RECEIVED
Dec 23 2024
SC Court of Appeals

THE STATE OF SOUTH CAROLINA
In the Court of Appeals

APPEAL FROM ANDERSON COUNTY
Court of Common Pleas

The Honorable R. Scott Sprouse
Circuit Court Judge

Appellate Case No. 2024-000057
Circuit Court Case No. 2019-CP-04-01942

Natalie Zitek, individually, and on behalf of all others similarly situated, ... Plaintiff,

v.

D.R. Horton, Inc., Jane Doe #1-10; and John Doe #1-50, ... Defendants,

and.

D.R. Horton, Inc ..... Third-Party Plaintiff,

v.

A&J Framing, Inc.; A-Z, Inc.; AJ Landscaping & Grading, LLC, A/K/A AJ Landscaping & Grading, LLC; Allpro Textures, LLC; Alpha E.M.C.; Alpha Omega Construction Group, Inc.; American Concrete And precast, Inc.; A/K/A ACP Concrete, Inc.; Atlanta Floor Designs Center; A Grade Above Others, LLC; BFK Builders, Inc.; BMC East LLC D/B/A Coleman Floor, LLC; Brand-Vaughn Lumber Co, Inc.; Bravo Carpenters, Inc.; Builders Designhouse, LLC; Builders FirstSource Southeast Group, LLC, A/K/A Builders FirstSource, Inc.; Builders Services Group, LLC, F/K/A Masco Contractor Services Central Inc. F/K/A Gale Industries, Inc. D/B/A Gale Contractor Services; Cannaday Siding & Gutter, Inc.; Caryl Mechanics II, Inc., A/K/A Caryl Mechanicals, Inc.; CBU Enterprises, Inc.; Cortes Painting, LLC; CPI Security Systems, Inc.; Dom Group, LLC; Dupree Plumbing Company, Inc.; Ferguson Enterprises, Inc.; Five Star Construction Inc.; Five Star Foundations, LLC; Galloway-Bell, Inc. A/K/A Galloway-Bell Inc. II; GBS Building Supply – Us LBM, LLC, F/K/A/GBS Building Supply, Inc.; General Shale Brick Inc.; Get Floored, LLC; Greener Pastures, Inc., A/K/A Greener Pastures of Aiken, LLC; Installed Building Products, LLC A/K/A Installed Building Products II, LLC; IBP Asset, LLC D/B/A Blue Ridge Building Products; JLS Masonry,

Inc.; Kings Landscaping, LLC; L&M Electric, Inc.; Lade-Danlar, Inc.; Landshapers, LLC; Lansing Building Products, Inc.; Long Heating & Air Conditioning, Inc.; M&L General Construction, LLC, A/K/A M&L General Construction, Inc.; M&L Reyna Construction, LLC; M&M Foundations, LLC; Manale Landscaping, LLC; MJ Cowboys, LLC; Nazareth Builders, LLC; NB Contractors, LLC; Poinsett Development, LLC; Poinsett Homes, LLC; P&L Enterprises, LLC; P&T Construction, Inc., A/K/A P&T Construction, Inc.; Probuild Company, LLC A/K/A Probuild Holdings, Inc.; Rite Rug Co.; Rodney Howard Grading, Inc. A/K/A Rodney Howard Grading Co.; Sandlapper Concrete, LLC; Silver Line Building Products Corporation; Sodfather Inc., Landscape Contractors; Stock Building Supply, LLC; Topbuild Home Services., Inc., A/K/A Gale Contractors Service; Tucker Materials, Inc., A/K/A Gypsum; UTM Enterprises, Inc; and Willow Tree Landscaping, Inc., ... Third-Party Defendants,

and.

Aaron D. Peris; Harrelson Painting, LLC, Huttig Building Products; et al, ... Fourth and Fifth-Party

of whom Defendants,

JLS Masonry, Inc. is the ..... Appellants.

and

Natalie Zitek, individually, and on behalf of all others similarly situated and as assignee of the claims of Third-Party Plaintiff D.R. Horton, Inc., ... Respondent,

---

RECORD ON APPEAL VOLUME VIII OF X

By *s/Nosizi Ralephata*

Nosizi Ralephata (SC 72484)
E-mail: nralephata@grsm.com
GORDON REES SCULLY MANSUKHANI
677 King Street, Suite 450
Charleston, SC 29403
Telephone: (843) 278-5900

Jeffrey A. Ross (SC 74254)
Email: jross@rclawsc.com
ROSS & CRISTALDI
863 Coleman Blvd. Ste B
Mt. Pleasant, SC 29464
Telephone: (843) 329-4040
Attorneys for Appellant JLS Masonry, Inc.

Other Counsel of Record:
Justin O'Toole Lucey, Esq. (SC 15438)
E-mail: jlucey@lucey-law.com
Dabny Lynn, Esq. (SC 78703)
E-mail: dlynn@lucey-law.com
Charlotte B. Winckler, Esq. (SC 102862)
E-mail: cwinckler@lucey-lasw.com
JUSTIN O'TOOLE LUCEY, P.A.
MOORE & LEWIS, LLC
415 Mill Street (29464)
Post Office Box 806
Mount Pleasant, SC 29465-0806
Telephone: (843) 849-8400
Attorneys for Plaintiff

INDEX

ORDERS

Order Granting Plaintiff's Motion for Class Certification and Denying Defendants Motion to Compel Arbitration, filed on January 27, 2021 1

Order Granting Defendant D.R. Horton, Inc.'s Motion to Establish Complex Case Designation, filed March 16, 2022.....15

Order Denying all Parties Motions to Decertify Class, filed July 19, 2023 18

Order Denying JLS Motion for Summary Judgment, filed July 28, 2023.....22

Trial Plan Order, filed August 17, 2023 25

Order Denying all Motions to Reconsider, filed August 18, 2023 35

Order Denying JLS Motion for Judgment Notwithstanding the Verdict, Filed November 8, 2023 39

Order Denying JLS Motion for Reconsideration, filed December 12, 2023 43

JUDGMENTS/DECISIONS

Jury Verdict, filed September 19, 2023 49

PLEADINGS

Plaintiff's Summons and Complaint, filed September 25, 2019 51

D.R. Horton's Amended Answer and Third-Party Complaint, filed March 11, 2021.....66

JLS Answer to Third-Party Complaint, filed March 9, 2022 93

JLS Notice of Appeal, filed January 10, 2024.....103

TRANSCRIPTS

Trial Transcript Volume I (September 5, 2023 – September 8, 2023) 124

Trial Transcript Volume II (September 11, 2023 – September 15, 2023).....807

MOTIONS AND MEMORANDA

Plaintiff's Motion to Certify Class, filed March 30, 2020.....1745

Plaintiff's Memorandum in Support of Motion to Certify Class, with exhibits A-V,

filed May 27, 2020 1747

D.R. Horton's Memorandum Opposing Class Certification, with exhibit A, filed November 23, 2020 1903

Plaintiff's Memorandum Opposing D.R. Horton's Motion to Dismiss, with exhibits A-P, filed November 23, 2020 1934

Plaintiff's Memorandum in Support of Class Certification, with exhibits A-G, filed November 23, 2020 2129

D.R. Horton's Motion to Decertify the Class, with exhibits A-B, filed May 1, 2023 2218

JLS Motion for Summary Judgment, filed May 1, 2023 2247

Fourth-Party Defendant Harrelson Motion for Decertification, with exhibits A-B, filed June 20, 2023 2250

Fourth-Party Defendant NW Alex Carpet Motion for Decertification, with exhibits A-B, filed June 20, 2023 2279

D.R. Horton's Motion for Partial Summary Judgment as to JLS, filed June 23, 2023 2308

JLS Motion to Bifurcate Trial, filed June 23, 2023 2311

JLS Motion to Decertify Class, filed June 23, 2023 2315

JLS, M&L Reyna, MJ Cowboys, and Fourth-Party Defendants Joint Motion for Bifurcated Trial, filed June 23, 2023 2318

Plaintiff's Motion for Summary Judgment, filed June 23, 2023 2322

Plaintiff's Motion for Trial Plan Order, filed June 23, 2023 2325

M&L Reyna Motion to Decertify Class and Joinder, filed June 26, 2023 2331

Fourth-Party Defendant NM Alex Carpet Memorandum in Support of Motion for Decertification, with exhibit A, filed July 10, 2023 2336

Fourth-Party Defendant Harrelson Painting Memorandum in Support of Motion for Decertification, filed July 10, 2023.....2347

D.R. Horton Memorandum in Opposition to all Third-Party Defendants Motions for Summary Judgment, filed July 11, 2023 2364

M&L Reyna Memorandum in Support of Motion to Decertify Class, with exhibits A-E, filed July 11, 2023.....2387

JLS & MJ Cowboys Joinder to M&L Reyna Motion to Decertify, filed July 11, 2023.....2429

JLS Memorandum in Support of Motion for Summary Judgment, with exhibit A,

filed July 11, 2023....2433

JLS and MJ Cowboys Joinder to M&L Reyna Memorandum in Opposition to D.R. Horton Motion for Partial Summary Judgment, filed July 11, 2023....2457

Plaintiff's Memorandum Supporting Trial Plan Order, filed July 12, 2023....2461

Plaintiff's Memorandum Opposing Decertification, filed July 13, 2023....2466

Plaintiff's Memorandum in Opposition to D.R. Horton Motion for Summary Judgment, filed July 14, 2023....2529

D.R. Horton's Motion to Alter or Amend Order Denying Motion for Decertification, filed July 28, 2023....2570

JLS Motion to Reconsider or Alter Order Denying Motion for Summary Judgment, filed August 7, 2023....2590

Plaintiff's Supplemental Memorandum Supporting Bifurcation, filed August 11, 2023....2596

JLS Motion for Directed Verdict, filed September 14, 2023....2602

MJ Cowboys Motion for Directed Verdict, filed September 14, 2023....2605

JLS and MJ Cowboys Memorandum in Support of Motions for Direct Verdict, filed September 14, 2023....2608

JLS Motion and Memorandum in Support of Motion for Judgment Notwithstanding the Verdict and/or New Trial, with exhibits A-D, filed September 22, 2023....2616

Plaintiff's Memorandum in Opposition to JLS Motion for JNOV, filed November 2, 2023....2749

JLS Motion and Memorandum in Support of Motion to Reconsider Order Denying Motion for JNOV, filed November 20, 2023....2802

TRIAL EXHBITS

Plaintiff's Trial Exhibit 1.8: JLS Subcontract....2814

Plaintiff's Trial Exhibit 1.9: JLS Purchase Agreement....2823

Plaintiff's Trial Exhibit 4.3: JLS Purchase Orders....2835

Plaintiff's Trial Exhibit 11.16: JLS Warranty Service Work Orders....3467

Plaintiff's Trial Exhibit 15.3: Defendant's Trial Exhibit 38: D.R. Horton Standard Details....3478

Plaintiff's Trial Exhibit 19.1: 2006 IRC for Brick.....3503

Plaintiff's Trial Exhibit 20.1: 2012 IRC for Brick.....3529

Plaintiff's Trial Exhibit 21.1: 2015 IRC for Brick.....3558

Plaintiff's Trial Exhibit 24.16: Dr. Whitlock Repair Cost Estimate.....3597

Plaintiff's Trial Exhibit 24.20 (C): Brick Photo Collection.....3668

Plaintiff's Trial Exhibit 24.20 (D): Stone Photo Collection.....3861

Plaintiff's Trial Exhibit 24.20 (F): Stone Clearance Photo Collection.....3694

Plaintiff's Trial Exhibit 24.20 (G): Brick Clad Window Photo Collection.....3705

Plaintiff's Trial Exhibit 25.1: Brick Crack Photos.....3718

Plaintiff's Trial Exhibit 25.3: 207 Buxton Insufficient Base of Wall Flashing Photos.....3730

Plaintiff's Trial Exhibit 25.4: 8 Duxbury Insufficient Base of Wall Flashing Photos.....3733

Plaintiff's Trial Exhibit 25.5: 206 Buxton Insufficient Lintel Bearing Photo.....3736

Plaintiff's Trial Exhibit 25.6: 17 Kettering Lintel Separate Above Garage Photo.....3737

Plaintiff's Trial Exhibit 25.7: 8 Kettering: Lintel Separate Above Garage Photo.....3738

Plaintiff's Trial Exhibit 25.8: 209 Buxton: Corroded Lintel Photo.....3739

Plaintiff's Trial Exhibit 25.16: 104 Sturbridge: Brick Crack Photos.....3740

Plaintiff's Trial Exhibit 25.17: Garage Crack Photos.....3742

Plaintiff's Trial Exhibit 25.19: Foundation Crack Photos.....3744

Plaintiff's Trial Exhibit 25.27: Dr. Whitlock Supplemental Brick Photos.....3755

Plaintiff's Trial Exhibit 25.28: Dr. Whitlock Supplemental Concrete Photos 3823

Plaintiff's Trial Exhibit 25.31: Dr. Whitlock Supplemental Stone Photos.....3850

Plaintiff's Trial Exhibit 25.34: Dr. Whitlock's Entire Photo Collection and Contact Sheets ...3895

Plaintiff's Trial Exhibit 32.14: D.R. Horton Email Regarding 104 Sturbridge Brick Defects and Proposed Repair 3896

Plaintiff's Trial Exhibit 32.15: D.R. Horton to Subcontractors Regarding 104 Sturbridge Repair 3913

Plaintiff's Trial Exhibit 51: Zitek DRH Warranty Submission re: Brick 3927

Plaintiff's Trial Exhibit 52: Zitek RWC Warranty Submission re: Brick 3928

Plaintiff's Trial Exhibit 53: Zitek Emails w/ DRH and Engineer re: Issues.....3931

Plaintiff's Trial Exhibit 54: Zitek Emails w/ DRH and Engineer re: Issues.....3937

Plaintiff's Trial Exhibit 55: 104 Sturbridge (Zitek) 2017 Repair Photos 3957

Plaintiff's Trial Exhibit 56: 104 Sturbridge (Zitek) 2018 1st Repair Photos.....4112

Plaintiff's Trial Exhibit 57: 104 Sturbridge (Zitek) 2018 2nd Repair Photos 4320

Plaintiff's Trial Exhibit 58: 104 Sturbridge (Zitek) 2018-2019 Post Repair Photos 4413

Plaintiff's Trial Exhibit 91: Rose Hill Neighborhood Map 4439

Plaintiff's Trial Exhibit 116: 104 Sturbridge (Zitek) Emails with D.R. Horton Regarding Repairs.....4440

Plaintiff's Trial Exhibit 233(A)-(B): Dr. Whitlock Loss of Use 4449

Plaintiff's Trial Exhibit 246: Rose Hill Neighborhood Map 4451

Plaintiff's Trial Exhibit 247: Vendor Spend.....4452

Defendant's Trial Exhibit 215: Engineer Letter Regarding 104 Sturbridge.....4490

OTHER DOCUMENTS

Plaintiff's Exhibit 49.....4492

Plaintiff's Notice of the Publication of the April 5-6, 2022
Deposition of Pamela Williamson and Exhibit.....4493

Plaintiff's Notice of the Publication of the April 25, 2023
Deposition of Christopher De La Torre.....4521

Certificate of Appellant.....4587

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/30/12
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200306 ON
Sub # / BU ID#	70953 / 0261
Swing/Plan/Elevation	R / LENO / K

Check Date 06/28/12
Check Number 29431
Invoice Date 06/07/12
Invoice Number 70953-00210317

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	**Slab Pour**

DELIVER TO:

Rose Hill 90'
9 Dartford Court
EASLEY, SC 29642
Lot/Block 261//
Plat Lot/Block/Phase 261 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2694.000	1.150	3,098.10
Slab Flatwork Labor		120.000	.850	102.00
				3,200.10

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,200.10

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3335

KDC 00042956

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/30/12
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200304 ON
Sub # / BU ID#	70953 / 0261
Swing/Plan/Elevation	R / LENO / K

Check Date 10/18/12
Check Number 36633
Invoice Date 09/28/12
Invoice Number 200304 261

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill 90'
9 Dartford Court
EASLEY, SC 29642
Lot/Block 261//
Plat Lot/Block/Phase 261 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3336

KDC 00042958

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/12/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201095 ON
Sub # / BU ID#	70953 / 0262
Swing/Plan/Elevation	L / FIEL / C

Check Date 06/06/13
Check Number 57782
Invoice Date 05/28/13
Invoice Number 70953-00219720

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
8 Dartford Court
EASLEY, SC 29642
Lot/Block 262//
Plat Lot/Block/Phase 262 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		3735.000	.495	1,848.83
Brick Veneer Labor (3sd/4sd)		10932.000	.495	5,411.34
				7,260.17

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			7,260.17

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3337

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/12/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201061 ON
Sub # / BU ID#	70953 / 0262
Swing/Plan/Elevation	L / FIEL / C

Check Date 05/09/13
Check Number 54950
Invoice Date 04/24/13
Invoice Number 70953-00216658

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
8 Dartford Court
EASLEY, SC 29642
Lot/Block 262//
Plat Lot/Block/Phase 262 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	6.250	281.25
Foundation Steel		1.00		
				281.25

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**16.88**	**298.13**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3338

KDC 00043012

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	02/27/13
Bid Contract Number	
FPO Req#/ JDE WO#	00006492 /
Purchase Order Number	3722807 OP
Sub # / BU ID#	70953 / 0261
Swing/Plan/Elevation	R / LENO / K

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.99	Retention Flatwork

Check Date 04/04/13
Check Number 51390
Invoice Date 03/26/13
Invoice Number 3722807 LOT 261

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90'
9 Dartford Court
EASLEY, SC 29642
Lot/Block 261//
Plat Lot/Block/Phase 261 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Retention Flatwork labor and material to replace damaged concrete at curb		1.00	75.000	75.00
				75.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			75.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3339

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/06/13
Bid Contract Number	
FPO Req#/ JDE WO#	00010082 /
Purchase Order Number	3732042 OP
Sub # / BU ID#	70953 / 0261
Swing/Plan/Elevation	R / LENO / K

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.02	Masonry Labor 2

Check Date 08/29/13
Check Number 67554
Invoice Date 08/20/13
Invoice Number 3732042 LOT 261

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
9 Dartford Court
EASLEY, SC 29642
Lot/Block 261//
Plat Lot/Block/Phase 261 / /

Description	Option	Qty	Unit Price	Extension
Masonry Labor 2 STACK STONE (MANTLE HT. W/ WD MANTLE) labor and material to repair brick at fireplace vent	JHEA00WM	1.00	200.000	200.00
				200.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			200.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00043055

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202499 ON
Sub # / BU ID#	70953 / 0198
Swing/Plan/Elevation	L / FIEL / B

Check Date 07/31/14
Check Number 112733
Invoice Date 07/27/14
Invoice Number 70953-00234845

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
6 Duxbury Lane
EASLEY, SC 29642
Lot/Block 198//
Plat Lot/Block/Phase 198 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2058.000	1.280	2,634.24
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				2,748.24

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,748.24

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3341

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202500 ON
Sub # / BU ID#	70953 / 0198
Swing/Plan/Elevation	L / FIEL / B

Check Date 07/31/14
Check Number 112733
Invoice Date 07/27/14
Invoice Number 70953-00234846

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill 90' **Delivery Date**
6 Duxbury Lane
EASLEY, SC 29642
Lot/Block 198//
Plat Lot/Block/Phase 198 / /

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3342

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202535 ON
Sub # / BU ID#	70953 / 0198
Swing/Plan/Elevation	L / FIEL / B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill 90'
6 Duxbury Lane
EASLEY, SC 29642
Lot/Block 198//
Plat Lot/Block/Phase 198 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Stone Soldier Pcs. (t/k) LINEAR FOOT			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00043184

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202563 ON
Sub # / BU ID#	70953 / 0198
Swing/Plan/Elevation	L / FIEL / B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill 90' **Delivery Date**
6 Duxbury Lane
EASLEY, SC 29642
Lot/Block 198//
Plat Lot/Block/Phase 198 / /

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202562 ON
Sub # / BU ID#	70953 / 0198
Swing/Plan/Elevation	L / FIEL / B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
6 Duxbury Lane
EASLEY, SC 29642
Lot/Block 198//
Plat Lot/Block/Phase 198 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00043196

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/07/13
Bid Contract Number	
FPO Req#/ JDE WO#	00011052 /
Purchase Order Number	3735333 OP
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH / J

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	Stone Turnkey 1

Check Date	10/24/13
Check Number	74499
Invoice Date	10/14/13
Invoice Number	3735333 LOT 196

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Description	Option	Qty	Unit Price	Extension
Stone Turnkey 1		1.00	1,275.000	1,275.00
assitional 150 sf of stone per community specs				
				1,275.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,275.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3346

KDC 00043270

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201551 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH / J

Check Date 09/05/13
Check Number 68428
Invoice Date 08/27/13
Invoice Number 201551 LOT 196

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill 90'
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257		212.000	.950	201.40
				201.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			201.40

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3347

KDC 00044061

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201550 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH / J

Check Date 09/05/13
Check Number 68428
Invoice Date 08/27/13
Invoice Number 201550 LOT 196

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job		562.000	.950	533.90
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3348

KDC 00044063

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201561 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH/ J

Check Date 06/20/13
Check Number 59519
Invoice Date 06/05/13
Invoice Number 70953-00220224

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

DELIVER TO:

Rose Hill 90' **Delivery Date**
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2776.000	1.280	3,553.28
Slab Flatwork Labor		243.000	.950	230.85
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				3,784.13

JBNSS025 BONUS ROOM - SERIES 200+ ON SL AB.
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,784.13

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3349

KDC 00044070

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201573 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH/ J

Check Date 07/25/13
Check Number 63577
Invoice Date 07/17/13
Invoice Number 70953-00223736

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor (3sd/4sd)		10122.000	.495	5,010.39
				5,010.39

J3SDB0BK ADDITIONAL BRICK (LEFT & RIGH T) ON BASEMENT

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			5,010.39

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3350

KDC 00044080

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201569 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH / J

Check Date 06/06/13
Check Number 57782
Invoice Date 05/31/13
Invoice Number 70953-00219704

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3351

KDC 00044082

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201524 ON
Sub # / BU ID#	70953 / 0196
Swing/Plan/Elevation	L / CYTH / J

Check Date 10/24/13
Check Number 74499
Invoice Date 10/14/13
Invoice Number 201524 LOT 196

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill 90'
10 Duxbury Lane
EASLEY, SC 29642
Lot/Block 196//
Plat Lot/Block/Phase 196 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k)		150.000	8.500	1,275.00
Artistic Stone				
Sim. Stone Soldier Pcs. (t/k)		14.000		
LINEAR FOOT				
Sim. Corner-Stone Veneer (t/k)		74.000		.01
(DHI Artistic Stone)				
				1,275.01

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,275.01

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3352

KDC 00044128

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201374 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Check Date 05/23/13
Check Number 56168
Invoice Date 05/16/13
Invoice Number 70953-00218539

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		41.000	7.500	307.50
Foundation Steel		1.00		
				307.50

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**18.45**	**325.95**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3353

KDC 00044310

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	11/06/13
Bid Contract Number	
FPO Req#/ JDE WO#	00011987 /
Purchase Order Number	3737333 OP
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH / D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date	11/21/13
Check Number	77788
Invoice Date	11/12/13
Invoice Number	3737333 0243

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90'
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Masonry Labor 1 additional labor for 2294 brick		1.00	1,135.530	1,135.53
				1,135.53

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,135.53

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3354

KDC 00044325

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	12/20/13
Bid Contract Number	
FPO Req#/ JDE WO#	00012744 /
Purchase Order Number	3739430 OP
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH / D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

Check Date	02/13/14
Check Number	87786
Invoice Date	01/04/14
Invoice Number	37394300243

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Description	Option	Qty	Unit Price	Extension
Driveway/Lead walk-Turnkey additional labor for 746' of concrete		1.00	746.700	746.70
				746.70

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			746.70

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3355

KDC 00044341

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201440 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Check Date 08/29/13
Check Number 67554
Invoice Date 08/20/13
Invoice Number 201440 LOT 244

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor		212.000	.950	201.40
(*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257				
				201.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			201.40

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3356

KDC 00044376

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201439 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Check Date 08/29/13
Check Number 67554
Invoice Date 08/20/13
Invoice Number 201439 LOT 244

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		562.000	.950	533.90
(*Note: All sq/ft measurements must be verified by the job				
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3357

KDC 00044378

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201451 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Check Date 06/06/13
Check Number 57782
Invoice Date 05/21/13
Invoice Number 201451 LOT 244

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2532.000	1.280	3,240.96
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				3,354.96

JCURS025 CURVED WINDOW WALL - SERIES 20 0+ ON SLAB (4 SIDE BRICK REQUI
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,354.96

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3358

KDC 00044386

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201412 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Check Date 10/24/13
Check Number 74499
Invoice Date 10/14/13
Invoice Number 201412 LOT 244

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone		120.000	8.500	1,020.00
Sim. Stone Soldier Pcs. (t/k) LINEAR FOOT		24.000		
Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)		6.000		
				1,020.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,020.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3359

KDC 00044427

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/29/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201409 ON
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date	07/25/13
Check Number	63577
Invoice Date	07/09/13
Invoice Number	70953-00223197

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90'
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		4412.000	.495	2,183.94
Brick Veneer Labor (3sd/4sd)		10500.000	.495	5,197.50
				7,381.44

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			7,381.44

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201939 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Check Date 10/10/13
Check Number 72677
Invoice Date 09/27/13
Invoice Number 70953-00228069

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

DELIVER TO:

Rose Hill 90'
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2776.000	1.280	3,553.28
Slab Flatwork Labor		243.000	.950	230.85
Slab Pour		1.00		
				3,784.13

JBNS00BD BEDROOM 4 IN LIEU OF BONUS ROO M
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,784.13

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3361

KDC 00044461

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201940 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Check Date 10/10/13
Check Number 72677
Invoice Date 09/16/13
Invoice Number 70953-00227757

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill 90' **Delivery Date**
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3362

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202004 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.02	City Sidewalk - Turnkey

Check Date 12/19/13
Check Number 81475
Invoice Date 12/10/13
Invoice Number 202004 LOT 243

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257		212.000	.950	201.40
				201.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			201.40

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3363

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202003 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Check Date 12/19/13
Check Number 81475
Invoice Date 12/10/13
Invoice Number 202003 LOT 243

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		1082.000	.950	1,027.90
(*Note: All sq/ft measurements must be verified by the job				
				1,027.90
JSEG0025 SIDE ENTRY GARAGE SERIES 200+ (CONSTRUCTION TO CONFIRM EXTRA				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,027.90

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3364

KDC 00044519

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202019 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45050.07	Fireplace Surround-Stone

Check Date 01/16/14
Check Number 84470
Invoice Date 01/14/14
Invoice Number 202019 LOT 243

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3365

KDC 00044539

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	08/07/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	201975 ON
Sub # / BU ID#	70953 / 0243
Swing/Plan/Elevation	R / CYTH/ D

Check Date 12/05/13
Check Number 79436
Invoice Date 11/21/13
Invoice Number 70953-00229646

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
7 Kettering Court
EASLEY, SC 29642
Lot/Block 243//
Plat Lot/Block/Phase 243 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		3764.000	.495	1,863.18
Brick Veneer Labor (3sd/4sd)		6822.000	.495	3,376.89
				5,240.07

JBNS00BD BEDROOM 4 IN LIEU OF BONUS ROO M
JSEG0025 SIDE ENTRY GARAGE SERIES 200+ (CONSTRUCTION TO CONFIRM EXTRA
J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			5,240.07

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3366

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/01/13
Bid Contract Number	
FPO Req#/ JDE WO#	00009479 /
Purchase Order Number	3729860 OP
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

Check Date	07/25/13
Check Number	63577
Invoice Date	07/16/13
Invoice Number	3729860 LOT 245

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Description	Option	Qty	Unit Price	Extension
Driveway/Lead walk-Turnkey		1.00	77.400	77.40
0.10 price correction for 774 ' of concrete				
				77.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			77.40

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3367

KDC 00044598

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/01/13
Bid Contract Number	
FPO Req#/ JDE WO#	00009477 /
Purchase Order Number	3729861 OP
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date 07/25/13
Check Number 63577
Invoice Date 07/16/13
Invoice Number 3729861 LOT 245

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Masonry Labor 1 additional labor for 1484 brick		1.00	734.580	734.58
				734.58

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			734.58

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3368

KDC 00044599

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/29/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200873 ON
Sub # / BU ID#	70953 / 0246
Swing/Plan/Elevation	R / BLAK / DD

Check Date 05/09/13
Check Number 54950
Invoice Date 04/17/13
Invoice Number 70953-00216092

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
15 Kettering Court
EASLEY, SC 29642
Lot/Block 246//
Plat Lot/Block/Phase 246 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		47.000	6.250	293.75
Foundation Steel		1.00		
				293.75

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**17.63**	**311.38**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3369

KDC 00044612

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

Check Date	06/20/13
Check Number	59519
Invoice Date	06/12/13
Invoice Number	3728084 LOT 245

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/24/13
Bid Contract Number	
FPO Req#/ JDE WO#	00008340 /
Purchase Order Number	3728084 OP
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Slab Pour price correction		1.00	12.000	12.00
				12.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			12.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3370

KDC 00044624

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200827 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

Check Date 07/11/13
Check Number 61954
Invoice Date 06/25/13
Invoice Number 200827 LOT 245

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257		212.000	.850	180.20
				180.20

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			180.20

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3371

KDC 00044636

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200826 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 07/11/13
Check Number 61954
Invoice Date 06/25/13
Invoice Number 200826 LOT 245

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job		562.000	.850	477.70
				477.70

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			477.70

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3372

KDC 00044637

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200840 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 08/29/13
Check Number 67554
Invoice Date 08/26/13
Invoice Number 200840 LOT 245

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3373

KDC 00044645

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200842 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 05/23/13
Check Number 56168
Invoice Date 05/09/13
Invoice Number 70953-00217881

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.150	2,306.90
Slab Flatwork Labor		120.000	.850	102.00
				2,408.90

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,408.90

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3374

KDC 00044659

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/29/13
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200934 ON
Sub # / BU ID#	70953 / 0246
Swing/Plan/Elevation	R / BLAK / DD

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

Check Date 07/11/13
Check Number 61954
Invoice Date 06/25/13
Invoice Number 200934 LOT 246

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
15 Kettering Court
EASLEY, SC 29642
Lot/Block 246//
Plat Lot/Block/Phase 246 / /

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		562.000	.850	477.70
(*Note: All sq/ft measurements must be verified by the job				
				477.70

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			477.70

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3375

KDC 00044682

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/29/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200946 ON
Sub # / BU ID#	70953 / 0246
Swing/Plan/Elevation	R / BLAK / DD

Check Date 08/29/13
Check Number 67554
Invoice Date 08/26/13
Invoice Number 200946 LOT 246

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill 90'
15 Kettering Court
EASLEY, SC 29642
Lot/Block 246//
Plat Lot/Block/Phase 246 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3376

KDC 00044692

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/29/13
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200944 ON
Sub # / BU ID#	70953 / 0246
Swing/Plan/Elevation	R / BLAK / DD

Check Date 05/09/13
Check Number 54950
Invoice Date 04/25/13
Invoice Number 70953-00216645

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
15 Kettering Court
EASLEY, SC 29642
Lot/Block 246//
Plat Lot/Block/Phase 246 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		3573.000	1.150	4,108.95
				4,108.95
JCVD00XX COVERED PATIO/DECK OPTION				
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			4,108.95

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3377

KDC 00044694

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/29/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200906 ON
Sub # / BU ID#	70953 / 0246
Swing/Plan/Elevation	R / BLAK / DD

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date	07/11/13
Check Number	61954
Invoice Date	06/20/13
Invoice Number	70953-00221446

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
15 Kettering Court
EASLEY, SC 29642
Lot/Block 246//
Plat Lot/Block/Phase 246 / /

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		1799.000	.495	890.51
Brick Veneer Labor (3sd/4sd)		7106.000	.495	3,517.47
				4,407.98

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			4,407.98

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3378

KDC 00044732

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	12/06/13
Bid Contract Number	
FPO Req#/ JDE WO#	00012540 /
Purchase Order Number	3738783 OP
Sub # / BU ID#	70953 / 0244
Swing/Plan/Elevation	R / MCDA/ C

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45300.01	Hardwood Flooring

Check Date	12/19/13
Check Number	81475
Invoice Date	12/06/13
Invoice Number	3738783 LOT 244

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
9 Kettering Court
EASLEY, SC 29642
Lot/Block 244//
Plat Lot/Block/Phase 244 / /

Description	Option	Qty	Unit Price	Extension
Hardwood Flooring lkabor and material to float out unlevel slab for hardwoods. Back Charge Reason: unlevel sub floors Back Charge Contac t and Date: mauricio 12/03		1.00	250.000-	250.00-
				250.00-

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			250.00-

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3379

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200798 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 06/20/13
Check Number 59519
Invoice Date 06/05/13
Invoice Number 70953-00220229

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		1532.000	.495	758.34
Brick Veneer Labor (3sd/4sd)		9036.000	.495	4,472.82
				5,231.16

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			5,231.16

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00044834

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200801 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 08/29/13
Check Number 67554
Invoice Date 08/26/13
Invoice Number 200801 LOT 245

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	**Stone Turnkey 1**

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Stone Soldier Pcs. (t/k) LINEAR FOOT		241.000 30.000	8.500	2,048.50
				2,048.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,048.50

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3381

KDC 00044853

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/15/13
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200763 ON
Sub # / BU ID#	70953 / 0245
Swing/Plan/Elevation	R / BROO/ D

Check Date 05/09/13
Check Number 54950
Invoice Date 04/22/13
Invoice Number 70953-00216641

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
11 Kettering Court
EASLEY, SC 29642
Lot/Block 245//
Plat Lot/Block/Phase 245 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	6.250	181.25
Foundation Steel		1.00		
				181.25

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**10.88**	**192.13**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3382

KDC 00044875

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200072 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

Check Date 12/16/11
Check Number 376084
Invoice Date 11/29/11
Invoice Number 200072 201

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257		212.000	.850	180.20
				180.20

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			180.20

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3383

KDC 00044919

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200071 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

Check Date 12/16/11
Check Number 376084
Invoice Date 11/29/11
Invoice Number 200071 201

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		1082.000	.850	919.70
(*Note: All sq/ft measurements must be verified by the job				
				919.70

JSEG0025 SIDE ENTRY GARAGE SERIES 200+ (CONSTRUCTION TO CONFIRM EXTRA

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			919.70

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3384

KDC 00044920

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200007 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

Check Date 10/20/11
Check Number 362193
Invoice Date 10/12/11
Invoice Number 200007 201

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	6.250	281.25
Foundation Steel		1.00		
				281.25

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**16.88**	**298.13**

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3385

KDC 00044948

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200041 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

Check Date 11/18/11
Check Number 369787
Invoice Date 11/09/11
Invoice Number 200041 201

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		2699.000	.495	1,336.01
Brick Veneer Labor (3sd/4sd)		8412.000	.495	4,163.94
				5,499.95

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			5,499.95

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3386

KDC 00044953

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200091 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45050.07	Fireplace Surround-Stone

Check Date	11/18/11
Check Number	369787
Invoice Date	11/09/11
Invoice Number	200091 201

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3387

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200088 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Check Date 10/20/11
Check Number 362193
Invoice Date 10/12/11
Invoice Number 200088 201

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		1935.000	1.150	2,225.25
Slab Flatwork Labor		120.000	.850	102.00
				2,327.25

JCURS002 CURVED WINDOW WALL - SERIES 20 0 ON SLAB (4 SIDE BRICK REQUIR
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,327.25

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

3388

KDC 00045019

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202274 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 06/04/14
Check Number 647009
Invoice Date 05/22/14
Invoice Number 2022740200

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone		310.000	8.500	2,635.00
Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)		9.000		
				2,635.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,635.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3389

KDC 00045068

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202239 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 04/03/14
Check Number 94630
Invoice Date 03/28/14
Invoice Number 70953-00231542

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill 90' **Delivery Date**
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202238 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 04/17/14
Check Number 96655
Invoice Date 04/07/14
Invoice Number 70953-00231881

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
Slab Pour	JPAT00SF	1.00	98.800	98.80
CONCRETE PATIO EXTENSION PER S Q. FOOT				
Slab Pour	JPAT00SF	1.00-	98.800-	98.80
CONCRETE PATIO EXTENSION PER S Q. FOOT				
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				2,879.28
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,879.28

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3391

KDC 00045122

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/18/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202589 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

Check Date	06/26/14
Check Number	107076
Invoice Date	04/07/14
Invoice Number	70953-00233803

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Description	Option	Qty	Unit Price	Extension
Slab Flatwork Labor		324.000	.950	307.80
				307.80

JPAT00SF CONCRETE PATIO EXTENSION PER S Q. FOOT

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			307.80

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3392

KDC 00045133

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/21/14
Bid Contract Number	
FPO Req#/ JDE WO#	00016386 /
Purchase Order Number	3748473 OP
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	Stone Turnkey 1

Check Date 06/04/14
Check Number 647009
Invoice Date 05/27/14
Invoice Number 37484730200

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Description	Option	Qty	Unit Price	Extension
Stone Turnkey 1	CLRPLUS1	1.00	977.500	977.50
COLOR PLUS COMMUNITY-USE A CP EXTERIOR COLOR SCHEME				
additional labor and material for 115' of stone at $8.50 per ft.				
Siding - Timber Bark, Shake - Autumn Tan, Trim & Board and Batten - Sail Cloth, Garage Door - SW 6133 Muslin, Gutters & Downspouts - Cream, Windows - Beige, Front Door & Shutters - SW 7041 Van Dyke Brown, Brick - Castlerock, Stone - Nature Blend				
				977.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			977.50

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3393

KDC 00045145

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/21/14
Bid Contract Number	
FPO Req#/ JDE WO#	00016388 /
Purchase Order Number	3748475 OP
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

Check Date 06/04/14
Check Number 647009
Invoice Date 05/27/14
Invoice Number 37484750200

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Description	Option	Qty	Unit Price	Extension
Driveway/Lead walk-Turnkey	CLRPLUS1	1.00	459.800	459.80

COLOR PLUS COMMUNITY-USE A CP EXTERIOR COLOR SCHEME
additional labor for 484' of concrete at 0.95 per foot. refe
rence CO # 3 for detail
Siding - Timber Bark, Shake - Autumn Tan, Trim & Board and Batten - Sail Cloth,
Garage Door - SW 6133 Muslin, Gutters & Downspouts - Cream, Windows - Beige, Fro
nt Door & Shutters - SW 7041 Van Dyke Brown, Brick - Castlerock, Stone - Nature
Blend

459.80

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			459.80

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3394

KDC 00045158

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/21/14
Bid Contract Number	
FPO Req#/ JDE WO#	00016387 /
Purchase Order Number	3748474 OP
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date	06/04/14
Check Number	647009
Invoice Date	05/27/14
Invoice Number	37484740200

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Description	Option	Qty	Unit Price	Extension
Masonry Labor 1	CLRPLUS1	1.00	536.580	536.58
COLOR PLUS COMMUNITY-USE A CP EXTERIOR COLOR SCHEME				
additional labor for 1084 brick at $0.495 per brick				
Siding - Timber Bark, Shake - Autumn Tan, Trim & Board and Batten - Sail Cloth, Garage Door - SW 6133 Muslin, Gutters & Downspouts - Cream, Windows - Beige, Front Door & Shutters - SW 7041 Van Dyke Brown, Brick - Castlerock, Stone - Nature Blend				
				536.58

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			536.58

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202300 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 05/22/14
Check Number 101888
Invoice Date 05/14/14
Invoice Number 70953-00233016

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257		212.000	.950	201.40
				201.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			201.40

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3396

KDC 00045174

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202299 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 05/22/14
Check Number 101888
Invoice Date 05/14/14
Invoice Number 70953-00233015

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		562.000	.950	533.90
(*Note: All sq/ft measurements must be verified by the job				
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3397

KDC 00045176

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202324 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 05/15/14
Check Number 100839
Invoice Date 05/07/14
Invoice Number 70953-00232807

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor (3sd/4sd)		9036.000	.495	4,472.82
				4,472.82

J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			4,472.82

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	03/21/14
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202317 ON
Sub # / BU ID#	70953 / 0200
Swing/Plan/Elevation	L / BROO/ B

Check Date 06/04/14
Check Number 647009
Invoice Date 05/22/14
Invoice Number 2023170200

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill 90'
2 Duxbury Lane
EASLEY, SC 29642
Lot/Block 200//
Plat Lot/Block/Phase 200 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION		1.000	400.000	400.00
				400.00
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			400.00

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3399

KDC 00045198

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	10/03/11
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200004 ON
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40023.07	Lot Grade-Extras

Check Date	10/20/11
Check Number	362193
Invoice Date	10/12/11
Invoice Number	200004 201

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
#57-Stone		1.000	325.000	325.00
				325.00

PAID
MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			325.00

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/16/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202348 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

Check Date 06/04/14
Check Number 647009
Invoice Date 05/29/14
Invoice Number 70953-00233361

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3401

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/16/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202347 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

Check Date 06/12/14
Check Number 104887
Invoice Date 06/06/14
Invoice Number 70953-00233484

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
40025.03 Slab Pour

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
				2,681.68

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,681.68

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

3402

KDC 00045214

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/21/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202423 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

Check Date 07/31/14
Check Number 112733
Invoice Date 07/21/14
Invoice Number 70953-00234850

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		8096.000	.495	4,007.52
Brick Veneer Labor (3sd/4sd)		9036.000	.495	4,472.82
				8,480.34

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS
J3SDS0BK ADDITIONAL BRICK (LEFT & RIGH T)ON SLAB

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			8,480.34

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00045290

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/16/14
Bid Contract Number	100049
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202420 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION			400.000	
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/16/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202402 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job city walk only on 193-210; 263-268; 250-257			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

KDC 00045350

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	04/16/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	202401 ON
Sub # / BU ID#	70953 / 0242
Swing/Plan/Elevation	R / BROO/ G

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill 90'
5 Kettering Court
EASLEY, SC 29642
Lot/Block 242//
Plat Lot/Block/Phase 242 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: WADDELL, BRIAN K **Phone:**

D.R. Horton Appr: _____ **DATE:** _____

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	11/11/11
Bid Contract Number	
FPO Req#/ JDE WO#	00001527 /
Purchase Order Number	3701466 OP
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

Check Date	12/16/11
Check Number	376084
Invoice Date	12/06/11
Invoice Number	3701466 201

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Slab Pour re-form house		1.00	250.000	250.00
				250.00

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			250.00

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

KDC 00045363

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	11/11/11
Bid Contract Number	
FPO Req#/ JDE WO#	00001523 /
Purchase Order Number	3701463 OP
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

Check Date	12/16/11
Check Number	376084
Invoice Date	12/06/11
Invoice Number	3701463 201

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Slab Pour flatwork labor PO short		1.00	12.000	12.00
				12.00

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			12.00

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

KDC 00045364

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	12/13/11
Bid Contract Number	
FPO Req#/ JDE WO#	00001712 /
Purchase Order Number	3702292 OP
Sub # / BU ID#	70953 / 0201
Swing/Plan/Elevation	R / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

Check Date 05/31/12
Check Number 27534
Invoice Date 05/15/12
Invoice Number 3702292 LOT 201

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill 90' **Delivery Date**
101 Sturbridge Court
EASLEY, SC 29642
Lot/Block 213-12-01-05
Plat Lot/Block/Phase 201 / /

Description	Option	Qty	Unit Price	Extension
Slab Pour extra flat work		1.00	129.400	129.40
Slab Pour parking lot labor		1.00	456.000	456.00
Slab Pour extra brick for model		1.00	2,420.060	2,420.06
				3,005.46

PAID

MODEL

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,005.46

Superintendent: YOUNG, JEREMY C **Phone:** (864) 417-2718

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200978 ON
Sub # / BU ID#	70959 / 0061
Swing/Plan/Elevation	L / BROO/ E

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
410 ROWLEY CT
EASLEY, SC 29642
Lot/Block 61//
Plat Lot/Block/Phase 61 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200979 ON
Sub # / BU ID#	70959 / 0061
Swing/Plan/Elevation	L / BROO/ E

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
410 ROWLEY CT
EASLEY, SC 29642
Lot/Block 61//
Plat Lot/Block/Phase 61 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200950 ON
Sub # / BU ID#	70959 / 0061
Swing/Plan/Elevation	L / BROO/ E

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
410 ROWLEY CT
EASLEY, SC 29642
Lot/Block 61//
Plat Lot/Block/Phase 61 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200916 ON
Sub # / BU ID#	70959 / 0061
Swing/Plan/Elevation	L / BROO/ E

Check Date 07/17/14
Check Number 110515
Invoice Date 07/07/14
Invoice Number 70959-00216680

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70' **Delivery Date**
410 ROWLEY CT
EASLEY, SC 29642
Lot/Block 61//
Plat Lot/Block/Phase 61 / /

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				2,681.68
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS				

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,681.68

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00046287

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/17/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200917 ON
Sub # / BU ID#	70959 / 0061
Swing/Plan/Elevation	L / BROO/ E

Check Date 07/02/14
Check Number 108137
Invoice Date 06/30/14
Invoice Number 70959-00215264

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill Land 70' **Delivery Date**
410 ROWLEY CT
EASLEY, SC 29642
Lot/Block 61//
Plat Lot/Block/Phase 61 / /

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200398 ON
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Check Date 07/17/14
Check Number 110515
Invoice Date 07/10/14
Invoice Number 70959-00216667

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		562.000	.950	533.90
(*Note: All sq/ft measurements must be verified by the job				
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048046

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200399 ON
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Check Date 07/17/14
Check Number 110515
Invoice Date 07/09/14
Invoice Number 70959-00216668

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job		132.000	.950	125.40
				125.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			125.40

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3416

KDC 00048062

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200367 ON
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Check Date 06/26/14
Check Number 107076
Invoice Date 06/19/14
Invoice Number 70959-00214498

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		2699.000	.495	1,336.01
				1,336.01

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			1,336.01

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200242 ON
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Check Date 05/22/14
Check Number 101888
Invoice Date 05/16/14
Invoice Number 70959-00211029

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048113

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200241 ON
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Check Date 05/29/14
Check Number 102779
Invoice Date 05/22/14
Invoice Number 70959-00211747

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		324.000	.950	307.80
Slab Pour		1.00		
				2,875.48

JPAT00SF CONCRETE PATIO EXTENSION PER S Q. FOOT
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,875.48

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048114

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/17/14
Bid Contract Number	
FPO Req#/ JDE WO#	00017887 /
Purchase Order Number	3752018 OP
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date 07/31/14
Check Number 112733
Invoice Date 07/22/14
Invoice Number 37520180050

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Masonry Labor 1 additional labor for 721 brick		1.00	356.890	356.89
				356.89

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			356.89

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3420

KDC 00048177

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200588 ON
Sub # / BU ID#	70959 / 0049
Swing/Plan/Elevation	R / BROO/ B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
509 CARDIFF CT
EASLEY, SC 29642
Lot/Block 49//
Plat Lot/Block/Phase 49 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200587 ON
Sub # / BU ID#	70959 / 0049
Swing/Plan/Elevation	R / BROO/ B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
509 CARDIFF CT
EASLEY, SC 29642
Lot/Block 49//
Plat Lot/Block/Phase 49 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200559 ON
Sub # / BU ID#	70959 / 0049
Swing/Plan/Elevation	R / BROO/ B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
509 CARDIFF CT
EASLEY, SC 29642
Lot/Block 49//
Plat Lot/Block/Phase 49 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048223

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200526 ON
Sub # / BU ID#	70959 / 0049
Swing/Plan/Elevation	R / BROO/ B

Check Date 05/29/14
Check Number 102779
Invoice Date 05/23/14
Invoice Number 70959-00211738

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill Land 70'
509 CARDIFF CT
EASLEY, SC 29642
Lot/Block 49//
Plat Lot/Block/Phase 49 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048235

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200525 ON
Sub # / BU ID#	70959 / 0049
Swing/Plan/Elevation	R / BROO/ B

Check Date 06/12/14
Check Number 104887
Invoice Date 06/09/14
Invoice Number 70959-00213096

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
509 CARDIFF CT
EASLEY, SC 29642
Lot/Block 49//
Plat Lot/Block/Phase 49 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
				2,681.68

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,681.68

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3425

KDC 00048237

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200334 ON
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Check Date 06/04/14
Check Number 647009
Invoice Date 05/28/14
Invoice Number 70959-00212433

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048285

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200333 ON
Sub # / BU ID#	70959 / 0050
Swing/Plan/Elevation	L / FIEL / BB

Check Date 06/12/14
Check Number 104887
Invoice Date 06/03/14
Invoice Number 70959-00213100

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
508 CARDIFF CT
EASLEY, SC 29642
Lot/Block 50//
Plat Lot/Block/Phase 50 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		1918.000	1.280	2,455.04
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
Slab Pour	JRVS00DR	1.00		
THIS PLAN TO BE BUILT REVERSED				
				2,569.04

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,569.04

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3427

KDC 00048286

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/24/14
Bid Contract Number	
FPO Req#/ JDE WO#	00018319 /
Purchase Order Number	3752565 OP
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

Check Date	08/07/14
Check Number	113457
Invoice Date	07/29/14
Invoice Number	37525650051

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway/Lead walk-Turnkey CONCRETE PATIO EXTENSION PER S Q. FOOT additional labor for 368'	JPAT00SF	1.00	349.600	349.60
				349.60

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			349.60

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3428

KDC 00048519

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/24/14
Bid Contract Number	
FPO Req#/ JDE WO#	00018321 /
Purchase Order Number	3752567 OP
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	Stone Turnkey 1

Check Date	08/07/14
Check Number	113457
Invoice Date	07/29/14
Invoice Number	37525670051

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Stone Turnkey 1 labor and material for additional stone		1.00	255.000	255.00
				255.00

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			255.00

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3429

KDC 00048520

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200275 ON
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200304 ON
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Check Date 07/24/14
Check Number 111403
Invoice Date 07/16/14
Invoice Number 70959-00217320

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To
D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description
45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job sides walks are only on one side of the street. this ON is based on the average the 100' lots and will need to voided on lots that don't get a sidewalk or reduced on smaller lots.		132.000	.950	125.40
				125.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			125.40

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3431

KDC 00048562

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200303 ON
Sub # / BU ID#	70959 / 0051
Swing/Plan/Elevation	R / BROO/ E

Check Date 07/24/14
Check Number 111403
Invoice Date 07/14/14
Invoice Number 70959-00217319

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
506 CARDIFF CT
EASLEY, SC 29642
Lot/Block 51//
Plat Lot/Block/Phase 51 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor		562.000	.950	533.90
(*Note: All sq/ft measurements must be verified by the job				
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3432

KDC 00048566

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/11/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200849 ON
Sub # / BU ID#	70959 / 0052
Swing/Plan/Elevation	L / GLNH/ 1

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill Land 70'
504 CARDIFF CT
EASLEY, SC 29642
Lot/Block 52//
Plat Lot/Block/Phase 52 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor			.495	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	**Total PO**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/11/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200880 ON
Sub # / BU ID#	70959 / 0052
Swing/Plan/Elevation	L / GLNH/ 1

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
504 CARDIFF CT
EASLEY, SC 29642
Lot/Block 52//
Plat Lot/Block/Phase 52 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048600

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/11/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200879 ON
Sub # / BU ID#	70959 / 0052
Swing/Plan/Elevation	L / GLNH/ 1

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
504 CARDIFF CT
EASLEY, SC 29642
Lot/Block 52//
Plat Lot/Block/Phase 52 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/11/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200817 ON
Sub # / BU ID#	70959 / 0052
Swing/Plan/Elevation	L / GLNH/ 1

Check Date 07/17/14
Check Number 110515
Invoice Date 07/07/14
Invoice Number 70959-00216673

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill Land 70'
504 CARDIFF CT
EASLEY, SC 29642
Lot/Block 52//
Plat Lot/Block/Phase 52 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3436

KDC 00048623

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	06/11/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200816 ON
Sub # / BU ID#	70959 / 0052
Swing/Plan/Elevation	L / GLNH/ 1

Check Date 07/24/14
Check Number 111403
Invoice Date 07/14/14
Invoice Number 70959-00217321

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
504 CARDIFF CT
EASLEY, SC 29642
Lot/Block 52//
Plat Lot/Block/Phase 52 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2677.000	1.280	3,426.56
Slab Flatwork Labor		203.000	.950	192.85
Slab Pour		1.00		
				3,619.41

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,619.41

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3437

KDC 00048624

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200114 ON
Sub # / BU ID#	70959 / 0046
Swing/Plan/Elevation	R / CYTH / B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
503 CARDIFF CT
EASLEY, SC 29642
Lot/Block 46//
Plat Lot/Block/Phase 46 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048659

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200113 ON
Sub # / BU ID#	70959 / 0046
Swing/Plan/Elevation	R / CYTH/ B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
503 CARDIFF CT
EASLEY, SC 29642
Lot/Block 46//
Plat Lot/Block/Phase 46 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200084 ON
Sub # / BU ID#	70959 / 0046
Swing/Plan/Elevation	R / CYTH / B

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
503 CARDIFF CT
EASLEY, SC 29642
Lot/Block 46//
Plat Lot/Block/Phase 46 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Stone Soldier Pcs. (t/k) LINEAR FOOT Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)			8.500	
JBNS00BD BEDROOM 4 IN LIEU OF BONUS ROO M				

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200429 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

Check Date 05/29/14
Check Number 102779
Invoice Date 05/23/14
Invoice Number 70959-00211726

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00048769

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200428 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

Check Date 06/12/14
Check Number 104887
Invoice Date 06/03/14
Invoice Number 70959-00213085

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		1935.000	1.280	2,476.80
Slab Flatwork Labor		260.000	.950	247.00
Slab Pour		1.00		
				2,723.80

JCURS002 CURVED WINDOW WALL - SERIES 20 0 ON SLAB (4 SIDE BRICK REQUIR
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,723.80

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3442

KDC 00048770

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200178 ON
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date 07/02/14
Check Number 108137
Invoice Date 06/25/14
Invoice Number 70959-00215231

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		1826.000	.495	903.87
				903.87

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			903.87

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3443

KDC 00048823

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200145 ON
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Check Date 05/22/14
Check Number 101888
Invoice Date 05/16/14
Invoice Number 70959-00210997

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	**Foundation Steel**

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3444

KDC 00048856

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200144 ON
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Check Date 06/04/14
Check Number 647009
Invoice Date 05/28/14
Invoice Number 70959-00212409

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2006.000	1.280	2,567.68
Slab Flatwork Labor		120.000	.950	114.00
Slab Pour		1.00		
				2,681.68

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			2,681.68

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3445

KDC 00048857

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200208 ON
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Check Date 07/24/14
Check Number 111403
Invoice Date 07/14/14
Invoice Number 70959-00217302

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job		562.000	.950	533.90
				533.90

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			533.90

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3446

KDC 00048891

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200209 ON
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Check Date 07/17/14
Check Number 110515
Invoice Date 07/10/14
Invoice Number 70959-00216650

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job		132.000	.950	125.40
				125.40

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			125.40

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3447

KDC 00048894

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/24/14
Bid Contract Number	
FPO Req#/ JDE WO#	00018327 /
Purchase Order Number	3752573 OP
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

Check Date	08/07/14
Check Number	113457
Invoice Date	07/29/14
Invoice Number	37525730045

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway/Lead walk-Turnkey labor for additional 165'		1.00	156.750	156.75
				156.75

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			156.75

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3448

KDC 00048909

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200050 ON
Sub # / BU ID#	70959 / 0046
Swing/Plan/Elevation	R / CYTH / B

Check Date 05/22/14
Check Number 101888
Invoice Date 05/14/14
Invoice Number 70959-00211002

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40026.02 Foundation Steel

DELIVER TO:

Rose Hill Land 70'
503 CARDIFF CT
EASLEY, SC 29642
Lot/Block 46//
Plat Lot/Block/Phase 46 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		45.000	7.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3449

KDC 00048919

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/08/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200049 ON
Sub # / BU ID#	70959 / 0046
Swing/Plan/Elevation	R / CYTH / B

Check Date 06/04/14
Check Number 647009
Invoice Date 05/29/14
Invoice Number 70959-00212413

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
503 CARDIFF CT
EASLEY, SC 29642
Lot/Block 46//
Plat Lot/Block/Phase 46 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2776.000	1.280	3,553.28
Slab Flatwork Labor		243.000	.950	230.85
Slab Pour		1.00		
				3,784.13

JBNS00BD BEDROOM 4 IN LIEU OF BONUS ROO M
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,784.13

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3450

KDC 00048920

EXTRA PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	07/17/14
Bid Contract Number	
FPO Req#/ JDE WO#	00017885 /
Purchase Order Number	3752016 OP
Sub # / BU ID#	70959 / 0045
Swing/Plan/Elevation	R / BROO/ C

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43040.01	Masonry Labor 1

Check Date 07/31/14
Check Number 112733
Invoice Date 07/22/14
Invoice Number 37520160045

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
501 CARDIFF CT
EASLEY, SC 29642
Lot/Block 45//
Plat Lot/Block/Phase 45 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Masonry Labor 1 additional labor for 214 brick		1.00	105.930	105.93
				105.93

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			105.93

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3451

KDC 00048931

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/19/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200774 ON
Sub # / BU ID#	70959 / 0048
Swing/Plan/Elevation	L / BROO/ A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
507 CARDIFF CT
EASLEY, SC 29642
Lot/Block 48//
Plat Lot/Block/Phase 48 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/19/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200773 ON
Sub # / BU ID#	70959 / 0048
Swing/Plan/Elevation	L / BROO/ A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
45530.01	Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
507 CARDIFF CT
EASLEY, SC 29642
Lot/Block 48//
Plat Lot/Block/Phase 48 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/19/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200743 ON
Sub # / BU ID#	70959 / 0048
Swing/Plan/Elevation	L / BROO/ A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill Land 70'
507 CARDIFF CT
EASLEY, SC 29642
Lot/Block 48//
Plat Lot/Block/Phase 48 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor			.495	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	**Total PO**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00049013

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/19/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200710 ON
Sub # / BU ID#	70959 / 0048
Swing/Plan/Elevation	L / BROO/ A

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40026.02	Foundation Steel

Check Date 07/31/14
Check Number 112733
Invoice Date 07/27/14
Invoice Number 70959-00217904

VENDOR: 1392314 OPEN AMOUNT: 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

DELIVER TO:

Rose Hill Land 70'
507 CARDIFF CT
EASLEY, SC 29642
Lot/Block 48//
Plat Lot/Block/Phase 48 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Rebar: #4x20' Grade 40		29.000	7.500	217.50
				217.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**13.05**	**230.55**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3455

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/19/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200709 ON
Sub # / BU ID#	70959 / 0048
Swing/Plan/Elevation	L / BROO/ A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
507 CARDIFF CT
EASLEY, SC 29642
Lot/Block 48//
Plat Lot/Block/Phase 48 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor			1.280	
Slab Flatwork Labor			.950	
Slab Pour		1.00		
Slab Pour vendor name change		1.00-		
Slab Pour THIS PLAN TO BE BUILT REVERSED	JRVS00DR	1.00		
Slab Pour THIS PLAN TO BE BUILT REVERSED	JRVS00DR	1.00-		
JPAT00SF CONCRETE PATIO EXTENSION PER S.Q. FOOT				
JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS				

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200495 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200494 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00049150

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200509 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45050.07 Fireplace Surround-Stone

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
MANTLE HIGH STONE INSTALLATION			400.000	
JHEA00WM STACK STONE (MANTLE HT. W/ WD MANTLE)				

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100051
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200462 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

Check Date 07/17/14
Check Number 110515
Invoice Date 07/09/14
Invoice Number 70959-00216654

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43040.01 Masonry Labor 1

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Brick Veneer Labor		1170.000	.495	579.15
				579.15

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			579.15

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3460

KDC 00049188

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/12/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200465 ON
Sub # / BU ID#	70959 / 0047
Swing/Plan/Elevation	R / FIEL / A

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
43060.01	Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
505 CARDIFF CT
EASLEY, SC 29642
Lot/Block 47//
Plat Lot/Block/Phase 47 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/16/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200680 ON
Sub # / BU ID#	70959 / 0054
Swing/Plan/Elevation	L / GLNH/ F

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.02 City Sidewalk - Turnkey

DELIVER TO:

Rose Hill Land 70'
500 CARDIFF CT
EASLEY, SC 29642
Lot/Block 54//
Plat Lot/Block/Phase 54 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Subdivision Sidewalk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/16/14
Bid Contract Number	100054
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200679 ON
Sub # / BU ID#	70959 / 0054
Swing/Plan/Elevation	L / GLNH/ F

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

45530.01 Driveway/Lead walk-Turnkey

DELIVER TO:

Rose Hill Land 70'
500 CARDIFF CT
EASLEY, SC 29642
Lot/Block 54//
Plat Lot/Block/Phase 54 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Driveway & Walk Labor (*Note: All sq/ft measurements must be verified by the job			.950	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

KDC 00049967

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/16/14
Bid Contract Number	100050
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200651 ON
Sub # / BU ID#	70959 / 0054
Swing/Plan/Elevation	L / GLNH/ F

VENDOR: 1392314 **OPEN AMOUNT:** 0.00

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

43060.01 Stone Turnkey 1

DELIVER TO:

Rose Hill Land 70'
500 CARDIFF CT
EASLEY, SC 29642
Lot/Block 54//
Plat Lot/Block/Phase 54 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Sim. Stone Veneer (t/k) Artistic Stone Sim. Corner-Stone Veneer (t/k) (DHI Artistic Stone)			8.500	

VOID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3464

KDC 00050208

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/16/14
Bid Contract Number	100052
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200620 ON
Sub # / BU ID#	70959 / 0054
Swing/Plan/Elevation	L / GLNH/ F

Check Date 07/10/14
Check Number 109061
Invoice Date 05/30/14
Invoice Number 70959-00215937

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description	
40025.03	Slab Pour

DELIVER TO:

Rose Hill Land 70'
500 CARDIFF CT
EASLEY, SC 29642
Lot/Block 54//
Plat Lot/Block/Phase 54 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Foundation Steel		1.00	337.500	337.50
				337.50

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
	6.00	**20.25**	**357.75**

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3465

KDC 00050239

PURCHASE ORDER

D·R·HORTON® DHI Listed NYSE
America's Builder

DR Horton Homes

PO Rev/Date/Page	0 / / 1
Purchase Order Date	05/16/14
Bid Contract Number	100053
FPO Req#/ JDE WO#	00000000 /
Purchase Order Number	200619 ON
Sub # / BU ID#	70959 / 0054
Swing/Plan/Elevation	L / GLNH/ F

Check Date 07/10/14
Check Number 109061
Invoice Date 06/06/14
Invoice Number 70959-00215936

VENDOR: 1392314 **OPEN AMOUNT: 0.00**

JLS MASONRY INC
PO BOX 78410
CHARLOTTE NC 28271

Phone: (704) 634-7471 **Fax:** (704) 243-7469

Remit To

D.R. HORTON - GREENVILLE
100 VERDAE BLVD SUITE 401
GREENVILLE, SC 29607

Phone: (864) 757-9928 Fax:

Work Description

40025.03 Slab Pour

DELIVER TO:

Rose Hill Land 70'
500 CARDIFF CT
EASLEY, SC 29642
Lot/Block 54//
Plat Lot/Block/Phase 54 / /

Delivery Date

Description	Option	Qty	Unit Price	Extension
Monolithic Slab Labor		2756.000	1.280	3,527.68
Slab Flatwork Labor		133.000	.950	126.35
				3,654.03

JSERS025 CLASSIC 200 + ON SLAB-REFER TO NEIGHBORHOOD SPECIFICATIONS
JSNR0002 SUNROOM-SERIES 200

PAID

SPECIAL INSTRUCTIONS:

1. We reserve the right to cancel if not filled as specified.
2. Place P.O. number on all invoices.
3. A copy of delivery ticket signed by D.R. Horton personnel and this signed P.O. must accompany each invoice submitted for payment with signed lien release.
4. Partial Shipments will not be accepted.
5. No liability will be assumed for materials placed on the job site that are not installed or that are in the excess of the amount specified on this P.O.
6. This P.O. is applicable only to the jobs indicated.
7. Receipt of this P.O. is binding on supplier for material at prices specified.
8. All terms and conditions of the signed contract and scope of work apply to this document.

Terms	Tax Percentage	Sales Tax	Total PO
			3,654.03

Superintendent: HAWN, WESLEY B **Phone:** (864) 387-0036

D.R. Horton Appr: _____ **DATE:** _____

3466

KDC 00050244

WARRANTY SERVICE WORK ORDER

D·R·HORTON America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	01/21/14
WO Number-Claim	2261885 007
Project Name	Rose Hill 70'
Project Number	709529999

Buyer Information

1634630 Donna Bastian
1 Chatham Ct
EASLEY, SC 29642

COE Date: 05/17/13
CELL (843) 469-7006

Lot 0006 Plan FIEL Elev B Ph 001

Contact Information		Job Address
Donna Bastian	(843) 469-7006	1 Chatham Ct

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

Loose stones at front door

Cost Code:
Request Date: 01/21/14
Inspection Date:
Date Assigned: 01/21/14
48 Hr Notice:
Work Start Date:
Completed Date: 07/11/14
Defect Code: BRK
Brick
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

PLAINTIFF'S EXHIBIT 11.16

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON · DHI NYSE
America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Buyer Information

1660188 Michael Paul Seibert
28 Duxbury Lane
EASLEY, SC 29642

Date Assigned	07/25/14
WO Number-Claim	2325108 003
Project Name	Rose Hill 65'
Project Number	709519999

COE Date: 09/16/13
HOME (864) 451-7501 WORK(864) 239-1859
CELL (864) 349-3681
Lot 0145 Plan SHER Elev CC Ph 001

Contact Information		Job Address
Michael Paul Seibert	(864) 451-7501	28 Duxbury Lane

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

Replace stone that fell from 2nd floor

Cost Code:
Request Date: 07/25/14
Inspection Date:
Date Assigned: 07/25/14
48 Hr Notice:
Work Start Date: 08/05/14
Completed Date: 08/27/14
Defect Code: BRK
Brick
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON • PHI NYSE
America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	04/24/14
WO Number-Claim	2270472 007
Project Name	Rose Hill 65'
Project Number	709519999

Buyer Information

1674253 Gareth Lengkeek
10 Harwick Court
EASLEY, SC 29642

COE Date: 10/15/13
CELL (678) 316-8818
CELL (678) 316-8150
Lot 0173 Plan BYRO Elev A Ph 001

Contact Information		Job Address
Gareth Lengkeek	(678) 316-8818	10 Harwick Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

Replace Stones under back door

Cost Code:
Request Date: 04/24/14
Inspection Date:
Date Assigned: 04/24/14
48 Hr Notice:
Work Start Date:
Completed Date: 07/01/14
Defect Code: BRK
Brick
Type: Orientation Walkthrough

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON INC
America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Bu er Information

1655660 Walter M Czumak
16 Harwick Court
EASLEY, SC 29642

COE Date: 11/20/13
CELL (864) 313-9668

Lot 0170 Plan BYROElev C Ph 001

Date Assigned	01/24/14
WO Number-Claim	2263101 004
Project Name	Rose Hill 65'
Project Number	709519999

Contact Information		Job Address
Walter M Czumak	(864) 313-9668	16 Harwick Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

need to look at side walk off garage

Cost Code:
Request Date: 01/24/14
Inspection Date:
Date Assigned: 01/24/14
48 Hr Notice:
Work Start Date: 02/20/14
Completed Date: 02/28/14
Defect Code: CON
Concrete
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R HORTON · DHI NYSE
America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	01/22/14
WO Number-Claim	2262353 003
Project Name	Rose Hill 65'
Project Number	709519999

Buyer Information

1668844 Wanda Taylor
5 Harwick Court
EASLEY, SC 29642

COE Date: 08/30/13
WORK (706) 389-6822
CELL (770) 362-7768
Lot 0165 Plan MILL Elev C Ph 001

Contact Information		Job Address
Wanda Taylor	(706) 389-6822	5 Harwick Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

one stone fell off please replace and check for loose stone under front door

Cost Code:
Request Date: 01/22/14
Inspection Date:
Date Assigned: 01/22/14
48 Hr Notice:
Work Start Date:
Completed Date: 03/02/14
Defect Code: BRK
Brick
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R HORTON America's Builder · DHI Listed NYSE

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	11/06/13
WO Number-Claim	2235202 001
Project Name	Rose Hill 70'
Project Number	709529999

Buyer Information

1515101 Michele A Williams
128 Berwick Court
EASLEY, SC 29642

COE Date: 03/28/13
CELL (864) 371-2049
WORK (864) 299-4268
Lot 0030 Plan BROO Elev B Ph 001

Contact Information		Job Address
Michele A Williams	(864) 371-2049	128 Berwick Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

replace loose stone by front door

Cost Code:
Request Date: 10/21/13
Inspection Date:
Date Assigned: 11/06/13
48 Hr Notice:
Work Start Date: 11/06/13
Completed Date: 01/28/14
Defect Code: MSN
Masonry
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	11/08/13
WO Number-Claim	2240913 001
Project Name	Rose Hill 90'
Project Number	709539999

Buyer Information

1620130 Paul Zitek
104 Sturbridge Court
EASLEY, SC 29642

COE Date: 07/25/13
HOME (773) 206-3088 CELL (773) 206-9279
WORK (773) 206-3088
Lot 0266 Plan WSLY Elev A Ph 001

Contact Information		Job Address
Paul Zitek	(773) 206-3088	104 Sturbridge Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

repair loose brick on right side of garage

Cost Code:
Request Date: 11/08/13
Inspection Date:
Date Assigned: 11/08/13
48 Hr Notice:
Work Start Date:
Completed Date: 12/15/13
Defect Code: MSN
Masonry
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	05/01/14
WO Number-Claim	2246903 008
Project Name	Rose Hill 90'
Project Number	709539999

Buyer Information

1620130 Paul Zitek
104 Sturbridge Court
EASLEY, SC 29642

COE Date: 07/25/13
HOME (773) 206-3088 CELL (773) 206-9279
WORK (773) 206-3088
Lot 0266 Plan WSLY Elev A Ph 001

Contact Information		Job Address
Paul Zitek	(773) 206-3088	104 Sturbridge Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

Mortar cracking left hand elevation in two places

Cost Code:
Request Date: 05/01/14
Inspection Date:
Date Assigned: 05/01/14
48 Hr Notice:
Work Start Date:
Completed Date: 06/01/14
Defect Code: BRK
Brick
Type: Orientation Walkthrough

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON · DHI
America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	05/01/14
WO Number-Claim	2246903 009
Project Name	Rose Hill 90'
Project Number	709539999

Buyer Information

1620130 Paul Zitek
104 Sturbridge Court
EASLEY, SC 29642

COE Date: 07/25/13
HOME (773) 206-3088 CELL (773) 206-9279
WORK (773) 206-3088
Lot 0266 Plan WSLY Elev A Ph 001

Contact Information		Job Address
Paul Zitek	(773) 206-3088	104 Sturbridge Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

Point up mortar front gable and returns

Cost Code:
Request Date: 05/01/14
Inspection Date:
Date Assigned: 05/01/14
48 Hr Notice:
Work Start Date:
Completed Date: 06/01/14
Defect Code: MSN
Masonry
Type: Orientation Walkthrough

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Buyer Information

1642524 Eric Moeller
6 Dartford Court
EASLEY, SC 29642

Date Assigned	05/01/14
WO Number-Claim	2294486 005
Project Name	Rose Hill 90'
Project Number	709539999

COE Date: 05/31/13
HOME (864) 398-0908
CELL (864) 420-1066
Lot 0263 Plan WSLY Elev A Ph 001

Contact Information		Job Address
Eric Moeller	(864) 398-0908	6 Dartford Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

need to pressure wash left side of home Been after you for 3 mouths to do this.

Cost Code:
Request Date: 05/01/14
Inspection Date:
Date Assigned: 05/01/14
48 Hr Notice:
Work Start Date: 06/12/14
Completed Date: 07/22/14
Defect Code: CLN
Cleaning
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED

WARRANTY SERVICE WORK ORDER

D·R·HORTON America's Builder

SUPPLIER/PROFESSIONAL TRADE CONTRACTOR:

JLS MASONRY INC
PO BOX 78410
CHARLOTTE, NC 28271

Telephone (704) 634-7471
Fax

DIVISION INFORMATION

D.R. Horton - Greenville Office
1 Bronson Drive
Simpsonville, SC 29680
Phone: (864) 757-9928

Customer Service Coordinator:
Customer Service Dept.
Marcus Cannon
864.757.9928

Date Assigned	06/16/14
WO Number-Claim	2310383 004
Project Name	Rose Hill 90'
Project Number	709539999

Buyer Information
1635618 Frederick Saamwaa
4 Kettering Court
EASLEY, SC 29642

COE Date: 09/30/13
HOME (864) 593-8844
CELL (864) 633-9636
Lot 0255 Plan FIEL Elev B Ph

Contact Information		Job Address
Frederick Saamwaa	(864) 593-8844	4 Kettering Court

NOTICE TO OUR SUPPLIER/PROFESSIONAL TRADE CONTRACTOR

Please schedule all work within 48 hours of receipt of this work order and complete within 10 days of the date assigned (below). Please use the contact information (above) to schedule the appointment. You shall diligently and continuously complete the corrective work to the satisfaction of D.R. Horton within the designated time or D.R. Horton shall have the right to perform the work or have the work performed by others and charge you the cost of the repair plus an additional 15% in excess. This is warranty work and will not be chargeable by you. To be paid for work performed, you must return this work order signed and dated. When entering a home please take all necessary steps to protect all flooring & belongings.

Description

crack in bricks over garage door

Cost Code:
Request Date: 06/16/14
Inspection Date:
Date Assigned: 06/16/14
48 Hr Notice:
Work Start Date: 06/17/14
Completed Date: 09/21/14
Defect Code: BRK
Brick
Type: Customer Service Request

Questions regarding work to be performed should be directed to the assigned CSR.

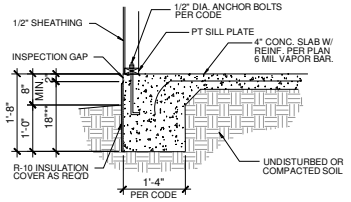
ASSIGNED CSR IS:

CARL RUROEDE

The above items have been completed to my satisfaction with the exception of non-warrantable item(s) as indicated above, please sign below No verbal agreements have been made.

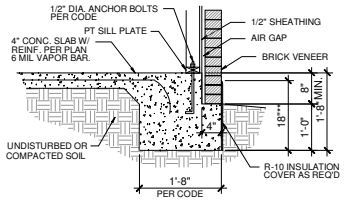
SERVICE APPROVED BY	SERVICE COMPLETED BY	Homeowner Signature (Required)	Date

THIS WORK ORDER MUST BE SIGNED OFF BY THE HOMEOWNER UPON SATISFACTION OF THE WORK REQUESTED



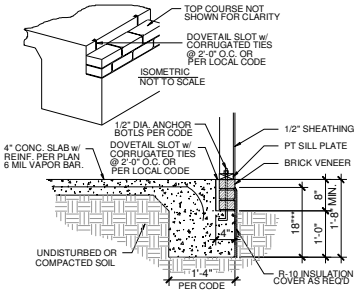
**TO BOTTOM OF FOOTING OR A MAXIMUM OF 18" BELOW GRADE, WHICHEVER IS LESS

1 TYPICAL SLAB SECTION
SCALE: 3/8" = 1'-0"



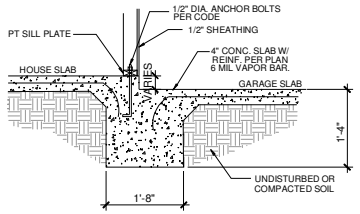
**TO BOTTOM OF FOOTING OR A MAXIMUM OF 18" BELOW GRADE, WHICHEVER IS LESS

2 BRICK LEDGE SECTION
SCALE: 3/8" = 1'-0"

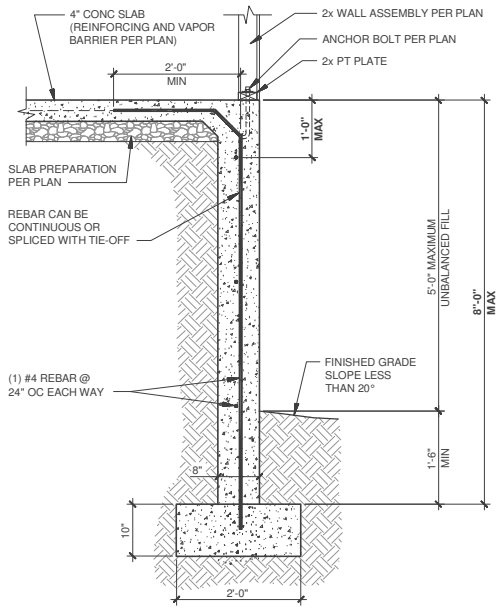


**TO BOTTOM OF FOOTING OR A MAXIMUM OF 18" BELOW GRADE, WHICHEVER IS LESS

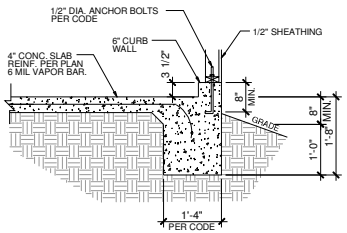
3 VENEER SLAB BRICK LEDGE SECTION
SCALE: 3/8" = 1'-0"



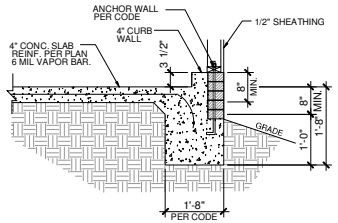
4 STEP-DOWN BETWEEN HOUSE & GARAGE
SCALE: 3/8" = 1'-0"



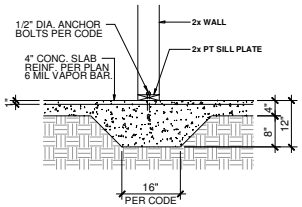
5 RETAINED TURNED-DOWN SLAB
SCALE: 1/2" = 1'-0"



6 GARAGE CURB SECTION
SCALE: 3/8" = 1'-0"

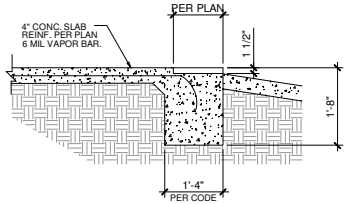


7 GARAGE CURB W/ BRICK VENEER
SCALE: 3/8" = 1'-0"



NOTE:
4" GRAVEL BASE WHERE REQUIRED PER LOCAL CODE

8 INTERIOR FOOTING SECTION
SCALE: 3/8" = 1'-0"



9 GARAGE ENTRY SECTION
SCALE: 3/8" = 1'-0"

PLAINTIFF'S EXHIBIT
15.3

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN
JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5599 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

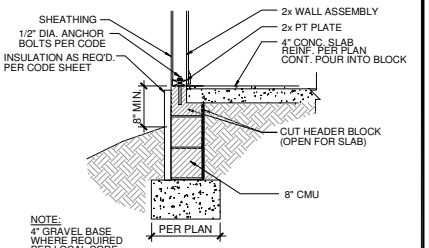
DRAWN BY: AWC

TURNED-DOWN SLAB DETAILS

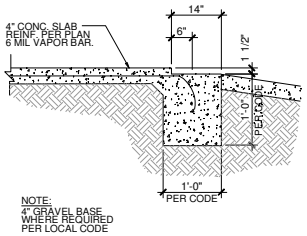
DSS

KDC 00188992

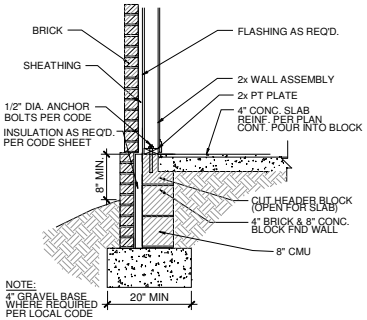
3478



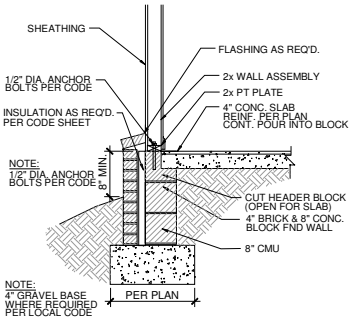
1 TYPICAL SLAB @ BLOCK
SCALE: 3/8" = 1'-0" PARGED WALL



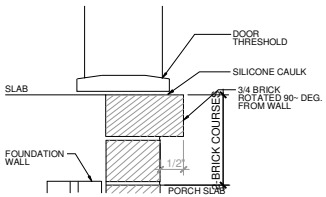
2 GARAGE ENTRY SECTION
SCALE: 3/8" = 1'-0"



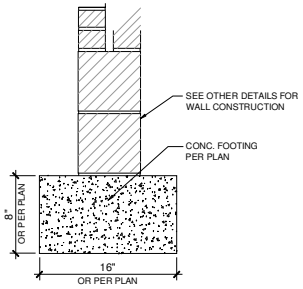
3 TYPICAL SLAB @ SUBWALL
SCALE: 3/8" = 1'-0" @ GARAGE



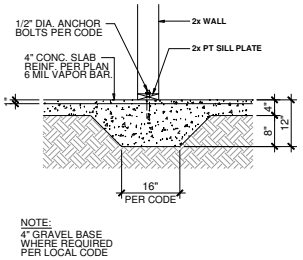
4 TYPICAL SLAB @ SUBWALL
SCALE: 3/8" = 1'-0" BRICK VENEER



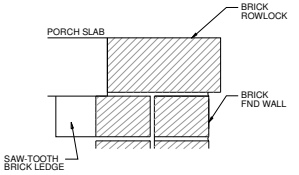
5 VENEER SLAB BRICK THRESHOLD
SCALE: 1 1/2" = 1'-0" AT FRONT DOOR



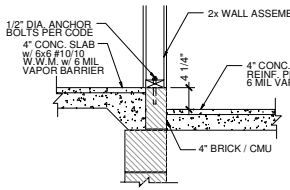
6 TYPICAL FOOTING
SCALE: 3/4" = 1'-0"



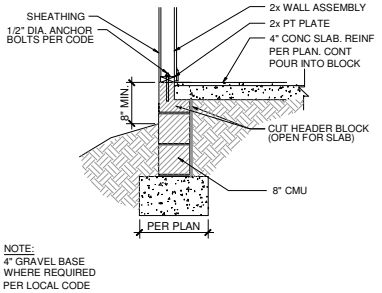
7 INTERIOR FOOTING SECTION
SCALE: 3/8" = 1'-0"



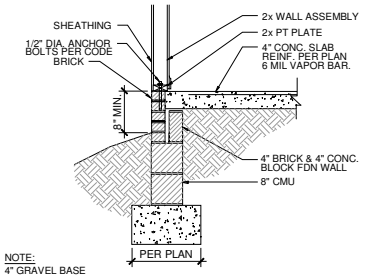
8 BRICK VENEER DETAIL
SCALE: 1 1/2" = 1'-0" AT FRONT PORCH



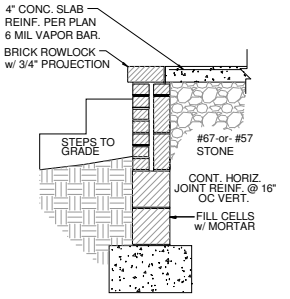
9 STEP-DOWN BETWEEN HOUSE & GARAGE
SCALE: 1/2" = 1'-0"



10 TYPICAL STEM WALL FOUNDATION
SCALE: 3/8" = 1'-0" AT GARAGE W/ CMU



11 TYPICAL STEM WALL FOUNDATION
SCALE: 3/8" = 1'-0" AT GARAGE W/ BRICK



12 FRONT PORCH SECTION
SCALE: 3/8" = 1'-0"

SOUTH CAROLINA PROFESSIONAL SEAL 29232 05/16/2018 ENGINEER ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5399 FAX: (919) 468-5456

PROJECT:

MODEL: **STANDARD DETAILS**

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

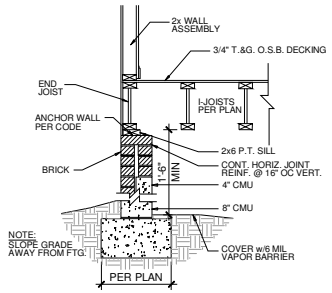
DRAWN BY: **AWC**

STEM WALL FOUNDATION DETAILS

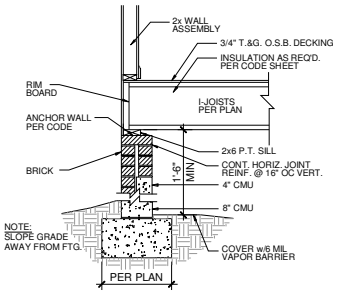
DSSW

KDC 00188993

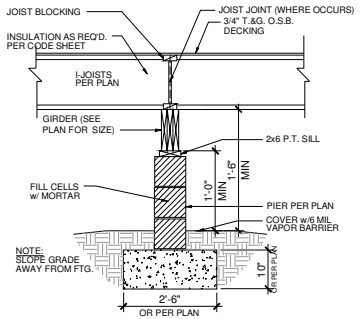
3479



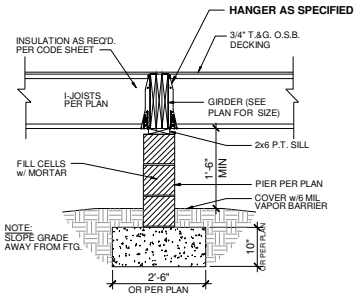
1 CRAWL SPACE FOUNDATION
SCALE: 3/8" = 1'-0" JOISTS PARALLEL TO WALL



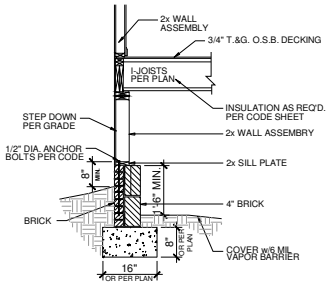
2 CRAWL SPACE FOUNDATION
SCALE: 3/8" = 1'-0" JOISTS PERPENDICULAR TO WALL



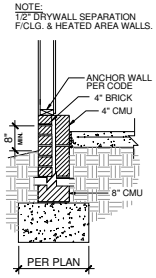
3 CRAWL SPACE GIRDER
SCALE: 3/8" = 1'-0"



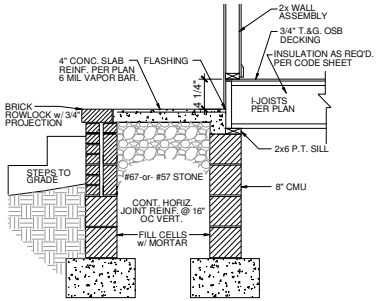
4 CRAWL SPACE FLUSH GIRDER
SCALE: 3/8" = 1'-0"



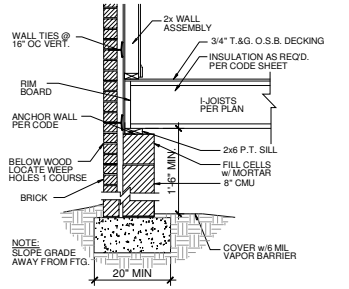
5 CRAWL SPACE CRIPPLE WALL
SCALE: 1/4" = 1'-0" AT LOW GRADE



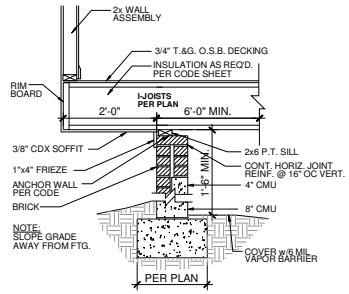
6 GARAGE FOUNDATION
SCALE: 3/8" = 1'-0"



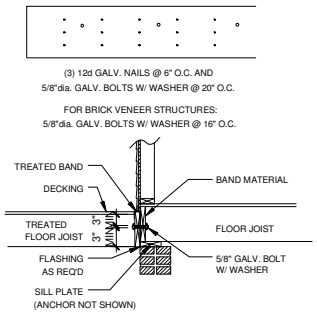
7 FRONT PORCH SECTION
SCALE: 3/8" = 1'-0"



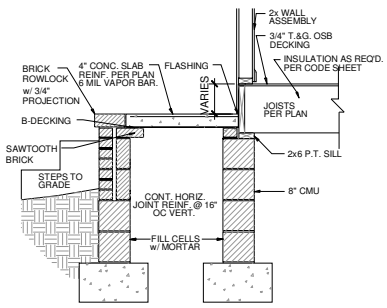
8 CRAWL SPACE FDN w/ BRICK VENEER
SCALE: 3/8" = 1'-0"



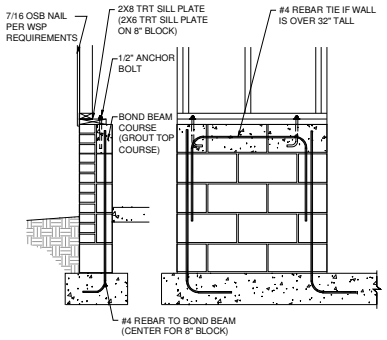
9 CANTILEVER CRAWL SECTION
SCALE: 3/8" = 1'-0"



10 DECK ATTACHMENT
SCALE: 3/8" = 1'-0"



11 FRONT PORCH SECTION
SCALE: 3/8" = 1'-0" FLOATED SLAB ON B-DECKING



12 GARAGE WING WALL
SCALE: 3/8" = 1'-0" 4" BRICK / 4" BLOCK

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5399 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

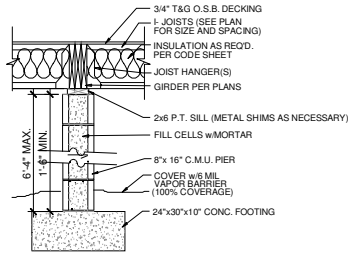
DRAWN BY: AWC

CRAWL SPACE FOUNDATION DETAILS

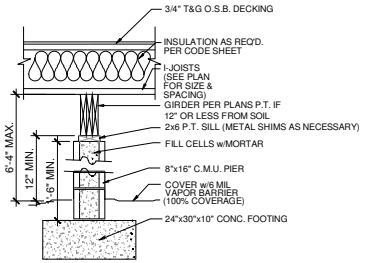
DSCS1

KDC 00188994

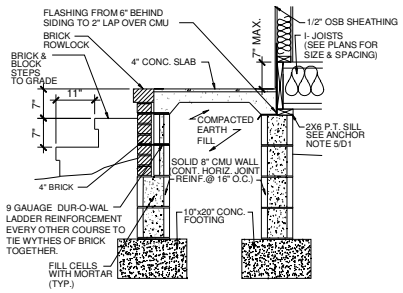
3480



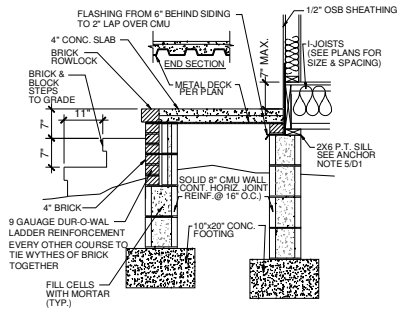
1 PIER & FLUSH GIRDER SECTION
SCALE: 3/8" - 1'-0"



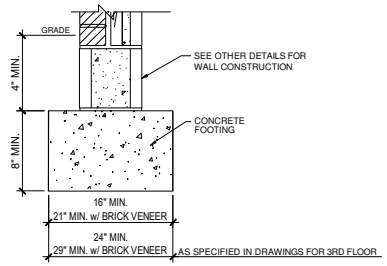
2 PIER & DROPPED GIRDER SECTION
SCALE: 3/8" = 1'-0"



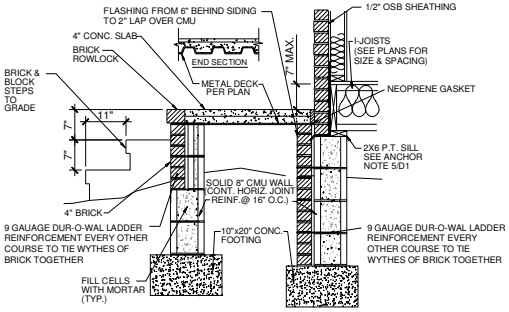
3 FRONT PORCH SECTION
SCALE: 3/8" = 1'-0"



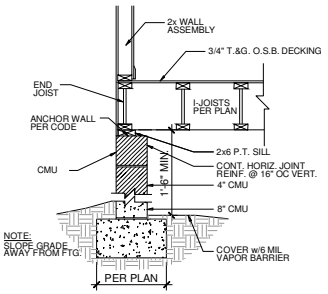
4 FRONT PORCH SECTION SUSPENDED SLAB
SCALE: 3/8" = 1'-0"



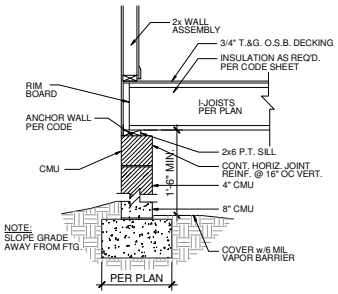
5 TYPICAL CRAWL SPACE FOOTING
SCALE: 3/4" = 1'-0"



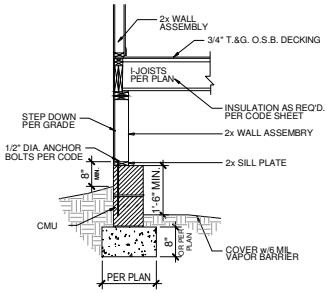
6 FRONT PORCH SECTION SUSPENDED SLAB WITH BRICK
SCALE: 3/8" = 1'-0"



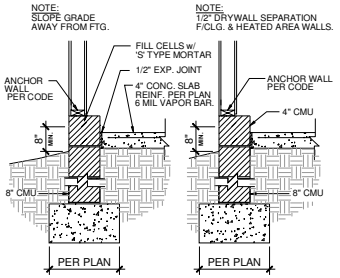
7 CRAWL @ EXTERIOR WALL SECTION
SCALE: 3/8" = 1'-0" PARGED WALL



8 CRAWL @ EXTERIOR WALL SECTION
SCALE: 3/8" = 1'-0" PARGED WALL



9 STEPPED DOWN CRAWL SECTION
SCALE: 1/4" = 1'-0" PARGED WALL



10 TYPICAL EXTERIOR WALL @ GARAGE
SCALE: 3/8" = 1'-0" PARGED WALL

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Auto Center Parkway, Suite 110
Lawrenceville, GA 30043
TEL: (678) 460-5399 FAX: (678) 405-4456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER. 1/4" = 1'-0" FOR 22x34 PAPER. OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

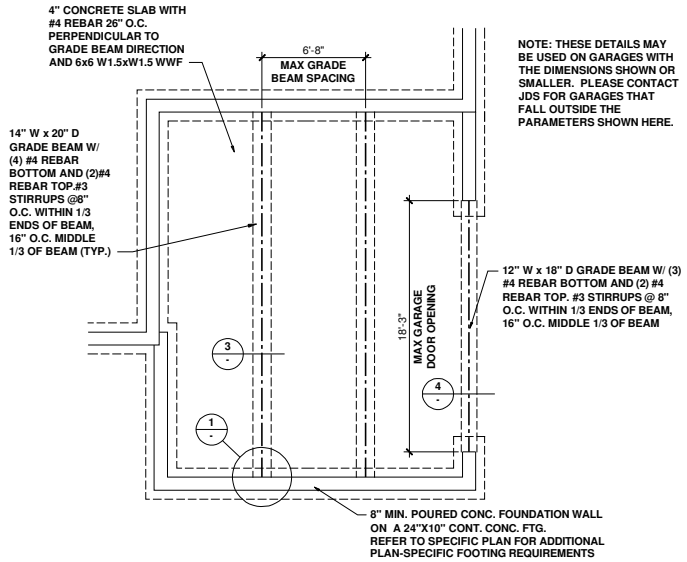
DRAWN BY: **AWC**

CRAWL SPACE FOUNDATION DETAILS

DSCS2

KDC 00188995

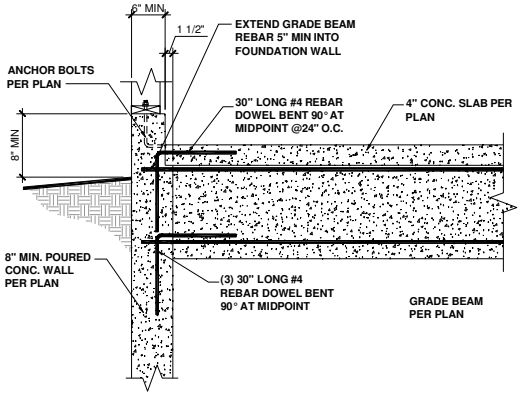
3481



NOTE: THESE DETAILS MAY BE USED ON GARAGES WITH THE DIMENSIONS SHOWN OR SMALLER. PLEASE CONTACT JDS FOR GARAGES THAT FALL OUTSIDE THE PARAMETERS SHOWN HERE.

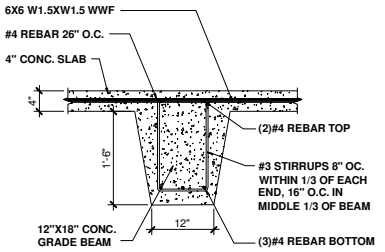
20'x24' SIDE ENTRY GARAGE

SCALE: 1/8" = 1'-0" FULLY EXCAVATED



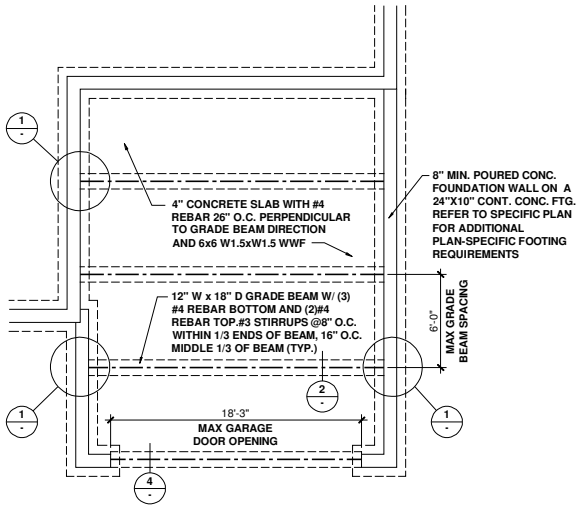
1 GRADE BEAM TO POURED CONCRETE WALL CONNECTIONS

SCALE: 1/2" = 1'-0"



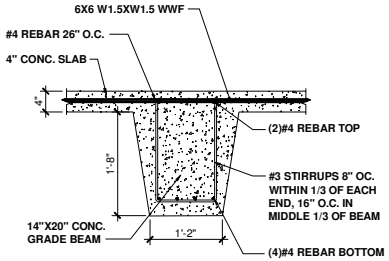
2 12"x18" GRADE BEAM

SCALE: 1/2" = 1'-0"



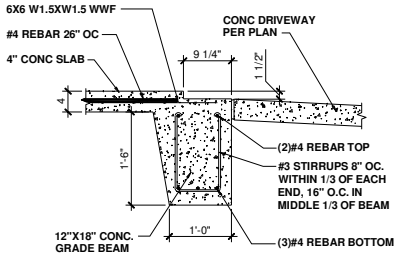
20'x24' FRONT ENTRY GARAGE

SCALE: 1/8" = 1'-0" FULLY EXCAVATED



3 14"x20" GRADE BEAM

SCALE: 1/2" = 1'-0"



4 12"x18" GRADE BEAM AT GARAGE DOOR

SCALE: 1/2" =1'-0"

SOUTH CAROLINA PROFESSIONAL SEAL 29232 05/16/2018 ENGINEER ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5499 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER. 1/4" = 1'-0" FOR 22x34 PAPER. OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

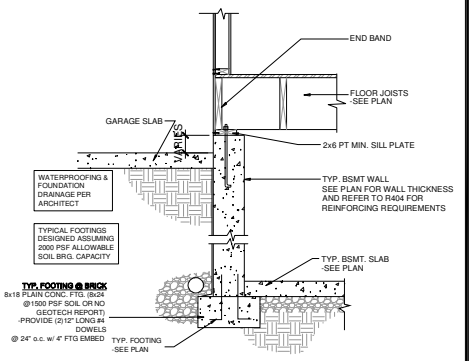
DRAWN BY: AWC

GARAGE GRADE BEAM DETAILS

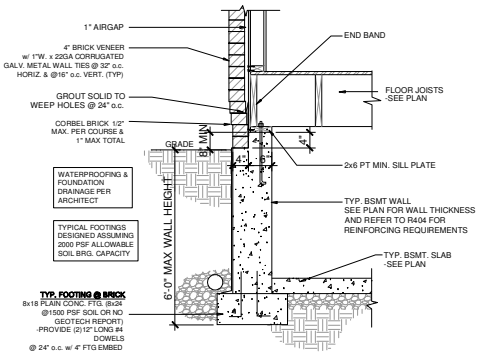
GRADE BEAM

KDC 00188996

3482

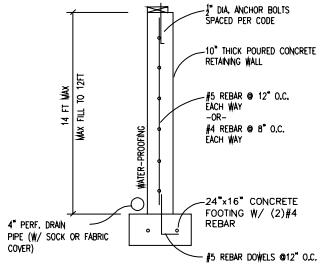


1 TYP. CONCRETE BSMT. FDN. WALL WITH GAR. SLAB
SCALE: 3/8" = 1'-0"



2 TYP. CONC. BASEMENT FDN. WALL W/ BRICK VENEER
SCALE: 3/8" = 1'-0"

GENERAL NOTES:
1) 3,000 PSI (COMPRESSIVE STRENGTH OF CONCRETE)
2) 2000 PSF (MIN. BEARING CAPACITY)
3) DO NOT BACK-FILL WALL UNTIL PROPERLY BRACED
4) BASEMENT FLOOR MUST BE POURED PRIOR TO BACK-FILL
5) BACK-FILL SHALL BE PLACED IN ACCORDANCE WITH NC BUILDING CODE AND INDUSTRY STANDARD OF CARE (WHEN BACK-FILLED WITH SOIL VS. WASHED STONE THE SOIL SHALL BE TESTED FOR PROPER MOISTURE CONTENT AND SOIL CLASSIFICATION)



1.1 14' CONCRETE BASEMENT FDN. WALL
SCALE: 1/4" = 1'-0"

8" POURED CONCRETE BASEMENT WALL REBAR EQUIVILANCY CHART FOR 9' WALL HEIGHT

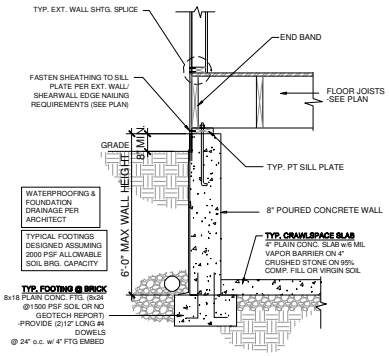
REBAR	5'or less UBF	6' UBF	7' UBF	8' UBF
#6	NR	@35" O.C.	@32" O.C.	@23" O.C.
#5	NR	@25" O.C.	@23" O.C.	@16" O.C.
#4	NR	@16" O.C.	@13" O.C.	@10" O.C.
SPACING BASED ON (1) VERTICAL REBAR PER				
UBF= UNBALANCED FILL; NR= NO VERTICAL REBAR REQUIRED				

10" POURED CONCRETE BASEMENT WALL REBAR EQUIVILANCY CHART FOR 9' WALL HEIGHT

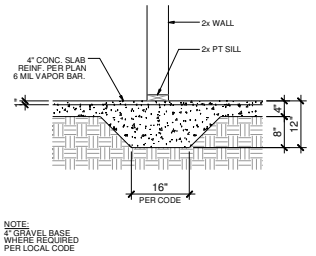
REBAR	6'or less UBF	7' UBF	8' UBF	9' UBF
#6	NR	@31" O.C.	@28" O.C.	@24" O.C.
#5	NR	@22" O.C.	@20" O.C.	@17" O.C.
#4	NR	@14" O.C.	@13" O.C.	@11" O.C.
SPACING BASED ON (1) VERTICAL REBAR PER				
UBF= UNBALANCED FILL; NR= NO VERTICAL REBAR REQUIRED				

10" POURED CONCRETE BASEMENT WALL REBAR EQUIVILANCY CHART FOR 10' WALL HEIGHT

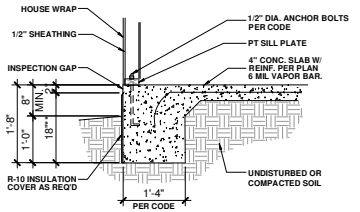
REBAR	6'or less UBF	7' UBF	8' UBF	9' UBF
#6	NR	@28" O.C.	@28" O.C.	@21" O.C.
#5	NR	@20" O.C.	@20" O.C.	@15" O.C.
#4	NR	@13" O.C.	@13" O.C.	@10" O.C.
SPACING BASED ON (1) VERTICAL REBAR PER				
UBF= UNBALANCED FILL; NR= NO VERTICAL REBAR REQUIRED				



3 TYPICAL ENGLISH BSMT. FND. WALL
SCALE: 3/8" = 1'-0"



4 INTERIOR BEARING WALL FOOTING
SCALE: 3/8" = 1'-0"



**TO BOTTOM OF FOOTING OR A MAXIMUM OF 18" BELOW GRADE, WHICHEVER IS LESS

5 TURNED DOWN FOOTING
SCALE: 3/8" = 1'-0"

8" POURED BASEMENT WALL

8" POURED BASEMENT WALL DESIGN PER 2012 NORTH CAROLINA RESIDENTIAL CODE -and- 2012 IRC SECTION R404. TABLE R404.1.2(3) SPECIFIES REBAR REQUIREMENTS FOR WALLS 9' TALL WITH 7' OF BACKFILL IN SOIL TYPES SC, MH, ML-CL AND INORGANIC CL SOILS TO BE #6 @ 32" O.C. ALL REINFORCEMENT TO BE GRADE 60. CODE SPECIFIES ALTERNATIVE REINFORCING BAR SIZES AND SPACING HAVING AN EQUIVALENT CROSS-SECTIONAL AREA OF REINFORCEMENT PER LINEAR FOOT OF WALL ARE ACCEPTABLE IN NOTE c TO TABLE R404.1.2(3). SEE TABLE THIS PAGE FOR #4 REBAR SPACING PER VARIOUS BACKFILL HEIGHTS.

NO MORE THAN 7' OF BACKFILL AGAINST 9' WALL. MAXIMUM OF 12" OF TOPSOIL BACKFILL TO BE INCLUDED IN THE 7' OF BACKFILL. EXTERIOR PERIMETER DRAIN TILE TO HAVE 2" MINIMUM OF STONE UNDERNEATH. FILTER FABRIC TO BE INSTALLED BETWEEN SOIL AND BACKFILLED STONE. BACKFILL STONE TO BE #57. REBAR TO BE 2" FROM INSIDE FACE OF WALL MINIMUM.

FOOTING CONCRETE TO BE 3000 PSI

BASEMENT WALL CAN BE BACKFILLED WITH NO MORE THAN 36" OF NO. 57 STONE BEFORE FLOOR JOIST HAVE BEEN SET. COMPLETE BACKFILL WHEN FIRST FLOOR SYSTEM IS INSTALLED.

10" POURED BASEMENT WALL

10" POURED BASEMENT WALL DESIGN PER 2012 NORTH CAROLINA RESIDENTIAL CODE -and- 2012 IRC SECTION R404. TABLE R404.1.2(4) SPECIFIES REBAR REQUIREMENTS FOR WALLS 9' TALL WITH 7' OF BACKFILL IN SOIL TYPES SC, MH, ML-CL AND INORGANIC CL SOILS TO BE #6 @ 31" O.C. ALL REINFORCEMENT TO BE GRADE 60. CODE SPECIFIES ALTERNATIVE REINFORCING BAR SIZES AND SPACING HAVING AN EQUIVALENT CROSS-SECTIONAL AREA OF REINFORCEMENT PER LINEAR FOOT OF WALL ARE ACCEPTABLE IN NOTE c TO TABLE R404.1.2(4). SEE TABLE THIS PAGE FOR #4 REBAR SPACING PER VARIOUS BACKFILL HEIGHTS.

NO MORE THAN 9' OF BACKFILL AGAINST 10' WALL. MAXIMUM OF 12" OF TOPSOIL BACKFILL TO BE INCLUDED IN THE 9' OF BACKFILL. EXTERIOR PERIMETER DRAIN TILE TO HAVE 2" MINIMUM OF STONE UNDERNEATH. FILTER FABRIC TO BE INSTALLED BETWEEN SOIL AND BACKFILLED STONE. BACKFILL STONE TO BE #57. REBAR TO BE 2" FROM INSIDE FACE OF WALL MINIMUM.

FOOTING CONCRETE TO BE 3000 PSI

BASEMENT WALL CAN BE BACKFILLED WITH NO MORE THAN 36" OF NO. 57 STONE BEFORE FLOOR JOIST HAVE BEEN SET. COMPLETE BACKFILL WHEN FIRST FLOOR SYSTEM IS IS INSTALLED.

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN
JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aviation Parkway, Suite 310
Morrisville, NC 27560
TEL: (919) 460-5999 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER. 1/4" = 1'-0" FOR 22x34 PAPER. OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

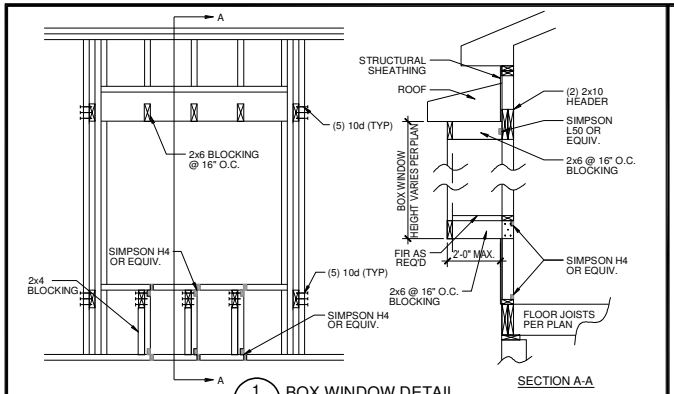
DRAWN BY: AWC

BASEMENT CONCRETE WALL DETAILS

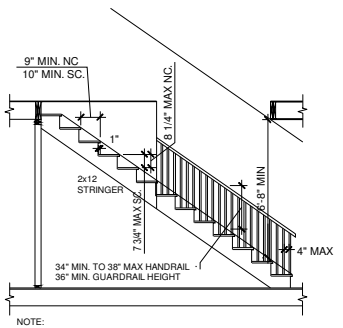
DSPCBT

KDC 00188997

3483

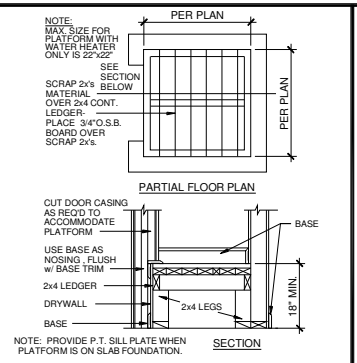


1 BOX WINDOW DETAIL
SCALE: 3/8" = 1'-0"

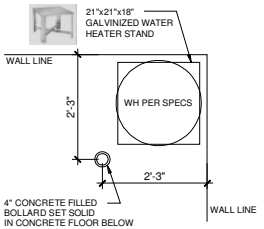


NOTE:
EACH TREAD AND RISER MUST BE UNIFORM WITH NO MORE THAN 3/8" MAXIMUM VARIATION.

2 STAIR DETAIL
SCALE: NTS

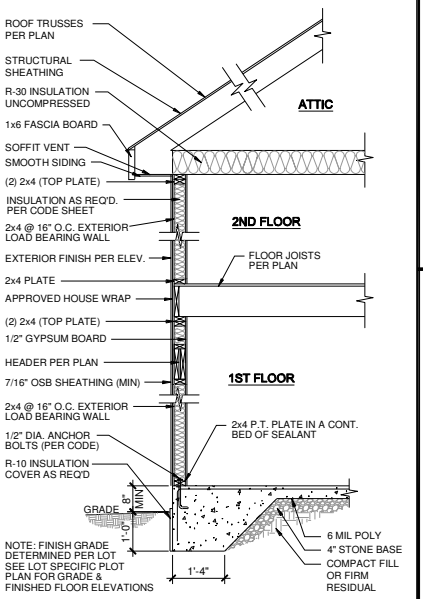


3 WATER HEATER/FURNACE PLATFORM
SCALE: NTS

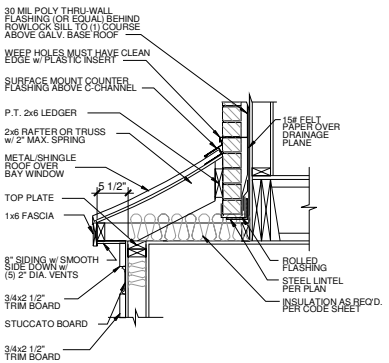


4 WATER HEATER PLATFORM GARAGE LOCATION
SCALE: 3/8" = 1'-0"

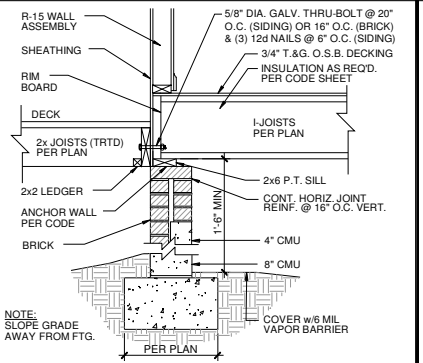
NOTE: PROVIDE 1 LAYER OF UNDERLAYMENT ON ROOF WITH 4:12 PITCH OR GREATER WHERE ASPHALT SHINGLES ARE USED.	NOTE: PROVIDE 2 LAYERS OF UNDERLAYMENT ON ROOF WITH LESS THAN 4:12 PITCH WHERE ASPHALT SHINGLES ARE USED.



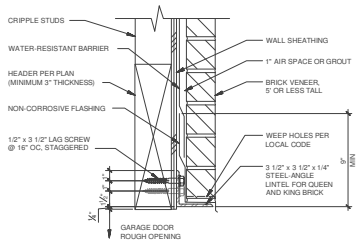
8 TWO-STORY ON SLAB
SCALE: NTS



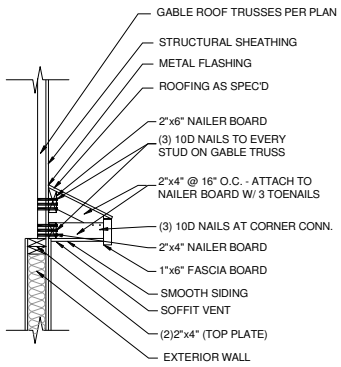
5 BAY ROOF FLASHING DETAIL
SCALE: 1/2" = 1'-0"



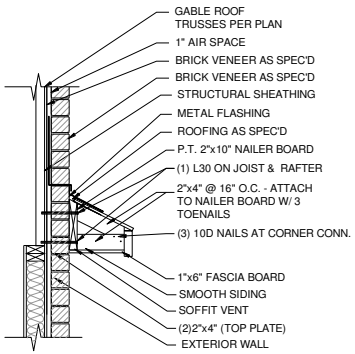
6 DECK ATTACHMENT DETAIL
SCALE: 1/2" = 1'-0"



7 GARAGE BRICK LINTEL DETAIL
SCALE: 1" = 1'-0"



9 GABLE END RETURN DETAIL
SCALE: 1/2" = 1'-0"



GABLE END RETURN DETAIL WITH BRICK VENEER
SCALE: 1/2" = 1'-0"

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Amold Center Parkway, Suite 110
Mooresville, NC 28560
PH: (919) 468-5399 FAX: (919) 469-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

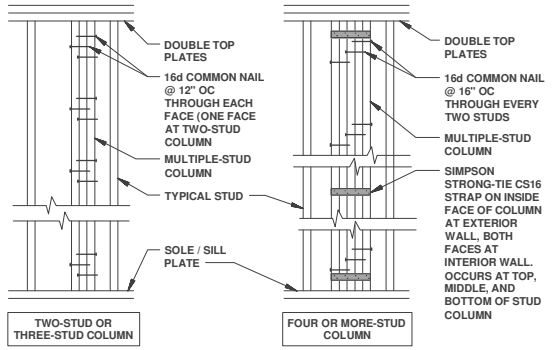
DATE: 05/16/2018
DRAWN BY: AWC

FRAMING DETAILS

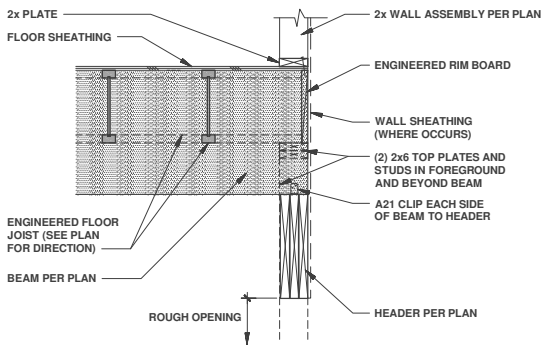
DSFR1

KDC 00188998

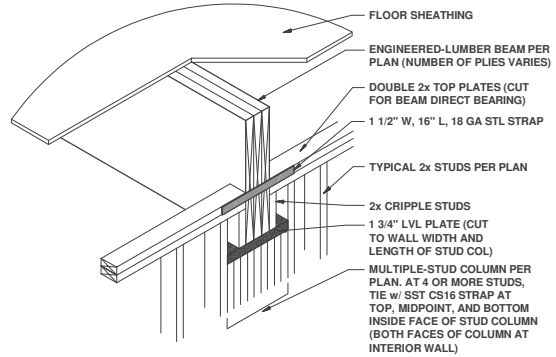
3484



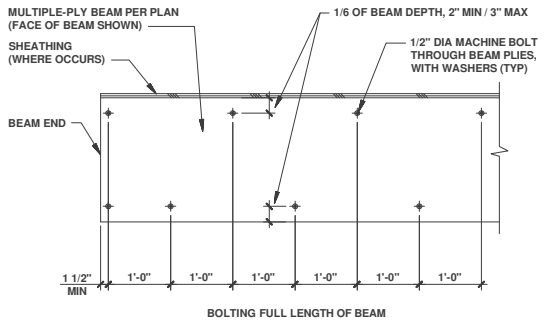
MULTIPLE-STUD COLUMNS | 1/2" = 1'-0" | 1



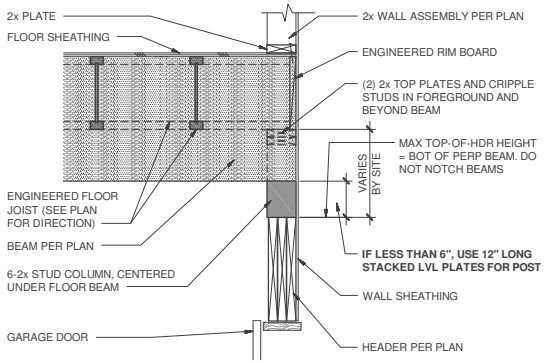
BEAM AT HEADER | 1/2" = 1'-0" | 2



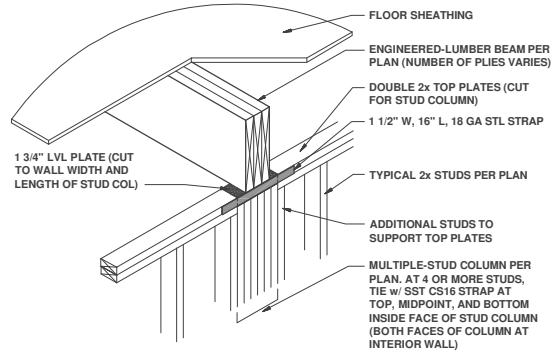
BEAM AT WALL | 1/2" = 1'-0" | 3



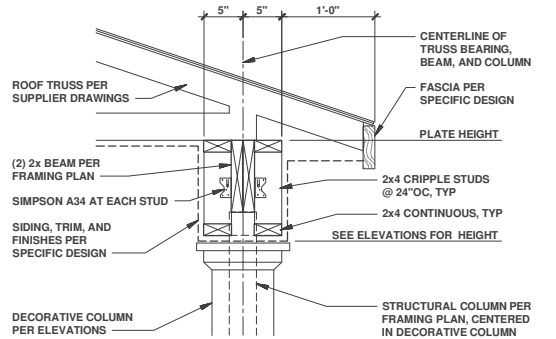
TYPICAL MULTIPLE-PLY BEAM | 1/2" = 1'-0" | 4



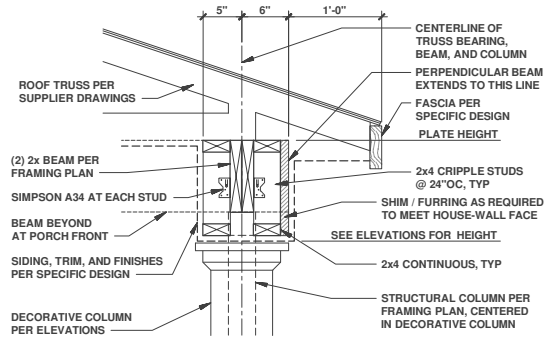
BEAM AT GARAGE HEADER | 1/2" = 1'-0" | 5



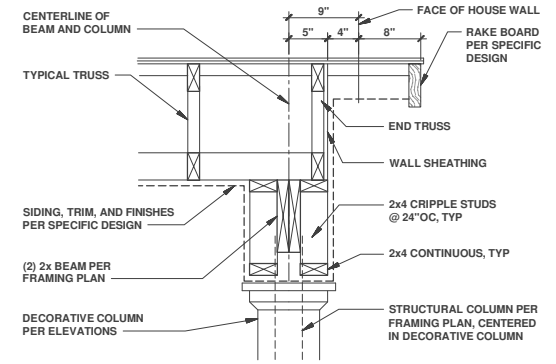
FLUSH BEAM AT WALL | 1/2" = 1'-0" | 6



PORCH ROOF FRAMING | 3/4" = 1'-0" | 7



PORCH ROOF FRAMING | 3/4" = 1'-0" | 8



PORCH ROOF FRAMING | 3/4" = 1'-0" | 9

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT. RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 468-5399 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

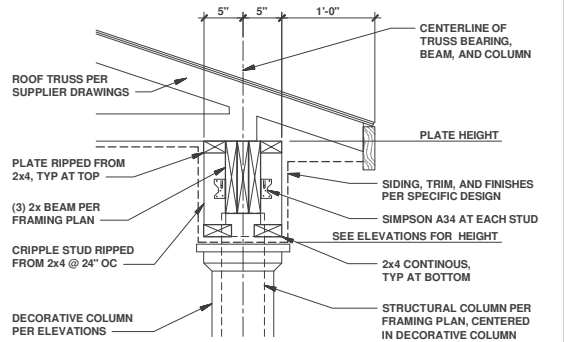
DRAWN BY: AWC

FRAMING DETAILS

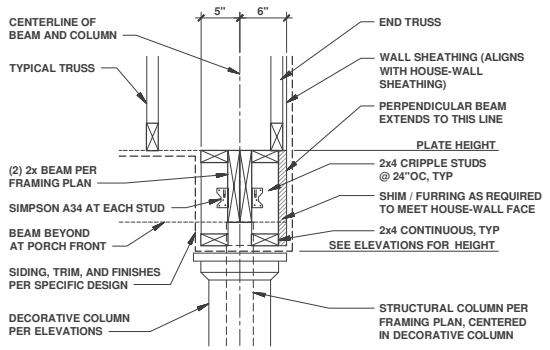
DSFR2

KDC 00188999

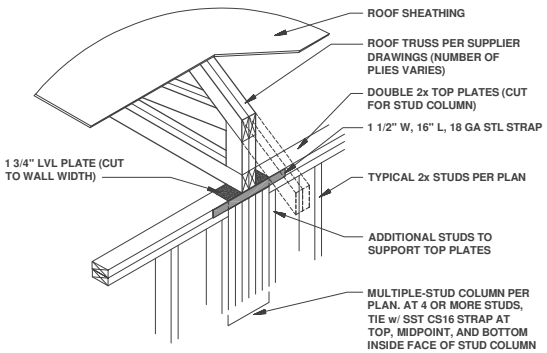
3485



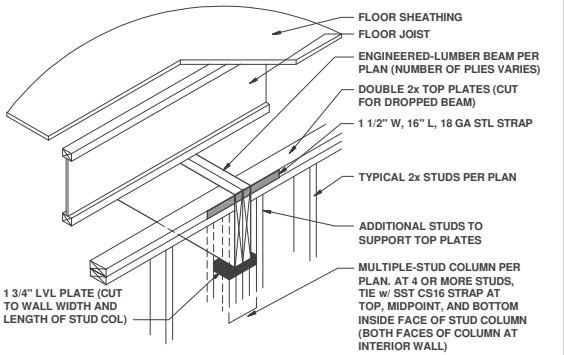
PORCH ROOF FRAMING | 3/4" = 1'-0" | 1



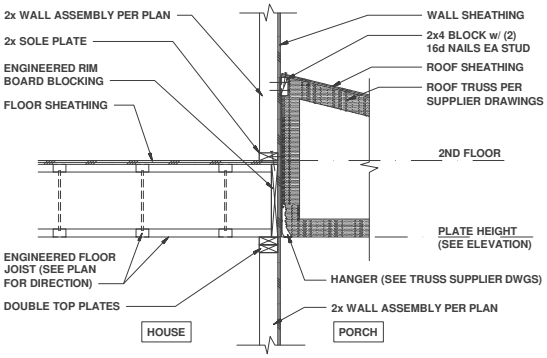
PORCH ROOF FRAMING | 3/4" = 1'-0" | 2



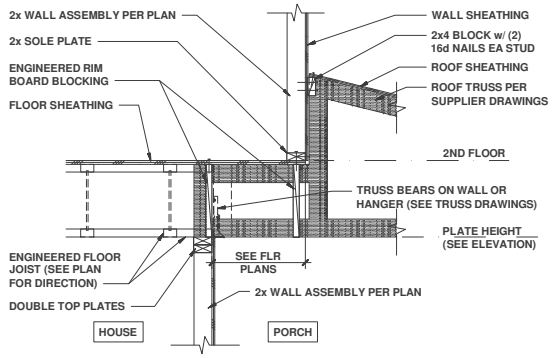
GIRDER TRUSS AT WALL | 1/2" = 1'-0" | 3



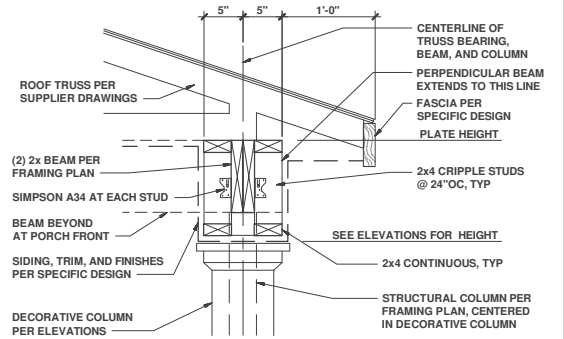
DROPPED BEAM AT WALL | 1/2" = 1'-0" | 4



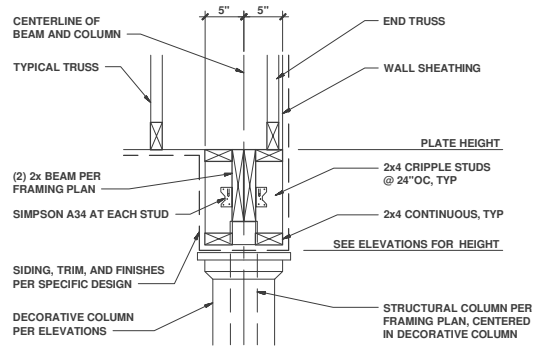
PORCH ROOF AT WALL | 1/2" = 1'-0" | 5



PORCH / HOUSE FRAMING | 1/2" = 1'-0" | 6



PORCH ROOF FRAMING | 3/4" = 1'-0" | 7



PORCH ROOF FRAMING | 3/4" = 1'-0" | 8

SOUTH CAROLINA PROFESSIONAL SEAL 29232 05/16/2018 ENGINEER ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT. RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 468-5399 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

DRAWN BY: AWC

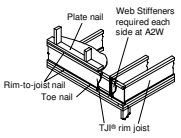
FRAMING DETAILS

DSFR3

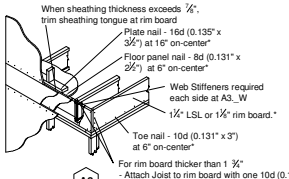
KDC 00189000

3486

JOIST DETAILS



A2 A2W — ***Must have 1½" minimum joist bearing at ends. Attach rim joist per A3 detail.***

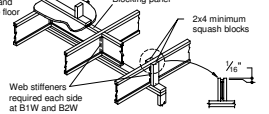


For rim board thicker than 1 ¾":
- Attach Joist to rim board with one 10d (0.126"x3") nail. Top nail from joist into rim board.
- Connect corner with four 10d (0.128"x3") nails. Toe nail from side of parallel closure into rim board

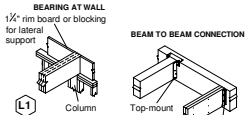
A3 A3W

IRC 502-7 requires lateral restraint (blocking) at all intermediate supports in Seismic Design Categories D0, D1, and D2 to strengthen the floor diaphragm.

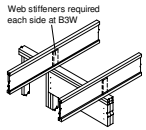
B1 B1W



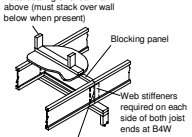
B2 B2W — Blocking panels may be required with shear walls above or below - see detail B1



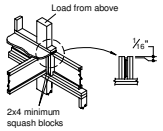
INTERMEDIATE BEARING NO LOAD BEARING WALL ABOVE



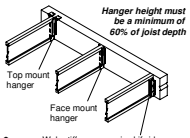
B3 B3W — Blocking panels may be required with shear walls above or below (See detail B1)



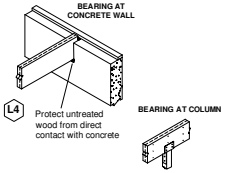
B4 B4W



CS — ***Use 2x4 minimum squash blocks to transfer load around joist***



H1



BEAM and COLUMN DETAILS

FASTENING of FLOOR PANELS

Guidelines for Closest On-Center Spacing per Row

*** SEE I-JOIST EQUIVALENCE CHART**

Nail Size	I-JOIST *		Rim Board	1½" LSL or wider	LVL	PSL
	110, 210, and 230 EQ.	360 and 560 EQ.	1¼" LSL			
8d (0.131" x 2½")	4"	3"	4"	3"	3"	3"
10d (0.148"x 3"), 12d (0.148"x 3¼")	4"	4"	4"	4"	4"	4"
16d (0.162"x 3½")	6"	6"	6"(2)	6"(2)	8"	6"

(1) One row of fasteners permitted (two at abutting panel edges) for diaphragms. Stagger nails when using 4" on-center spacing and maintain ⅜" joist and panel edge distance. For other applications, multiple rows of fasteners are permitted if the rows are offset at least ½" and staggered.

(2) Can be reduced to 4" on-center if nail penetration into the narrow edge is no more than 1 ⅜" (to avoid splitting).

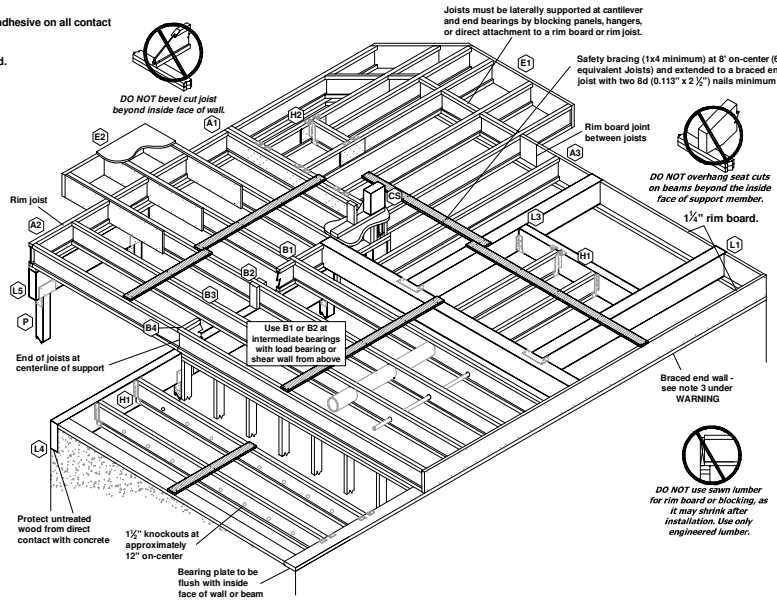
- **Recommended nailing is 12" on-center in field and 6" on-center along panel edge. Fastening requirements on engineered drawings supersede recommendations listed above.**
- **Recommended use of a non-polyurethane subfloor adhesive on all contact points between panels and floor framing.**
- **Nailing rows must be offset at least ½" and staggered.**
- **14 ga. staples may be substituted for 8d (0.113" x 2½") nails if minimum penetration of 1" into the joist or rim board is achieved.**
- **Maximum spacing of nails is 18" on-center for joists.**

FILLER and BACKER BLOCK SIZES

*** SEE I-JOIST EQUIVALENCE CHART**

I-Joists	110 EQ. *		210 EQ. *		230 or 360 EQ. *			560 EQ. *		
Depth	9½" or 11⅞"	14"	9½" or 11⅞"	14" or 16"	9½" or 11⅞"	14" or 16"	18" or 20"	11⅞"	14" or 16"	18" or 20"
Filler Block (1) (Detail H2)	2x6	2x8	2x6 + ⅜" sheathing	2x8 + ⅜" sheathing	2x6 + ½" sheathing	2x8 + ½" sheathing	2x12 + ½" sheathing	Two 2x6	Two 2x8	Two 2x12
Cantilever Filler (Detail E4)	2x6 4'-0" long	2x10 6'-0" long	2x6 + ¾" sheathing 4'-0" long	2x10 + ¾" sheathing 6'-0" long	2x6 + ½" sheathing 4'-0" long	2x10 + ½" sheathing 6'-0" long	Not applicable	Not applicable		
Backer Block (1) (Detail F1 or H2)	⅝" or ¾"		¾" or ⅞"		1" Net			2x6	2x8	2x12

(1) If necessary, increase filler and backer block height for face mount hangers and maintain ⅛" gap at top of joist; see detail W. Filler and backer block lengths should accomodate required nailing without splitting (12" minimum for backer blocks and 24" minimum for filler blocks).



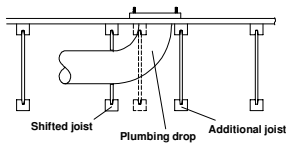
INSTALLATION TIPS

Subfloor adhesive will improve floor performance, but may not be required.

Squash blocks and blocking panels carry stacked vertical loads (details B1 and B2). Packing out the web of a joist (with web stiffeners) is not a substitute for squash blocks or blocking panels.

When joists are doubled at non-load bearing parallel partitions, space joists apart the width of the wall for plumbing or HVAC.

Additional joist at plumbing drop (see detail).



* I-JOIST EQUIVALENCY CHART

EQUIVALENT IN SPAN AND SPACING		
Depth	Manf.& Series	Manf.& Series
9 1/4"	TJI - 110	BCI 4500
	TJI - 210	BCI 5000
	TJI - 230	BCI 6000
		BCI 6500
11 7/8"	TJI - 110	BCI 4500
	TJI - 210	BCI 5000
	TJI - 230	BCI 6000
		BCI 6500
	TJI - 360	BCI 60'S
	TJI - 560	BCI 90'S
14"	TJI - 110	BCI 4500
	TJI - 210	BCI 5000
	TJI - 230	BCI 6000
		BCI 6500
	TJI - 360	BCI 60'S
	TJI - 560	BCI 90'S
16"	TJI - 110	BCI 4500
	TJI - 210	BCI 5000
	TJI - 230	BCI 6000
		BCI 6500
	TJI - 360	BCI 60'S
	TJI - 560	BCI 90'S

JOIST NAILING REQUIREMENTS at BEARING

Joist to Bearing Plate

1¼" rim board.

One 8d (0.113" x 2½") nail each side. Drive nails at an angle at least 1½" from end.

1¾" minimum bearing at end support; 3½" minimum at intermediate support

Shear transfer: Connections equivalent to floor panel nailing schedule

Squash Blocks to Joist ***(Load bearing wall above)***

One 10d (0.128" x 3") nail into each flange

Also see detail B2

Rim to Joist

1¾" minimum bearing

1¼" rim board or 1¾" wide rim joist: One 10d (0.128" x 3") nail into each flange

2 ⅛" - 2 5/16" wide rim joist: One 16d (0.135" x 3½") nail into each flange

3½" wide rim joist: Toe nail with 10d (0.128" x 3") nails, one each side of TJI® joist flange

3½" wide floor joist

3½" wide rim joist

Top View

Locate rim board joint between joists.

BEAM ATTACHMENT at BEARING

One 10d (0.128" x 3") nail each side of member at bearing, 1½" minimum from end

Drive nails at an angle to minimize splitting of plate

1¼" rim board.

See framing plan (if applicable) or iLevel® Framer's Pocket Guide for minimum end and intermediate bearing lengths.

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2809 Anvil Course, Parkway, Suite 110
Fuquay-Varina, NC 27526
TEL: (919) 460-3399 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

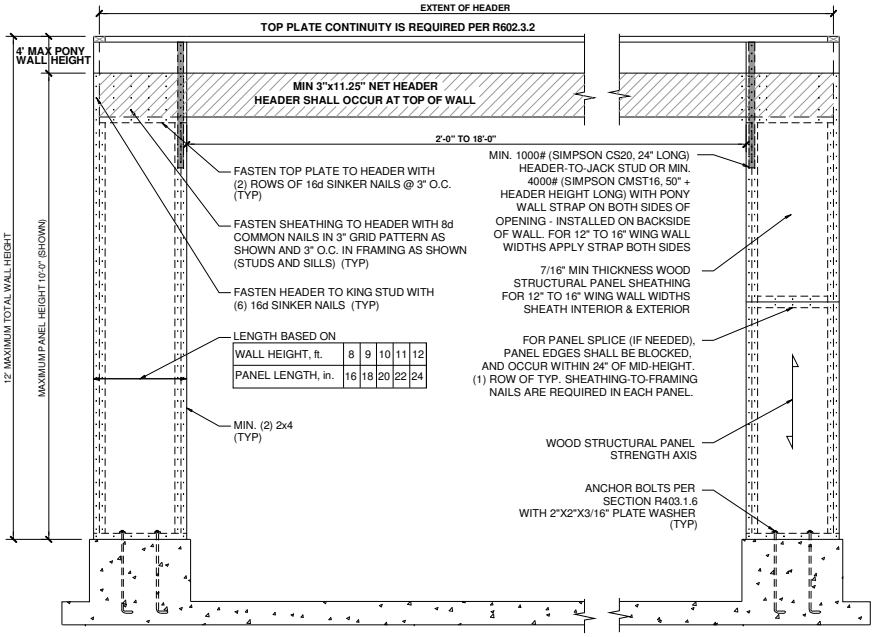
DRAWN BY: **AWC**

I-JOIST DETAILS

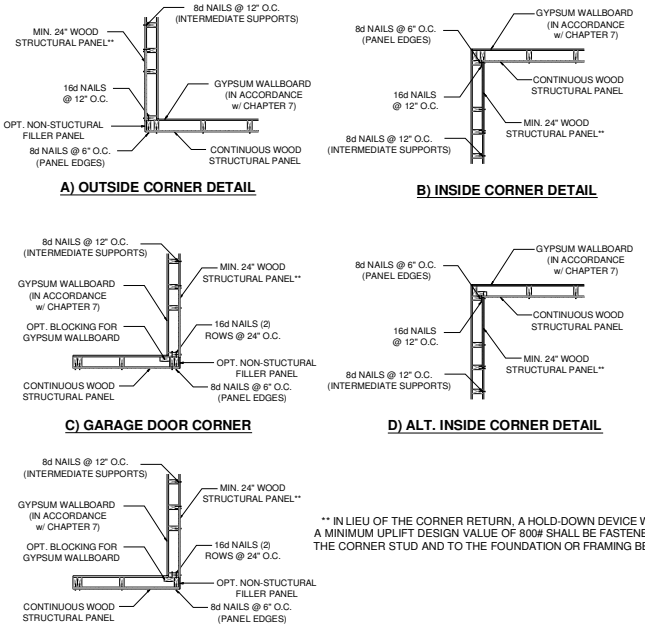
DSIJ

KDC 00189001

3487



1 METHOD PH: PORTAL FRAME PANEL CONSTRUCTION
SCALE: 3/8" = 1'-0"

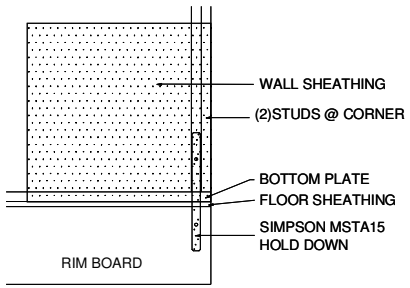


** IN LIEU OF THE CORNER RETURN, A HOLD-DOWN DEVICE WITH A MINIMUM UPLIFT DESIGN VALUE OF 800# SHALL BE FASTENED TO THE CORNER STUD AND TO THE FOUNDATION OR FRAMING BELOW.

2 TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS SHEATHING
SCALE: NTS

WALL BRACING FOR 120 MPH AND 130 MPH WIND ZONES

PER 2012 NCRC R4506 - ALL STORIES - WOOD STRUCTURAL SHEATHING PANELS. BLOCKING SHALL BE INSTALLED IF LESS THAT 50 PERCENT OF WALL LENGTH IS SHEATHED. WHERE BLOCKING IS REQUIRED, ALL PANELS SHALL BE FASTENED AT 3" OC ALONG THE EDGES AND 6" OC AT INTERMEDIATE FRAMING. IF A WALL IS SHEATHED LESS THAN 25 PERCENT OF ITS LENGTH, THEN THAT WALL SHALL BE DESIGNED PER APPROVED ENGINEERING PRACTICE.



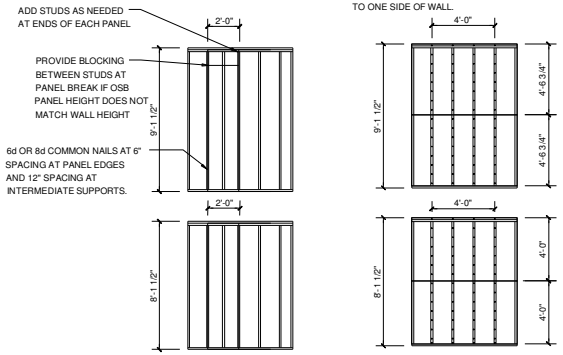
▶ SIMPSON MSTA15 HOLD DOWN CAPACITY OF 970 POUNDS PER ANCHOR WITH (12) 10d NAILS. STRAP TO BE LOCATED AT EDGE OF BRACED WALL PANEL.

WSP - WOOD STRUCTURAL PANEL

BRACED WALL PANEL
7/16" MIN. OSB SHEATHING ON ONE SIDE OF WALL. MINIMUM PANEL LENGTH 24".

GB - GYPSUM BOARD

BRACED WALL PANEL
1/2" GYPSUM BOARD NAILED TO STUDS AT 7" O.C. USING 5d COOLER NAILS OR #6 SCREWS. MINIMUM PANEL LENGTH 48" WHEN APPLIED TO BOTH SIDES OF WALL AND 96" WHEN APPLIED TO ONE SIDE OF WALL.



BRACING METHODS

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN
JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER. PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5599 FAX: (919) 468-5456

PROJECT:
MODEL:
STANDARD DETAILS
SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

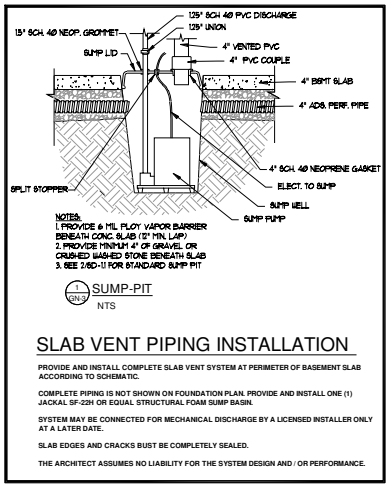
PROJECT NO.:

DATE: **05/16/2018**
DRAWN BY: **AWC**

WALL BRACING DETAILS
DSWB

KDC 00189002

3488



SUMP-PIT
NTS

SLAB VENT PIPING INSTALLATION

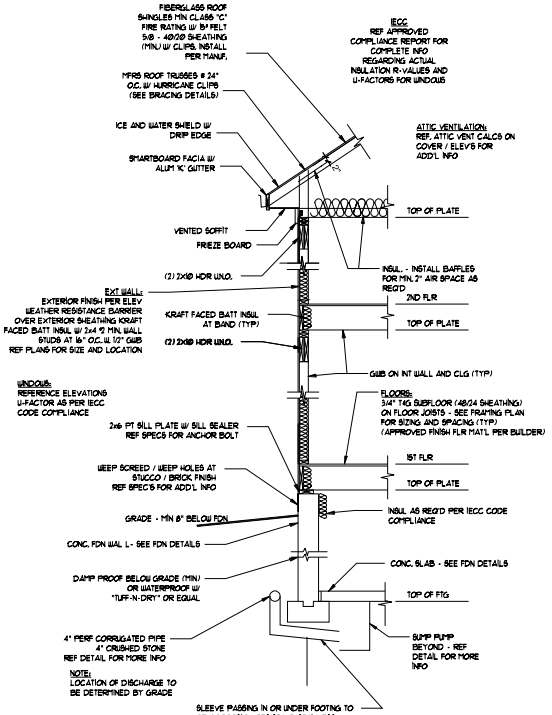
PROVIDE AND INSTALL COMPLETE SLAB VENT SYSTEM AT PERIMETER OF BASEMENT SLAB ACCORDING TO SCHEMATIC.

COMPLETE PIPING IS NOT SHOWN ON FOUNDATION PLAN. PROVIDE AND INSTALL ONE (1) JACKAL SF-22R OR EQUAL STRUCTURAL FOAM SUMP BASIN.

SYSTEM MAY BE CONNECTED FOR MECHANICAL DISCHARGE BY A LICENSED INSTALLER ONLY AT A LATER DATE.

SLAB EDGES AND CRACKS BUST BE COMPLETELY SEALED.

THE ARCHITECT ASSUMES NO LIABILITY FOR THE SYSTEM DESIGN AND / OR PERFORMANCE.



TYPICAL WALL SECTION
-NTS-

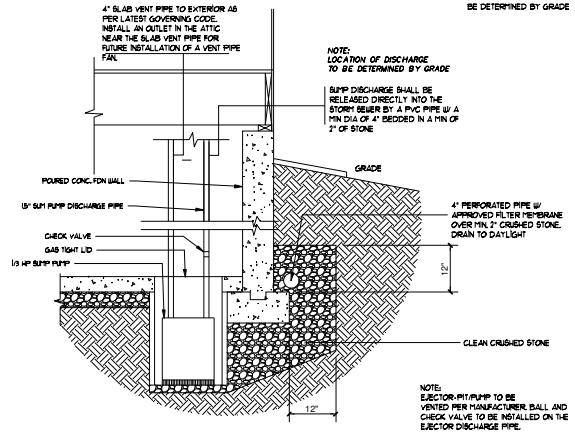
NOTES:
1. ALL CONCRETE SLABS THAT COME IN CONTACT WITH HE GROUND SHALL BE LAID OVER A GAS PERMEABLE MATERIAL MADE UP OF EITHER A MINIMUM 4" THICK UNIFORM LAYER OF CLEAN AGGREGATE, OR A MINIMUM 4" THICK UNIFORM LAYER OF SAND. OVERLAIN BY A LAYER OF STRIPS OF MANUFACTURED MATTING DESIGNED TO ALLOW THE LATERAL FLOW OF SOIL GASES.

2. ALL CONCRETE FLOOR SLABS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH LOCAL BUILDING CODES. ADDITIONAL REFS: AMERICAN CONCRETE INSTITUTE OF PUBLICATIONS, "ACI302.1R" & "ACI332R", OR THE POST OF TENSIONING INSTITUTE MANUAL. "DESIGN AND CONSTRUCTION OF POST-TENSIONED SLABS ON GROUND".

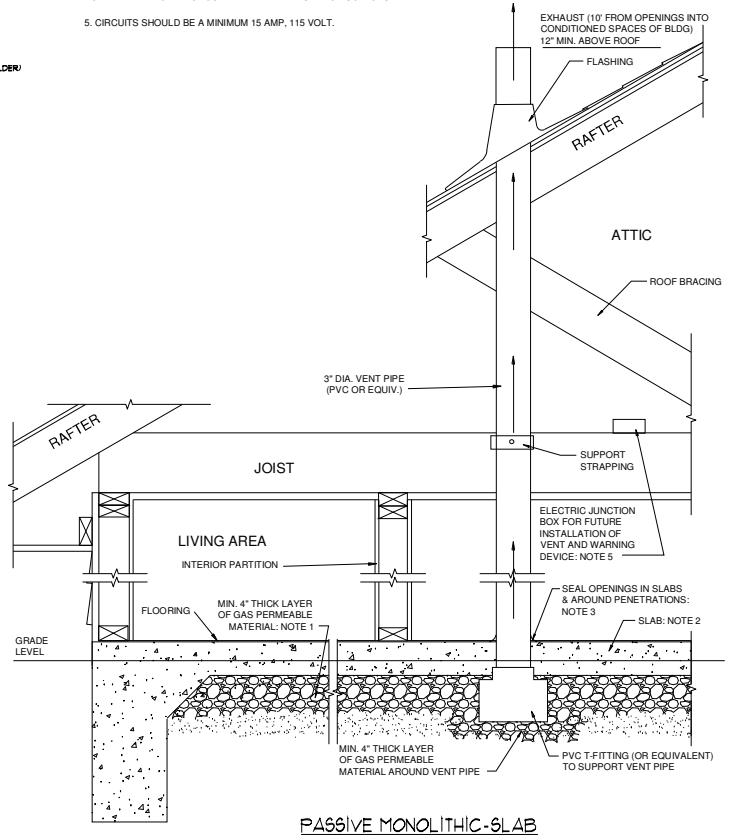
3. ALL OPENINGS, GAPS AND JOINTS IN FLOOR AND WALL ASSEMBLIES IN CONTACT SOIL OR GAPS AROUND PIPES, TOILETS, BATHTUBS OR DRAINS PENETRATING THESE ASSEMBLIES SHALL BE FILLED OR CLOSED WITH MATERIALS THAT PROVIDE A PERMANENT AIR-TIGHT SEAL. SEAL LARGE OPENINGS WITH NON-SHRINK MORTAR, GROUTS OR EXPANDING FOAM MATERIALS AND SMALLER GAPS WITH AN ELASTOMERIC JOINT SEALANT, AS DEFINED IN ASTM C920-87. MORTAR: USE QUIKRETE NON-SHRINK PRECISION GROUT OR EQUIVALENT. SEAL: USE TREMSEAL HP OR EQUIVALENT.

4. VENT PIPES SHALL BE INSTALLED SO THAT ANY RAINWATER OR CONDENSATION DRAINS DOWNWARD INTO THE GROUND BENEATH THE SLAB OR SOIL-GAS-RETARDER MEMBRANE.

5. CIRCUITS SHOULD BE A MINIMUM 15 AMP, 115 VOLT.



EXTERIOR PERIMETER DRAIN AND SUB SLAB VENT DETAIL - SUB SLAB SYSTEM VENTED THROUGH SUMP
-NTS-



PASSIVE MONOLITHIC-SLAB DEPRESSURIZATION VENT SYSTEM FOR NEW CONSTRUCTION
-NTS-

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Lumley Crossing Parkway, Suite 110
Lumley, NC 27526
TEL: (919) 460-5599 FAX: (919) 460-5456

PROJECT:

MODEL: **STANDARD DETAILS**

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

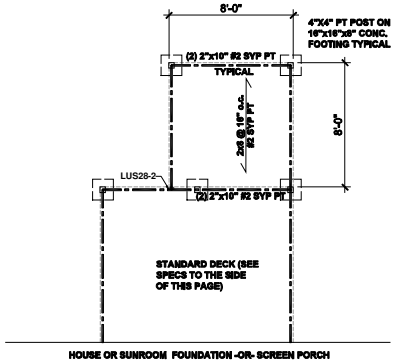
DRAWN BY: **AWC**

SLAB VENT SYSTEM

SL VENT

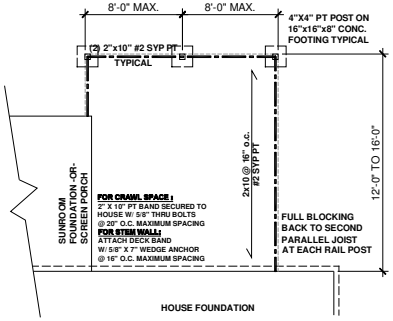
KDC 00189003

3489



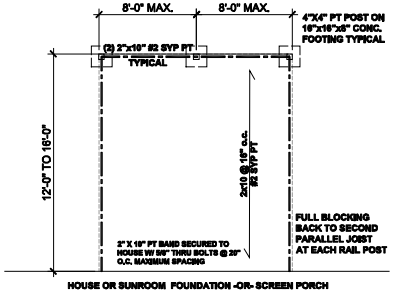
TYPICAL 8'x8' GRILL DECK PLAN

SCALE: 1/8"=1'-0" (ATTACHED TO MAIN DECK)



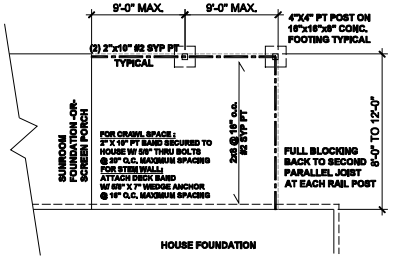
TYPICAL LARGE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



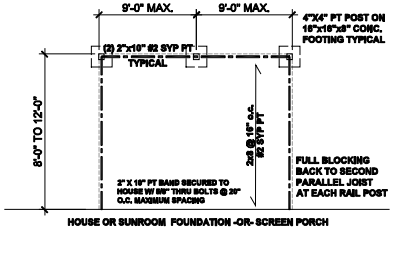
TYPICAL LARGE REAR DECK PLAN

SCALE: 1/8"=1'-0"



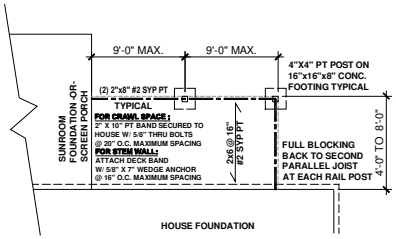
TYPICAL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



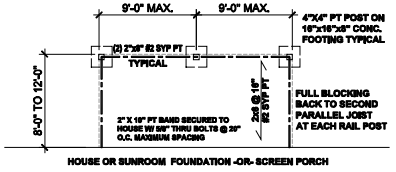
TYPICAL REAR DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL SMALL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL SMALL REAR DECK PLAN

SCALE: 1/8"=1'-0"

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-3999 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

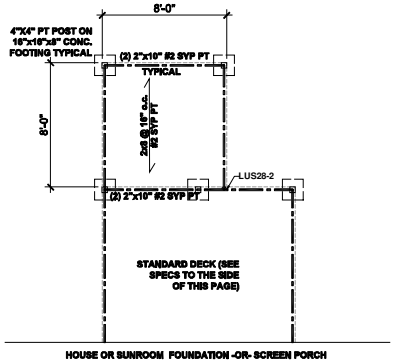
DRAWN BY: AWC

STANDARD DECK PLANS (RIGHT-HAND VERSION)

DECK - R

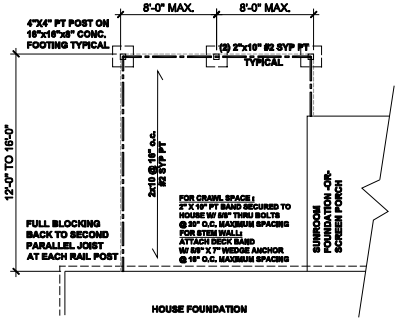
KDC 00189004

3490



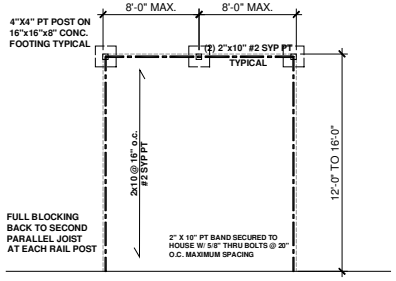
TYPICAL 8'x8' GRILL DECK PLAN

SCALE: 1/8"=1'-0" (ATTACHED TO MAIN DECK)



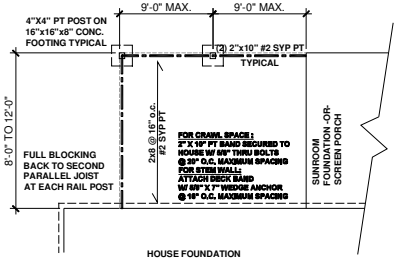
TYPICAL LARGE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



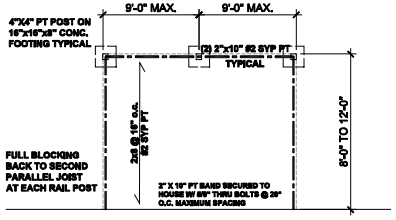
TYPICAL LARGE REAR DECK PLAN

SCALE: 1/8"=1'-0"



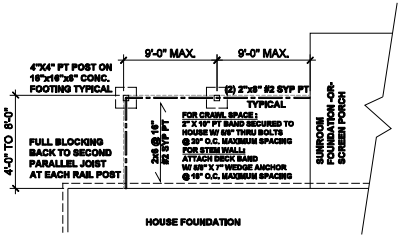
TYPICAL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



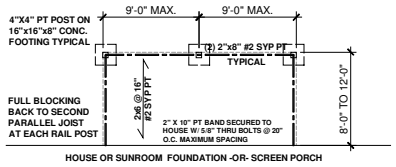
TYPICAL REAR DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL SMALL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL SMALL REAR DECK PLAN

SCALE: 1/8"=1'-0"

SOUTH CAROLINA PROFESSIONAL ENGINEER SEAL 29232 05/16/2018 ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2009 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5499 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

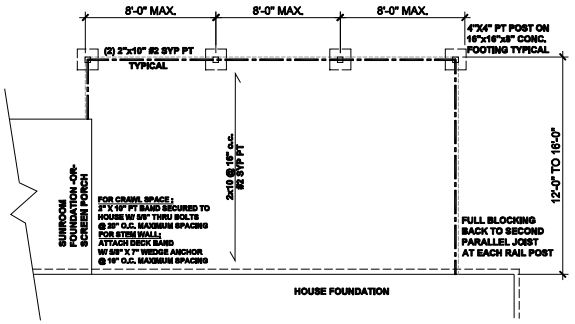
DRAWN BY: AWC

STANDARD DECK PLANS (LEFT-HAND VERSION)

DECK - L

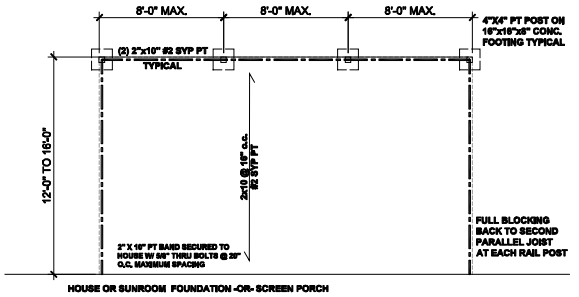
KDC 00189005

3491



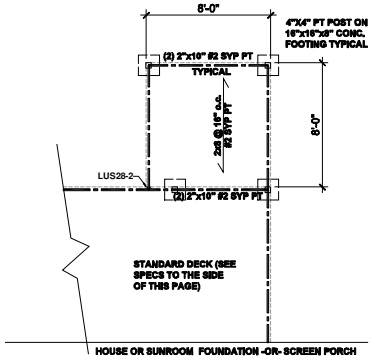
TYPICAL WIDE LARGE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



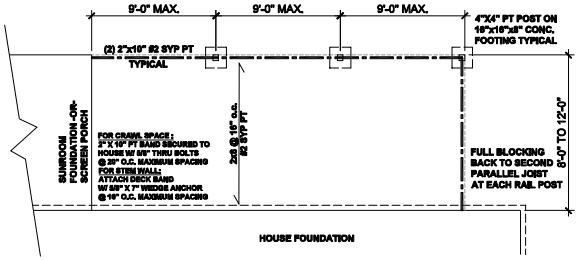
TYPICAL WIDE LARGE REAR DECK PLAN

SCALE: 1/8"=1'-0"



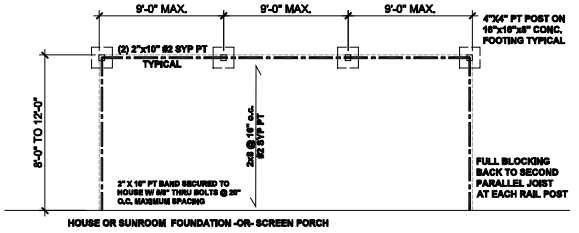
TYPICAL 8'x8' GRILL DECK PLAN

SCALE: 1/8"=1'-0" (ATTACHED TO MAIN DECK)



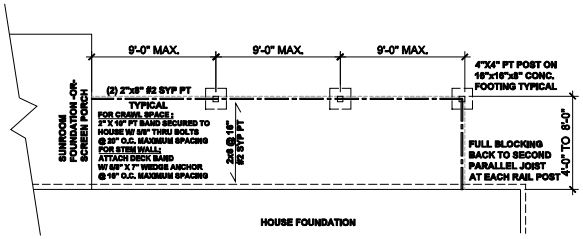
TYPICAL WIDE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



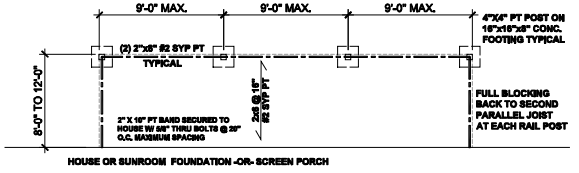
TYPICAL WIDE REAR DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL WIDE SMALL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL WIDE SMALL REAR DECK PLAN

SCALE: 1/8"=1'-0"

SOUTH CAROLINA PROFESSIONAL SEAL 29232 05/16/2018 ENGINEER ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-3999 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

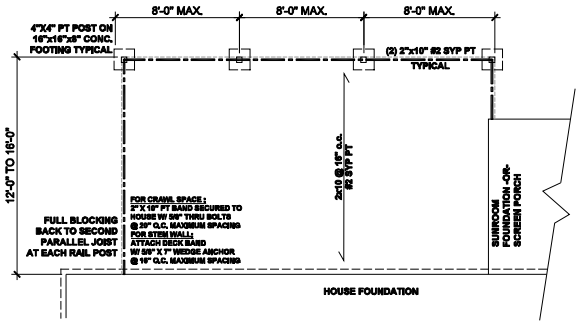
DATE:	DRAWN BY:
05/16/2018	AWC

WIDE DECK PLANS (RIGHT-HAND VERSION)

W DECK - R

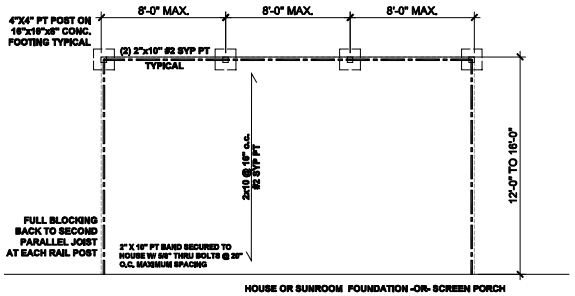
KDC 00189006

3492



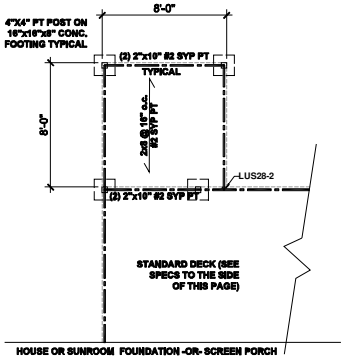
TYPICAL WIDE LARGE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



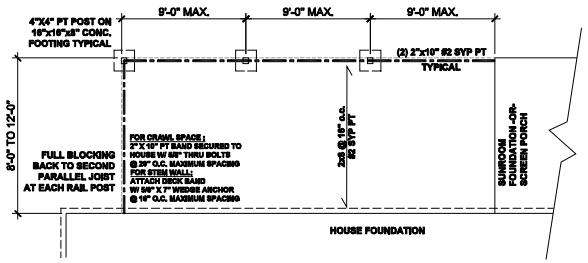
TYPICAL WIDE LARGE REAR DECK PLAN

SCALE: 1/8"=1'-0"



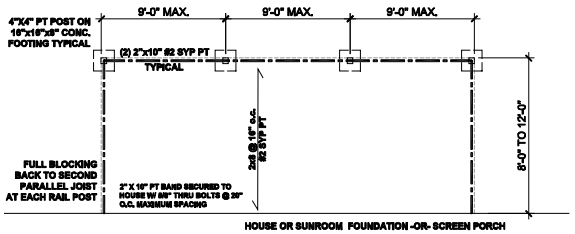
TYPICAL 8'x8' GRILL DECK PLAN

SCALE: 1/8"=1'-0" (ATTACHED TO MAIN DECK)



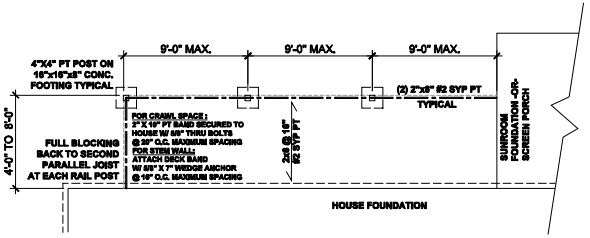
TYPICAL WIDE SIDE DECK PLAN

SCALE: 1/8"=1'-0"



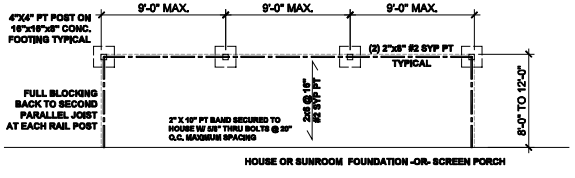
TYPICAL WIDE REAR DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL WIDE SMALL SIDE DECK PLAN

SCALE: 1/8"=1'-0"



TYPICAL WIDE SMALL REAR DECK PLAN

SCALE: 1/8"=1'-0"

SOUTH CAROLINA PROFESSIONAL SEAL 29232 05/16/2018 ENGINEER ELIJAH B. SMITH

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-3999 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

DRAWN BY: AWC

WIDE DECK PLANS (LEFT-HAND VERSION)

W DECK - L

KDC 00189007

3493

DOOR SCHEDULE

Mark	Type	Size	Glazing	U-Value	SHGC	Notes
D1	Door-Inswing	2/8 x 6/8	Ext. Full Glass	0.31	0.21	
D2	Door-Inswing	2/8 x 6/8	w/ 20 Min. Fire Rating	0.19	n/a	20 Min. Fire Rated
D3	Door-Inswing	2/8 x 6/8	Ext. Full Lite	0.31	0.21	
D5	Door-Inswing	3/0 x 6/8	6 Panel w/ 10" S.L.	0.31	0.21	
D6	Door-Inswing	(2) 2/8 x 6/8	Ext. Full Lite	0.31	0.21	1 fixed, 1 operable
D7	Door-Inswing	2/8 x 6/8	6 Panel w/ 12" S.L.	0.31	0.21	
D9	Door-Inswing	3/6 x 8/0	3/4 GL 8-Lite MAHOG			
D10	Door-Inswing	3/4 x 8/0				
D15	Sliding Glass Door	9/0 x 6/8	Double-pane low-E	0.31	0.21	Full Lite
D16	Exterior	8/0				Overhead Garage Door
D17	Exterior	16/0				Overhead Garage Door
D18	Sliding Glass Door	6/0 x 6/8	Double-pane low-E	0.31	0.21	Full Lite
D19	Exterior	2/8 x 6/8	4-Lite			
D20	Exterior	2/8 x 6/8	9-Lite			
D21	Exterior	2/8 x 6/8				Screen Door
D22	Exterior	2/8 x 8/0	Ext. Full Glass	0.31	0.21	
D23	Exterior	3/0 x 6/8				
D24	Exterior	3/0 x 6/8	6 Panel w/ (2) 10" S.L.	0.31	0.21	
D25	Exterior	3/0 x 6/8	6 Panel w/ 12" S.L.	0.31	0.21	
D26	Exterior	3/0 x 8/0	6 Panel w/ 12" S.L.	0.31	0.21	
D27	Exterior	3/0 x 6/8	Ext. Full Glass	0.31	0.21	Sale Center
D28	Exterior	2/6 x 6/8	15-Lite	0.31	0.21	
D29	Exterior	2/8 x 6/8	15-Lite	0.31	0.21	
D30	Exterior	2/8 x 6/8	Full Lite	0.31	0.21	
D31	Exterior	3/0 x 8/0	Full Lite	0.31	0.21	
D32	Exterior	(2) 2/8 x 8/0	8-LITE	0.31	0.21	
D33	Exterior	2/8 X 6/8	6 PANEL			Service Door
D34	Exterior	(2) 2/8 x 8/0	6-Lite	0.31	0.21	

WINDOW SCHEDULE

FIXED

W2	Fixed	2/0 x 2/0	Double-pane low-E	0.31	0.21	
W3	Fixed	2/4 x 3/0	Double-pane low-E	0.31	0.21	
W4	Fixed	3/0 x 2/0	Double-pane low-E	0.31	0.21	
W5	Fixed	3/0 x 3/0	Double-pane low-E	0.31	0.21	
W6	Fixed	3/0 x 4/0	Double-pane low-E	0.31	0.21	
W7	Fixed Arched	3/0 x 5/0	Double-pane low-E	0.31	0.21	
W8	Fixed	3/6 x 3/6	Double-pane low-E	0.31	0.21	
W9	Fixed	4/0 x 1/0	Double-pane low-E	0.31	0.21	
W10	Fixed	4/0 x 1/0	Double-pane low-E	0.31	0.21	
W11	Fixed	4/0 x 4/0	Double-pane low-E	0.31	0.21	
W12	Fixed	4/0 x 6/0	Double-pane low-E	0.31	0.21	
W13	Fixed	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W14	Fixed	6/0 x 1/0	Double-pane low-E	0.31	0.21	
W15	Fixed	4/0 x 5/0	Double-pane low-E	0.31	0.21	
W16	Fixed Arched	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W17	Fixed	3/0 x 1/6	Double-pane low-E	0.31	0.21	Transom
W18	Fixed	3/0 x 2/0	Double-pane low-E	0.31	0.21	Transom
W19	Fixed	6/0 x 1/6	Double-pane low-E	0.31	0.21	Transom
W20	Fixed	6/0 x 2/0	Double-pane low-E	0.31	0.21	Transom
W21	Fixed	6/0 x 3/0	Double-pane low-E	0.31	0.21	Transom - Half Round
W22	Fixed	2/4 x 2/4	Double-pane low-E	0.31	0.21	
W23	Fixed	2/8 x 1/0	Double-pane low-E	0.31	0.21	Transom
W46	Fixed	1/6 x 1/6	Double-pane low-E	0.31	0.21	
W47	Fixed	2/8 x 1/0	Double-pane low-E	0.31	0.21	Transom
W48	Fixed	5/0 x 1/0	Double-pane low-E	0.31	0.21	Transom
W70	Fixed	2/8 x 1/6	Double-pane low-E	0.31	0.21	Transom
W71	Fixed	2/4 x 4/0	Double-pane low-E	0.31	0.21	
W72	Fixed	3/0 x 1/0	Double-pane low-E	0.31	0.21	Transom
W73	Fixed	4/0 x 2/0	Double-pane low-E	0.31	0.21	
W75	Fixed	2/6 x 2/6	Double-pane low-E	0.31	0.21	
W77	Fixed	2/0 x 2/6	Double-pane low-E	0.31	0.21	
W78	Twin Fixed	2/0 x 2/0	Double-pane low-E	0.31	0.21	

WINDOW SCHEDULE

SINGLE HUNG

W24	Single-Hung	2/6 x 6/0	Double-pane low-E	0.31	0.21	
W25	Casement	(2) 2/0 x 4/0	Double-pane low-E	0.31	0.21	
W26	Single-Hung	2/0 x 3/0	Double-pane low-E	0.31	0.21	
W27	Single-Hung	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W28	Single-Hung	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W29	Single-Hung	2/0 x 4/6	Double-pane low-E	0.31	0.21	
W30	Single-Hung	2/0 x 5/0	Double-pane low-E	0.31	0.21	
W31	Single-Hung	2/0 x 6/0	Double-pane low-E	0.31	0.21	
W32	Single-Hung	2/4 x 4/0	Double-pane low-E	0.31	0.21	
W33	Single-Hung	2/4 x 4/6	Double-pane low-E	0.31	0.21	
W34	Single-Hung	2/4 x 5/0	Double-pane low-E	0.31	0.21	
W35	Single-Hung	2/4 x 6/0	Double-pane low-E	0.31	0.21	
W36	Single-Hung	2/8 x 4/6	Double-pane low-E	0.31	0.21	
W37	Single-Hung	2/8 x 6/0	Double-pane low-E	0.31	0.21	
W38	Single-Hung	3/0 x 3/2	Double-pane low-E	0.31	0.21	
W39	Single-Hung	3/0 x 4/0	Double-pane low-E	0.31	0.21	
W40	Single-Hung	3/0 x 5/0	Double-pane low-E	0.31	0.21	
W41						
W42	Single-Hung	3/0 x 6/0	Double-pane low-E	0.31	0.21	
W43	Single-Hung	4/0 x 5/0	Double-pane low-E	0.31	0.21	
W44	Single-Hung	4/0 x 6/0	Double-pane low-E	0.31	0.21	
W45	Single-Hung	2/6 x 6/0	Double-pane low-E	0.31	0.21	
W76	Single-Hung	2/8 x 5/0	Double-pane low-E	0.31	0.21	

TWIN - SINGLE HUNG

W49	(2) Twin - Single Hung	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W50	(2) Twin - Single Hung	2/4 x 4/0	Double-pane low-E	0.31	0.21	
W51	(2) Twin - Single Hung	2/4 x 5/0	Double-pane low-E	0.31	0.21	
W52	(2) Twin - Single Hung	2/4 x 6/0	Double-pane low-E	0.31	0.21	
W53	(2) Twin - Single Hung	2/8 x 4/0	Double-pane low-E	0.31	0.21	
W54	(2) Twin - Single Hung	2/8 x 6/0	Double-pane low-E	0.31	0.21	
W55	(2) Twin - Single Hung	3/0 x 5/0	Double-pane low-E	0.31	0.21	
W56	(2) Twin - Single Hung	3/0 x 5/2	Double-pane low-E	0.31	0.21	
W57	(2) Twin - Single Hung	3/0 x 6/0	Double-pane low-E	0.31	0.21	
W58	(2) Twin - Single Hung	3/0 x 4/0	Double-pane low-E	0.31	0.21	
W59	(2) Twin - Single Hung	2/6 x 6/0	Double-pane low-E	0.31	0.21	
W61	(3) Triple - Single Hung	2/0 x 6/0	Double-pane low-E	0.31	0.21	
W62	(3) Triple - Single Hung	2/4 x 5/0	Double-pane low-E	0.31	0.21	
W63	(3) Triple - Single Hung	3/0 x 6/0	Double-pane low-E	0.31	0.21	
W64	(3) Triple - Single Hung	3/0 x 6/0	Double-pane low-E	0.31	0.21	
W65	(3) Triple - Single Hung	3/0 x 5/0	Double-pane low-E	0.31	0.21	
W74	(3) Triple - Single Hung	2/8 x 6/0	Double-pane low-E	0.31	0.21	

WINDOW SCHEDULE

CASEMENT

W100	(2) Double - Casement	2/0 x 4/0	Double-pane low-E	0.31	0.21	
W101	Hopper Window	2/0 x 4/0	Double-pane low-E	0.31	0.21	

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Lumley Centre Parkway, Suite 110
Lee's Summit, MO 64063
TEL: (919) 460-3699 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

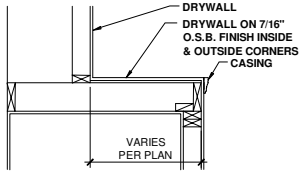
DRAWN BY: **AWC**

DOOR AND WINDOW SCHEDULES

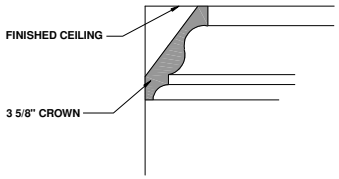
SCH

KDC 00189008

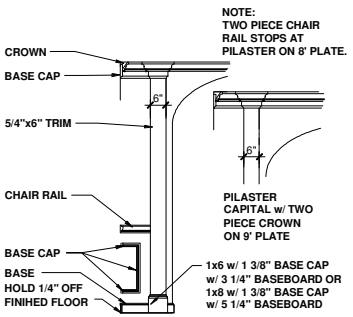
3494



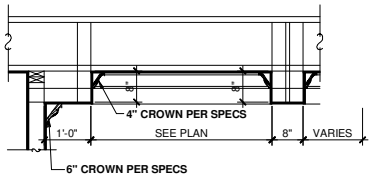
1 PLANT SHELF
NTS



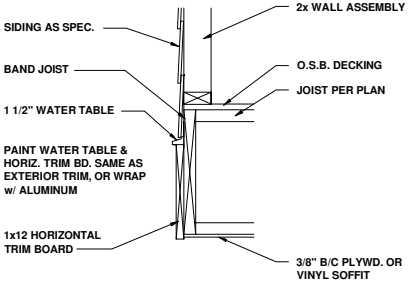
2 STANDARD CROWN MOULD SECTION
SCALE: NTS



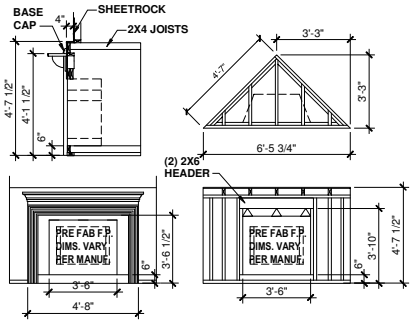
3 INTERIOR PILASTER ELEVATION
SCALE: 1/4" = 1'-0"



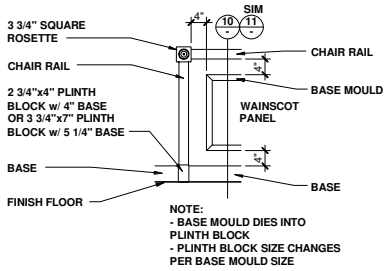
4 COFFER DETAIL
SCALE: 3/8" = 1'-0



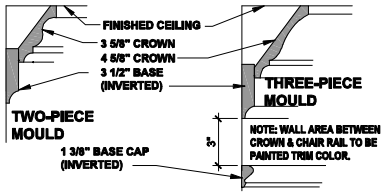
5 HORIZONTAL BAND SECTION
SCALE: 3/4" = 1'-0"



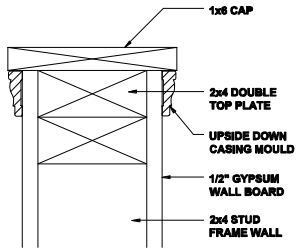
6 FIREPLACE
NTS



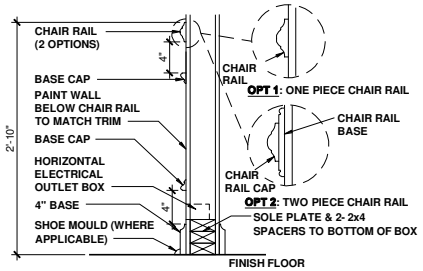
7 WAINSCOT ELEVATION AT ROSETTE
SCALE: 3/8" = 1'-0"



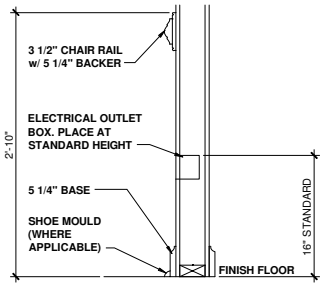
8 CROWN MOULD SECTION (OPT 2 / 3 PIECE MOULD)
SCALE: 1 1/2" = 1'-0"



9 CAP WALL SECTION
SCALE: 3" = 1'-0"



10 WALL SECTION @ WAINSCOT
NTS



11 WALL W/ TWO PIECE CHAIR RAIL
NTS

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5499 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

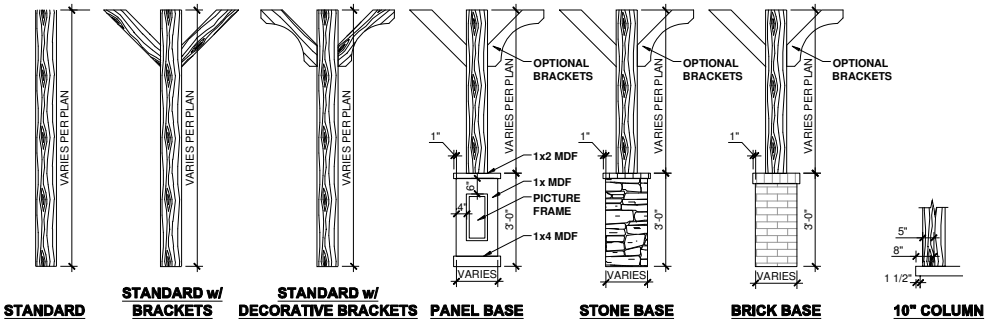
DRAWN BY: AWC

TRIM DETAILS

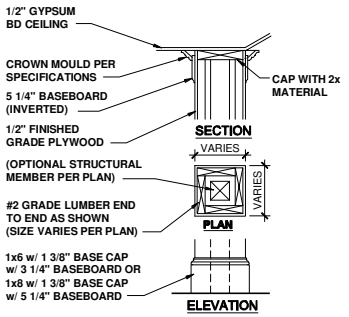
DA1

KDC 00189009

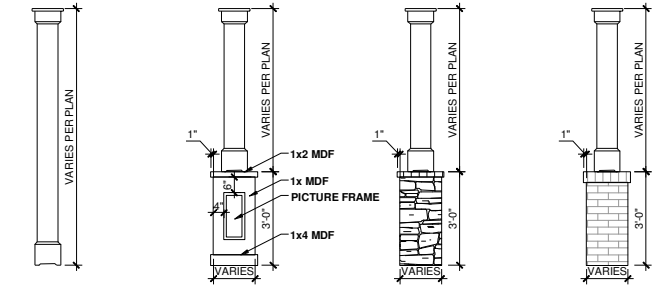
3495



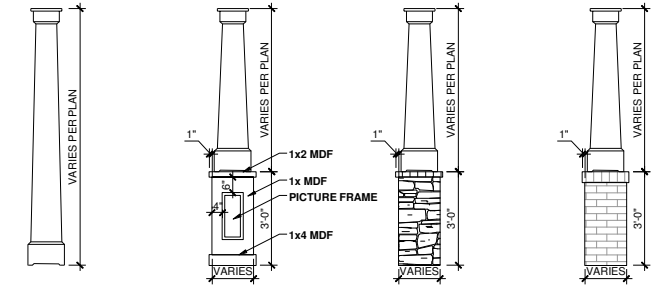
1 CEDAR COLUMN DETAIL @ FRONT PORCH
SCALE: 1/4" = 1'-0"



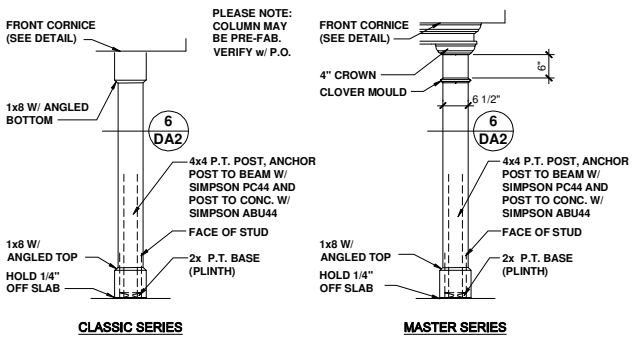
2 INTERIOR COLUMN
NTS



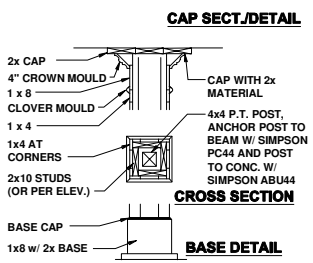
3 COLUMN DETAIL @ FRONT PORCH
SCALE: 1/4" = 1'-0"



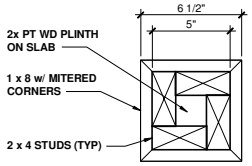
4 TAPPERED COLUMN DETAIL @ FRONT PORCH
SCALE: 1/4" = 1'-0"



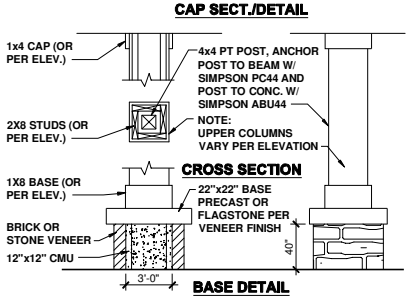
5 PORCH COLUMN ELEVATIONS
NTS



6 PORCH COLUMN DETAIL
NTS



7 COLUMN PLAN
SCALE: 1 1/2" = 1'-0"



8 PORCH COLUMN W/ VENEER BASE
SCALE: 3/8" = 1'-0"

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5599 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

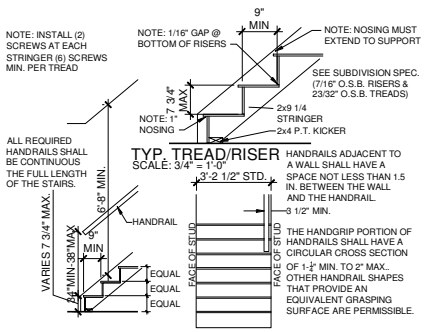
DRAWN BY: AWC

EXTERIOR AND INTERIOR COLUMN DETAILS

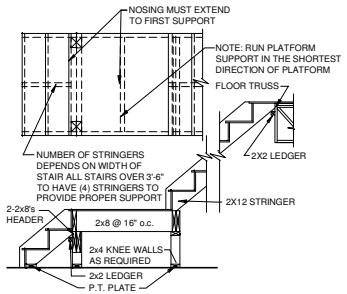
DA2

KDC 00189010

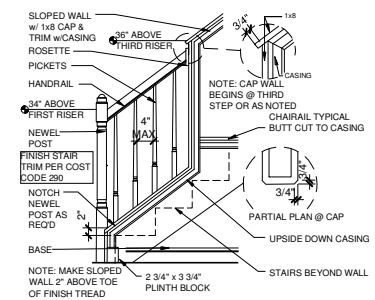
3496



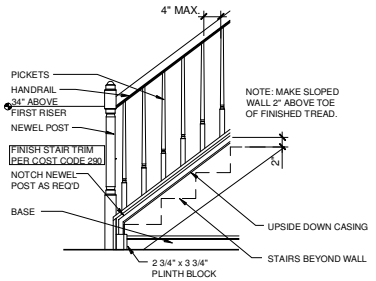
1 STAIR PLAN/ELEVATION/SECTION
SCALE: NTS



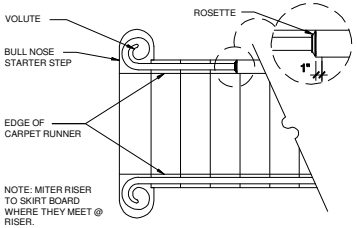
2 STAIR PLATFORM
SCALE: 1/4" = 1'-0"

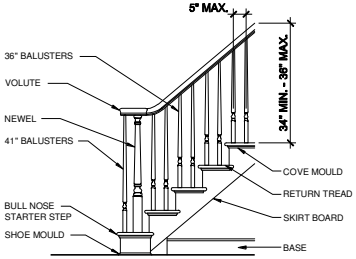


3 PARTIAL OPEN RAIL ON SLOPED WALL
SCALE: 3/8" = 1'-0"

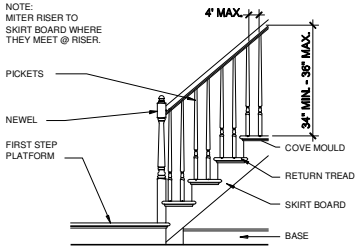


4 OPEN RAIL ON SLOPED WALL ELEV.
SCALE: 3/8" = 1'-0"



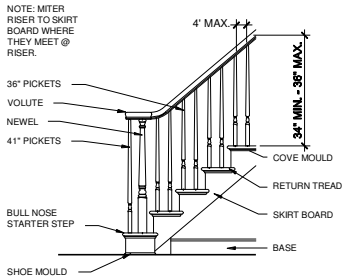


5 OPEN RAIL ON TREAD W/ VOLUTE
NTS



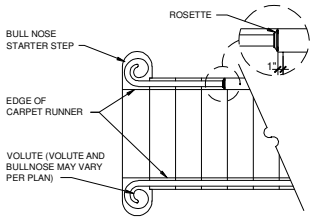
ELEVATION

6 OPEN RAIL ON TREAD
SCALE: 1/4" = 1'-0"



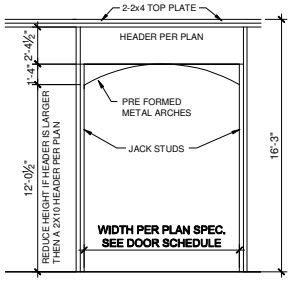
ELEVATION

7 OPEN RAIL ON TREAD W/ VOLUTE
SCALE: 1/4" = 1'-0"

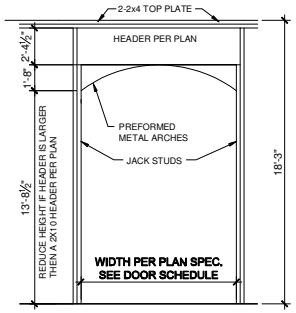


PARTIAL PLAN

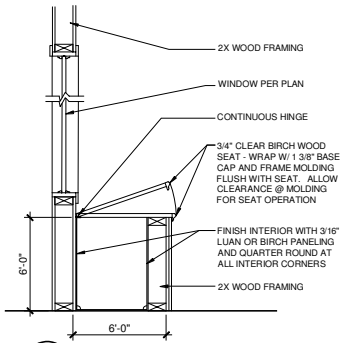
8 OPEN RAIL ON TREAD W/ VOLUTE
SCALE: 1/4" = 1'-0"



9 ELLIP. OPENING ELEV. FOR 8'-0" CEILING (DISCOVERY)
NTS



10 ELLIP. OPENING ELEV. FOR 9'-0" CEILING
NTS



11 WINDOW SEAT SECTION
SCALE: 1/2" = 1'-0"

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-3399 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

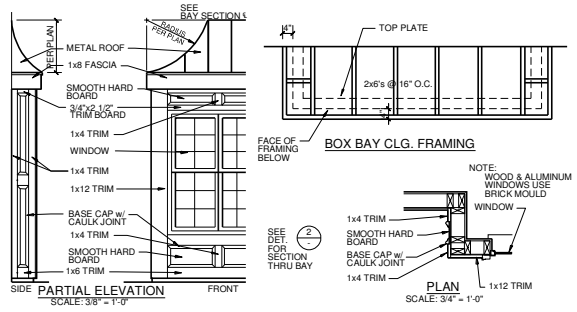
DRAWN BY: **AWC**

STAIR DETAILS

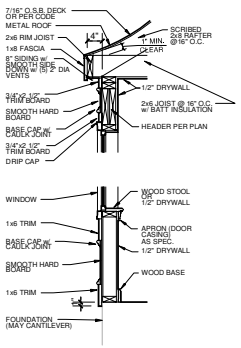
DA3

KDC 00189011

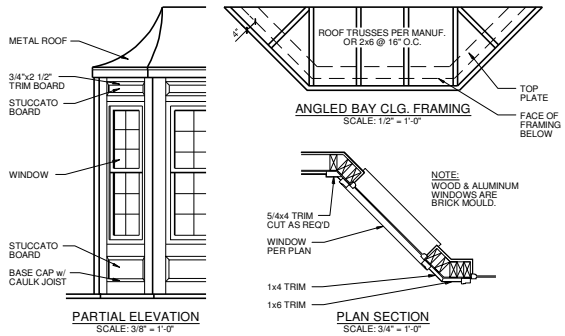
3497



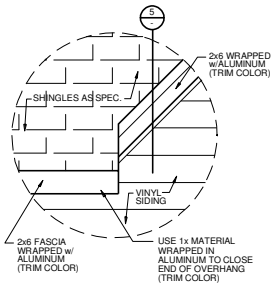
1 BOX BAY WINDOW PLAN/SECTION
SCALE: VARIES



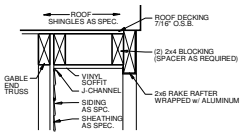
2 BAY SECTION
SCALE: 3/8" = 1'-0"



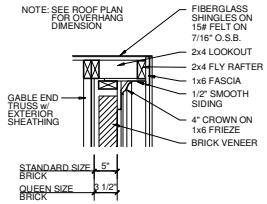
3 ANGLED BAY WINDOW DETAIL
SCALE: VARIES



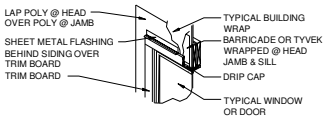
4 TYPICAL FLUSH RAKE RETURN ELEV.
SCALE: 3/8" = 1'-0"



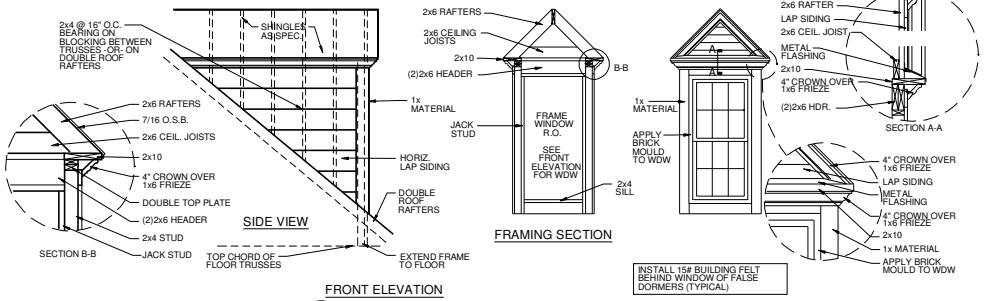
5 1'-0" RAKE SECTION
SCALE: 3/4" = 1'-0"



6 FRONT RAKE SECTION FOR BRICK
SCALE: 1/2" = 1'-0"



7 TYP HEAD FLASHING AT FRAME
SCALE: NTS



8 DORMER SECTIONS / ELEVATIONS
SCALE: NTS

NOTE: WHERE THE PROPERTY LINE IS LESS THAN 10' FROM THE BUILDING FACE AND SOFFIT MATERIAL IS VINYL OR ALUMINUM, THE SOFFIT MATERIAL SHALL BE SECURELY ATTACHED TO THE FRAMING MEMBERS AND USE UNDERLAYMENT MATERIAL OF EITHER FIRE TREATED WOOD. $\frac{7/16}{15/32}$" WOOD SHEATHING OR $\frac{1}{2}$" GYP BOARD. VENTING REQUIREMENTS SHALL APPLY TO BOTH SOFFIT AND UNDERLAYMENT AND SHALL BE PER SECTION 806.

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Auriel Center Parkway, Suite 210
Morrisville, NC 27560
TEL: (919) 468-5999 FAX: (919) 468-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

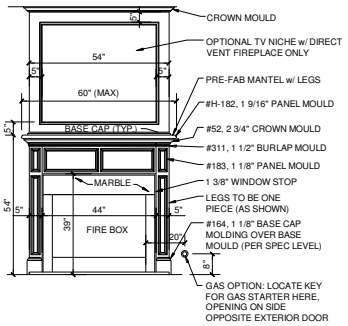
DRAWN BY: AWC

DORMER AND BAY DETAILS

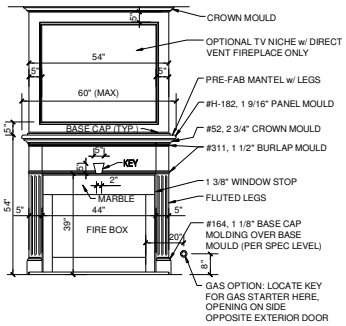
DA4

KDC 00189012

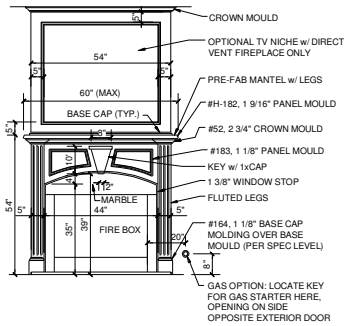
3498



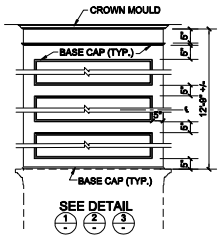
1 FIREPLACE ELEVATION (CLAREMONT)
SCALE: 1/4" = 1'-0"



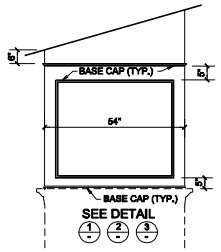
2 FIREPLACE ELEVATION (HARTFORD)
SCALE: 1/4" = 1'-0"



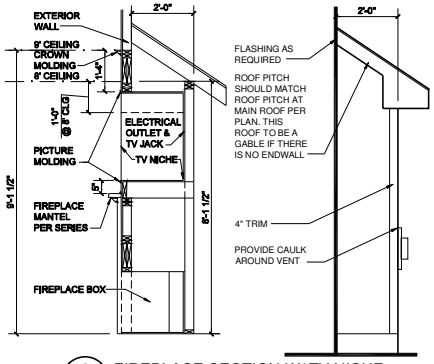
3 FIREPLACE ELEVATION (WINDSOR)
SCALE: 1/4" = 1'-0"



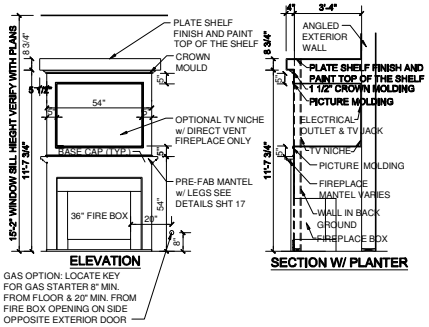
4 TWO STORY FIREPLACE TRIM
SCALE: 1/4" = 1'-0"



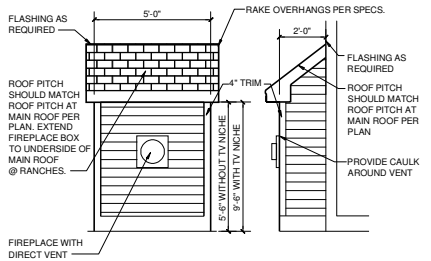
5 FIREPLACE ELEV. @ SLOPED CEILING
SCALE: 1/4" = 1'-0"



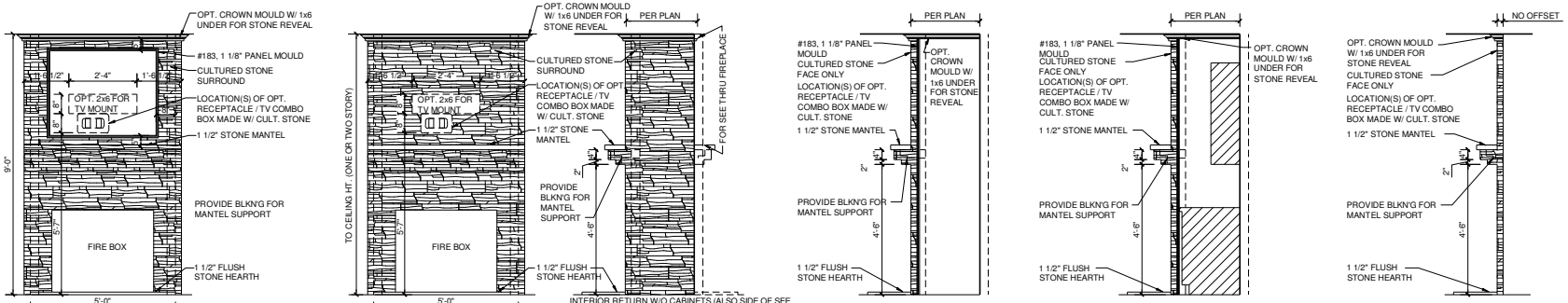
6 FIREPLACE SECTION W/ TV NICHE
SCALE: 1/4" = 1'-0"



7 CORNER FIREPLACE
SCALE: 3/16" = 1'-0"



8 FIREPLACE ENCLOSURE ELEVATION
SCALE: 3/16" = 1'-0"



9 INTERIOR STONE FIREPLACE ELEVATIONS
SCALE: 1/4" = 1'-0"

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Lumley Centre Parkway, Suite 110
Lumberton, NC 28358
TEL: (910) 660-3999 FAX: (910) 488-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

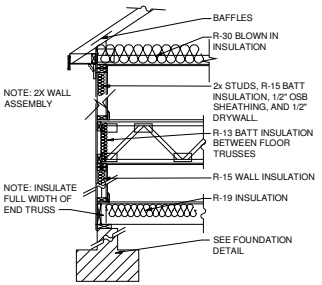
DRAWN BY: AWC

FIREPLACE MANTEL DETAILS

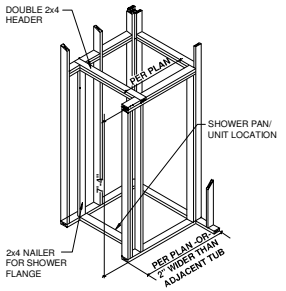
DA5

KDC 00189013

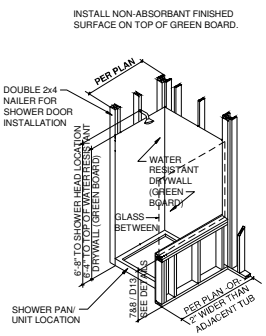
3499



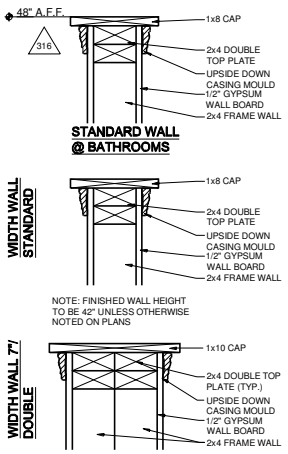
1 INSULATION SECTION
NTS



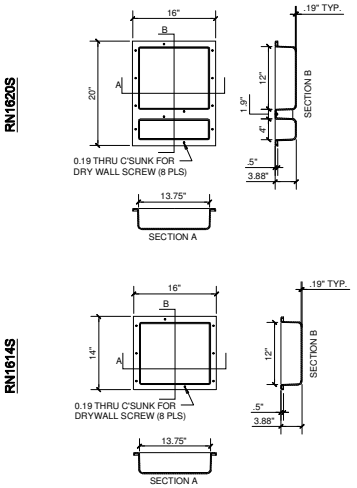
2 FIBERGLASS TUB/SHOWER WALL
NTS



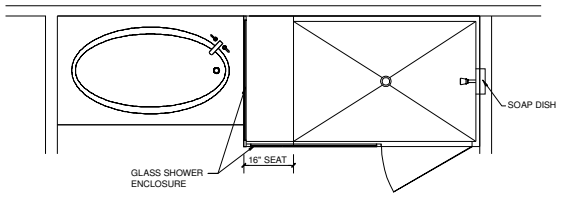
3 TILE TUB/SHOWER WALL
NTS



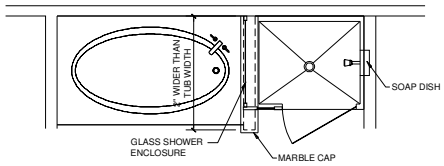
4 CAP WALL SECTION
NTS



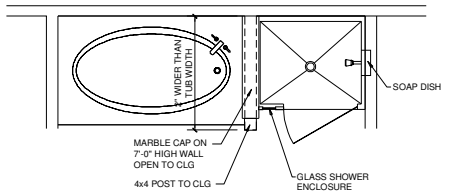
5 SHOWER NICHE DETAIL
SCALE: NTS



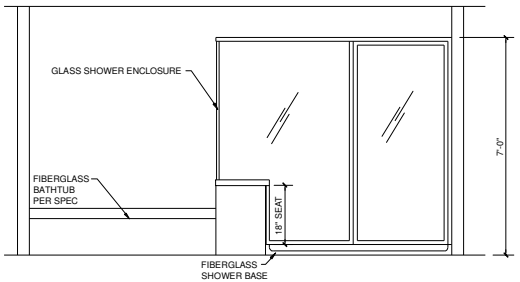
LUXURY OWNER'S SHOWER PLAN



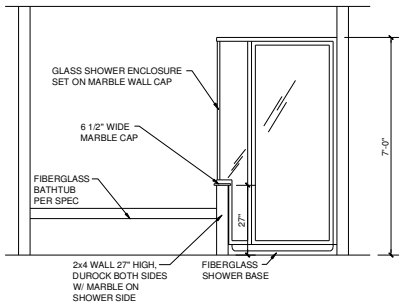
SHOWER WALL PLAN



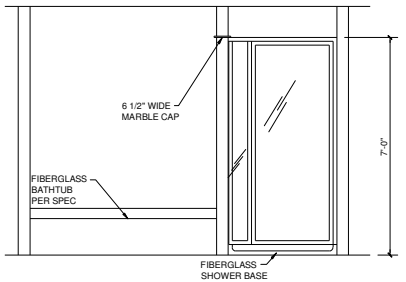
SHOWER WALL PLAN



6 SHOWER WALL ELEVATION (SEAT)
SCALE: 1/4" = 1'-0"



7 SHOWER WALL ELEVATION (LOW WALL)
SCALE: 1/4" = 1'-0"



8 SHOWER WALL ELEVATION (HIGH WALL)
SCALE: 1/4" = 1'-0"

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-3399 FAX: (919) 468-5436

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

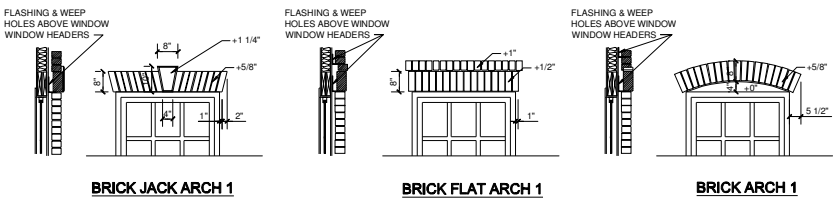
DRAWN BY: AWC

SHOWER AND BATHTUB DETAILS

DA6

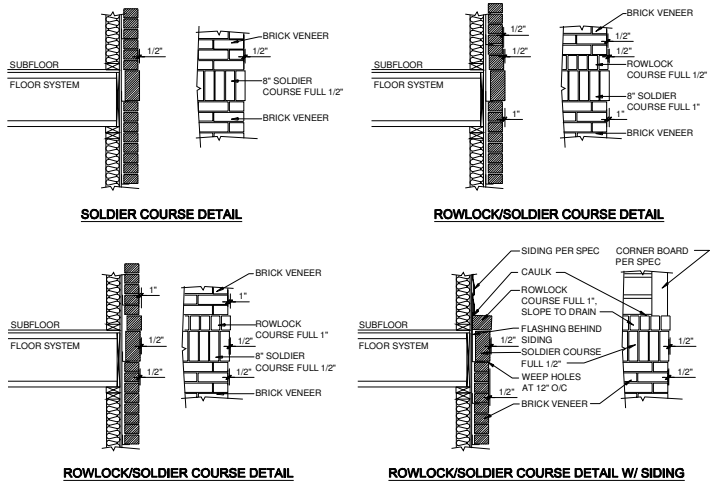
KDC 00189014

3500

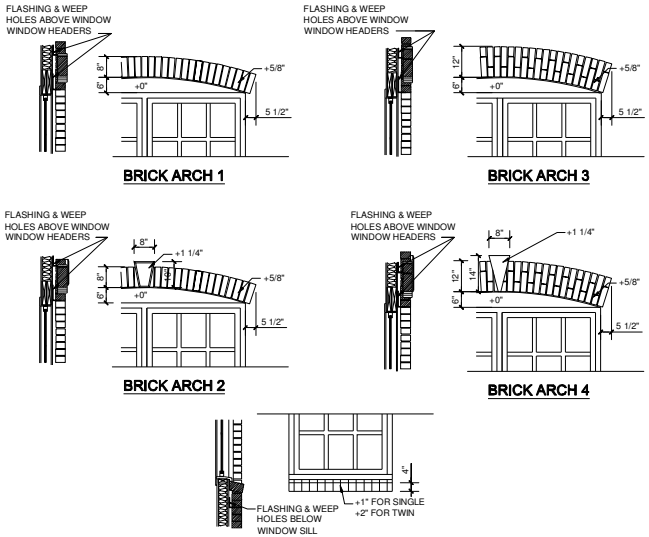


1 SINGLE WINDOW BRICK HEADER
NTS

NOTE: WEEP HOLES @ 12" O.C. ABOVE & BELOW WINDOWS, DOORS, GARAGE, & ROLL UP DOORS (AS APPLICABLE).

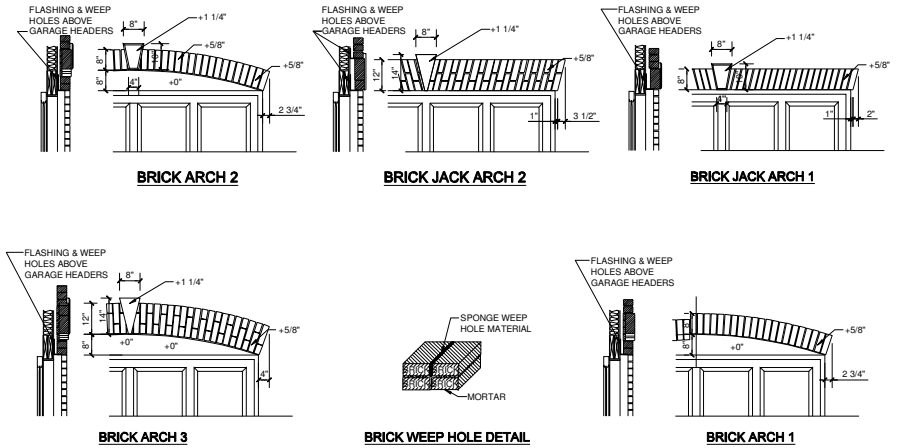


2 BRICK SOLDIER COURSE
NTS



NOTE: WEEP HOLES @ 12" O.C. ABOVE & BELOW WINDOWS, DOORS, GARAGE, & ROLL UP DOORS (AS APPLICABLE).

3 TWIN WINDOW BRICK HEADER DETAILS
NTS



NOTE: WEEP HOLES @ 12" O.C. ABOVE & BELOW WINDOWS, DOORS, GARAGE, & ROLL UP DOORS (AS APPLICABLE).

4 GARAGE BRICK HEADER DETAILS
NTS

JDS CONSULTING & DESIGN
JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075
INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5999 FAX: (919) 469-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: 05/16/2018

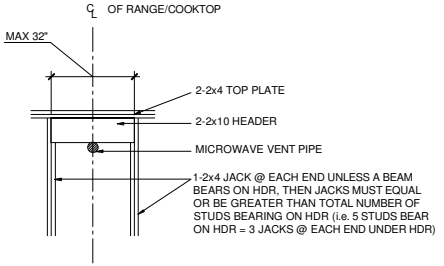
DRAWN BY: AWC

BRICK TRIM DETAILS

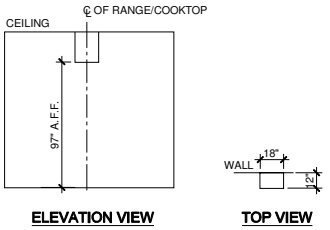
DA7

KDC 00189015

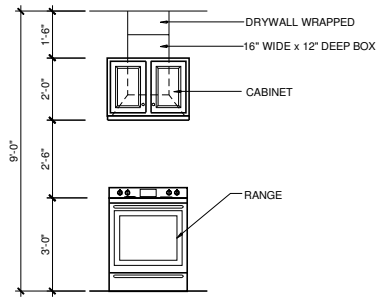
3501



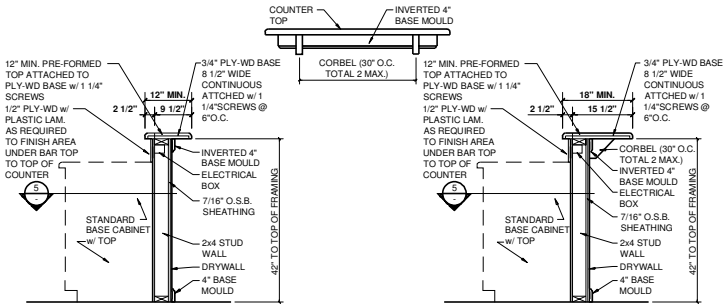
1 MICROWAVE VENT FRAMING DETAIL - "A" EXTERIOR WALL
SCALE: 1/4" = 1'-0"



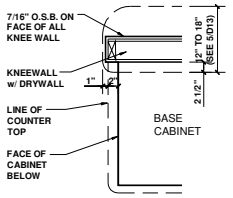
2 MICROWAVE VENT FRAMING DETAIL - "B" INTERIOR WALL
SCALE: 1/8" = 1'-0"



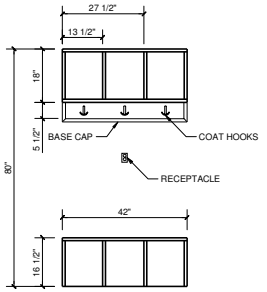
3 RANGE VENT DETAIL
SCALE: 1/4" = 1'-0"



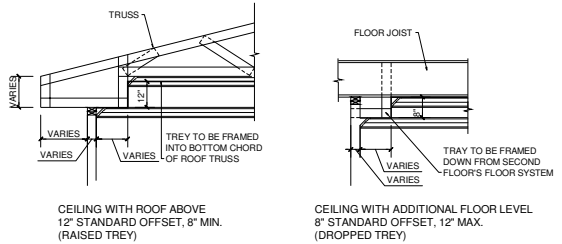
4 KITCHEN KNEE WALL
SCALE: 3/8" = 1'-0"



5 PENINSULA/ISLAND CABINET PLAN
SCALE: 1/2" = 1'-0"



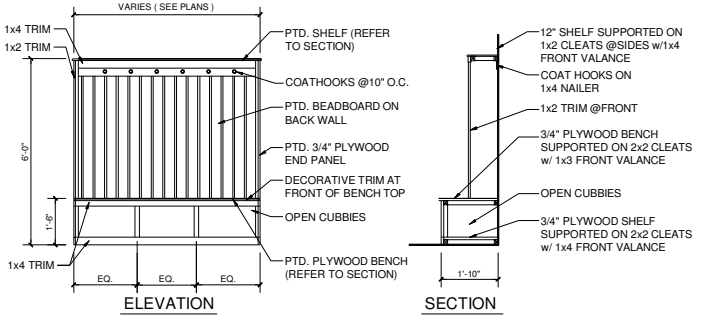
6 CUBBIES AND COAT HOOKS DETAIL
SCALE: NTS



CEILING WITH ROOF ABOVE
12" STANDARD OFFSET, 8" MIN.
(RAISED TREY)

CEILING WITH ADDITIONAL FLOOR LEVEL
8" STANDARD OFFSET, 12" MAX.
(DROPPED TREY)

7 TRAY CEILING
SCALE: 1/4" = 1'-0"



8 DROP ZONE DETAIL & SECTION
SCALE: NTS

JDS CONSULTING & DESIGN

JDS CONSULTING & DESIGN, PLLC
8600 'D' JERSEY CT, RALEIGH, NC 27617
919.480.1075

INFO@JDSDESIGNONLINE.COM
WWW.JDSDESIGNONLINE.COM

JDS CONSULTING & DESIGN IS NOT LIABLE FOR CHANGES MADE TO PLANS DUE TO CONSTRUCTION METHODS OR ANY CHANGES TO PLANS MADE IN THE FIELD BY CONTRACTOR OR BY OTHERS. DRAWINGS ARE PROVIDED TO CLIENT FOR THE LOT NUMBER, PROPERTY, OR AS A MASTER PLAN AS SPECIFIED ON TITLE SHEET. DIMENSIONS SHALL GOVERN OVER SCALE, AND CODE SHALL GOVERN OVER DIMENSIONS ON DRAWINGS.

EMERALD HOMES
2000 Aerial Center Parkway, Suite 110
Morrisville, NC 27560
TEL: (919) 460-5599 FAX: (919) 460-5456

PROJECT:

MODEL:

STANDARD DETAILS

SCALE: 1/8" = 1'-0" FOR 11x17 PAPER, 1/4" = 1'-0" FOR 22x34 PAPER, OR AS NOTED

PROJECT NO.:

DATE: **05/16/2018**

DRAWN BY: **AWC**

KITCHEN AND BEDROOM DETAILS

DA8

KDC 00189016

3502

A Member of the International Code Family®

INTERNATIONAL RESIDENTIAL CODE®

FOR ONE- AND TWO-FAMILY DWELLINGS

2006

PLAINTIFF'S EXHIBIT
19.1
www.snagglers.com

TABLE R603.7
MINIMUM PERCENTAGE OF FULL HEIGHT STRUCTURAL SHEATHING ON EXTERIOR WALLS[a, b, c, d, e]

WALL SUPPORTING	ROOF SLOPE	WIND SPEED (mph) AND EXPOSURE				
		85 A/B	100 A/B	110 A/B or 85 C	100 C	110 C
Roof and ceiling only	3:12	8	9	12	16	20
	6:12	12	15	20	26	35
	9:12	21	25	30	50	58
	12:12	30	35	40	66	75
One story, roof and ceiling	3:12	24	30	35	50	66
	6:12	25	30	40	58	74
	9:12	35	40	55	74	91
	12:12	40	50	65	100	115

For SI: 1 mile per hour = 0.447 m/s.

a. Linear interpolation shall be permitted.

b. Bracing amount shall not be less than 20 percent of the wall length after all applicable adjustments are made.

c. Minimum percentages are based on a building aspect ratio of 1:1. Minimum percentages for the shorter walls of a building shall be multiplied by a factor of 1.5 and 2.0 for building aspect ratios of 1.5:1 and 2:1 respectively.

d. For hip roofed homes with continuous structural sheathing, the amount of bracing shall be permitted to be multiplied by a factor of 0.95 for roof slopes not exceeding 7:12 and a factor of 0.9 for roof slopes greater than 7:12.

e. Sheathing percentages are permitted to be reduced in accordance with Section R603.7.2.

SECTION R604
WOOD STRUCTURAL PANELS

R604.1 Identification and grade. Wood structural panels shall conform to DOC PS 1 or DOC PS 2. All panels shall be identified by a grade mark or certificate of inspection issued by an approved agency.

R604.2 Allowable spans. The maximum allowable spans for wood structural panel wall sheathing shall not exceed the values set forth in Table R602.3(3).

R604.3 Installation. Wood structural panel wall sheathing shall be attached to framing in accordance with Table R602.3(1). Wood structural panels marked Exposure 1 or Exterior are considered water-repellent sheathing under the code.

SECTION R605
PARTICLEBOARD

R605.1 Identification and grade. Particleboard shall conform to ANSI A208.1 and shall be so identified by a grade mark or certificate of inspection issued by an approved agency. Particleboard shall comply with the grades specified in Table R602.3(4).

SECTION R606
GENERAL MASONRY CONSTRUCTION

R606.1 General. Masonry construction shall be designed and constructed in accordance with the provisions of this section or in accordance with the provisions of ACI 530/ASCE 5/TMS 402.

R606.1.1 Professional registration not required. When the empirical design provisions of ACI 530/ASCE 5/TMS 402 Chapter 5 or the provisions of this section are used to design masonry, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the jurisdiction having authority.

R606.2 Thickness of masonry. The nominal thickness of masonry walls shall conform to the requirements of Sections R606.2.1 through R606.2.4.

R606.2.1 Minimum thickness. The minimum thickness of masonry bearing walls more than one story high shall be 8 inches (203 mm). Solid masonry walls of one-story dwellings and garages shall not be less than 6 inches (152 mm) in thickness when not greater than 9 feet (2743 mm) in height, provided that when gable construction is used, an additional 6 feet (1829 mm) is permitted to the peak of the gable. Masonry walls shall be laterally supported in either the horizontal or vertical direction at intervals as required by Section R606.9.

R606.2.2 Rubble stone masonry wall. The minimum thickness of rough, random or coursed rubble stone masonry walls shall be 16 inches (406 mm).

R606.2.3 Change in thickness. Where walls of masonry of hollow units or masonry-bonded hollow walls are decreased in thickness, a course of solid masonry shall be constructed between the wall below and the thinner wall above, or special units or construction shall be used to transmit the loads from face shells or wythes above to those below.

R606.2.4 Parapet walls. Unreinforced solid masonry parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) located in Seismic Design Category D_0, D_1 or D_2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

R606.3 Corbeled masonry. Solid masonry units shall be used for corbeling. The maximum corbeled projection beyond the

face of the wall shall not be more than one-half of the wall thickness or one-half the wythe thickness for hollow walls; the maximum projection of one unit shall not exceed one-half the height of the unit or one-third the thickness at right angles to the wall. When corbeled masonry is used to support floor or roof-framing members, the top course of the corbel shall be a header course or the top course bed joint shall have ties to the vertical wall. The hollow space behind the corbeled masonry shall be filled with mortar or grout.

R606.4 Support conditions. Bearing and support conditions shall be in accordance with Sections R606.4.1 and R606.4.2.

R606.4.1 Bearing on support. Each masonry wythe shall be supported by at least two-thirds of the wythe thickness.

R606.4.2 Support at foundation. Cavity wall or masonry veneer construction may be supported on an 8-inch (203 mm) foundation wall, provided the 8-inch (203 mm) wall is corbeled with solid masonry to the width of the wall system above. The total horizontal projection of the corbel shall not exceed 2 inches (51 mm) with individual corbels projecting not more than one-third the thickness of the unit or one-half the height of the unit.

R606.5 Allowable stresses. Allowable compressive stresses in masonry shall not exceed the values prescribed in Table R606.5. In determining the stresses in masonry, the effects of all loads and conditions of loading and the influence of all forces affecting the design and strength of the several parts shall be taken into account.

R606.5.1 Combined units. In walls or other structural members composed of different kinds or grades of units, materials or mortars, the maximum stress shall not exceed the allowable stress for the weakest of the combination of units, materials and mortars of which the member is composed. The net thickness of any facing unit that is used to resist stress shall not be less than 1.5 inches (38 mm).

R606.6 Piers. The unsupported height of masonry piers shall not exceed ten times their least dimension. When structural clay tile or hollow concrete masonry units are used for isolated piers to support beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar, except that unfilled hollow piers may be used if their unsupported height is not more than four times their least dimension. Where hollow masonry units are solidly filled with concrete or Type M, S or N mortar, the allowable compressive stress shall be permitted to be increased as provided in Table R606.5.

R606.6.1 Pier cap. Hollow piers shall be capped with 4 inches (102 mm) of solid masonry or concrete or shall have cavities of the top course filled with concrete or grout or other approved methods.

R606.7 Chases. Chases and recesses in masonry walls shall not be deeper than one-third the wall thickness, and the maximum length of a horizontal chase or horizontal projection shall not exceed 4 feet (1219 mm), and shall have at least 8 inches (203 mm) of masonry in back of the chases and recesses and between adjacent chases or recesses and the jambs of openings. Chases and recesses in masonry walls shall be designed and constructed so as not to reduce the required strength or required fire resistance of the wall and in no case shall a chase or recess be permitted within the required area of a pier. Masonry directly above chases or recesses wider than 12 inches (305 mm) shall be supported on noncombustible lintels.

TABLE R606.5
ALLOWABLE COMPRESSIVE STRESSES FOR EMPIRICAL DESIGN OF MASONRY

CONSTRUCTION; COMPRESSIVE STRENGTH OF UNIT, GROSS AREA	ALLOWABLE COMPRESSIVE STRESSES[a] GROSS CROSS-SECTIONAL AREA[b]	
	Type M or S mortar	Type N mortar
Solid masonry of brick and other solid units of clay or shale; sand-lime or concrete brick:		
8,000 + psi	350	300
4,500 psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Grouted[c] masonry, of clay or shale; sand-lime or concrete:		
4,500+ psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Solid masonry of solid concrete masonry units:		
3,000+ psi	225	200
2,000 psi	160	140
1,200 psi	115	100
Masonry of hollow load-bearing units:		
2,000+ psi	140	120
1,500 psi	115	100
1,000 psi	75	70
700 psi	60	55
Hollow walls (cavity or masonry bonded[d]) solid units:		
2,500+ psi	160	140
1,500 psi	115	100
Hollow units	75	70
Stone ashlar masonry:		
Granite	720	640
Limestone or marble	450	400
Sandstone or cast stone	360	320
Rubble stone masonry:		
Coarse, rough or random	120	100

For SI: 1 pound per square inch = 6.895 kPa.

a. Linear interpolation shall be used for determining allowable stresses for masonry units having compressive strengths that are intermediate between those given in the table.

b. Gross cross-sectional area shall be calculated on the actual rather than nominal dimensions.

c. See Section R608.

d. Where floor and roof loads are carried upon one wythe, the gross cross-sectional area is that of the wythe under load; if both wythes are loaded, the gross cross-sectional area is that of the wall minus the area of the cavity between the wythes. Walls bonded with metal ties shall be considered as cavity walls unless the collar joints are filled with mortar or grout.

R606.8 Stack bond. In unreinforced masonry where masonry units are laid in stack bond, longitudinal reinforcement consisting of not less than two continuous wires each with a minimum

aggregate cross-sectional area of 0.017 square inch (11 mm²) shall be provided in horizontal bed joints spaced not more than 16 inches (406 mm) on center vertically.

R606.9 Lateral support. Masonry walls shall be laterally supported in either the horizontal or the vertical direction. The maximum spacing between lateral supports shall not exceed the distances in Table R606.9. Lateral support shall be provided by cross walls, pilasters, buttresses or structural frame members when the limiting distance is taken horizontally, or by floors or roofs when the limiting distance is taken vertically.

TABLE R606.9
SPACING OF LATERAL SUPPORT FOR MASONRY WALLS

CONSTRUCTION	MAXIMUM WALL LENGTH TO THICKNESS OR WALL HEIGHT TO THICKNESS[a,b]
Bearing walls:	
Solid or solid grouted	20
All other	18
Nonbearing walls:	
Exterior	18
Interior	36

For SI: 1 foot = 304.8 mm.

a. Except for cavity walls and cantilevered walls, the thickness of a wall shall be its nominal thickness measured perpendicular to the face of the wall. For cavity walls, the thickness shall be determined as the sum of the nominal thicknesses of the individual wythes. For cantilever walls, except for parapets, the ratio of height to nominal thickness shall not exceed 6 for solid masonry, or 4 for hollow masonry. For parapets, see Section R606.2.4.

b. An additional unsupported height of 6 feet is permitted for gable end walls.

R606.9.1 Horizontal lateral support. Lateral support in the horizontal direction provided by intersecting masonry walls shall be provided by one of the methods in Section R606.9.1.1 or Section R606.9.1.2.

R606.9.1.1 Bonding pattern. Fifty percent of the units at the intersection shall be laid in an overlapping masonry bonding pattern, with alternate units having a bearing of not less than 3 inches (76 mm) on the unit below.

R606.9.1.2 Metal reinforcement. Interior nonload- bearing walls shall be anchored at their intersections, at vertical intervals of not more than 16 inches (406 mm) with joint reinforcement of at least 9 gage [0.148 in. (4mm)], or $^1/_4$ inch (6 mm) galvanized mesh hardware cloth. Intersecting masonry walls, other than interior nonloadbearing walls, shall be anchored at vertical intervals of not more than 8 inches (203 mm) with joint reinforcement of at least 9 gage and shall extend at least 30 inches (762 mm) in each direction at the intersection. Other metal ties, joint reinforcement or anchors, if used, shall be spaced to provide equivalent area of anchorage to that required by this section.

R606.9.2 Vertical lateral support. Vertical lateral support of masonry walls in Seismic Design Category A, B or C shall be provided in accordance with one of the methods in Section R606.9.2.1 or Section R606.9.2.2.

R606.9.2.1 Roof structures. Masonry walls shall be anchored to roof structures with metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch (13 mm) bolts spaced not more than 6 feet (1829 mm) on center, or other approved anchors. Anchors shall be embedded at least 16 inches (406 mm) into the masonry, or be hooked or welded to bond beam reinforcement placed not less than 6 inches (152 mm) from the top of the wall.

R606.9.2.2 Floor diaphragms. Masonry walls shall be anchored to floor diaphragm framing by metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch-diameter (13 mm) bolts spaced at intervals not to exceed 6 feet (1829 mm) and installed as shown in Figure R606.11(1), or by other approved methods.

R606.10 Lintels. Masonry over openings shall be supported by steel lintels, reinforced concrete or masonry lintels or masonry arches, designed to support load imposed.

R606.11 Anchorage. Masonry walls shall be anchored to floor and roof systems in accordance with the details shown in Figure R606.11(1), R606.11(2) or R606.11(3). Footings may be considered as points of lateral support.

R606.12 Seismic requirements. The seismic requirements of this section shall apply to the design of masonry and the construction of masonry building elements located in Seismic Design Category D_0, D_1 or D_2. Townhouses in Seismic Design Category C shall comply with the requirements of Section R606.12.2. These requirements shall not apply to glass unit masonry conforming to Section R610 or masonry veneer conforming to Section R703.7.

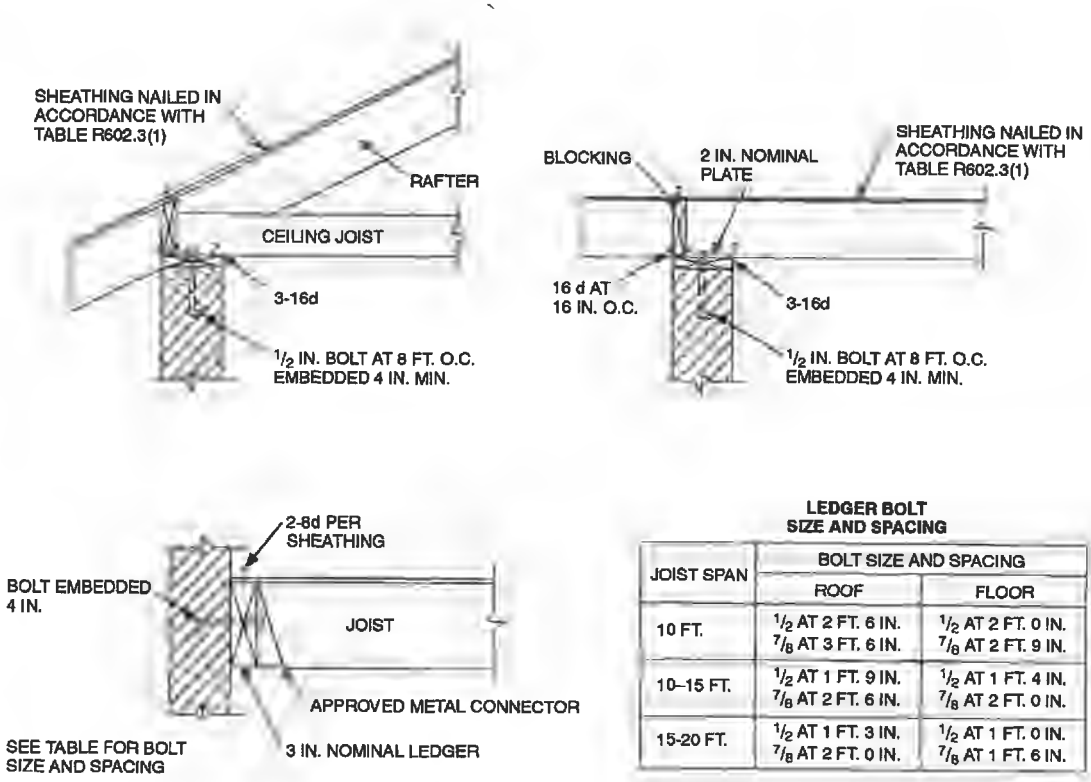
R606.12.1 General. Masonry structures and masonry elements shall comply with the requirements of Sections R606.12.2 through R606.12.4 based on the seismic design category established in Table R301.2(1). Masonry structures and masonry elements shall comply with the requirements of Section R606.12 and Figures R606.11(1), R606.11(2) and R606.11(3) or shall be designed in accordance with ACI 530/ASCE 5/TMS 402.

R606.12.1.1 Floor and roof diaphragm construction. Floor and roof diaphragms shall be constructed of wood structural panels attached to wood framing in accordance with Table R602.3(1) or to cold-formed steel floor framing in accordance with Table R505.3.1(2) or to cold-formed steel roof framing in accordance with Table R804.3. Additionally, sheathing panel edges perpendicular to framing members shall be backed by blocking, and sheathing shall be connected to the blocking with fasteners at the edge spacing. For Seismic Design Categories C, D_0, D_1 and D_2, where the width-to-thickness dimension of the diaphragm exceeds 2-to-1, edge spacing of fasteners shall be 4 inches (102 mm) on center.

R606.12.2 Seismic Design Category C. Townhouses located in Seismic Design Category C shall comply with the requirements of this section.

R606.12.2.1 Design of elements not part of the lateral force-resisting system.

R606.12.2.1.1 Load-bearing frames or columns. Elements not part of the lateral-force-resisting system shall be analyzed to determine their effect on the response of the system. The frames or columns shall be adequate for vertical load carrying capacity and induced moment caused by the design story drift.

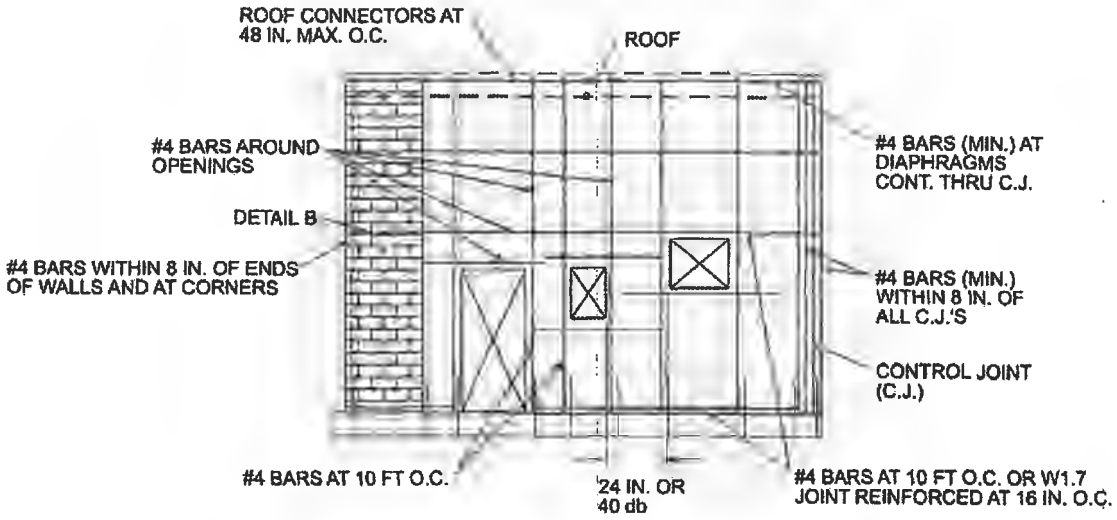


LEDGER BOLT SIZE AND SPACING

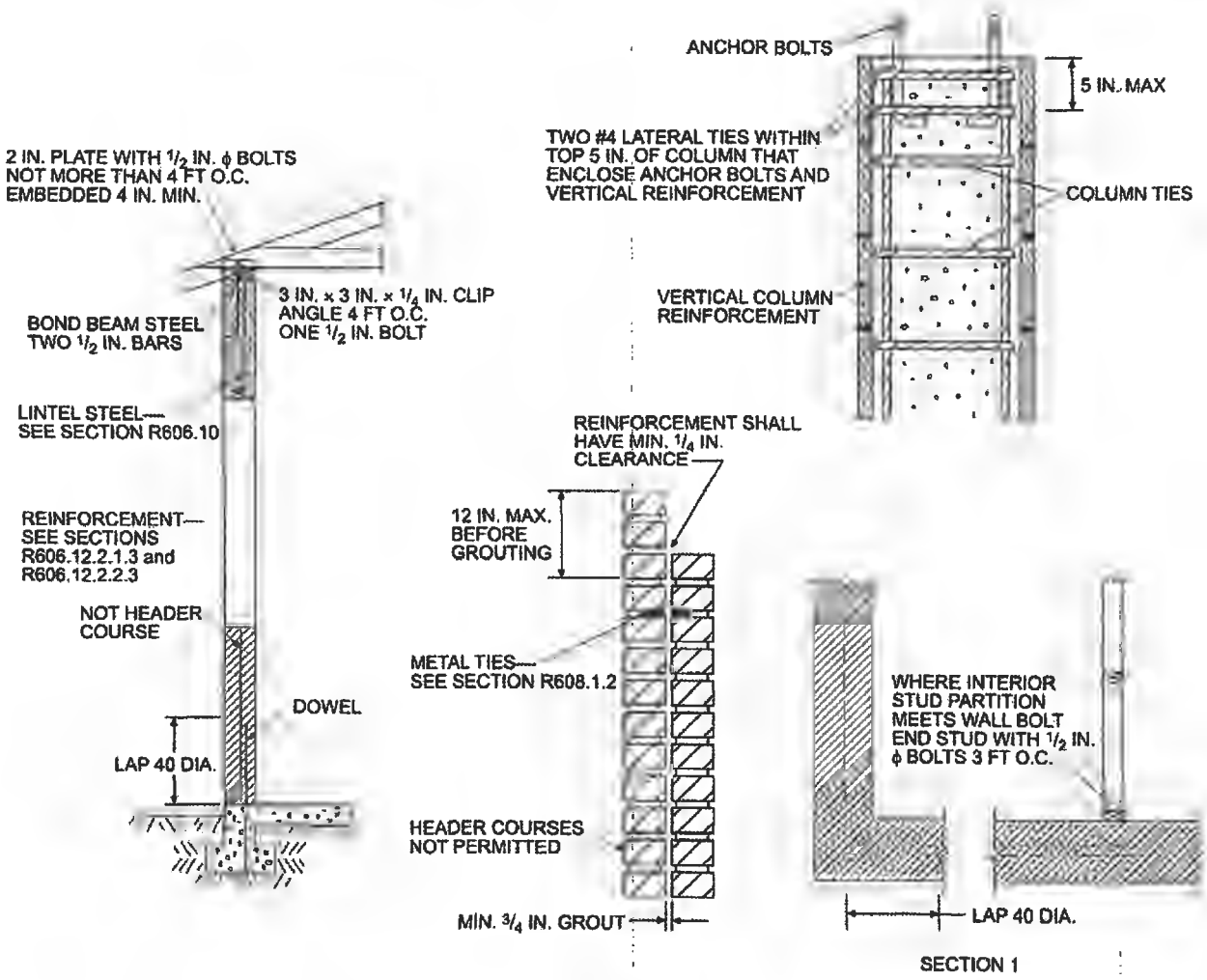
JOIST SPAN	BOLT SIZE AND SPACING	
	ROOF	FLOOR
10 FT.	1/2 AT 2 FT. 6 IN. 7/8 AT 3 FT. 6 IN.	1/2 AT 2 FT. 0 IN. 7/8 AT 2 FT. 9 IN.
10–15 FT.	1/2 AT 1 FT. 9 IN. 7/8 AT 2 FT. 6 IN.	1/2 AT 1 FT. 4 IN. 7/8 AT 2 FT. 0 IN.
15-20 FT.	1/2 AT 1 FT. 3 IN. 7/8 AT 2 FT. 0 IN.	1/2 AT 1 FT. 0 IN. 7/8 AT 1 FT. 6 IN.

NOTE: Where bolts are located in hollow masonry, the cells in the courses receiving the bolt shall be grouted solid.
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.

FIGURE R606.11(1)
ANCHORAGE REQUIREMENTS FOR MASONRY WALLS LOCATED IN SEISMIC DESIGN CATEGORY A, B OR C AND WHERE WIND LOADS ARE LESS THAN 30 PSF

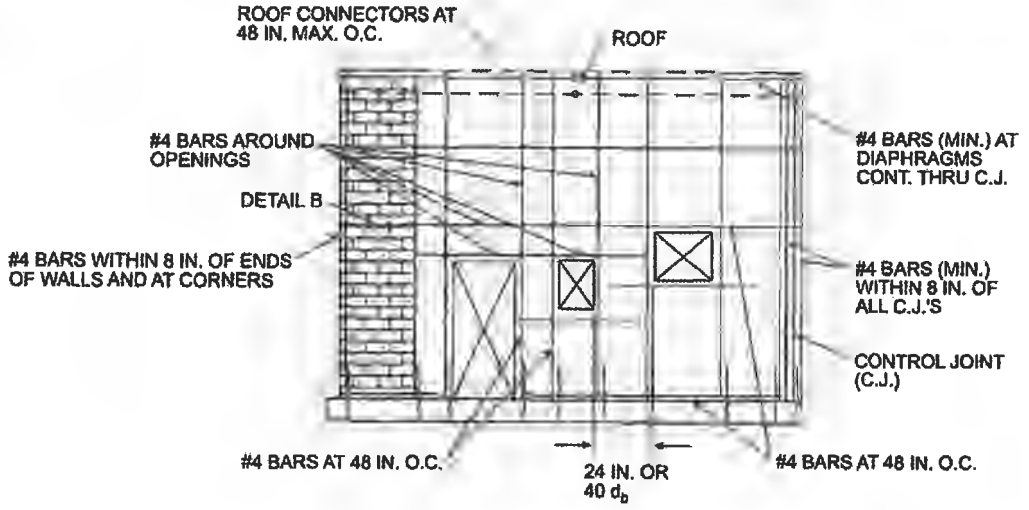


MINIMUM REINFORCEMENT FOR MASONRY WALLS

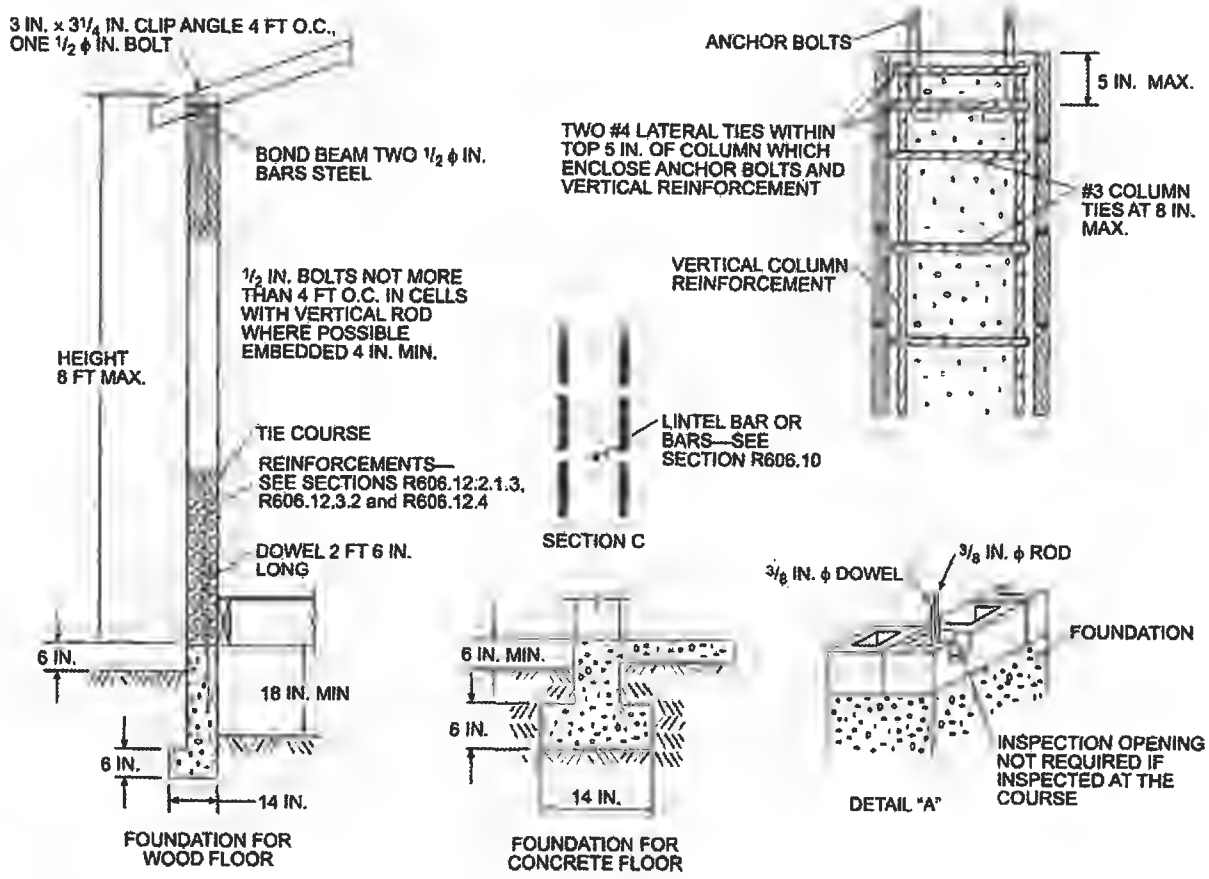


For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R606.11(2)
REQUIREMENTS FOR REINFORCED GROUTED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY C



MINIMUM REINFORCEMENT FOR MASONRY WALLS



Note: A full bed joint must be provided. All cells containing vertical bars are to be filled to the top of wall and provide inspection opening as shown on detail "A." Horizontal bars are to be laid as shown on detail "B." Lintel bars are to be laid as shown on Section C.

NOTE: A full bed joint must be provided. All cells containing vertical bars are to be filled to the top of wall and provide inspection opening as shown on detail "A." Horizontal bars are to be laid as shown on detail "B." Lintel bars are to be laid as shown on Section C.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R606.11(3)
REQUIREMENTS FOR REINFORCED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY D_0, D_1 OR D_2

R606.12.2.1.2 Masonry partition walls. Masonry partition walls, masonry screen walls and other masonry elements that are not designed to resist vertical or lateral loads, other than those induced by their own weight, shall be isolated from the structure so that vertical and lateral forces are not imparted to these elements. Isolation joints and connectors between these elements and the structure shall be designed to accommodate the design story drift.

R606.12.2.1.3 Reinforcement requirements for masonry elements. Masonry elements listed in Section R606.12.2.1.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of at least two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and at least one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or at least one No. 4 bar spaced not more than 48 inches (1219 mm). Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate. Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.
2. Vertical reinforcement. Vertical reinforcement shall consist of at least one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be located within 16 inches (406 mm) of the ends of masonry walls.

R606.12.2.2 Design of elements part of the lateral-force-resisting system.

R606.12.2.2.1 Connections to masonry shear walls. Connectors shall be provided to transfer forces between masonry walls and horizontal elements in accordance with the requirements of Section 2.1.8 of ACI 530/ASCE 5/TMS 402. Connectors shall be designed to transfer horizontal design forces acting either perpendicular or parallel to the wall, but not less than 200 pounds per linear foot (2919 N/m) of wall. The maximum spacing between connectors shall be 4 feet (1219 mm). Such anchorage mechanisms shall not induce tension stresses perpendicular to grain in ledgers or nailers.

R606.12.2.2.2 Connections to masonry columns. Connectors shall be provided to transfer forces between masonry columns and horizontal elements in accordance with the requirements of Section 2.1.8 of ACI 530/ASCE 5/TMS 402. Where anchor bolts are used to connect horizontal elements to the tops of columns, the bolts shall be placed within lateral ties. Lateral ties shall enclose both the vertical bars in the column and the anchor bolts. There shall be a minimum of two No. 4 lateral ties provided in the top 5 inches (127 mm) of the column.

R606.12.2.2.3 Minimum reinforcement requirements for masonry shear walls. Vertical reinforcement of at least one No. 4 bar shall be provided at corners, within 16 inches (406 mm) of each side of openings, within 8 inches (203 mm) of each side of movement joints, within 8 inches (203 mm) of the ends of walls, and at a maximum spacing of 10 feet (3048 mm).

Horizontal joint reinforcement shall consist of at least two wires of W1.7 spaced not more than 16 inches (406 mm); or bond beam reinforcement of at least one No. 4 bar spaced not more than 10 feet (3048 mm) shall be provided. Horizontal reinforcement shall also be provided at the bottom and top of wall openings and shall extend not less than 24 inches (610 mm) nor less than 40 bar diameters past the opening; continuously at structurally connected roof and floor levels; and within 16 inches (406 mm) of the top of walls.

R606.12.3 Seismic Design Category D_0 or D_1. Structures in Seismic Design Category D_0 or D_1 shall comply with the requirements of Seismic Design Category C and the additional requirements of this section.

R606.12.3.1 Design requirements. Masonry elements other than those covered by Section R606.12.2.1.2 shall be designed in accordance with the requirements of Chapter 1 and Sections 2.1 and 2.3 of ACI 530/ASCE 5/TMS 402 and shall meet the minimum reinforcement requirements contained in Sections R606.12.3.2 and R606.12.3.2.1.

Exception: Masonry walls limited to one story in height and 9 feet (2743 mm) between lateral supports need not be designed provided they comply with the minimum reinforcement requirements of Sections R606.12.3.2 and R606.12.3.2.1.

R606.12.3.2 Minimum reinforcement requirements for masonry walls. Masonry walls other than those covered by Section R606.12.2.1.3 shall be reinforced in both the vertical and horizontal direction. The sum of the cross-sectional area of horizontal and vertical reinforcement shall be at least 0.002 times the gross cross-sectional area of the wall, and the minimum cross-sectional area in each direction shall be not less than 0.0007 times the gross cross-sectional area of the wall. Reinforcement shall be uniformly distributed. Table R606.12.3.2 shows the minimum reinforcing bar sizes required for varying thicknesses of masonry walls. The maximum spacing of reinforcement shall be 48 inches (1219 mm) provided that the walls are solid grouted and constructed of hollow open-end units, hollow units laid with full head joints or two wythes of solid units. The maximum spacing of reinforcement shall be 24 inches (610 mm) for all other masonry.

R606.12.3.2.1 Shear wall reinforcement requirements. The maximum spacing of vertical and horizontal reinforcement shall be the smaller of one-third the length of the shear wall, one-third the height of the

TABLE R606.12.3.2
MINIMUM DISTRIBUTED WALL REINFORCEMENT FOR BUILDING ASSIGNED TO SEISMIC DESIGN CATEGORY D_0 or D_1

NOMINAL WALL THICKNESS (inches)	MINIMUM SUM OF THE VERTICAL AND HORIZONTAL REINFORCEMENT AREAS[a] (square inches per foot)	MINIMUM REINFORCEMENT AS DISTRIBUTED IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS[b] (square inches per foot)	MINIMUM BAR SIZE FOR REINFORCEMENT SPACED AT 48 INCHES
6	0.135	0.047	#4
8	0.183	0.064	#5
10	0.231	0.081	#6
12	0.279	0.098	#6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square inch per foot = 2064 mm^2/m.

a. Based on the minimum reinforcing ratio of 0.002 times the gross cross-sectional area of the wall.

b. Based on the minimum reinforcing ratio each direction of 0.0007 times the gross cross-sectional area of the wall.

shear wall, or 48 inches (1219 mm). The minimum cross-sectional area of vertical reinforcement shall be one-third of the required shear reinforcement. Shear reinforcement shall be anchored around vertical reinforcing bars with a standard hook.

R606.12.3.3 Minimum reinforcement for masonry columns. Lateral ties in masonry columns shall be spaced not more than 8 inches (203 mm) on center and shall be at least $^3/_8$ inch (9.5 mm) diameter. Lateral ties shall be embedded in grout.

R606.12.3.4 Material restrictions. Type N mortar or masonry cement shall not be used as part of the lateral-force-resisting system.

R606.12.3.5 Lateral tie anchorage. Standard hooks for lateral tie anchorage shall be either a 135-degree (2.4 rad) standard hook or a 180-degree (3.2 rad) standard hook.

R606.12.4 Seismic Design Category D_2. All structures in Seismic Design Category D_2 shall comply with the requirements of Seismic Design Category D_1 and to the additional requirements of this section.

R606.12.4.1 Design of elements not part of the lateral-force-resisting system. Stack bond masonry that is not part of the lateral-force-resisting system shall have a horizontal cross-sectional area of reinforcement of at least 0.0015 times the gross cross-sectional area of masonry. Table R606.12.4.1 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 24 inches (610 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.1
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 24 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

R606.12.4.2 Design of elements part of the lateral-force-resisting system. Stack bond masonry that is part of the lateral-force-resisting system shall have a horizontal cross-sectional area of reinforcement of at least 0.0025 times the gross cross-sectional area of masonry. Table R606.12.4.2 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 16 inches (406 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.2
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 16 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

R606.13 Protection for reinforcement. Bars shall be completely embedded in mortar or grout. Joint reinforcement embedded in horizontal mortar joints shall not have less than $^5/_8$-inch (15.9 mm) mortar coverage from the exposed face. All other reinforcement shall have a minimum coverage of one bar diameter over all bars, but not less than $^3/_4$ inch (19 mm), except where exposed to weather or soil, in which case the minimum coverage shall be 2 inches (51 mm).

R606.14 Beam supports. Beams, girders or other concentrated loads supported by a wall or column shall have a bearing of at least 3 inches (76 mm) in length measured parallel to the beam upon solid masonry not less than 4 inches (102 mm) in thickness, or upon a metal bearing plate of adequate design and dimensions to distribute the load safely, or upon a continuous reinforced masonry member projecting not less than 4 inches (102 mm) from the face of the wall.

R606.14.1 Joist bearing. Joists shall have a bearing of not less than $1^1/_2$ inches (38 mm), except as provided in Section R606.14, and shall be supported in accordance with Figure R606.11(1).

R606.15 Metal accessories. Joint reinforcement, anchors, ties and wire fabric shall conform to the following: ASTM A 82 for wire anchors and ties; ASTM A 36 for plate, headed and

bent-bar anchors; ASTM A 510 for corrugated sheet metal anchors and ties; ASTM A 951 for joint reinforcement; ASTM B 227 for copper-clad steel wire ties; or ASTM A 167 for stainless steel hardware.

R606.15.1 Corrosion protection. Minimum corrosion protection of joint reinforcement, anchor ties and wire fabric for use in masonry wall construction shall conform to Table R606.15.1.

TABLE R606.15.1
MINIMUM CORROSION PROTECTION

MASONRY METAL ACCESSORY	STANDARD
Joint reinforcement, interior walls	ASTM A 641, Class 1
Wire ties or anchors in exterior walls completely embedded in mortar or grout	ASTM A 641, Class 3
Wire ties or anchors in exterior walls not completely embedded in mortar or grout	ASTM A 153, Class B-2
Joint reinforcement in exterior walls or interior walls exposed to moist environment	ASTM A 153, Class B-2
Sheet metal ties or anchors exposed to weather	ASTM A 153, Class B-2
Sheet metal ties or anchors completely embedded in mortar or grout	ASTM A 653, Coating Designation G60
Stainless steel hardware for any exposure	ASTM A 167, Type 304

SECTION R607
UNIT MASONRY

R607.1 Mortar. Mortar for use in masonry construction shall comply with ASTM C 270. The type of mortar shall be in accordance with Sections R607.1.1, R607.1.2 and R607.1.3 and shall meet the proportion specifications of Table R607.1 or the property specifications of ASTM C 270.

R607.1.1 Foundation walls. Masonry foundation walls constructed as set forth in Tables R404.1.1(1) through R404.1.1(4) and mortar shall be Type M or S.

R607.1.2 Masonry in Seismic Design Categories A, B and C. Mortar for masonry serving as the lateral-force-resisting system in Seismic Design Categories A, B and C shall be Type M, S or N mortar.

R607.1.3 Masonry in Seismic Design Categories D_0, D_1 and D_2. Mortar for masonry serving as the lateral-force- resisting system in Seismic Design Categories D_0, D_1 and D_2 shall be Type M or S portland cement-lime or mortar cement mortar.

R607.2 Placing mortar and masonry units.

R607.2.1 Bed and head joints. Unless otherwise required or indicated on the project drawings, head and bed joints shall be $^3/_8$ inch (10 mm) thick, except that the thickness of the bed joint of the starting course placed over foundations shall not be less than $^1/_4$ inch (7 mm) and not more than $^3/_4$ inch (19 mm).

R607.2.1.1 Mortar joint thickness tolerance. Mortar joint thickness shall be within the following tolerances from the specified dimensions:

1. Bed joint: + $^1/_8$ inch (3 mm).
2. Head joint: $^1/_4$ inch (7 mm), + $^3/_8$ inch (10 mm).
3. Collar joints: $^1/_4$ inch (7 mm), + $^3/_8$ inch (10 mm).

Exception: Nonload-bearing masonry elements and masonry veneers designed and constructed in accordance with Section R703.7 are not required to meet these tolerances.

R607.2.2 Masonry unit placement. The mortar shall be sufficiently plastic and units shall be placed with sufficient pressure to extrude mortar from the joint and produce a tight joint. Deep furrowing of bed joints that produces voids shall not be permitted. Any units disturbed to the extent that initial bond is broken after initial placement shall be removed and relaid in fresh mortar. Surfaces to be in contact with mortar shall be clean and free of deleterious materials.

R607.2.2.1 Solid masonry. Solid masonry units shall be laid with full head and bed joints and all interior vertical joints that are designed to receive mortar shall be filled.

R607.2.2.2 Hollow masonry. For hollow masonry units, head and bed joints shall be filled solidly with mortar for a distance in from the face of the unit not less than the thickness of the face shell.

R607.3 Installation of wall ties. The installation of wall ties shall be as follows:

1. The ends of wall ties shall be embedded in mortar joints. Wall tie ends shall engage outer face shells of hollow units by at least $^1/_2$ inch (13 mm). Wire wall ties shall be embedded at least $1^1/_2$ inches (38 mm) into the mortar bed of solid masonry units or solid grouted hollow units.
2. Wall ties shall not be bent after being embedded in grout or mortar.

SECTION R608
MULTIPLE WYTHE MASONRY

R608.1 General. The facing and backing of multiple wythe masonry walls shall be bonded in accordance with Section R608.1.1, R608.1.2 or R608.1.3. In cavity walls, neither the facing nor the backing shall be less than 3 inches (76 mm) nominal in thickness and the cavity shall not be more than 4 inches (102 mm) nominal in width. The backing shall be at least as thick as the facing.

Exception: Cavities shall be permitted to exceed the 4-inch (102 mm) nominal dimension provided tie size and tie spacing have been established by calculation.

R608.1.1 Bonding with masonry headers. Bonding with solid or hollow masonry headers shall comply with Sections R608.1.1.1 and R608.1.1.2.

R608.1.1.1 Solid units. Where the facing and backing (adjacent wythes) of solid masonry construction are bonded by means of masonry headers, no less than 4 percent of the wall surface of each face shall be composed of

CHAPTER 7
WALL COVERING

SECTION R701
GENERAL

R701.1 Application. The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for all buildings.

R701.2 Installation. Products sensitive to adverse weather shall not be installed until adequate weather protection for the installation is provided. Exterior sheathing shall be dry before applying exterior cover.

SECTION R702
INTERIOR COVERING

R702.1 General. Interior coverings or wall finishes shall be installed in accordance with this chapter and Table R702.1(1), Table R702.1(2), Table R702.1(3) and Table R702.3.5. Interior masonry veneer shall comply with the requirements of Section R703.7.1 for support and Section R703.7.4 for anchorage, except an air space is not required. Interior finishes and materials shall conform to the flame spread and smoke-density requirements of Section R315.

TABLE R702.1(1)
THICKNESS OF PLASTER

PLASTER BASE	FINISHED THICKNESS OF PLASTER FROM FACE OF LATH, MASONRY, CONCRETE (inches)	
	Gypsum plaster	Portland cement mortar
Expanded metal lath	$^5/_8$, minimum[a]	$^5/_8$, minimum[a]
Wire lath	$^5/_8$, minimum[a]	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]
Gypsum lath[g]	$^1/_2$, minimum	$^3/_4$, minimum (interior)[b]
Masonry walls[c]	$^1/_2$, minimum	$^1/_2$, minimum
Monolithic concrete walls[c,d]	$^5/_8$, maximum	$^7/_8$, maximum
Monolithic concrete ceilings[c,d]	$^3/_8$, maximum[e]	$^1/_2$, maximum
Gypsum veneer base[f,g]	$^1/_{16}$, minimum	$^3/_4$, minimum (interior)[b]
Gypsum sheathing[g]	—	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]

For SI: 1 inch = 25.4 mm.

a. When measured from back plane of expanded metal lath, exclusive of ribs, or self-furring lath, plaster thickness shall be $^3/_4$ inch minimum.
b. When measured from face of support or backing.
c. Because masonry and concrete surfaces may vary in plane, thickness of plaster need not be uniform.
d. When applied over a liquid bonding agent, finish coat may be applied directly to concrete surface.
e. Approved acoustical plaster may be applied directly to concrete or over base coat plaster, beyond the maximum plaster thickness shown.
f. Attachment shall be in accordance with Table R702.3.5.
g. Where gypsum board is used as a base for portland cement plaster, weather-resistant sheathing paper complying with Section R703.2 shall be provided.

TABLE R702.1(2)
GYPSUM PLASTER PROPORTIONS[a]

NUMBER	COAT	PLASTER BASE OR LATH	MAXIMUM VOLUME AGGREGATE PER 100 POUNDS NEAT PLASTER[b] (cubic feet)	
			Damp loose sand[a]	Perlite or vermiculite[c]
Two-coat work	Base coat	Gypsum lath	2.5	2
	Base coat	Masonry	3	3
Three-coat work	First coat	Lath	2[d]	2
	Second coat	Lath	3[d]	2[e]
	First and second coats	Masonry	3	3

For SI: 1 inch = 25.4 mm, 1 cubic foot = 0.0283 m^3, 1 pound = 0.454 kg.

a. Wood-fibered gypsum plaster may be mixed in the proportions of 100 pounds of gypsum to not more than 1 cubic foot of sand where applied on masonry or concrete.
b. When determining the amount of aggregate in set plaster, a tolerance of 10 percent shall be allowed.
c. Combinations of sand and lightweight aggregate may be used, provided the volume and weight relationship of the combined aggregate to gypsum plaster is maintained.
d. If used for both first and second coats, the volume of aggregate may be 2.5 cubic feet.
e. Where plaster is 1 inch or more in total thickness, the proportions for the second coat may be increased to 3 cubic feet.

TABLE R702.1(3)
PORTLAND CEMENT PLASTER

MAXIMUM VOLUME AGGREGATE PER VOLUME CEMENTITIOUS MATERIAL[a]						
		Portland cement-lime plaster[c]				
Coat	Portland cement plaster[b] maximum volume aggregate per volume cement	Maximum volume lime per volume cement	Maximum volume sand per volume cement and lime	Approximate minimum thickness[d] curing (inches)	MINIMUM PERIOD MOIST COATS	MINIMUM INTERVAL BETWEEN
First	4	3/4	4	3/8[e]	48 Hours[f]	48 Hours[g]
Second	5	3/4	5	First and second coats	48 Hours	7 Days[h]
Finish	3[i]	—	3[i]	1/8	—	Note h

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

a. When determining the amount of aggregate in set plaster, a tolerance of 10 percent may be allowed.
b. From 10 to 20 pounds of dry hydrated lime (or an equivalent amount of lime putty) may be added as a plasticizing agent to each sack of Type I and Type II standard portland cement in base coat plaster.
c. No plasticizing agents shall be added.
d. See Table R702.1(1).
e. Measured from face of support or backing to crest of scored plaster.
f. Twenty-four-hour minimum period for moist curing of interior portland cement plaster.
g. Twenty-four hour minimum interval between coats of interior portland cement plaster.
h. Finish coat plaster may be applied to interior portland cement base coats after a 48-hour period.
i. For finish coat, plaster up to an equal part of dry hydrated lime by weight (or an equivalent volume of lime putty) may be added to Type I, Type II and Type III standard portland cement.

R702.2 Interior plaster. Gypsum plaster or portland cement plastering materials shall conform to ASTM C 5, C 28, C 35, C 37, C 59, C 61, C 587, C 588, C 631, C 847, C 897, C 933, C 1032 and C 1047, and shall be installed or applied in conformance with ASTM C 843, C 844 and C 1063. Plaster shall not be less than three coats when applied over metal lath and not less than two coats when applied over other bases permitted by this section, except that veneer plaster may be applied in one coat not to exceed 3/16 inch (5 mm) thickness, provided the total thickness is as set forth in Table R702.1(1).

R702.2.1 Support. Support spacing for gypsum or metal lath on walls or ceilings shall not exceed 16 inches (406 mm) for 3/8 inch thick (10 mm) or 24 inches (610 mm) for 1/2-inch-thick (13 mm) plain gypsum lath. Gypsum lath shall be installed at right angles to support framing with end joints in adjacent courses staggered by at least one framing space.

R702.3 Gypsum board.

R702.3.1 Materials. All gypsum board materials and accessories shall conform to ASTM C 36, C 79, C 475, C 514, C 630, C 931, C 960, C 1002, C 1047, C 1177, C 1178, C 1278, C 1395 or C 1396 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board shall conform to ASTM C 557.

R702.3.2 Wood framing. Wood framing supporting gypsum board shall not be less than 2 inches (51 mm) nominal thickness in the least dimension except that wood furring strips not less than 1-inch-by-2 inch (25 mm by 51 mm) nominal dimension may be used over solid backing or framing spaced not more than 24 inches (610 mm) on center.

R702.3.3 Steel framing. Steel framing supporting gypsum board shall not be less than 1.25 inches (32 mm) wide in the least dimension. Light-gage nonload-bearing steel framing shall comply with ASTM C 645. Load-bearing steel framing and steel framing from 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall comply with ASTMC 955.

R702.3.4 Insulating concrete form walls. Foam plastics for insulating concrete form walls constructed in accordance with Sections R404.4 and R611 on the interior of habitable spaces shall be covered in accordance with Section R314.4. Use of adhesives in conjunction with mechanical fasteners is permitted. Adhesives used for interior and exterior finishes shall be compatible with the insulating form materials.

R702.3.5 Application. Maximum spacing of supports and the size and spacing of fasteners used to attach gypsum board shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsum board shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.

R702.3.6 Fastening. Screws for attaching gypsum board to wood framing shall be Type W or Type S in accordance with ASTM C 1002 and shall penetrate the wood not less than 5/8 inch (16 mm). Screws for attaching gypsum board to light-gage steel framing shall be Type S in accordance with ASTM C 1002 and shall penetrate the steel not less than 3/8 inch (10 mm). Screws for attaching gypsum board to steel framing 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall comply with ASTM C 954.

TABLE R702.3.5
MINIMUM THICKNESS AND APPLICATION OF GYPSUM BOARD

THICKNESS OF GYPSUM BOARD (inches)	APPLICATION	ORIENTATION OF GYPSUM BOARD TO FRAMING	MAXIMUM SPACING OF FRAMING MEMBERS (inches o.c.)	MAXIMUM SPACING OF FASTENERS (inches)		SIZE OF NAILS FOR APPLICATION TO WOOD FRAMING[c]
				Nails[a]	Screws[b]	
Application without adhesive						
$^3/_8$	Ceiling[d]	Perpendicular	16	7	12	13 gage, $1^1/_4$" long, $^{19}/_{64}$" head; 0.098" diameter, $1^1/_4$" long, annular-ringed; or 4d cooler nail, 0.080" diameter, $1^3/$" lon, $^7/$" head.
	Wall	Either direction	16	8	16	
$^1/_2$	Ceiling	Either direction	16	7	12	13 gage, $1^3/_8$" long, $^{19}/_{64}$" head; 0.098" diameter, $1^1/_4$" long, annular-ringed; 5d cooler nail, 0.086" diameter, $1^5/_8$" long, $^{15}/_{64}$" head; or gypsum board nail, 0.086" diameter, $1^5/_8$" long, $^9/_{32}$" head.
	Ceiling[d]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
$^5/_8$	Ceiling	Either direction	16	7	12	13 gage, $1^5/_8$" long, $^{19}/_{64}$" head; 0.098" diameter, $1^3/_8$" long, annular-ringed; 6d cooler nail, 0.092" diameter, $1^7/_8$" long, $^1/_4$" head; or gypsum board nail, 0.0915" diameter, $1^7/_8$" long, $^{19}/_{64}$" head.
	Ceiling[e]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
Application with adhesive						
$^3/_8$	Ceiling[d]	Perpendicular	16	16	16	Same as above for $^3/_8$" gypsum board
	Wall	Either direction	16	16	24	
$^1/_2$ or $^5/_8$	Ceiling	Either direction	16	16	16	Same as above for $^1/_2$" and $^5/_8$" gypsum board, respectively
	Ceiling[d]	Perpendicular	24	12	16	
	Wall	Either direction	24	16	24	
Two $^3/_8$ layers	Ceiling	Perpendicular	16	16	16	Base ply nailed as above for $^1/_2$" gypsum board; face ply installed with adhesive
	Wall	Either direction	24	24	24	

For SI: 1 inch = 25.4 mm.

a. For application without adhesive, a pair of nails spaced not less than 2 inches apart or more than $2^1/_2$ inches apart may be used with the pair of nails spaced 12 inches on center.

b. Screws shall be Type S or W per ASTM C 1002 and shall be sufficiently long to penetrate wood framing not less than $^5/_8$ inch and metal framing not less than $^3/_8$ inch.

c. Where metal framing is used with a clinching design to receive nails by two edges of metal, the nails shall be not less than $^5/_8$ inch longer than the gypsum board thickness and shall have ringed shanks. Where the metal framing has a nailing groove formed to receive the nails, the nails shall have barbed shanks or be 5d, $13^1/_2$ gage, $1^5/_8$ inches long, $^{15}/_{64}$-inch head for $^1/_2$-inch gypsum board; and 6d, 13 gage, $1^7/_8$ inches long, $^{15}/_{64}$-inch head for $^5/_8$-inch gypsum board.

d. Three-eighths-inch-thick single-ply gypsum board shall not be used on a ceiling where a water-based textured finish is to be applied, or where it will be required to support insulation above a ceiling. On ceiling applications to receive a water-based texture material, either hand or spray applied, the gypsum board shall be applied perpendicular to framing. When applying a water-based texture material, the minimum gypsum board thickness shall be increased from $^3/_8$ inch to $^1/_2$ inch for 16-inch on center framing, and from $^1/_2$ inch to $^5/_8$ inch for 24-inch on center framing or $^1/_2$-inch sag-resistant gypsum ceiling board shall be used.

e. Type X gypsum board for garage ceilings beneath habitable rooms shall be installed perpendicular to the ceiling framing and shall be fastened at maximum 6 inches o.c. by minimum $1^7/_8$ inches 6d coated nails or equivalent drywall screws.

R702.3.7 Horizontal gypsum board diaphragm ceilings. Use of gypsum board shall be permitted on wood joists to create a horizontal diaphragm in accordance with Table R702.3.7. Gypsum board shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of board shall not occur on the same joist. The maximum allowable diaphragm proportions shall be $1^1/_2$:1 between shear resisting elements. Rotation or cantilever conditions shall not be permitted. Gypsum board shall not be used in diaphragm ceilings to resist lateral forces imposed by masonry or concrete construction. All perimeter edges shall be blocked using wood members not less than 2-inch (51 mm) by 6-inch (152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than 2 inches (51 mm) in width for the attachment of the gypsum board.

R702.3.8 Water-resistant gypsum backing board. Gypsum board used as the base or backer for adhesive application of ceramic tile or other required nonabsorbent finish material shall conform to ASTM C 630 or C 1178. Use of water-resistant gypsum backing board shall be permitted on ceilings where framing spacing does not exceed 12 inches (305 mm) on center for $^1/_2$-inch-thick (13 mm) or 16 inches (406 mm) for $^5/_8$-inch-thick (16 mm) gypsum board. Water-resistant gypsum board shall not be installed over a vapor retarder in a shower or tub compartment. Cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer.

R702.3.8.1 Limitations. Water resistant gypsum backing board shall not be used where there will be direct exposure to water, or in areas subject to continuous high humidity.

TABLE R702.3.7
SHEAR CAPACITY FOR HORIZONTAL WOOD-FRAMED GYPSUM BOARD DIAPHRAGM CEILING ASSEMBLIES

MATERIAL	THICKNESS OF MATERIAL (min.) (in.)	SPACING OF FRAMING MEMBERS (max.) (in.)	SHEAR VALUE[a, b] (plf of ceiling)	MINIMUM FASTENER SIZE[c, d]
Gypsum Board	$^1/_2$	16 o.c.	90	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head
Gypsum Board	$^1/_2$	24 o.c.	70	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head

For SI: 1 inch = 25.4 mm, 1 pound per linear foot = 1.488 kg/m.

a. Values are not cumulative with other horizontal diaphragm values and are for short-term loading caused by wind or seismic loading. Values shall be reduced 25 percent for normal loading.

b. Values shall be reduced 50 percent in Seismic Design Categories D_0, D_1, D_2 and E.

c. $1^1/_4$", #6 Type S or W screws may be substituted for the listed nails.

d. Fasteners shall be spaced not more than 7 inches on center at all supports, including perimeter blocking, and not less than $^3/_8$ inch from the edges and ends of the gypsum board.

R702.4 Ceramic tile.

R702.4.1 General. Ceramic tile surfaces shall be installed in accordance with ANSI A108.1, A108.4, A108.5, A108.6, A108.11, A118.1, A118.3, A136.1 and A137.1.

R702.4.2 Cement, fiber-cement and glass mat gypsum backers. Cement, fiber-cement or glass mat gypsum backers in compliance with ASTM C 1288, C 1325 or C 1178 and installed in accordance with manufacturers' recommendations shall be used as backers for wall tile in tub and shower areas and wall panels in shower areas.

R702.5 Other finishes. Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hard board paneling less than $^1/_4$ inch (6 mm) nominal thickness shall not have less than a $^3/_8$-inch (10 mm) gypsum board backer. Wood veneer paneling not less than $^1/_4$-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to ANSI/AHA A135.5.

R702.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles* and shall be permitted to be installed directly to the studs with maximum 24 inches (610 mm) on-center spacing.

R702.6.1 Attachment. Nails, staples or glue are permitted for attaching shakes or shingles to the wall, and attachment of the shakes or shingles directly to the surface shall be permitted provided the fasteners are appropriate for the type of wall surface material. When nails or staples are used, two fasteners shall be provided and shall be placed so that they are covered by the course above.

R702.6.2 Furring strips. Where furring strips are used, they shall be 1 inch by 2 inches or 1 inch by 3 inches (25 mm by 51 mm or 25 mm by 76 mm), spaced a distance on center equal to the desired exposure, and shall be attached to the wall by nailing through other wall material into the studs.

SECTION R703
EXTERIOR COVERING

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.8. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2. and a means of draining water that enters the assembly to the exterior. Protection against condensation in the exterior wall assembly shall be provided in accordance with Chapter 11 of this code.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Section R703.2 and Section R703.8, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
   2.2. Exterior wall envelope test assemblies shall be at least 4 feet (1219 mm) by 8 feet (2438 mm) in size.
   2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa).

2.4. Exterior wall envelope assemblies shall be subjected to a minimum test exposure duration of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate: control joints in the exterior wall envelope; joints at the perimeter of openings penetration; or intersections of terminations with dissimilar materials.

R703.2 Water-resistive barrier. One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1.

Exception: Omission of the water-resistive barrier is permitted in the following situations:

1. In detached accessory buildings.
2. Under exterior wall finish materials as permitted in Table R703.4.
3. Under paperbacked stucco lath when the paper backing is an approved weather-resistive sheathing paper.

R703.3 Wood, hardboard and wood structural panel siding.

R703.3.1 Panel siding. Joints in wood, hardboard or wood structural panel siding shall be made as follows unless otherwise approved. Vertical joints in panel siding shall occur over framing members, unless wood or wood structural panel sheathing is used, and shall be shiplapped or covered with a batten. Horizontal joints in panel siding shall be lapped a minimum of 1 inch (25 mm) or shall be shiplapped or shall be flashed with Z-flashing and occur over solid blocking, wood or wood structural panel sheathing.

R703.3.2 Horizontal siding. Horizontal lap siding shall be lapped a minimum of 1 inch (25 mm), or 0.5 inch (13 mm) if rabbeted, and shall have the ends caulked, covered with a batten, or sealed and installed over a strip of flashing.

R703.4 Attachments. Unless specified otherwise, all wall coverings shall be securely fastened in accordance with Table R703.4 or with other approved aluminum, stainless steel, zinc-coated or other approved corrosion-resistive fasteners. Where the basic wind speed per Figure R301.2(4) is 110 miles per hour (49 m/s) or higher, the attachment of wall coverings shall be designed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

R703.5 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles.*

R703.5.1 Application. Wood shakes or shingles shall be applied either single-course or double-course over nominal $^1/_2$-inch (13 mm) wood-based sheathing or to furring strips over $^1/_2$-inch (13 mm) nominal nonwood sheathing . A permeable water-resistive barrier shall be provided over all sheathing, with horizontal overlaps in the membrane of not less than 2 inches (51mm) and vertical overlaps of not less than 6 inches (152 mm). Where furring strips are used, they shall be 1 inch by 3 inches or 1 inch by 4 inches (25 mm by 76 mm or 25 mm by 102 mm) and shall be fastened horizontally to the studs with 7d or 8d box nails and shall be spaced a distance on center equal to the actual weather exposure of the shakes or shingles, not to exceed the maximum exposure specified in Table R703.5.2. The spacing between adjacent shingles to allow for expansion shall not exceed $^1/_4$ inch (6 mm), and between adjacent shakes, it shall not exceed $^1/_2$ inch (13 mm). The offset spacing between joints in adjacent courses shall be a minimum of $1^1/_2$ inches (38 mm).

R703.5.2 Weather exposure. The maximum weather exposure for shakes and shingles shall not exceed that specified in Table R703.5.2.

R703.5.3 Attachment. Each shake or shingle shall be held in place by two hot-dipped zinc-coated, stainless steel, or aluminum nails or staples. The fasteners shall be long enough to penetrate the sheathing or furring strips by a minimum of $^1/_2$ inch (13 mm) and shall not be overdriven.

R703.5.3.1 Staple attachment. Staples shall not be less than16 gage and shall have a crown width of not less than $^7/_{16}$ inch (11 mm), and the crown of the staples shall be parallel with the butt of the shake or shingle. In single-course application, the fasteners shall be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and $^3/_4$ inch (19 mm) from the edge. In double-course applications, the exposed shake or shingle shall be face-nailed with two casing nails, driven approximately 2 inches (51 mm) above the butt line and $^3/_4$ inch (19 mm) from each edge. In all applications, staples shall be concealed by the course above. With shingles wider than 8 inches (203 mm) two additional nails shall be required and shall be nailed approximately 1 inch (25 mm) apart near the center of the shingle.

R703.5.4 Bottom courses. The bottom courses shall be doubled.

R703.6 Exterior plaster. Installation of these materials shall be in compliance with ASTM C 926 and ASTM C 1063 and the provisions of this code.

R703.6.1 Lath. All lath and lath attachments shall be of corrosion-resistant materials. Expanded metal or woven wire lath shall be attached with $1^1/_2$-inch-long (38 mm), 11 gage nails having a $^7/_{16}$-inch (11.1 mm) head, or $^7/_8$-inch-long (22.2 mm), 16 gage staples, spaced at no more than 6 inches (152 mm), or as otherwise approved.

R703.6.2 Plaster. Plastering with portland cement plaster shall be not less than three coats when applied over metal lath or wire lath and shall be not less than two coats when applied over masonry, concrete, pressure-preservative treated wood or decay-resistant wood as specified in Section R319.1 or gypsum backing. If the plaster surface is completely covered by veneer or other facing material or is completely concealed, plaster application need be only two coats, provided the total thickness is as set forth in Table R702.1(1).

TABLE R703.4
WEATHER–RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	WATER-RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b,c,d]					
					Wood or wood structural panel sheathing	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Horizontal aluminum[e]	Without insulation	0.019[f]	Lap	Yes	0.120 nail 1½″ long	0.120 nail 2″ long	0.120 nail 2″ long	0.120 nail[y]	Not allowed	Same as stud spacing
		0.024	Lap	Yes	0.120 nail 1½″ long	0.120 nail 2″ long	0.120 nail 2″ long	0.120 nail[y]	Not allowed	
	With insulation	0.019	Lap	Yes	0.120 nail 1½″ long	0.120 nail 2½″ long	0.120 nail 2½″ long	0.120 nail[y]	0.120 nail 1½″ long	
Brick veneer[z]		2	Section R703	Yes (Note l)	See Section R703 and Figure R703.7[s]					
Concrete masonry veneer[z]		2								
Hardboard[k] Panel siding-vertical		7/16	—	Yes	Note n	Note n	Note n	Note n	Note n	6″ panel edges 12″ inter. sup.[v]
Hardboard[k] Lap-siding-horizontal		7/16	Note q	Yes	Note p	Note p	Note p	Note p	Note p	Same as stud spacing 2 per bearing
Steel[h]		29 ga.	Lap	Yes	0.113 nail 1¾″ Staple–1¾″	0.113 nail 2¾″ Staple–2½″	0.113 nail 2½″ Staple–2¼″	0.113 nail[y] Staple[y]	Not allowed	Same as stud spacing
Stone veneer		2	Section R703	Yes (Note l)	See Section R703 and Figure R703.7[s]					
Particleboard panels		3/8 – 1/2	—	Yes	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	box nail[y]	6d box nail (2″ × 0.099″), 3/8 not allowed	6″ panel edge, 12″ inter. sup.
		5/8	—	Yes	6d box nail (2″ × 0.099″)	8d box nail (2½″ × 0.113″)	8d box nail (2½″ × 0.113″)	box nail[y]	6d box nail (2″ × 0.099″)	
Plywood panel[i] (exterior grade)		3/8	—	Yes	0.099 nail–2″	0.113 nail–2½″	0.099 nail–2″	0.113 nail[y]	0.099 nail–2″	6″ on edges, 12″ inter. sup.
Vinyl siding[m]		0.035	Lap	Yes	0.120 nail 1½″ Staple–1¾″	0.120 nail 2″ Staple–2½″	0.120 nail 2″ Staple–2½″	0.120 nail[y] Staple[y]	Not allowed	Same as stud spacing
Wood[j] rustic, drop		3/8 Min	La	Yes	Fastener penetration into stud–1″				0.113 nail–2½″ Staple–2″	Face nailing up to 6″ widths, 1 nail per bearing; 8″ widths and over, 2 nails per bearing
Shiplap		19/32 Average	Lap	Yes						
Bevel		7/16								
Butt tip		3/16	Lap	Yes						
Fiber cement panel siding[r]		5/16	Note s	Yes Note x	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t, y]	4d corrosion-resistant nail[u]	6″ o.c. on edges, 12″ o.c. on intermed. studs
Fiber cement lap siding[r]		5/16	Note v	Yes Note x	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t]	6d corrosion-resistant nail[t, y]	6d corrosion-resistant nail[w]	Note w

For SI: 1 inch = 25.4 mm.

a. Based on stud spacing of 16 inches on center where studs are spaced 24 inches, siding shall be applied to sheathing approved for that spacing.
b. Nail is a general description and shall be T-head, modified round head, or round head with smooth or deformed shanks.
c. Staples shall have a minimum crown width of 7/16-inch outside diameter and be manufactured of minimum 16 gage wire.
d. Nails or staples shall be aluminum, galvanized, or rust-preventative coated and shall be driven into the studs for fiberboard or gypsum backing.
e. Aluminum nails shall be used to attach aluminum siding.
f. Aluminum (0.019 inch) shall be unbacked only when the maximum panel width is 10 inches and the maximum flat area is 8 inches. The tolerance for aluminum siding shall be +0.002 inch of the nominal dimension.
g. All attachments shall be coated with a corrosion-resistant coating.
h. Shall be of approved type.

(continued)

Footnotes to Table R703.4—continued

i. Three-eighths-inch plywood shall not be applied directly to studs spaced more than 16 inches on center when long dimension is parallel to studs. Plywood $^1/_2$-inch or thinner shall not be applied directly to studs spaced more than 24 inches on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular to the studs or over sheathing approved for that stud spacing.
j. Wood board sidings applied vertically shall be nailed to horizontal nailing strips or blocking set 24 inches on center. Nails shall penetrate $1^1/_2$ inches into studs, studs and wood sheathing combined, or blocking. A weather-resistive membrane shall be installed weatherboard fashion under the vertical siding unless the siding boards are lapped or battens are used.
k. Hardboard siding shall comply with AHA A135.6.
l. For masonry veneer, a weather-resistive sheathing paper is not required over a sheathing that performs as a weather-resistive barrier when a 1-inch air space is provided between the veneer and the sheathing. When the 1-inch space is filled with mortar, a weather-resistive sheathing paper is required over studs or sheathing.
m. Vinyl siding shall comply with ASTM D 3679.
n. Minimum shank diameter of 0.092 inch, minimum head diameter of 0.225 inch, and nail length must accommodate sheathing and penetrate framing $1^1/_2$ inches.
o. When used to resist shear forces, the spacing must be 4 inches at panel edges and 8 inches on interior supports.
p. Minimum shank diameter of 0.099 inch, minimum head diameter of 0.240 inch, and nail length must accommodate sheathing and penetrate framing $1^1/_2$ inches.
q. Vertical end joints shall occur at studs and shall be covered with a joint cover or shall be caulked.
r. Fiber cement siding shall comply with the requirements of ASTM C 1186.
s. See Section R703.10.1.
t. Minimum 0.102" smooth shank, 0.255" round head.
u. Minimum 0.099" smooth shank, 0.250" round head.
v. See Section R703.10.2.
w. Face nailing: 2 nails at each stud. Concealed nailing: one 11 gage $1^1/_2$ galv. roofing nail (0.371" head diameter, 0.120" shank) or 6d galv. box nail at each stud.
x. See Section R703.2 exceptions.
y. Minimum nail length must accommodate sheathing and penetrate framing $1^1/_2$ inches.
z. Adhered masonry veneer shall comply with the requirements in Sections 6.1 and 6.3 of ACI 530/ASCE 5/TMS-402.

TABLE R703.5.2
MAXIMUM WEATHER EXPOSURE FOR WOOD SHAKES AND SHINGLES ON EXTERIOR WALLS[a,b,c]
(Dimensions are in inches)

LENGTH	EXPOSURE FOR SINGLE COURSE	EXPOSURE FOR DOUBLE COURSE
Shingles[a]		
16	$7^1/_2$	12[b]
18	$8^1/_2$	14[c]
24	$11^1/_2$	16
Shakes[a]		
18	$8^1/_2$	14
24	$11^1/_2$	18

For SI: 1 inch = 25.4 mm.
a. Dimensions given are for No. 1 grade.
b. A maximum 10-inch exposure is permitted for No. 2 grade.
c. A maximum 11-inch exposure is permitted for No. 2 grade.

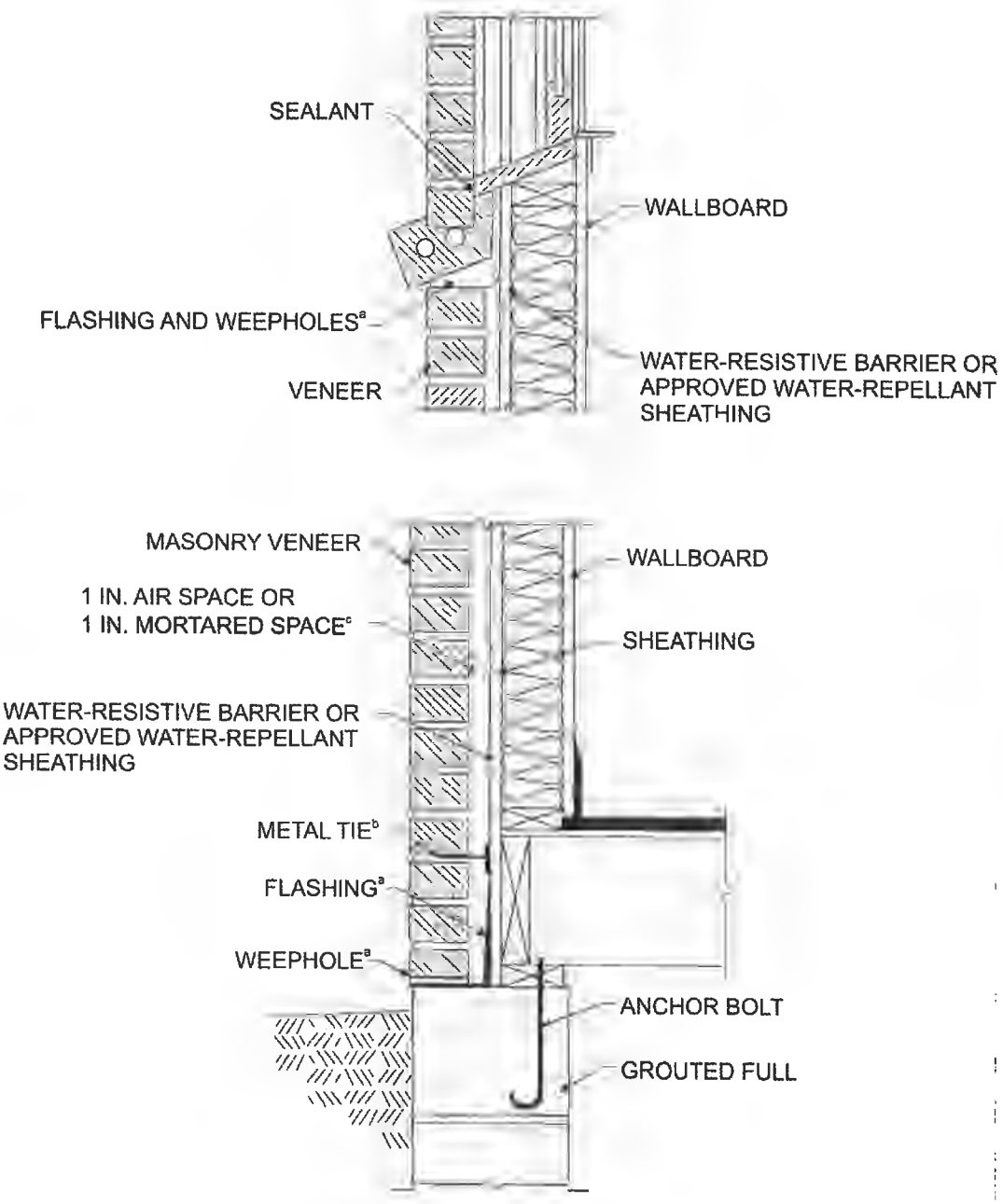
On wood-frame construction with an on-grade floor slab system, exterior plaster shall be applied to cover, but not extend below, lath, paper and screed.

The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3).

R703.6.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

R703.6.3 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper.

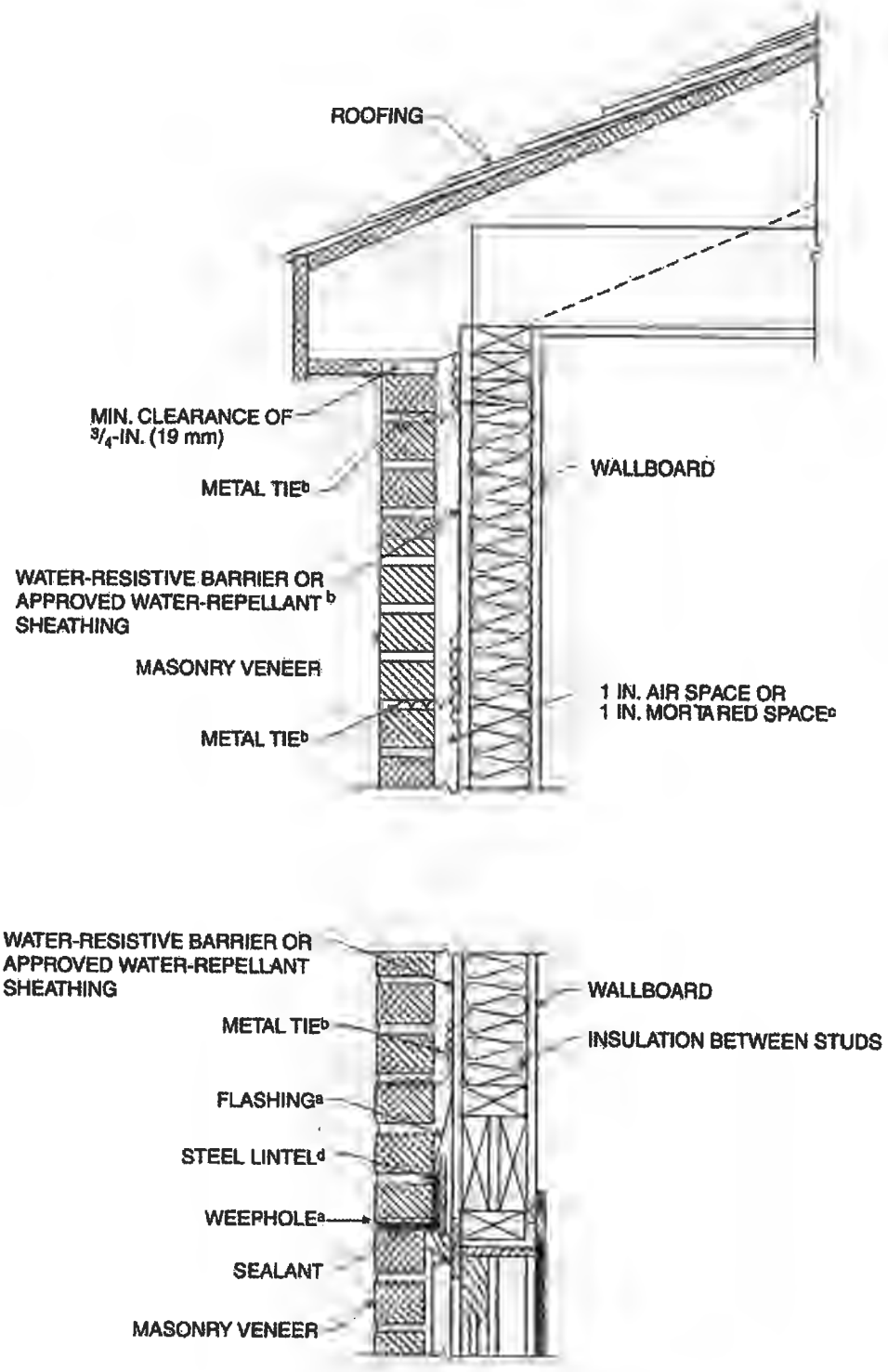
Exception: Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60 minute Grade D paper and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or designed drainage space.



For SI: 1 inch = 25.4 mm.

FIGURE R703.7
MASONRY VENEER WALL DETAILS

(continued)



For SI: 1 inch = 25.4 mm.

a. See Sections R703.7.5, R703.7.6 and R703.8.

b. See Sections R703.2 and R703.7.4.

c. See Sections R703.7.4.2 and R703.7.4.3.

d. See Section R703.7.3.

FIGURE R703.7—continued
MASONRY VENEER WALL DETAILS

R703.7 Stone and masonry veneer, general. Stone and masonry veneer shall be installed in accordance with this chapter, Table R703.4 and Figure R703.7. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above-grade and shall not exceed 5 inches (127 mm) in thickness.

Exceptions:

1. For all buildings in Seismic Design Categories A, B and C, exterior stone or masonry veneer, as specified in Table R703.7(1), with a backing of wood or steel framing shall be permitted to the height specified in Table R703.7(1) above a noncombustible foundation. Wall bracing at exterior and interior braced wall lines shall be in accordance with Section R602.10 or R603.7, and the additional requirements of Table R703.7(1).
2. For detached one- or two-family dwellings in Seismic Design Categories D_0, D_1 and D_2, exterior stone or masonry veneer, as specified in Table R703.7(2), with a backing of wood framing shall be permitted to the height specified in Table R703.7(2) above a noncombustible foundation. Wall bracing and hold downs at exterior and interior braced wall lines shall be in accordance with Sections R602.10 and R602.11 and the additional requirements of Table R703.7(2). In Seismic Design Categories D_0, D_1 and D_2, cripple walls shall not be permitted, and required interior braced wall lines shall be supported on continuous foundations.

R703.7.1 Interior veneer support. Veneers used as interior wall finishes shall be permitted to be supported on wood or cold-formed steel floors that are designed to support the loads imposed.

R703.7.2 Exterior veneer support. Except in Seismic Design Categories D_0, D_1 and D_2, exterior masonry veneers having an installed weight of 40 pounds per square foot (195 kg/m^2) or less shall be permitted to be supported on wood or cold-formed steel construction. When masonry veneer supported by wood or cold-formed steel construction adjoins masonry veneer supported by the foundation, there shall be a movement joint between the veneer supported by the wood or cold-formed steel construction and the veneer supported by the foundation. The wood or cold-formed steel construction supporting the masonry veneer shall be designed to limit the deflection to $^1/_{600}$ of the span for the supporting members. The design of the wood or cold-formed steel construction shall consider the weight of the veneer and any other loads.

R703.7.2.1 Support by steel angle. A minimum 6 inches by 4 inches by $^5/_{16}$ inch (152 mm by 102 mm by 8 mm) steel angle, with the long leg placed vertically, shall be anchored to double 2 inches by 4 inches (51 mm by 102 mm) wood studs at a maximum on-center spacing of 16 inches (406 mm). Anchorage of the steel angle at every double stud spacing shall be a minimum of two $^7/_{16}$ inch

TABLE R703.7(1)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, WOOD OR STEEL FRAMING, SEISMIC DESIGN CATEGORIES A, B AND C

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD OR STEEL FRAMED STORIES	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION[a] (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]	WOOD OR STEEL FRAMED STORY	MINIMUM SHEATHING AMOUNT (percent of braced wall line length)[c]
A or B	Steel: 1 or 2 Wood: 1, 2 or 3	30	5	50	all	Table R602.10.1 or Table R603.7
C	1	30	5	50	1 only	Table R602.10.1 or Table R603.7
	2	30	5	50	top	Table R602.10.1 or Table R603.7
					bottom	1.5 times length required by Table R602.10.1 or 1.5 times length required by Table R603.7
	Wood only: 3	30	5	50	top	Table R602.10.1
					middle	1.5 times length required by Table R602.10.1
					bottom	1.5 times length required by Table R602.10.1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa.

a. An Additional 8 feet is permitted for gable end walls. See also story height limitations of Section R301.3.

b. Maximum weight is installed weight and includes weight of mortar, grout, lath and other materials used for installation. Where veneer is placed on both faces of a wall, the combined weight shall not exceed that specified in this table.

c. Applies to exterior and interior braced wall lines.

TABLE R703.7(2)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, ONE- AND TWO-FAMILY DETACHED DWELLINGS, WOOD FRAMING, SEISMIC DESIGN CATEGORIES D_0, D_1 AND D_2

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD FRAMED STORIES[a]	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION OR FOUNDATION WALL (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]	WOOD FRAMED STORY	MINIMUM SHEATHING AMOUNT (percent of braced wall line length)[c]	MINIMUM SHEATHING THICKNESS AND FASTENING	SINGLE STORY HOLD DOWN FORCE (lb)[d]	CUMULATIVE HOLD DOWN FORCE (lb)[e]
D_0	1	20[f]	4	40	1 only	35	$^7/_{16}$-inch wood structural panel sheathing with 8d common nails spaced at 4 inches on center at panel edges, 12 inches on center at intermediate supports. 8d common nails at 4 inches on center at braced wall panel end posts with hold down attached.	N/A	—
	2	20[f]	4	40	top	35		1900	—
					bottom	45		3200	5100
	3	30[g]	4	40	top	40		1900	—
					middle	45		3500	5400
					bottom	60		3500	8900
D_1	1	20[f]	4	40	1 only	45		2100	—
	2	20[f]	4	40	top	45		2100	—
					bottom	45		3700	5800
	3	20[f]	4	40	top	45		2100	—
					middle	45		3700	5800
					bottom	60		3700	9500
D_2	1	20[f]	3	30	1 only	55		2300	—
	2	20[f]	3	30	top	55		2300	—
					bottom	55		3900	6200

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa, 1 pound-force = 4.448 N.

a. Cripple walls are not permitted in Seismic Design Categories D_0, D_1 and D_2.

b. Maximum weight is installed weight and includes weight of mortar, grout and lath, and other materials used for installation.

c. Applies to exterior and interior braced wall lines.

d. Hold down force is minimum allowable stress design load for connector providing uplift tie from wall framing at end of braced wall panel at the noted story to wall framing at end of braced wall panel at the story below, or to foundation or foundation wall. Use single story hold down force where edges of braced wall panels do not align; a continuous load path to the foundation shall be maintained. [See Figure R703.7(1)(b)].

e. Where hold down connectors from stories above align with stories below, use cumulative hold down force to size middle and bottom story hold down connectors. [See Figure R703.7(1)(a)].

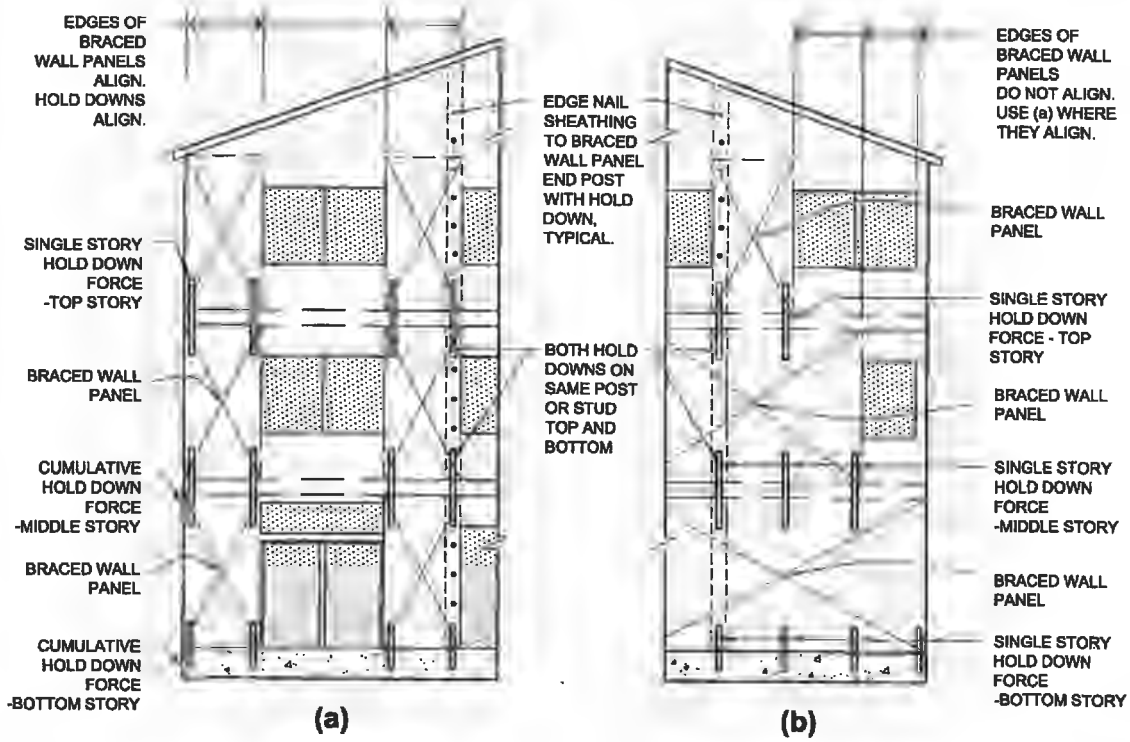
f. The veneer shall not exceed 20 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls, or 30 feet in height with an additional 8 feet for gable end walls where the lower 10 feet has a backing of concrete or masonry wall. See also story height limitations of Section R301.3.

g. The veneer shall not exceed 30 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls. See also story height limitations of Section R301.3.

(11 mm) diameter by 4 inch (102 mm) lag screws. The steel angle shall have a minimum clearance to underlying construction of $^1/_{16}$ inch (2 mm). A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.2.1. The maximum height of masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The air space separating the masonry veneer from the wood backing shall be in accordance with Sections R703.7.4 and R703.7.4.2. The method of support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.1.

The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3 inch × 3 inch × $^1/_4$ inch (76 mm × 76 mm × 6 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as approved by the building official.

R703.7.2.2 Support by roof construction. A steel angle shall be placed directly on top of the roof construction. The roof supporting construction for the steel angle shall consist of a minimum of three 2-inch by 6-inch (51 mm by 152 mm) wood members. The wood member abutting the vertical wall stud construction shall be anchored with a minimum of three $^5/_8$-inch (16 mm) diameter by 5-inch (127 mm) lag screws to every wood stud spacing. Each additional roof member shall be anchored by the use of two 10d nails at every wood stud spacing. A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.2.2. The maximum height of the masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The air space separating the masonry veneer from the wood backing shall be in accordance with Sections R703.7.4 and R703.7.4.2. The support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.2.



(a) Braced wall panels stacked (aligned story to story). Use cumulative hold down force.
(b) Braced wall panels not stacked. Use single story hold down force.

FIGURE R703.7(1)
HOLD DOWNS AT EXTERIOR AND INTERIOR BRACED WALL PANELS WHEN USING STONE OR MASONRY VENEER

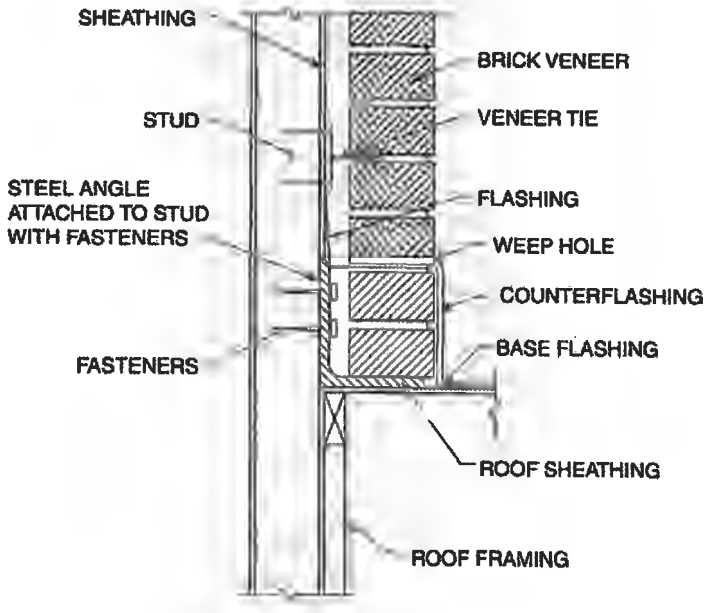


FIGURE R703.7.2.1
EXTERIOR MASONRY VENEER SUPPORT BY STEEL ANGLES

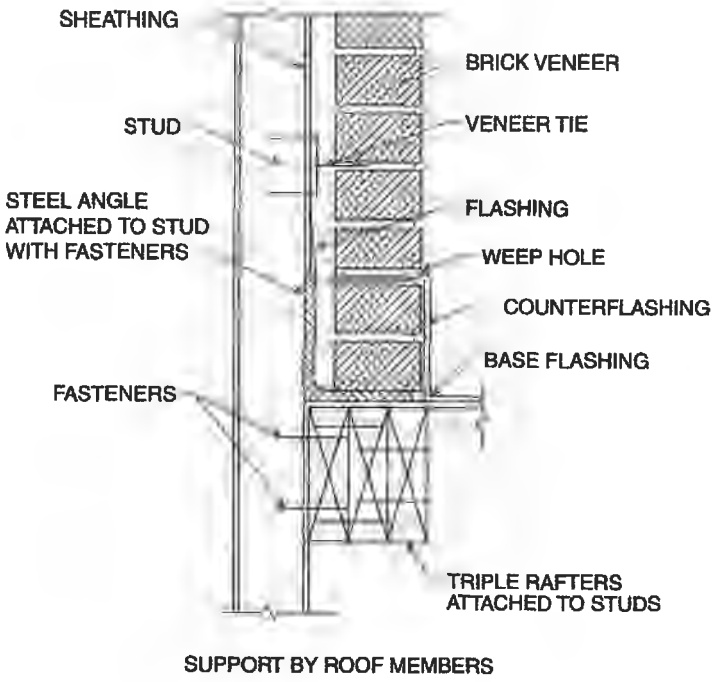


FIGURE R703.7.2.2
EXTERIOR MASONRY VENEER SUPPORT BY ROOF MEMBERS

The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3 inch × 3 inch × $^1/_4$ inch (76 mm × 76 mm × 6 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as approved by the building official.

R703.7.3 Lintels. Masonry veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of noncombustible materials and the allowable span shall not exceed the value set forth in Table R703.7.3. The lintels shall have a length of bearing not less than 4 inches (102 mm).

R703.7.4 Anchorage. Masonry veneer shall be anchored to the supporting wall with corrosion-resistant metal ties. Where veneer is anchored to wood backings by corrugated sheet metal ties, the distance separating the veneer from the sheathing material shall be a maximum of a nominal 1 inch (25 mm). Where the veneer is anchored to wood backings using metal strand wire ties, the distance separating the veneer from the sheathing material shall be a maximum of $4^1/_2$ inches (114 mm). Where the veneer is anchored to cold-formed steel backings, adjustable metal strand wire ties shall be used. Where veneer is anchored to cold-formed steel backings, the distance separating the veneer from the sheathing material shall be a maximum of $4^1/_2$ inches (114 mm).

R703.7.4.1 Size and spacing. Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage [(0.148 in.) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 in.)(0.76 mm)] $^7/_8$ inch (22 mm) corrugated. Each tie shall be spaced not more than 24 inches (610 mm) on center horizontally and vertically and shall support not more than 2.67 square feet (0.25 m^2) of wall area.

Exception: In Seismic Design Category D_0, D_1 or D_2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m^2) of wall area.

R703.7.4.1.1 Veneer ties around wall openings. Veneer ties around wall openings. Additional metal ties shall be provided around all wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (9144 mm) on center and placed within 12 inches (305 mm) of the wall opening.

R703.7.4.2 Air space. The veneer shall be separated from the sheathing by an air space of a minimum of a nominal 1 inch (25 mm) but not more than $4^1/_2$ inches (114 mm).

R703.7.4. 3 Mortar or grout fill. As an alternate to the air space required by Section R703.7.4.2, mortar or grout shall be permitted to fill the air space .When the air space is filled with mortar, a water-resistive barrier is required over studs or sheathing. When filling the air space, replacing the sheathing and water-resistive barrier with a wire mesh and approved water-resistive barrier or an approved water-resistive barrier-backed reinforcement attached directly to the studs is permitted.

TABLE R703.7.3
ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER[a, b, c]

SIZE OF STEEL ANGLE[a, c] (inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE	NO. OF $^1/_2$" OR EQUIVALENT REINFORCING BARS[c]
$3 \times 3 \times {}^1/_4$	6'-0"	4'-6"	3'-0"	1
$4 \times 3 \times {}^1/_4$	8'-0"	6'-0"	4'-6"	1
$5 \times 3^1/_2 \times {}^5/_{16}$	10'-0"	8'-0"	6'-0"	2
$6 \times 3^1/_2 \times {}^5/_{16}$	14'-0"	9'-6"	7'-0"	2
$2\text{-}6 \times 3^1/_2 \times {}^5/_{16}$	20'-0"	12'-0"	9'-6"	4

For SI: 1 inch = 25.4 mm, 1 foot =304.8 mm.

a. Long leg of the angle shall be placed in a vertical position.

b. Depth of reinforced lintels shall not be less than 8 inches and all cells of hollow masonry lintels shall be grouted solid. Reinforcing bars shall extend not less than 8 inches into the support.

c. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements may be used.

R703.7.5 Flashing. Flashing shall be located beneath the first course of masonry above finished ground level above the foundation wall or slab and at other points of support, including structural floors, shelf angles and lintels when masonry veneers are designed in accordance with Section R703.7. See Section R703.8 for additional requirements.

R703.7.6 Weepholes. Weepholes shall be provided in the outside wythe of masonry walls at a maximum spacing of 33 inches (838 mm) on center. Weepholes shall not be less than $^3/_{16}$ inch (5 mm) in diameter. Weepholes shall be located immediately above the flashing.

R703.8 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in such a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at all of the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage.
2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

R703.9 Exterior insulation finish systems, general. All Exterior Insulation Finish Systems (EIFS) shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section. Decorative trim shall not be face nailed through the EIFS. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.

R703.9.1 Water-resistive barrier. All EIFS shall have a water-resistive barrier applied between the underlying water-sensitive building components and the exterior insulation, and a means of draining water to the exterior of the veneer. A water-resistive barrier shall be compliant with ASTM D 226 Type I asphalt saturated felt or equivalent, shall be applied horizontally with the upper layer lapped over the lower layer not less than 2 inches (51 mm), and shall have all vertical joints lapped not less than 6 inches (152 mm).

R703.9.2 Flashing, general. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8.

R703.10 Fiber cement siding.

R703.10.1 Panel siding. Panels shall be installed with the long dimension parallel to framing. Vertical joints shall occur over framing members and shall be sealed with caulking or covered with battens. Horizontal joints shall be flashed with Z-flashing and blocked with solid wood framing.

R703.10.2 Horizontal lap siding. Lap siding shall be lapped a minimum of $1^1/_4$ inches (32 mm) and shall have the ends sealed with caulking, covered with an H-section joint cover, or located over a strip of flashing. Lap siding courses may be installed with the fastener heads exposed or concealed, according to approved manufacturers' installation instructions.

R703.11 Vinyl siding. Vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D 3679 by an approved quality control agency.

R703.11.1 Installation. Vinyl siding, soffit and accessories shall be installed in accordance with the manufacturer's installation instructions.



2012 INTERNATIONAL RESIDENTIAL CODE®

FOR ONE- AND TWO-FAMILY DWELLINGS

A Member of the International Code Family®

2012 IRC®

Become a Building Safety Professional Member and Learn More about the Code Council

GO TO WWW.ICCSAFE.ORG for All Your Technical and Professional Needs Including:

- Codes, Standards and Guidelines
- Membership Benefits
- Education and Certification
- Communications on Industry News



Section E13.3, and AISI S230, Section F7.2, as required for 110 miles per hour (49 m/s), Exposure C.

R603.9.4.2 Hold-down anchor. Where the percentage of full height sheathing is adjusted in accordance with Section R603.9.2.3, a hold-down anchor, with a strength of 4,300 pounds (19 kN), shall be provided at each end of each full-height sheathed wall section used to meet the minimum percent sheathing requirements of Section R603.9.2. Hold-down anchors shall be attached to back-to-back studs; structural sheathing panels shall have edge fastening to the studs, in accordance with Section R603.9.3 and AISI S230, Table E11-1.

A single hold-down anchor, installed in accordance with Figure R603.9.2, shall be permitted at the corners of buildings.

R603.9.5 Structural sheathing for stone and masonry veneer. In Seismic Design Category C, where stone and masonry veneer is installed in accordance with Section R703.7, the length of structural sheathing for walls supporting one *story*, roof and ceiling shall be the greater of the amount required by Section R603.9.2 or 36 percent, modified by Section R603.9.2 except Section R603.9.2.2 shall not be permitted.

SECTION R604
WOOD STRUCTURAL PANELS

R604.1 Identification and grade. Wood structural panels shall conform to DOC PS 1, DOC PS 2 or ANSI/APA PRP 210 or, when manufactured in Canada, CSA O437 or CSA O325. All panels shall be identified by a grade mark or certificate of inspection issued by an *approved* agency.

R604.2 Allowable spans. The maximum allowable spans for wood structural panel wall sheathing shall not exceed the values set forth in Table R602.3(3).

R604.3 Installation. Wood structural panel wall sheathing shall be attached to framing in accordance with Table R602.3(1) or R602.3(3). Wood structural panels marked Exposure 1 or Exterior are considered water-repellent sheathing under the code.

SECTION R605
PARTICLEBOARD

R605.1 Identification and grade. Particleboard shall conform to ANSI A208.1 and shall be so identified by a grade mark or certificate of inspection issued by an *approved* agency. Particleboard shall comply with the grades specified in Table R602.3(4).

SECTION R606
GENERAL MASONRY CONSTRUCTION

R606.1 General. Masonry construction shall be designed and constructed in accordance with the provisions of this section, TMS 403 or in accordance with the provisions of TMS 402/ ACI 530/ASCE 5.

R606.1.1 Professional registration not required. When the empirical design provisions of Chapter 5 of TMS 402/ ACI 530/ASCE 5, the provisions of TMS 403, or the provisions of this section are used to design masonry, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the *jurisdiction* having authority.

R606.2 Thickness of masonry. The nominal thickness of masonry walls shall conform to the requirements of Sections R606.2.1 through R606.2.4.

R606.2.1 Minimum thickness. The minimum thickness of masonry bearing walls more than one *story* high shall be 8 inches (203 mm). *Solid masonry* walls of one-story *dwellings* and garages shall not be less than 6 inches (152 mm) in thickness when not greater than 9 feet (2743 mm) in height, provided that when gable construction is used, an additional 6 feet (1829 mm) is permitted to the peak of the gable. Masonry walls shall be laterally supported in either the horizontal or vertical direction at intervals as required by Section R606.9.

R606.2.2 Rubble stone masonry wall. The minimum thickness of rough, random or coursed rubble stone masonry walls shall be 16 inches (406 mm).

R606.2.3 Change in thickness. Where walls of masonry of hollow units or masonry-bonded hollow walls are decreased in thickness, a course of *solid masonry* shall be constructed between the wall below and the thinner wall above, or special units or construction shall be used to transmit the loads from face shells or wythes above to those below.

R606.2.4 Parapet walls. Unreinforced *solid masonry* parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) located in Seismic Design Category D_0, D_1 or D_2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

R606.3 Corbeled masonry. Corbeled masonry shall be in accordance with Sections R606.3.1 through R606.3.3.

R606.3.1 Units. *Solid masonry* units or masonry units filled with mortar or grout shall be used for corbeling.

R606.3.2 Corbel projection. The maximum projection of one unit shall not exceed one-half the height of the unit or one-third the thickness at right angles to the wall. The maximum corbeled projection beyond the face of the wall shall not exceed:

1. One-half of the wall thickness for multiwythe walls bonded by mortar or grout and wall ties or masonry headers, or
2. One-half the wythe thickness for single wythe walls, masonry-bonded hollow walls, multiwythe walls with open collar joints and veneer walls.

R606.3.3 Corbeled masonry supporting floor or roof-framing members. When corbeled masonry is used to support floor or roof-framing members, the top course of the corbel shall be a header course or the top course bed joint shall have ties to the vertical wall.

R606.4 Support conditions. Bearing and support conditions shall be in accordance with Sections R606.4.1 and R606.4.2.

R606.4.1 Bearing on support. Each masonry wythe shall be supported by at least two-thirds of the wythe thickness.

R606.4.2 Support at foundation. Cavity wall or masonry veneer construction may be supported on an 8-inch (203 mm) foundation wall, provided the 8-inch (203 mm) wall is corbeled to the width of the wall system above with masonry constructed of *solid masonry* units or masonry units filled with mortar or grout. The total horizontal projection of the corbel shall not exceed 2 inches (51 mm) with individual corbels projecting not more than one-third the thickness of the unit or one-half the height of the unit. The hollow space behind the corbeled masonry shall be filled with mortar or grout.

R606.5 Allowable stresses. Allowable compressive stresses in masonry shall not exceed the values prescribed in Table R606.5. In determining the stresses in masonry, the effects of all loads and conditions of loading and the influence of all forces affecting the design and strength of the several parts shall be taken into account.

R606.5.1 Combined units. In walls or other structural members composed of different kinds or grades of units, materials or mortars, the maximum stress shall not exceed the allowable stress for the weakest of the combination of units, materials and mortars of which the member is composed. The net thickness of any facing unit that is used to resist stress shall not be less than 1.5 inches (38 mm).

R606.6 Piers. The unsupported height of masonry piers shall not exceed ten times their least dimension. When structural clay tile or hollow concrete masonry units are used for isolated piers to support beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar, except that unfilled hollow piers may be used if their unsupported height is not more than four times their least dimension. Where hollow masonry units are solidly filled with concrete or Type M, S or N mortar, the allowable compressive stress shall be permitted to be increased as provided in Table R606.5.

R606.6.1 Pier cap. Hollow piers shall be capped with 4 inches (102 mm) of *solid masonry* or concrete, a masonry cap block, or shall have cavities of the top course filled with concrete or grout.

R606.7 Chases. Chases and recesses in masonry walls shall not be deeper than one-third the wall thickness, and the maximum length of a horizontal chase or horizontal projection shall not exceed 4 feet (1219 mm), and shall have at least 8 inches (203 mm) of masonry in back of the chases and recesses and between adjacent chases or recesses and the jambs of openings. Chases and recesses in masonry walls shall be designed and constructed so as not to reduce the required strength or required fire resistance of the wall and in no case shall a chase or recess be permitted within the required area of a pier. Masonry directly above chases or recesses wider than 12 inches (305 mm) shall be supported on noncombustible lintels.

TABLE R606.5
ALLOWABLE COMPRESSIVE STRESSES FOR EMPIRICAL DESIGN OF MASONRY

CONSTRUCTION; COMPRESSIVE STRENGTH OF UNIT, GROSS AREA	ALLOWABLE COMPRESSIVE STRESSES[a] GROSS CROSS-SECTIONAL AREA[b]	
	Type M or S mortar	Type N mortar
Solid masonry of brick and other solid units of clay or shale; sand-lime or concrete brick:		
8,000 + psi	350	300
4,500 psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Grouted[c] masonry, of clay or shale; sand-lime or concrete:		
4,500 + psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Solid masonry of solid concrete masonry units:		
3,000 + psi	225	200
2,000 psi	160	140
1,200 psi	115	100
Masonry of hollow load-bearing units:		
2,000 + psi	140	120
1,500 psi	115	100
1,000 psi	75	70
700 psi	60	55
Hollow walls (cavity or masonry bonded[d]) solid units:		
2,500 + psi	160	140
1,500 psi	115	100
Hollow units	75	70
Stone ashlar masonry:		
Granite	720	640
Limestone or marble	450	400
Sandstone or cast stone	360	320
Rubble stone masonry:		
Coarse, rough or random	120	100

For SI: 1 pound per square inch = 6.895 kPa.

a. Linear interpolation shall be used for determining allowable stresses for masonry units having compressive strengths that are intermediate between those given in the table.

b. Gross cross-sectional area shall be calculated on the actual rather than nominal dimensions.

c. See Section R608.

d. Where floor and roof loads are carried upon one wythe, the gross cross-sectional area is that of the wythe under load; if both wythes are loaded, the gross cross-sectional area is that of the wall minus the area of the cavity between the wythes. Walls bonded with metal ties shall be considered as cavity walls unless the collar joints are filled with mortar or grout.

R606.8 Stack bond. In unreinforced masonry where masonry units are laid in stack bond, longitudinal reinforcement consisting of not less than two continuous wires each with a minimum aggregate cross-sectional area of 0.017 square inch (11 mm^2) shall be provided in horizontal bed joints spaced not more than 16 inches (406 mm) on center vertically.

R606.9 Lateral support. Masonry walls shall be laterally supported in either the horizontal or the vertical direction. The maximum spacing between lateral supports shall not exceed the distances in Table R606.9. Lateral support shall be provided by cross walls, pilasters, buttresses or structural frame members when the limiting distance is taken horizontally, or by floors or roofs when the limiting distance is taken vertically.

TABLE R606.9
SPACING OF LATERAL SUPPORT FOR MASONRY WALLS

CONSTRUCTION	MAXIMUM WALL LENGTH TO THICKNESS OR WALL HEIGHT TO THICKNESS[a, b]
Bearing walls:	
Solid or solid grouted	20
All other	18
Nonbearing walls:	
Exterior	18
Interior	36

For SI: 1 foot = 304.8 mm.

a. Except for cavity walls and cantilevered walls, the thickness of a wall shall be its nominal thickness measured perpendicular to the face of the wall. For cavity walls, the thickness shall be determined as the sum of the nominal thicknesses of the individual wythes. For cantilever walls, except for parapets, the ratio of height to nominal thickness shall not exceed 6 for solid masonry, or 4 for hollow masonry. For parapets, see Section R606.2.4.

b. An additional unsupported height of 6 feet is permitted for gable end walls.

R606.9.1 Horizontal lateral support. Lateral support in the horizontal direction provided by intersecting masonry walls shall be provided by one of the methods in Section R606.9.1.1 or Section R606.9.1.2.

R606.9.1.1 Bonding pattern. Fifty percent of the units at the intersection shall be laid in an overlapping masonry bonding pattern, with alternate units having a bearing of not less than 3 inches (76 mm) on the unit below.

R606.9.1.2 Metal reinforcement. Interior nonloadbearing walls shall be anchored at their intersections, at vertical intervals of not more than 16 inches (406 mm) with joint reinforcement of at least 9 gage [0.148 inch (4mm)], or $^1/_4$-inch (6 mm) galvanized mesh hardware cloth. Intersecting masonry walls, other than interior nonloadbearing walls, shall be anchored at vertical intervals of not more than 8 inches (203 mm) with joint reinforcement of at least 9 gage and shall extend at least 30 inches (762 mm) in each direction at the intersection. Other metal ties, joint reinforcement or anchors, if used, shall be spaced to provide equivalent area of anchorage to that required by this section.

R606.9.2 Vertical lateral support. Vertical lateral support of masonry walls in Seismic Design Category A, B or C shall be provided in accordance with one of the methods in Section R606.9.2.1 or Section R606.9.2.2.

R606.9.2.1 Roof structures. Masonry walls shall be anchored to roof structures with metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch (13 mm) bolts spaced not more than 6 feet (1829 mm) on center, or other *approved* anchors. Anchors shall be embedded at least 16 inches (406 mm) into the masonry, or be hooked or welded to bond beam reinforcement placed not less than 6 inches (152 mm) from the top of the wall.

R606.9.2.2 Floor diaphragms. Masonry walls shall be anchored to floor *diaphragm* framing by metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch-diameter (13 mm) bolts spaced at intervals not to exceed 6 feet (1829 mm) and installed as shown in Figure R606.11(1), or by other *approved* methods.

R606.10 Lintels. Masonry over openings shall be supported by steel lintels, reinforced concrete or masonry lintels or masonry arches, designed to support load imposed.

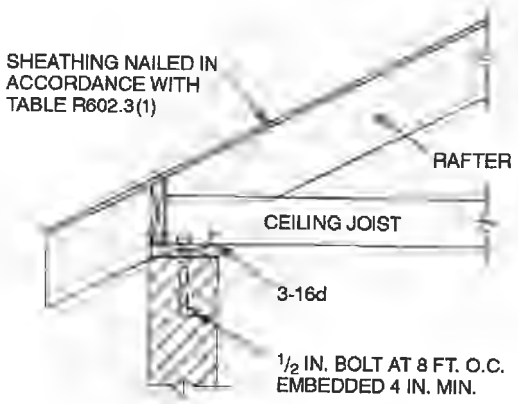
R606.11 Anchorage. Masonry walls shall be anchored to floor and roof systems in accordance with the details shown in Figure R606.11(1), R606.11(2) or R606.11(3). Footings may be considered as points of lateral support.

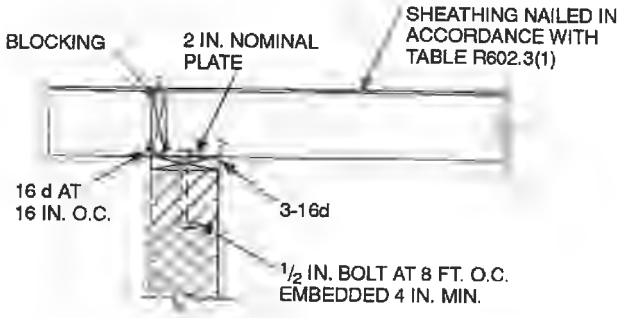
R606.12 Seismic requirements. The seismic requirements of this section shall apply to the design of masonry and the construction of masonry building elements located in Seismic Design Category D_0, D_1 or D_2. Townhouses in Seismic Design Category C shall comply with the requirements of Section R606.12.2. These requirements shall not apply to glass unit masonry conforming to Section R610 or masonry veneer conforming to Section R703.7.

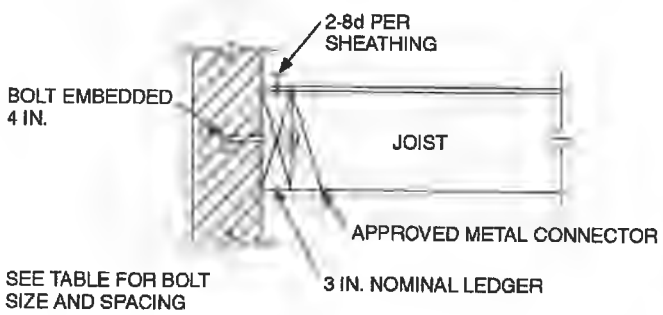
R606.12.1 General. Masonry structures and masonry elements shall comply with the requirements of Sections R606.12.2 through R606.12.4 based on the seismic design category established in Table R301.2(1). Masonry structures and masonry elements shall comply with the requirements of Section R606.12 and Figures R606.11(1), R606.11(2) and R606.11(3) or shall be designed in accordance with TMS 402/ACI 530/ASCE 5 or TMS 403.

R606.12.1.1 Floor and roof diaphragm construction. Floor and roof *diaphragms* shall be constructed of wood structural panels attached to wood framing in accordance with Table R602.3(1) or to cold-formed steel floor framing in accordance with Table R505.3.1(2) or to cold-formed steel roof framing in accordance with Table R804.3. Additionally, sheathing panel edges perpendicular to framing members shall be backed by blocking, and sheathing shall be connected to the blocking with fasteners at the edge spacing. For Seismic Design Categories C, D_0, D_1 and D_2, where the width-to-thickness dimension of the *diaphragm* exceeds 2-to-1, edge spacing of fasteners shall be 4 inches (102 mm) on center.

R606.12.2 Seismic Design Category C. Townhouses located in Seismic Design Category C shall comply with the requirements of this section.

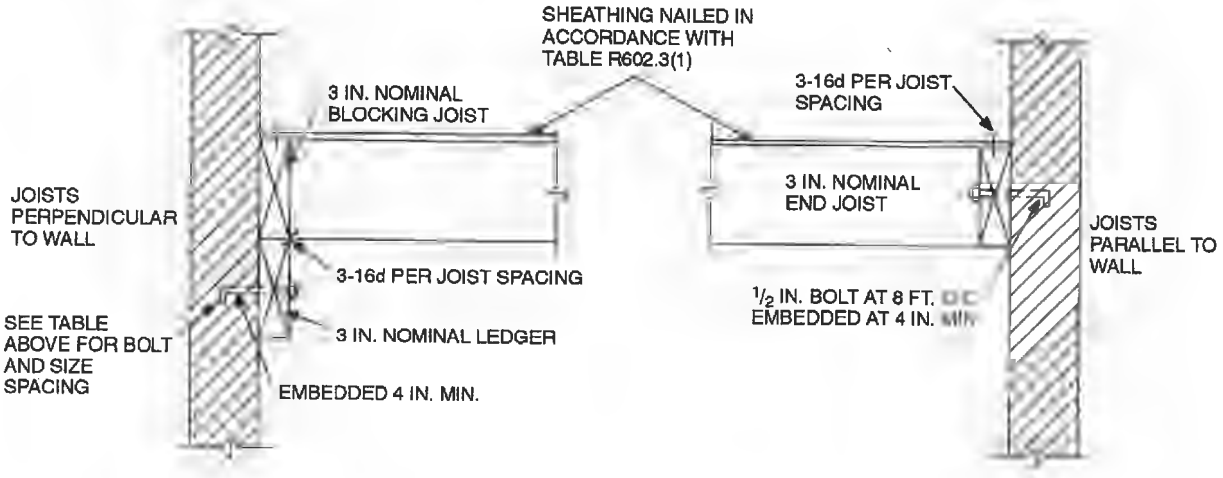






LEDGER BOLT SIZE AND SPACING

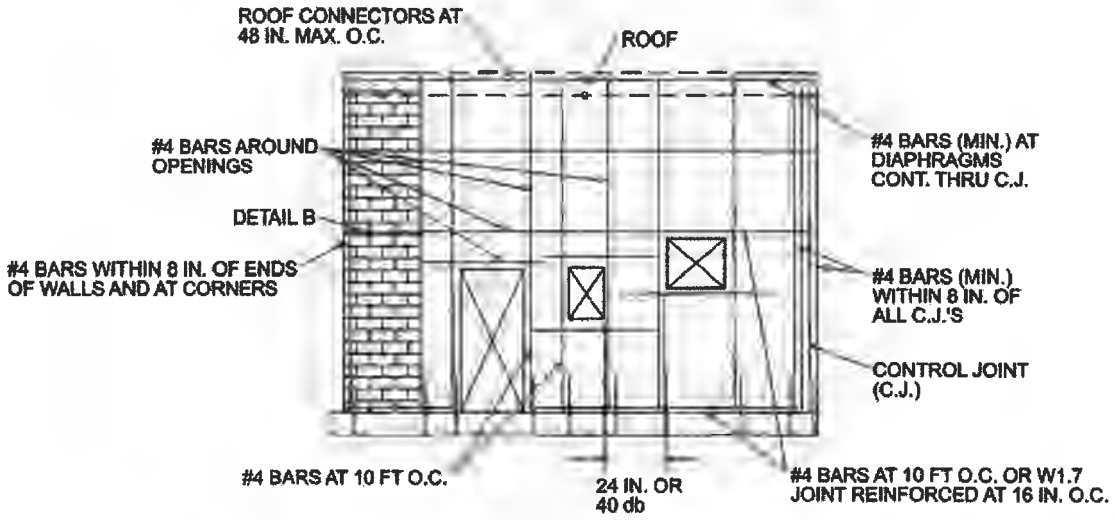
JOIST SPAN	BOLT SIZE AND SPACING	
	ROOF	FLOOR
10 FT.	1/2 AT 2 FT. 6 IN. 7/8 AT 3 FT. 6 IN.	1/2 AT 2 FT. 0 IN. 7/8 AT 2 FT. 9 IN.
10–15 FT.	1/2 AT 1 FT. 9 IN. 7/8 AT 2 FT. 6 IN.	1/2 AT 1 FT. 4 IN. 7/8 AT 2 FT. 0 IN.
15-20 FT.	1/2 AT 1 FT. 3 IN. 7/8 AT 2 FT. 0 IN.	1/2 AT 1 FT. 0 IN. 7/8 AT 1 FT. 6 IN.



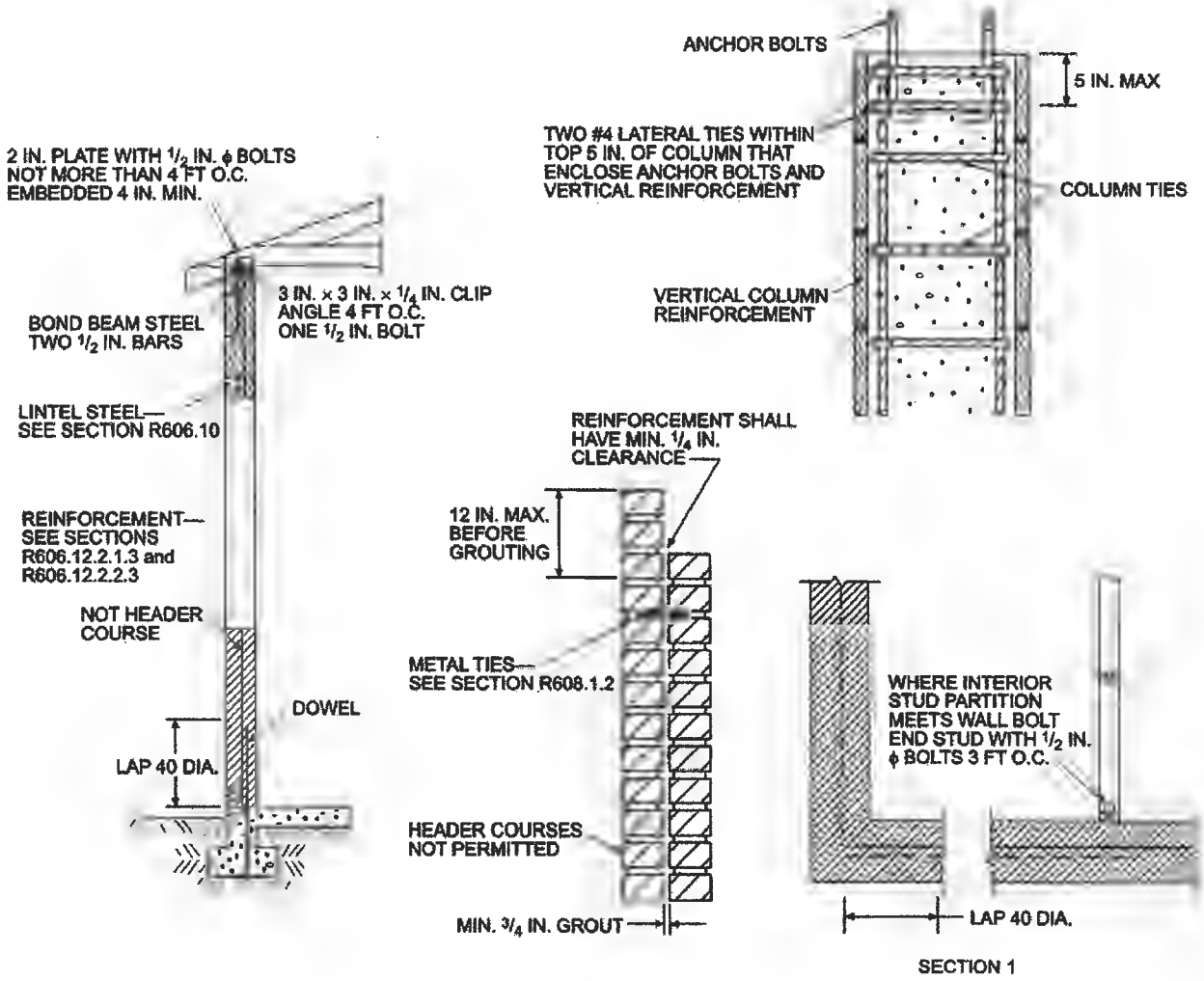
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0.479 kPa.

Note: Where bolts are located in hollow masonry, the cells in the courses receiving the bolt shall be grouted solid.

FIGURE R606.11(1)
ANCHORAGE REQUIREMENTS FOR MASONRY WALLS LOCATED IN SEISMIC DESIGN CATEGORY A, B OR C AND WHERE WIND LOADS ARE LESS THAN 30 PSF



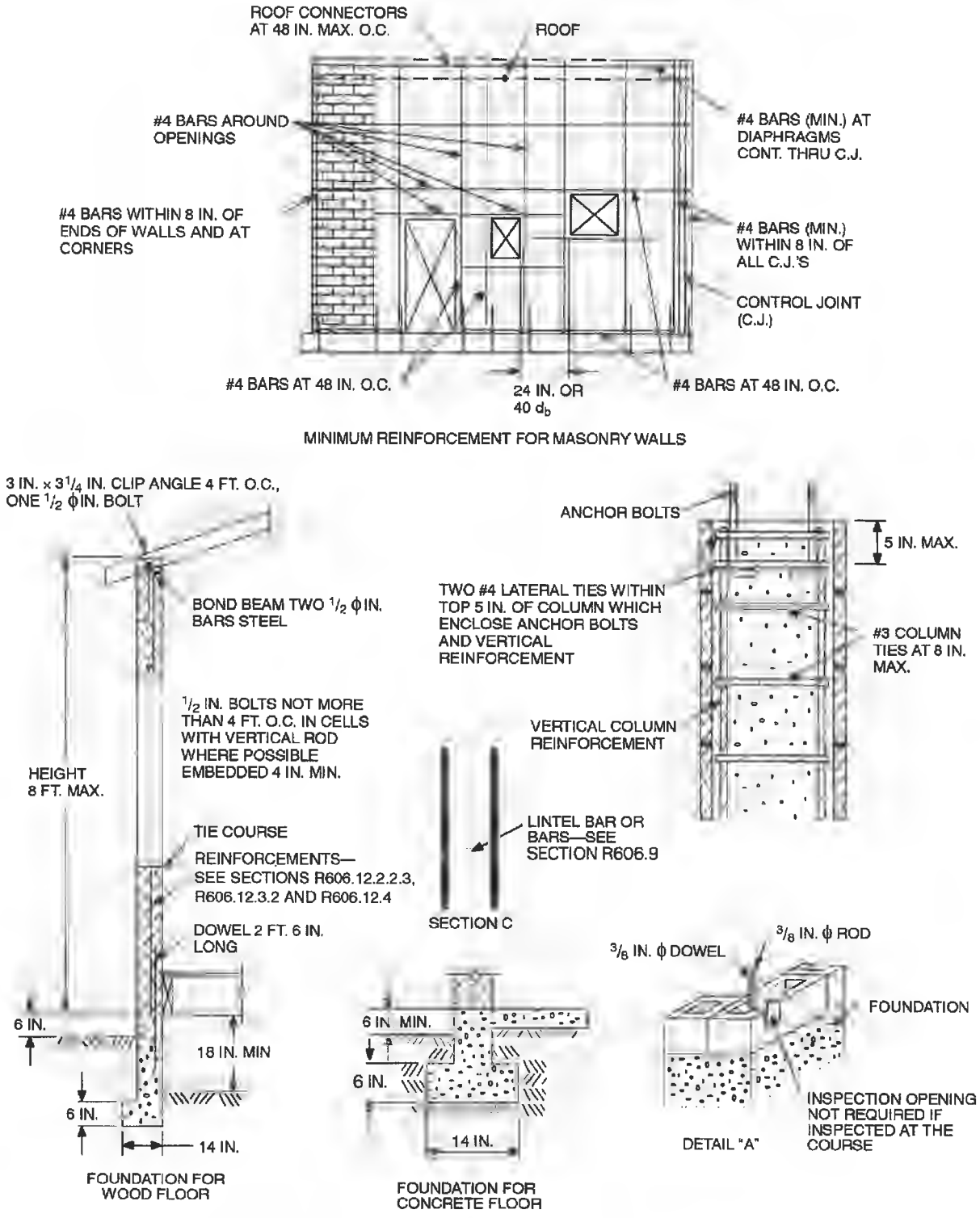
MINIMUM REINFORCEMENT FOR MASONRY WALLS



SECTION 1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R606.11(2)
REQUIREMENTS FOR REINFORCED GROUTED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY C



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

Note: A full bed joint must be provided. All cells containing vertical bars are to be filled to the top of wall and provide inspection opening as shown on detail "A."

Horizontal bars are to be laid as shown on detail "B." Lintel bars are to be laid as shown on Section C.

FIGURE R606.11(3)
REQUIREMENTS FOR REINFORCED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY D_0, D_1, OR D_2

R606.12.2.1 Minimum length of wall without openings. Table R606.12.2.1 shall be used to determine the minimum required solid wall length without openings at each masonry exterior wall. The provided percentage of solid wall length shall include only those wall segments that are 3 feet (914 mm) or longer. The maximum clear distance between wall segments included in determining the solid wall length shall not exceed 18 feet (5486 mm). Shear wall segments required to meet the minimum wall length shall be in accordance with Section R606.12.2.2.3.

R606.12.2.2 Design of elements not part of the lateral force-resisting system.

R606.12.2.2.1 Load-bearing frames or columns. Elements not part of the lateral force-resisting system shall be analyzed to determine their effect on the response of the system. The frames or columns shall be adequate for vertical load carrying capacity and induced moment caused by the design *story* drift.

R606.12.2.2.2 Masonry partition walls. Masonry partition walls, masonry screen walls and other masonry elements that are not designed to resist vertical or lateral loads, other than those induced by their own weight, shall be isolated from the structure so that vertical and lateral forces are not imparted to these elements. Isolation joints and connectors between these elements and the structure shall be designed to accommodate the design *story* drift.

R606.12.2.2.3 Reinforcement requirements for masonry elements. Masonry elements listed in Section R606.12.2.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of at least two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and at least one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or at least one No. 4 bar spaced not more than 48 inches (1219 mm). Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate. Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.
2. Vertical reinforcement. Vertical reinforcement shall consist of at least one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be located within 16 inches (406 mm) of the ends of masonry walls.

R606.12.2.3 Design of elements part of the lateral force-resisting system.

R606.12.2.3.1 Connections to masonry shear walls. Connectors shall be provided to transfer forces between masonry walls and horizontal elements in accordance with the requirements of Section 1.7.4 of TMS 402/ACI 530/ASCE 5. Connectors shall be designed to transfer horizontal design forces acting either perpendicular or parallel to the wall, but not less than 200 pounds per linear foot (2919 N/m) of wall. The maximum spacing between connectors shall be 4 feet (1219 mm). Such anchorage mechanisms shall not induce tension stresses perpendicular to grain in ledgers or nailers.

R606.12.2.3.2 Connections to masonry columns. Connectors shall be provided to transfer forces between masonry columns and horizontal elements in accordance with the requirements of Section 1.7.4 of TMS 402/ACI 530/ASCE 5. Where anchor bolts are used to connect horizontal elements to the tops of columns, the bolts shall be placed within lateral ties. Lateral ties shall enclose both the vertical bars in the column and the anchor bolts. There shall be a minimum of two No. 4 lateral ties provided in the top 5 inches (127 mm) of the column.

R606.12.2.3.3 Minimum reinforcement requirements for masonry shear walls. Vertical reinforcement of at least one No. 4 bar shall be provided at corners, within 16 inches (406 mm) of each side of openings, within 8 inches (203 mm) of each side of movement joints, within 8 inches (203 mm) of the ends of walls, and at a maximum spacing of 10 feet (3048 mm).

Horizontal joint reinforcement shall consist of at least two wires of W1.7 spaced not more than 16 inches (406 mm); or bond beam reinforcement of at least one No. 4 bar spaced not more than 10 feet

TABLE R606.12.2.1
MINIMUM SOLID WALL LENGTH ALONG EXTERIOR WALL LINES

SESIMIC DESIGN CATEGORY	MINIMUM SOLID WALL LENGTH (percent)[a]		
	One story or top story of two story	Wall supporting light-framed second story and roof	Wall supporting masonry second story and roof
Townhouses in C	20	25	35
D_0 or D_1	25	NP	NP
D_2	30	NP	NP

NP = Not permitted, except with design in accordance with the *International Building Code*.

a. For all walls, the minimum required length of solid walls shall be based on the table percent multiplied by the dimension, parallel to the wall direction under consideration, of a rectangle inscribing the overall building plan.

(3048 mm) shall be provided. Horizontal reinforcement shall also be provided at the bottom and top of wall openings and shall extend not less than 24 inches (610 mm) nor less than 40 bar diameters past the opening; continuously at structurally connected roof and floor levels; and within 16 inches (406 mm) of the top of walls.

R606.12.3 Seismic Design Category D_0 or D_1. Structures in Seismic Design Category D_0 or D_1 shall comply with the requirements of Seismic Design Category C and the additional requirements of this section.

R606.12.3.1 Design requirements. Masonry elements other than those covered by Section R606.12.2.2.2 shall be designed in accordance with the requirements of Chapter 1 and Sections 2.1 and 2.3 of TMS 402, ACI 530/ASCE 5 and shall meet the minimum reinforcement requirements contained in Sections R606.12.3.2 and R606.12.3.2.1. Otherwise, masonry shall be designed in accordance with TMS 403.

Exception: Masonry walls limited to one *story* in height and 9 feet (2743 mm) between lateral supports need not be designed provided they comply with the minimum reinforcement requirements of Sections R606.12.3.2 and R606.12.3.2.1.

R606.12.3.2 Minimum reinforcement requirements for masonry walls. Masonry walls other than those covered by Section R606.12.2.2.3 shall be reinforced in both the vertical and horizontal direction. The sum of the cross-sectional area of horizontal and vertical reinforcement shall be at least 0.002 times the gross cross-sectional area of the wall, and the minimum cross-sectional area in each direction shall be not less than 0.0007 times the gross cross-sectional area of the wall. Reinforcement shall be uniformly distributed. Table R606.12.3.2 shows the minimum reinforcing bar sizes required for varying thicknesses of masonry walls. The maximum spacing of reinforcement shall be 48 inches (1219 mm) provided that the walls are solid grouted and constructed of hollow open-end units, hollow units laid with full head joints or two wythes of solid units. The maximum spacing of reinforcement shall be 24 inches (610 mm) for all other masonry.

R606.12.3.2.1 Shear wall reinforcement requirements. The maximum spacing of vertical and horizontal reinforcement shall be the smaller of one-third the length of the shear wall, one-third the height of the shear wall, or 48 inches (1219 mm). The minimum cross-sectional area of vertical reinforcement shall be one-third of the required shear reinforcement. Shear reinforcement shall be anchored around vertical reinforcing bars with a standard hook.

R606.12.3.3 Minimum reinforcement for masonry columns. Lateral ties in masonry columns shall be spaced not more than 8 inches (203 mm) on center and shall be at least $^3/_8$-inch (9.5 mm) diameter. Lateral ties shall be embedded in grout.

R606.12.3.4 Material restrictions. Type N mortar or masonry cement shall not be used as part of the lateral-force-resisting system.

R606.12.3.5 Lateral tie anchorage. Standard hooks for lateral tie anchorage shall be either a 135-degree (2.4 rad) standard hook or a 180-degree (3.2 rad) standard hook.

R606.12.4 Seismic Design Category D_2. All structures in Seismic Design Category D_2 shall comply with the requirements of Seismic Design Category D_1 and to the additional requirements of this section.

R606.12.4.1 Design of elements not part of the lateral force-resisting system. Stack bond masonry that is not part of the lateral force-resisting system shall have a horizontal cross-sectional area of reinforcement of at least 0.0015 times the gross cross-sectional area of masonry. Table R606.12.4.1 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 24 inches (610 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.1
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 24 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

TABLE R606.12.3.2
MINIMUM DISTRIBUTED WALL REINFORCEMENT FOR BUILDING ASSIGNED TO SEISMIC DESIGN CATEGORY D_0 or D_1

NOMINAL WALL THICKNESS (inches)	MINIMUM SUM OF THE VERTICAL AND HORIZONTAL REINFORCEMENT AREAS[a] (square inches per foot)	MINIMUM REINFORCEMENT AS DISTRIBUTED IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS[b] (square inches per foot)	MINUMUM BAR SIZE FOR REINFORCEMENT SPACED AT 48 INCHES
6	0.135	0.047	#4
8	0.183	0.064	#5
10	0.231	0.081	#6
12	0.279	0.098	#6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square inch per foot = 2064 mm^2/m.

a. Based on the minimum reinforcing ratio of 0.002 times the gross cross-sectional area of the wall.

b. Based on the minimum reinforcing ratio each direction of 0.0007 times the gross cross-sectional area of the wall.

R606.12.4.2 Design of elements part of the lateral force-resisting system. Stack bond masonry that is part of the lateral force-resisting system shall have a horizontal cross-sectional area of reinforcement of at least 0.0025 times the gross cross-sectional area of masonry. Table R606.12.4.2 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 16 inches (406 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.2
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 16 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

R606.13 Protection for reinforcement. Bars shall be completely embedded in mortar or grout. Joint reinforcement embedded in horizontal mortar joints shall not have less than $^5/_8$-inch (15.9 mm) mortar coverage from the exposed face. All other reinforcement shall have a minimum coverage of one bar diameter over all bars, but not less than $^3/_4$ inch (19 mm), except where exposed to weather or soil, in which case the minimum coverage shall be 2 inches (51 mm).

R606.14 Beam supports. Beams, girders or other concentrated loads supported by a wall or column shall have a bearing of at least 3 inches (76 mm) in length measured parallel to the beam upon *solid masonry* not less than 4 inches (102 mm) in thickness, or upon a metal bearing plate of adequate design and dimensions to distribute the load safely, or upon a continuous reinforced masonry member projecting not less than 4 inches (102 mm) from the face of the wall.

R606.14.1 Joist bearing. Joists shall have a bearing of not less than $1^1/_2$ inches (38 mm), except as provided in Section R606.14, and shall be supported in accordance with Figure R606.11(1).

R606.15 Metal accessories. Joint reinforcement, anchors, ties and wire fabric shall conform to the following: ASTM A 82 for wire anchors and ties; ASTM A 36 for plate, headed and bent-bar anchors; ASTM A 510 for corrugated sheet metal anchors and ties; ASTM A 951 for joint reinforcement; ASTM B 227 for copper-clad steel wire ties; or ASTM A 167 for stainless steel hardware.

R606.15.1 Corrosion protection. Minimum corrosion protection of joint reinforcement, anchor ties and wire fabric for use in masonry wall construction shall conform to Table R606.15.1.

TABLE R606.15.1
MINIMUM CORROSION PROTECTION

MASONRY METAL ACCESSORY	STANDARD
Joint reinforcement, interior walls	ASTM A 641, Class 1
Wire ties or anchors in exterior walls completely embedded in mortar or grout	ASTM A 641, Class 3
Wire ties or anchors in exterior walls not completely embedded in mortar or grout	ASTM A 153, Class B-2
Joint reinforcement in exterior walls or interior walls exposed to moist environment	ASTM A 153, Class B-2
Sheet metal ties or anchors exposed to weather	ASTM A 153, Class B-2
Sheet metal ties or anchors completely embedded in mortar or grout	ASTM A 653, Coating Designation G60
Stainless steel hardware for any exposure	ASTM A 167, Type 304

SECTION R607
UNIT MASONRY

R607.1 Mortar. Mortar for use in masonry construction shall comply with ASTM C 270. The type of mortar shall be in accordance with Sections R607.1.1, R607.1.2 and R607.1.3 and shall meet the proportion specifications of Table R607.1 or the property specifications of ASTM C 270.

R607.1.1 Foundation walls. Masonry foundation walls constructed as set forth in Tables R404.1.1(1) through R404.1.1(4) and mortar shall be Type M or S.

R607.1.2 Masonry in Seismic Design Categories A, B and C. Mortar for masonry serving as the lateral-force-resisting system in Seismic Design Categories A, B and C shall be Type M, S or N mortar.

R607.1.3 Masonry in Seismic Design Categories D_0, D_1 and D_2. Mortar for masonry serving as the lateral-force-resisting system in Seismic Design Categories D_0, D_1 and D_2 shall be Type M or S portland cement-lime or mortar cement mortar.

R607.2 Placing mortar and masonry units.

R607.2.1 Bed and head joints. Unless otherwise required or indicated on the project drawings, head and bed joints shall be $^3/_8$ inch (10 mm) thick, except that the thickness of the bed joint of the starting course placed over foundations shall not be less than $^1/_4$ inch (7 mm) and not more than $^3/_4$ inch (19 mm).

R607.2.1.1 Mortar joint thickness tolerance. Mortar joint thickness for load-bearing masonry shall be within the following tolerances from the specified dimensions:

1. Bed joint: + $^1/_8$ inch (3 mm).

CHAPTER 7
WALL COVERING

SECTION R701
GENERAL

R701.1 Application. The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for all buildings.

R701.2 Installation. Products sensitive to adverse weather shall not be installed until adequate weather protection for the installation is provided. Exterior sheathing shall be dry before applying exterior cover.

SECTION R702
INTERIOR COVERING

R702.1 General. Interior coverings or wall finishes shall be installed in accordance with this chapter and Table R702.1(1), Table R702.1(2), Table R702.1(3) and Table R702.3.5. Interior masonry veneer shall comply with the requirements of Section R703.7.1 for support and Section R703.7.4 for anchorage, except an air space is not required. Interior finishes and materials shall conform to the flame spread and smoke-development requirements of Section R302.9.

R702.2 Interior plaster.

R702.2.1 Gypsum plaster. Gypsum plaster materials shall conform to ASTM C 5, C 22, C 28, C 35, C 59, C 61, C 587, C 631, C 847, C 933, C 1032 and C 1047, and shall be installed or applied in compliance with ASTM C 843 and C 844. Gypsum lath or gypsum base for veneer plaster shall conform to ASTM C 1396. Plaster shall not be less than three coats when applied over metal lath and not less than two coats when applied over other bases permitted by this section, except that veneer plaster may be applied in one coat not to exceed $^3/_{16}$ inch (4.76 mm) thickness, provided the total thickness is in accordance with Table R702.1(1).

R702.2.2 Cement plaster. Cement plaster materials shall conform to ASTM C 91 (Type M, S or N), C 150 (Type I, II and III), C 595 [Type IP, I (PM), IS and I (SM), C 847, C 897, C 926, C 933, C 1032, C 1047 and C 1328, and shall be installed or applied in compliance with ASTM C 1063. Gypsum lath shall conform to ASTM C 1396. Plaster shall not be less than three coats when applied over metal lath and not less than two coats when applied over other bases permitted by this section, except that veneer plaster may be applied in one coat not to exceed $^3/_{16}$ inch (4.76 mm) thickness, provided the total thickness is in accordance with Table R702.1(1).

R702.2.2.1 Application. Each coat shall be kept in a moist condition for at least 24 hours prior to application of the next coat.

Exception: Applications installed in accordance with ASTM C 926.

R702.2.2.2 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than 48 hours after application of the first coat. For three coat cement plaster the second coat shall not be applied sooner than 24 hours after application of the first coat. The finish coat for three-coat cement plaster shall not

TABLE R702.1(1)
THICKNESS OF PLASTER

PLASTER BASE	FINISHED THICKNESS OF PLASTER FROM FACE OF LATH, MASONRY, CONCRETE (Inches)	
	Gypsum Plaster	Cement Plaster
Expanded metal lath	$^5/_8$, minimum[a]	$^5/_8$, minimum[a]
Wire lath	$^5/_8$, minimum[a]	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]
Gypsum lath[g]	$^1/_2$, minimum	$^3/_4$, minimum (interior)[b]
Masonry walls[c]	$^1/_2$, minimum	$^1/_2$, minimum
Monolithic concrete walls[c, d]	$^5/_8$, maximum	$^7/_8$, maximum
Monolithic concrete ceilings[c, d]	$^3/_8$, maximum[e]	$^1/_2$, maximum
Gypsum veneer base[f, g]	$^1/_{16}$, minimum	$^3/_4$, minimum (interior)[b]
Gypsum sheathing[g]	—	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]

For SI: 1 inch = 25.4 mm.

a. When measured from back plane of expanded metal lath, exclusive of ribs, or self-furring lath, plaster thickness shall be $^3/_4$ inch minimum.

b. When measured from face of support or backing.

c. Because masonry and concrete surfaces may vary in plane, thickness of plaster need not be uniform.

d. When applied over a liquid bonding agent, finish coat may be applied directly to concrete surface.

e. Approved acoustical plaster may be applied directly to concrete or over base coat plaster, beyond the maximum plaster thickness shown.

f. Attachment shall be in accordance with Table R702.3.5.

g. Where gypsum board is used as a base for cement plaster, a water-resistive barrier complying with Section R703.2 shall be provided.

be applied sooner than 48 hours after application of the second coat.

R702.2.3 Support. Support spacing for gypsum or metal lath on walls or ceilings shall not exceed 16 inches (406 mm) for $^3/_8$-inch-thick (9.5 mm) or 24 inches (610 mm) for $^1/_2$-inch-thick (12.7 mm) plain gypsum lath. Gypsum lath shall be installed at right angles to support framing with end joints in adjacent courses staggered by at least one framing space.

R702.3 Gypsum board.

R702.3.1 Materials. All gypsum board materials and accessories shall conform to ASTM C 22, C 475, C 514, C 1002, C 1047, C 1177, C 1178, C 1278, C 1396 or C 1658 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board shall conform to ASTM C 557.

R702.3.2 Wood framing. Wood framing supporting gypsum board shall not be less than 2 inches (51 mm) nominal thickness in the least dimension except that wood furring strips not less than 1-inch by 2-inch (25 mm by 51 mm) nominal dimension may be used over solid backing or framing spaced not more than 24 inches (610 mm) on center.

R702.3.3 Cold-formed steel framing. Cold-formed steel framing supporting gypsum board shall not be less than $1^1/_4$ inches (32 mm) wide in the least dimension. Nonload-bearing cold-formed steel framing shall comply with ASTM C 645. Load-bearing cold-formed steel framing and all cold-

TABLE R702.1(2)
GYPSUM PLASTER PROPORTIONS[a]

NUMBER	COAT	PLASTER BASE OR LATH	MAXIMUM VOLUME AGGREGATE PER 100 POUNDS NEAT PLASTER[b] (cubic feet)	
			Damp Loose Sand[a]	Perlite or Vermiculite[c]
Two-coat work	Base coat	Gypsum lath	2.5	2
	Base coat	Masonry	3	3
Three-coat work	First coat	Lath	2[d]	2
	Second coat	Lath	3[d]	2[e]
	First and second coats	Masonry	3	3

For SI: 1 inch = 25.4 mm, 1 cubic foot = 0.0283 m^3, 1 pound = 0.454 kg.

a. Wood-fibered gypsum plaster may be mixed in the proportions of 100 pounds of gypsum to not more than 1 cubic foot of sand where applied on masonry or concrete.

b. When determining the amount of aggregate in set plaster, a tolerance of 10 percent shall be allowed.

c. Combinations of sand and lightweight aggregate may be used, provided the volume and weight relationship of the combined aggregate to gypsum plaster is maintained.

d. If used for both first and second coats, the volume of aggregate may be 2.5 cubic feet.

e. Where plaster is 1 inch or more in total thickness, the proportions for the second coat may be increased to 3 cubic feet.

TABLE R702.1(3)
CEMENT PLASTER PROPORTIONS, PARTS BY VOLUME

COAT	CEMENT PLASTER TYPE	CEMENTITIOUS MATERIALS				VOLUME OF AGGREGATE PER SUM OF SEPARATE VOLUMES OF CEMENTITIOUS MATERIALS[b]
		Portland Cement Type I, II or III or Blended Cement Type IP, I (PM), IS or I (SM)	Plastic Cement	Masonry Cement Type M, S or N	Lime	
First	Portland or blended	1			$^3/_4$ - $1^1/_2$[a]	$2^1/_2$ - 4
	Masonry				1	$2^1/_2$ - 4
	Plastic		1			$2^1/_2$ - 4
Second	Portland or blended	1			$^3/_4$ - $1^1/_2$	3 - 5
	Masonry			1		3 - 5
	Plastic		1			3 - 5
Finish	Portland or blended	1			$^3/_4$ - 2	$1^1/_2$ - 3
	Masonry			1		$1^1/_2$ - 3
	Plastic		1			$1^1/_2$ - 3

For SI: 1 inch = 25.4 mm, 1 pound = 0.545 kg.

a. Lime by volume of 0 to 3/4 shall be used when the plaster will be placed over low-absorption surfaces such as dense clay tile or brick.

b. The same or greater sand proportion shall be used in the second coat than used in the first coat.

formed steel framing from 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall comply with ASTM C 955.

R702.3.4 Insulating concrete form walls. Foam plastics for insulating concrete form walls constructed in accordance with Sections R404.1.2 and R611 on the interior of *habitable spaces* shall be protected in accordance with Section R316.4. Use of adhesives in conjunction with mechanical fasteners is permitted. Adhesives used for interior and exterior finishes shall be compatible with the insulating form materials.

R702.3.5 Application. Maximum spacing of supports and the size and spacing of fasteners used to attach gypsum board shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsum board shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.

R702.3.6 Fastening. Screws for attaching gypsum board to wood framing shall be Type W or Type S in accordance with ASTM C 1002 and shall penetrate the wood not less than $^5/_8$ inch (16 mm). Gypsum board shall be attached to cold-formed steel framing with minimum No. 6 screws. Screws for attaching gypsum board to cold-formed steel framing less than 0.033 inch (1 mm) thick shall be Type S in accordance with ASTM C 1002 or bugle head style in accordance with ASTM C 1513 and shall penetrate the

TABLE R702.3.5
MINIMUM THICKNESS AND APPLICATION OF GYPSUM BOARD

THICKNESS OF GYPSUM BOARD (inches)	APPLICATION	ORIENTATION OF GYPSUM BOARD TO FRAMING	MAXIMUM SPACING OF FRAMING MEMBERS (inches o.c.)	MAXIMUM SPACING OF FASTENERS (inches)		SIZE OF NAILS FOR APPLICATION TO WOOD FRAMING[c]
				Nails[a]	Screws[b]	
Application without adhesive						
$^3/_8$	Ceiling[d]	Perpendicular	16	7	12	13 gage, $1^1/_4$″ long, $^{19}/_{64}$″ head; 0.098″ diameter, $1^1/_4$″ long, annular-ringed; or 4d cooler nail, 0.080″ diameter, $1^3/_8$″ long, $^7/_{32}$″ head.
	Wall	Either direction	16	8	16	
$^1/_2$	Ceiling	Either direction	16	7	12	13 gage, $1^3/_8$″ long, $^{19}/_{64}$″ head; 0.098″ diameter, $1^1/_4$″ long, annular-ringed; 5d cooler nail, 0.086″ diameter, $1^5/_8$″ long, $^{15}/_{64}$″ head; or gypsum board nail, 0.086? diameter, $1^5/_8$″ long, $^9/_{32}$″ head.
	Ceiling[d]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
$^5/_8$	Ceiling	Either direction	16	7	12	13 gage, $1^5/_8$″ long, $^{19}/_{64}$″ head; 0.098″ diameter, $1^3/_8$″ long, annular-ringed; 6d cooler nail, 0.092″ diameter, $1^7/_8$″ long, $^1/_4$″ head; or gypsum board nail, 0.0915″ diameter, $1^7/_8$″ long, $^{19}/_{64}$″ head.
	Ceiling[e]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
Application with adhesive						
$^3/_8$	Ceiling[d]	Perpendicular	16	16	16	Same as above for $^3/_8$″ gypsum board
	Wall	Either direction	16	16	24	
$^1/_2$ or $^5/_8$	Ceiling	Either direction	16	16	16	Same as above for $^1/_2$″ and $^5/_8$″ gypsum board, respectively
	Ceiling[d]	Perpendicular	24	12	16	
	Wall	Either direction	24	16	24	
Two $^3/_8$ layers	Ceiling	Perpendicular	16	16	16	Base ply nailed as above for $^1/_2$″ gypsum board; face ply installed with adhesive
	Wall	Either direction	24	24	24	

For SI: 1 inch = 25.4 mm.

a. For application without adhesive, a pair of nails spaced not less than 2 inches apart or more than $2^1/_2$ inches apart may be used with the pair of nails spaced 12 inches on center.

b. Screws shall be in accordance with Section R702.3.6. Screws for attaching gypsum board to structural insulated panels shall penetrate the wood structural panel facing not less than $^7/_{16}$ inch.

c. Where cold-formed steel framing is used with a clinching design to receive nails by two edges of metal, the nails shall be not less than $^5/_8$ inch longer than the gypsum board thickness and shall have ringed shanks. Where the cold-formed steel framing has a nailing groove formed to receive the nails, the nails shall have barbed shanks or be 5d, $13^1/_2$ gage, $^{15}/_8$ inches long, $^{15}/_{64}$-inch head for $^1/_2$-inch gypsum board; and 6d, 13 gage, $1^7/_8$ inches long, $^{15}/_{64}$-inch head for $^5/_8$-inch gypsum board.

d. Three-eighths-inch-thick single-ply gypsum board shall not be used on a ceiling where a water-based textured finish is to be applied, or where it will be required to support insulation above a ceiling. On ceiling applications to receive a water-based texture material, either hand or spray applied, the gypsum board shall be applied perpendicular to framing. When applying a water-based texture material, the minimum gypsum board thickness shall be increased from $^3/_8$ inch to $^1/_2$ inch for 16-inch on center framing, and from $^1/_2$ inch to $^5/_8$ inch for 24-inch on center framing or $^1/_2$-inch sag-resistant gypsum ceiling board shall be used.

e. Type X gypsum board for garage ceilings beneath habitable rooms shall be installed perpendicular to the ceiling framing and shall be fastened at maximum 6 inches o.c. by minimum $1^7/_8$ inches 6d coated nails or equivalent drywall screws.

steel not less than $^3/_8$ inch (9.5 mm). Screws for attaching gypsum board to cold-formed steel framing 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall be in accordance with ASTM C 954 or bugle head style in accordance with ASTM C 1513. Screws for attaching gypsum board to structural insulated panels shall penetrate the wood structural panel facing not less than $^7/_{16}$ inch (11 mm).

R702.3.7 Horizontal gypsum board diaphragm ceilings. Use of gypsum board shall be permitted on wood joists to create a horizontal *diaphragm* in accordance with Table R702.3.7. Gypsum board shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of board shall not occur on the same joist. The maximum allowable *diaphragm* proportions shall be $1^1/_2$:1 between shear resisting elements. Rotation or cantilever conditions shall not be permitted. Gypsum board shall not be used in *diaphragm* ceilings to resist lateral forces imposed by masonry or concrete construction. All perimeter edges shall be blocked using wood members not less than 2-inch by 6-inch (51 mm by 152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than 2 inches (51 mm) in width for the attachment of the gypsum board.

R702.3.8 Water-resistant gypsum backing board. Gypsum board used as the base or backer for adhesive application of ceramic tile or other required nonabsorbent finish material shall conform to ASTM C 1396, C 1178 or C1278. Use of water-resistant gypsum backing board shall be permitted on ceilings where framing spacing does not exceed 12 inches (305 mm) on center for $^1/_2$-inch-thick (12.7 mm) or 16 inches (406 mm) for $^5/_8$-inch-thick (16 mm) gypsum board. Water-resistant gypsum board shall not be installed over a Class I or II vapor retarder in a shower or tub compartment. Cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer.

R702.3.8.1 Limitations. Water resistant gypsum backing board shall not be used where there will be direct exposure to water, or in areas subject to continuous high humidity.

R702.4 Ceramic tile.

R702.4.1 General. Ceramic tile surfaces shall be installed in accordance with ANSI A108.1, A108.4, A108.5, A108.6, A108.11, A118.1, A118.3, A136.1 and A137.1.

R702.4.2 Fiber-cement, fiber-mat reinforced cementitious backer units, glass mat gypsum backers and fiber-reinforced gypsum backers. Fiber-cement, fiber-mat reinforced cementitious backer units, glass mat gypsum backers or fiber-reinforced gypsum backers in compliance with ASTM C 1288, C 1325, C 1178 or C 1278, respectively, and installed in accordance with manufacturers' recommendations shall be used as backers for wall tile in tub and shower areas and wall panels in shower areas.

R702.5 Other finishes. Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hard board paneling less than $^1/_4$-inch (6 mm) nominal thickness shall not have less than a $^3/_8$-inch (10 mm) gypsum board backer. Wood veneer paneling not less than $^1/_4$-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to CPA/ANSI A135.5.

R702.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles* and shall be permitted to be installed directly to the studs with maximum 24 inches (610 mm) on-center spacing.

R702.6.1 Attachment. Nails, staples or glue are permitted for attaching shakes or shingles to the wall, and attachment of the shakes or shingles directly to the surface shall be permitted provided the fasteners are appropriate for the type of wall surface material. When nails or staples are used, two fasteners shall be provided and shall be placed so that they are covered by the course above.

R702.6.2 Furring strips. Where furring strips are used, they shall be 1 inch by 2 inches or 1 inch by 3 inches (25 mm by 51 mm or 25 mm by 76 mm), spaced a distance on center equal to the desired exposure, and shall be attached to the wall by nailing through other wall material into the studs.

TABLE R702.3.7
SHEAR CAPACITY FOR HORIZONTAL WOOD-FRAMED GYPSUM BOARD DIAPHRAGM CEILING ASSEMBLIES

MATERIAL	THICKNESS OF MATERIAL (min.) (inch)	SPACING OF FRAMING MEMBERS (max.) (inch)	SHEAR VALUE[a, b] (plf of ceiling)	MINIMUM FASTENER SIZE[c, d]
Gypsum board	$^1/_2$	16 o.c.	90	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head
Gypsum board	$^1/_2$	24 o.c.	70	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head

For SI: 1 inch = 25.4 mm, 1 pound per linear foot = 1.488 kg/m.

a. Values are not cumulative with other horizontal diaphragm values and are for short-term loading caused by wind or seismic loading. Values shall be reduced 25 percent for normal loading.

b. Values shall be reduced 50 percent in Seismic Design Categories D_0, D_1, D_2 and E.

c. $1^1/_4$-inch, #6 Type S or W screws may be substituted for the listed nails.

d. Fasteners shall be spaced not more than 7 inches on center at all supports, including perimeter blocking, and not less than $^3/_8$ inch from the edges and ends of the gypsum board.

R702.7 Vapor retarders. Class I or II vapor retarders are required on the interior side of frame walls in Climate Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. Basement walls.
2. Below grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

R702.7.1 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in Table R702.7.1 is met.

TABLE R702.7.1
CLASS III VAPOR RETARDERS

CLIMATE ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a]
Marine 4	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Insulated sheathing with R-value ≥ 2.5 over 2 × 4 wall.
	Insulated sheathing with R-value ≥ 3.75 over 2 × 6 wall.
5	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Insulated sheathing with R-value ≥ 5 over 2 × 4 wall.
	Insulated sheathing with R-value ≥ 7.5 over 2 × 6 wall.
6	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Insulated sheathing with R-value ≥ 7.5 over 2 × 4 wall.
	Insulated sheathing with R-value ≥ 11.25 over 2 × 6 wall.
7 and 8	Insulated sheathing with R-value ≥ 10 over 2 × 4 wall.
	Insulated sheathing with R-value ≥ 15 over 2 × 6 wall.

For SI: 1 pound per cubic foot = 16 kg/m^3.

a. Spray foam with a minimum density of 2 lb/ft^3 applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to meet the insulating sheathing requirement where the spray foam R-value meets or exceeds the specified insulating sheathing R-value.

R702.7.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

Class I: Sheet polyethylene, unperforated aluminum foil.

Class II: Kraft-faced fiberglass batts.

Class III: Latex or enamel paint.

R702.7.3 Minimum clear air spaces and vented openings for vented cladding. For the purposes of this section, vented cladding shall include the following minimum clear air spaces. Other openings with the equivalent vent area shall be permitted.

1. Vinyl lap or horizontal aluminum siding applied over a weather resistive barrier as specified in Table R703.4.
2. Brick veneer with a clear airspace as specified in Table R703.7.4.
3. Other approved vented claddings.

SECTION R703
EXTERIOR COVERING

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.8.

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section R702.7 of this code.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed according to Section R703.7 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections R703.2 and R703.8, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.
   2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.
   2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa).
   2.4. Exterior wall envelope assemblies shall be subjected to the minimum test exposure for a minimum of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the

results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetration or intersections of terminations with dissimilar materials.

R703.1.2 Wind resistance. Wall coverings, backing materials and their attachments shall be capable of resisting wind loads in accordance with Tables R301.2(2) and R301.2(3). Wind-pressure resistance of the siding and backing materials shall be determined by ASTM E 330 or other applicable standard test methods. Where wind-pressure resistance is determined by design analysis, data from approved design standards and analysis conforming to generally accepted engineering practice shall be used to evaluate the siding and backing material and its fastening. All applicable failure modes including bending rupture of siding, fastener withdrawal and fastener head pull-through shall be considered in the testing or design analysis. Where the wall covering and the backing material resist wind load as an assembly, use of the design capacity of the assembly shall be permitted.

R703.2 Water-resistive barrier. One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1.

Exception: Omission of the water-resistive barrier is permitted in the following situations:

1. In detached accessory buildings.
2. Under exterior wall finish materials as permitted in Table R703.4.
3. Under paperbacked stucco lath when the paper backing is an approved water-resistive barrier.

R703.3 Wood, hardboard and wood structural panel siding.

R703.3.1 Panel siding. Joints in wood, hardboard or wood structural panel siding shall be made as follows unless otherwise approved. Vertical joints in panel siding shall occur over framing members, unless wood or wood structural panel sheathing is used, and shall be shiplapped or covered with a batten. Horizontal joints in panel siding shall be lapped a minimum of 1 inch (25 mm) or shall be shiplapped or shall be flashed with Z-flashing and occur over solid blocking, wood or wood structural panel sheathing.

R703.3.2 Horizontal siding. Horizontal lap siding shall be installed in accordance with the manufacturer's recommendations. Where there are no recommendations the siding shall be lapped a minimum of 1 inch (25 mm), or $^1/_2$ inch (13 mm) if rabbeted, and shall have the ends caulked, covered with a batten or sealed and installed over a strip of flashing.

R703.4 Attachments. Unless specified otherwise, all wall coverings shall be securely fastened in accordance with Table R703.4 or with other *approved* aluminum, stainless steel, zinc-coated or other *approved* corrosion-resistive fasteners. Where the basic wind speed in accordance with Figure R301.2(4)A is 110 miles per hour (49 m/s) or higher, the attachment of wall coverings shall be designed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3).

R703.5 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles.*

R703.5.1 Application. Wood shakes or shingles shall be applied either single-course or double-course over nominal $^1/_2$-inch (13 mm) wood-based sheathing or to furring strips over $^1/_2$-inch (13 mm) nominal nonwood sheathing . A permeable water-resistive barrier shall be provided over all sheathing, with horizontal overlaps in the membrane of not less than 2 inches (51 mm) and vertical overlaps of not less than 6 inches (152 mm). Where furring strips are used, they shall be 1 inch by 3 inches or 1 inch by 4 inches (25 mm by 76 mm or 25 mm by 102 mm) and shall be fastened horizontally to the studs with 7d or 8d box nails and shall be spaced a distance on center equal to the actual weather exposure of the shakes or shingles, not to exceed the maximum exposure specified in Table R703.5.2. The spacing between adjacent shingles to allow for expansion shall not exceed $^1/_4$ inch (6 mm), and between adjacent shakes, it shall not exceed $^1/_2$ inch (13 mm). The offset spacing between joints in adjacent courses shall be a minimum of $1^1/_2$ inches (38 mm).

R703.5.2 Weather exposure. The maximum weather exposure for shakes and shingles shall not exceed that specified in Table R703.5.2.

TABLE R703.5.2
MAXIMUM WEATHER EXPOSURE FOR WOOD SHAKES AND SHINGLES ON EXTERIOR WALLS[a, b, c]
(Dimensions are in inches)

LENGTH	EXPOSURE FOR SINGLE COURSE	EXPOSURE FOR DOUBLE COURSE
Shingles[a]		
16	$7^1/_2$	12[b]
18	$8^1/_2$	14[c]
24	$11^1/_2$	16
Shakes[a]		
18	$8^1/_2$	14
24	$11^1/_2$	18

For SI: 1 inch = 25.4 mm.

a. Dimensions given are for No. 1 grade.

b. A maximum 10-inch exposure is permitted for No. 2 grade.

c. A maximum 11-inch exposure is permitted for No. 2 grade.

TABLE R703.4
WEATHER-RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	WATER-RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b, c, d]					
					Wood or wood structural panel sheathing into stud	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Horizonal aluminum[e]	Without insulation	0.019[f] 0.024	Lap	Yes	0.120 nail 1 1/2″ long	0.120 nail 2″ long	0.120 nail 2″ long	0.120 nail[y]	Not allowed	Same as stud spacing
			Lap	Yes	0.120 nail 1 1/2″ long	0.120 nail 2″ long	0.120 nail 2″ long	0.120 nail[y]	Not allowed	
	With insulation	0.019	Lap	Yes	0.120 nail 1 1/2″ long	0.120 nail 2 1/2″ long	0.120 nail 2 1/2″ long	0.120 nail[y]	0.120 nail 1 1/2″ long	
Anchored veneer: brick, concrete, masonry or stone		2	Section R703	Yes	See Section R703 and Figure R703.7[g]					
Adhered veneer: concrete, stone or masonry[w]		—	Section R703	Yes Note w	See Section R703.6.1[g] or in accordance with the manufacturer's instructions.					
Hardboard[k] Panel siding-vertical		7/16	—	Yes	Note m	Note m	Note m	Note m	Note m	6″ panel edges 12″ inter. sup.[n]
Hardboard[k] Lap-siding-horizontal		7/16	Note p	Yes	Note o	Note o	Note o	Note o	Note o	Same as stud spacing 2 per bearing
Steel[h]		29 ga.	Lap	Yes	0.113 nail 1 3/4″ Staple-1 3/4″	0.113 nail 2 3/4″ Staple-2 1/2″	0.113 nail 2 1/2″ Staple-2 1/4″	0.113 nail[v] Staple[v]	Not allowed	Same as stud spacing
Particleboard panels		3/8 - 1/2	—	Yes	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	box nail[v]	6d box nail (2″ × 0.099″), 3/8 not allowed	6″ panel edge, 12" inter. sup.
		5/8	—	Yes	6d box nail (2″ × 0.099″)	8d box nail (2 1/2″ × 0.113″)	8d box nail (2 1/2″ × 0.113″)	box nail[v]	6d box nail (2″" × 0.099″)	
Wood structural panel[i] ANSI/APA-PRP 210 siding[i] (exterior grade)		3/8 - 1/2	Note p	Yes	0.099 nail-2″	0.113 nail-2 1/2″	0.113 nail-2 1/2″	0.113 nail[v]	0.099 nail-2″	6″ panel edges, 12″ inter. sup.
Wood structural panel lapsiding		3/8 - 1/2	Note p Note x	Yes	0.099 nail-2″	0.113 nail-2 1/2″	0.113 nail-2 1/2″	0.113 nail[x]	0.099 nail-2″	8″ along bottom edge
Vinyl siding[l]		0.035	Lap	Yes	0.120 nail (shank) with a 0.313 head or 16-gage staple with 3/8 to 1/2-inch crown[y, z]	0.120 nail (shank) with a 0.313 head or 16-gage staple with 3/8 to 1/2-inch crown[y]	0.120 nail (shank) with a 0.313 head or 16-gage staple with 3/8 to 1/2-inch crown[y]	0.120 nail (shank) with a 0.313 head per Section R703.11.2	Not allowed	16 inches on center or specified by the manufacturer instructions or test report
Wood[j] rustic, drop	3/8 Min	Lap	Lap	Yes	Fastener penetration into stud-1″				0.113 nail-2 1/2″ Staple-2″	Face nailing up to 6″ widths, 1 nail per bearing; 8″ widths and over, 2 nails per bearing

(continued)

TABLE R703.4—continued
WEATHER-RESISTANT SIDING ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL	NOMINAL THICKNESS[a] (inches)	JOINT TREATMENT	WATER-RESISTIVE BARRIER REQUIRED	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS[b, c, d]					
				Wood or wood structural panel sheathing into stud	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud	Direct to studs	Number or spacing of fasteners
Shiplap	$^{19}/_{32}$ Average	Lap	Yes	Fastener penetration into stud-1″				0.113 nail-2$^{1}/_{2}$″ Staple-2″	Face nailing up to 6″ widths, 1 nail per bearing; 8″ widths and over, 2 nails per bearing
Bevel	$^{7}/_{16}$								
Butt tip	$^{3}/_{16}$	Lap	Yes						
Fiber cement panel siding[q]	$^{5}/_{16}$	Note q	Yes Note u	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r, v]	4d common corrosion-resistant nail[r]	6″ o.c. on edges, 12″ o.c. on intermed. studs
Fiber cement lap siding[s]	$^{5}/_{16}$	Note s	Yes Note u	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r]	6d common corrosion-resistant nail[r, v]	6d common corrosion-resistant nail or 11-gage roofing nail[r]	Note t

For SI: 1 inch = 25.4 mm.

a. Based on stud spacing of 16 inches on center where studs are spaced 24 inches, siding shall be applied to sheathing approved for that spacing.

b. Nail is a general description and shall be T-head, modified round head, or round head with smooth or deformed shanks.

c. Staples shall have a minimum crown width of $^{7}/_{16}$-inch outside diameter and be manufactured of minimum 16-gage wire.

d. Nails or staples shall be aluminum, galvanized, or rust-preventative coated and shall be driven into the studs where fiberboard, gypsum, or foam plastic sheathing backing is used. Where wood or wood structural panel sheathing is used, fasteners shall be driven into studs unless otherwise permitted to be driven into sheathing in accordance with the siding manufacturer's installation instructions.

e. Aluminum nails shall be used to attach aluminum siding.

f. Aluminum (0.019 inch) shall be unbacked only when the maximum panel width is 10 inches and the maximum flat area is 8 inches. The tolerance for aluminum siding shall be +0.002 inch of the nominal dimension.

g. All attachments shall be coated with a corrosion-resistant coating.

h. Shall be of approved type.

i. Three-eighths-inch plywood shall not be applied directly to studs spaced more than 16 inches on center when long dimension is parallel to studs. Plywood $^{1}/_{2}$-inch or thinner shall not be applied directly to studs spaced more than 24 inches on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular to the studs or over sheathing approved for that stud spacing.

j. Wood board sidings applied vertically shall be nailed to horizontal nailing strips or blocking set 24 inches on center. Nails shall penetrate 1$^{1}/_{2}$ inches into studs, studs and wood sheathing combined or blocking.

k. Hardboard siding shall comply with CPA/ANSI A135.6.

l. Vinyl siding shall comply with ASTM D 3679.

m. Minimum shank diameter of 0.092 inch, minimum head diameter of 0.225 inch, and nail length must accommodate sheathing and penetrate framing 1$^{1}/_{2}$ inches.

n. When used to resist shear forces, the spacing must be 4 inches at panel edges and 8 inches on interior supports.

o. Minimum shank diameter of 0.099 inch, minimum head diameter of 0.240 inch, and nail length must accommodate sheathing and penetrate framing 1$^{1}/_{2}$ inches.

p. Vertical end joints shall occur at studs and shall be covered with a joint cover or shall be caulked.

q. See Section R703.10.1.

r. Fasteners shall comply with the nominal dimensions in ASTM F 1667.

s. See Section R703.10.2.

t. Face nailing: one 6d common nail through the over lap ping planks at each stud. Concealed nailing: one 11 gage 1$^{1}/_{2}$ inch long galv. roofing nail through the top edge of each plank at each stud.

u. See Section R703.2 exceptions.

v. Minimum nail length must accommodate sheathing and penetrate framing 1$^{1}/_{2}$ inches.

w. Adhered masonry veneer shall comply with the requirements of Section R703.6.3 and shall comply with the requirements in Sections 6.1 and 6.3 of TMS-402 ACI 530/ASCE 5.

x. Vertical joints, if staggered shall be permitted to be away from studs if applied over wood structural panel sheathing.

y. Minimum fastener length must accommodate sheathing and penetrate framing 0.75 inches or in accordance with the manufacturer's installation instructions.

z. Where approved by the manufacturer's instructions or test report siding shall be permitted to be installed with fasteners penetrating not less than 0.75 inches through wood or wood structural sheathing with or without penetration into the framing.

R703.5.3 Attachment. Each shake or shingle shall be held in place by two hot-dipped zinc-coated, stainless steel, or aluminum nails or staples. The fasteners shall be long enough to penetrate the sheathing or furring strips by a minimum of $^1/_2$ inch (13 mm) and shall not be overdriven.

R703.5.3.1 Staple attachment. Staples shall not be less than 16 gage and shall have a crown width of not less than $^7/_{16}$ inch (11 mm), and the crown of the staples shall be parallel with the butt of the shake or shingle. In single-course application, the fasteners shall be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and $^3/_4$ inch (19 mm) from the edge. In double-course applications, the exposed shake or shingle shall be face-nailed with two casing nails, driven approximately 2 inches (51 mm) above the butt line and $^3/_4$ inch (19 mm) from each edge. In all applications, staples shall be concealed by the course above. With shingles wider than 8 inches (203 mm) two additional nails shall be required and shall be nailed approximately 1 inch (25 mm) apart near the center of the shingle.

R703.5.4 Bottom courses. The bottom courses shall be doubled.

R703.6 Exterior plaster. Installation of these materials shall be in compliance with ASTM C 926 and ASTM C 1063 and the provisions of this code.

R703.6.1 Lath. All lath and lath attachments shall be of corrosion-resistant materials. Expanded metal or woven wire lath shall be attached with $1^1/_2$-inch-long (38 mm), 11 gage nails having a $^7/_{16}$-inch (11.1 mm) head, or $^7/_8$-inch-long (22.2 mm), 16 gage staples, spaced at no more than 6 inches (152 mm), or as otherwise *approved*.

R703.6.2 Plaster. Plastering with portland cement plaster shall be not less than three coats when applied over metal lath or wire lath and shall be not less than two coats when applied over masonry, concrete, pressure-preservative treated wood or decay-resistant wood as specified in Section R317.1 or gypsum backing. If the plaster surface is completely covered by veneer or other facing material or is completely concealed, plaster application need be only two coats, provided the total thickness is as set forth in Table R702.1(1).

On wood-frame construction with an on-grade floor slab system, exterior plaster shall be applied to cover, but not extend below, lath, paper and screed.

The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3).

R703.6.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed a minimum of 4 inches (102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

R703.6.3 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section R703.8) intended to drain to the water-resistive barrier is directed between the layers.

Exception: Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60-minute Grade D paper and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or designed drainage space.

R703.6.4 Application. Each coat shall be kept in a moist condition for at least 48 hours prior to application of the next coat.

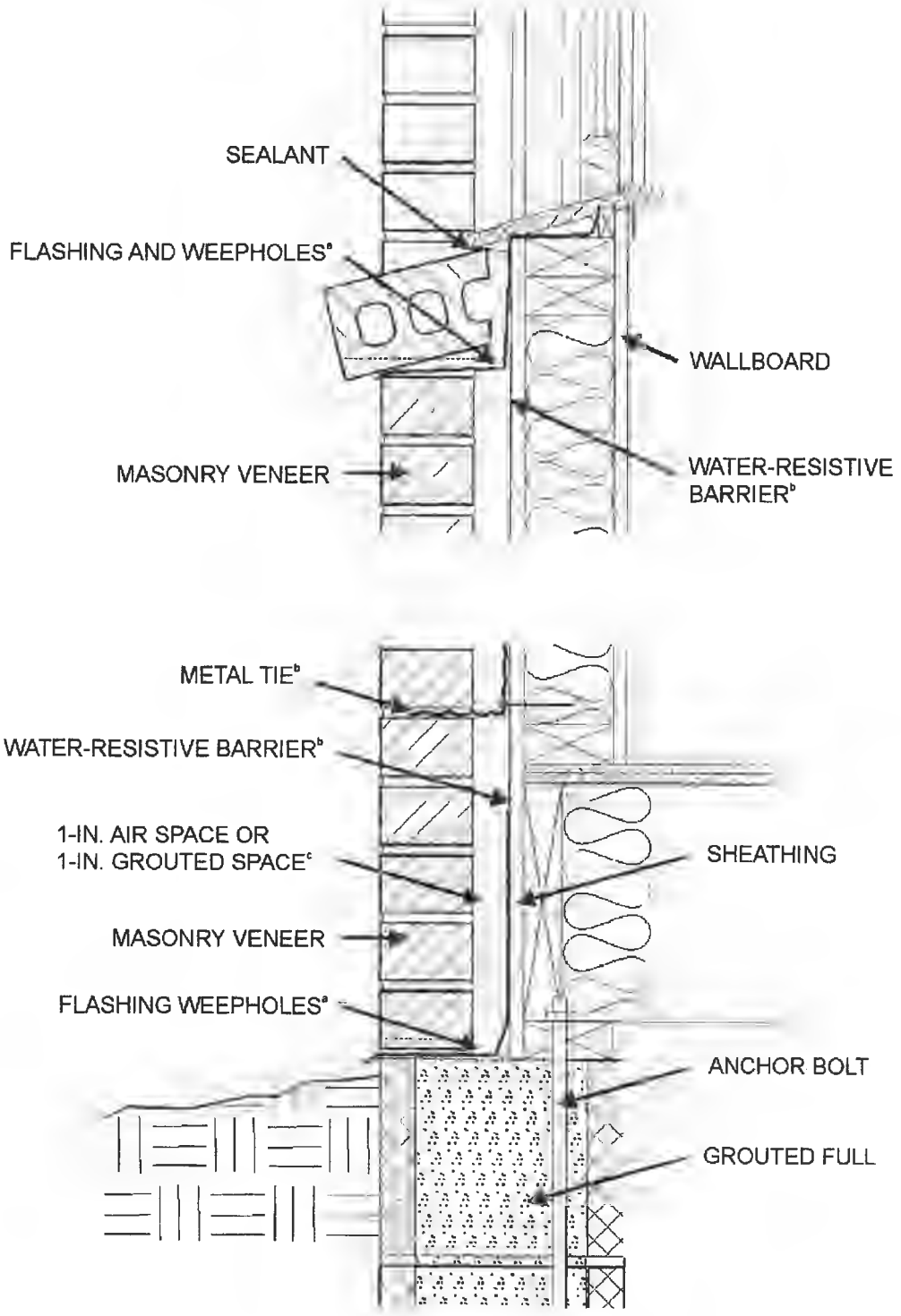
Exception: Applications installed in accordance with ASTM C 926.

R703.6.5 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than seven days after application of the first coat. For three-coat cement plaster, the second coat shall not be applied sooner than 48 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than seven days after application of the second coat.

R703.7 Stone and masonry veneer, general. Stone and masonry veneer shall be installed in accordance with this chapter, Table R703.4 and Figure R703.7. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first *story* above-grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for wood-framed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel construction.

Exceptions:

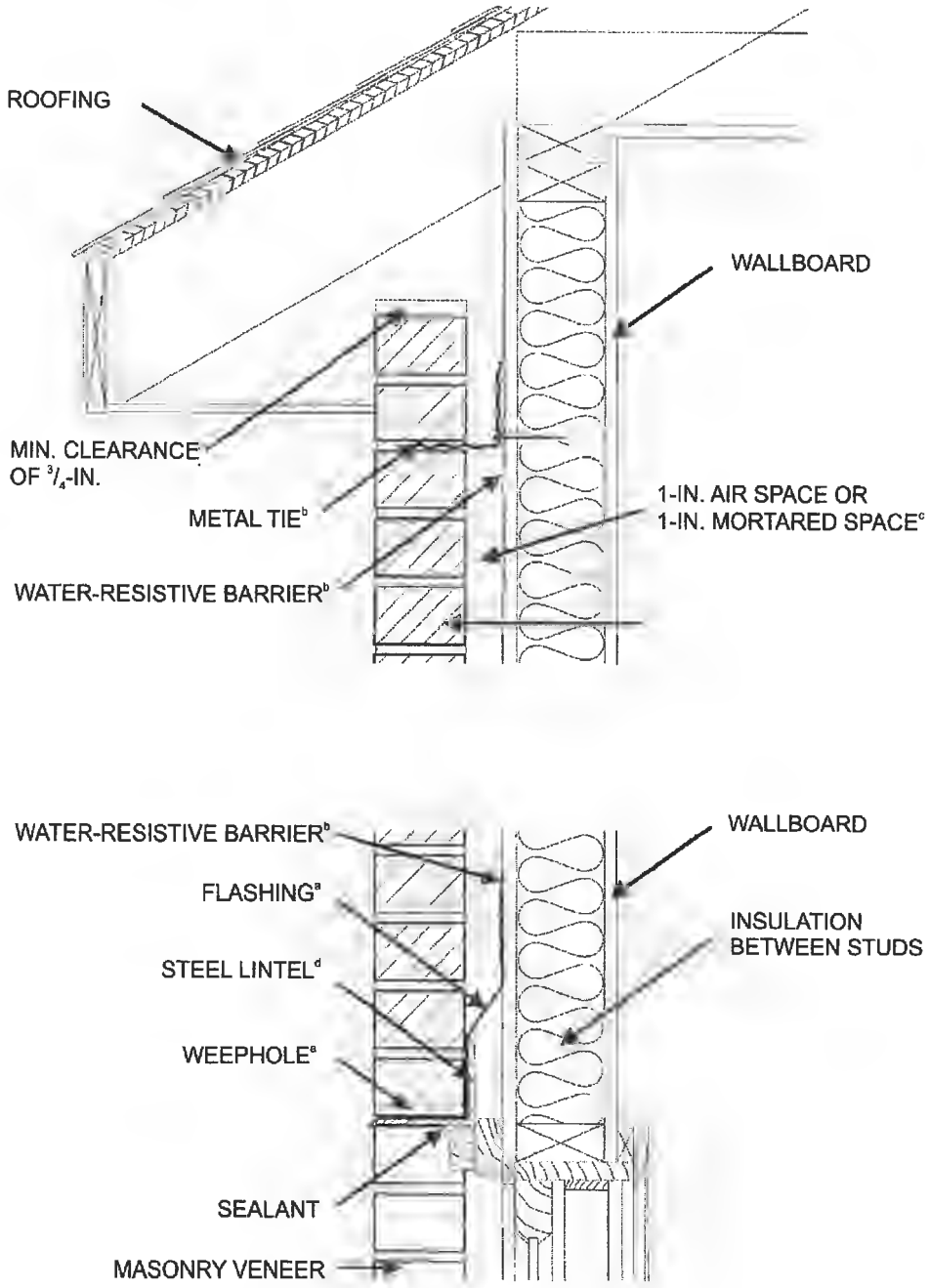
1. For all buildings in Seismic Design Categories A, B and C, exterior stone or masonry veneer, as specified in Table R703.7(1), with a backing of wood or steel framing shall be permitted to the height specified in Table R703.7(1) above a noncombustible foundation.
2. For detached one- or two-family *dwellings* in Seismic Design Categories D_0, D_1 and D_2, exterior stone or masonry veneer, as specified in Table R703.7(2), with a backing of wood framing shall be permitted to the height specified in Table R703.7(2) above a noncombustible foundation.



For SI: 1 inch = 24.5 mm.

FIGURE R703.7
MASONRY VENEER WALL DETAILS

(continued)



For SI: 1 inch = 25.4 mm.

a. See Sections R703.7.5, R703.7.6 and R703.8.

b. See Sections R703.2 and R703.7.4.

c. See Section R703.7.4.2 and Table R703.7.4.

d. See Section R703.7.3.

FIGURE R703.7—continued
MASONRY VENEER WALL DETAILS

TABLE R703.7(1)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, WOOD OR STEEL FRAMING, SEISMIC DESIGN CATEGORIES A, B AND C

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD OR STEEL-FRAMED STORIES	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION[a] (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]	WOOD OR STEEL-FRAMED STORY
A or B	Steel: 1 or 2 Wood: 1, 2 or 3	30	5	50	all
C	1	30	5	50	1 only
	2	30	5	50	top
					bottom
	Wood only: 3	30	5	50	top
					middle
					bottom

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa.

a. An additional 8 feet is permitted for gable end walls. See also story height limitations of Section R301.3.

b. Maximum weight is installed weight and includes weight of mortar, grout, lath and other materials used for installation. Where veneer is placed on both faces of a wall, the combined weight shall not exceed that specified in this table.

TABLE R703.7(2)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, ONE- AND TWO-FAMILY DETACHED DWELLINGS, WOOD FRAMING, SEISMIC DESIGN CATEGORIES D_0, D_1 AND D_2

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD FRAMED STORIES[a]	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION OR FOUNDATION WALL (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (Inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]
D_0	1	20[c]	4	40
	2	20[c]	4	40
	3	30[d]	4	40
D_1	1	20[c]	4	40
	2	20[c]	4	40
	3	20[c]	4	40
D_2	1	20[c]	3	30
	2	20[c]	3	30

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa, 1 pound-force = 4.448 N.

a. Cripple walls are not permitted in Seismic Design Categories D_0, D_1 and D_2.

b. Maximum weight is installed weight and includes weight of mortar, grout and lath, and other materials used for installation.

c. The veneer shall not exceed 20 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls, or 30 feet in height with an additional 8 feet for gable end walls where the lower 10 feet has a backing of concrete or masonry wall. See also story height limitations of Section R301.3.

d. The veneer shall not exceed 30 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls. See also story height limitations of Section R301.3.

R703.7.1 Interior veneer support. Veneers used as interior wall finishes shall be permitted to be supported on wood or cold-formed steel floors that are designed to support the loads imposed.

R703.7.2 Exterior veneer support. Except in Seismic Design Categories D_0, D_1 and D_2, exterior masonry veneers having an installed weight of 40 pounds per square foot (195 kg/m^2) or less shall be permitted to be supported on wood or cold-formed steel construction. When masonry veneer supported by wood or cold-formed steel construction adjoins masonry veneer supported by the foundation, there shall be a movement joint between the veneer supported by the wood or cold-formed steel construction and the veneer supported by the foundation. The wood or cold-formed steel construction supporting the masonry veneer shall be designed to limit the deflection to $^1/_{600}$ of the span for the supporting members. The design of the wood or cold-formed steel construction shall consider the weight of the veneer and any other loads.

R703.7.2.1 Support by steel angle. A minimum 6 inches by 4 inches by $^5/_{16}$ inch (152 mm by 102 mm by 8 mm) steel angle, with the long leg placed vertically, shall be anchored to double 2 inches by 4 inches (51 mm by 102 mm) wood studs at a maximum on-center spacing of 16 inches (406 mm). Anchorage of the steel angle at every double stud spacing shall be a minimum

of two $^{7}/_{16}$ inch (11 mm) diameter by 4 inch (102 mm) lag screws. The steel angle shall have a minimum clearance to underlying construction of $^{1}/_{16}$ inch (2 mm). A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.2.1. The maximum height of masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The air space separating the masonry veneer from the wood backing shall be in accordance with Sections R703.7.4 and R703.7.4.2. The method of support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.1.

The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3 inch by 3 inch by $^{1}/_{4}$ inch (76 mm by 76 mm by 6 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as *approved* by the *building official.*

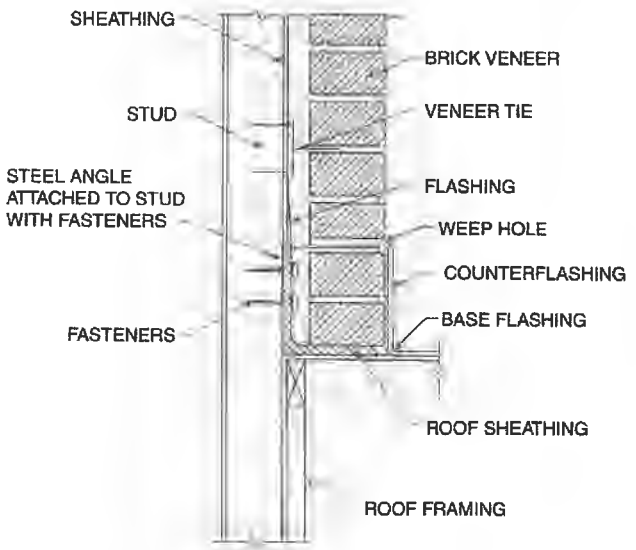


FIGURE R703.7.2.1
EXTERIOR MASONRY VENEER SUPPORT BY STEEL ANGLES

R703.7.2.2 Support by roof construction. A steel angle shall be placed directly on top of the roof construction. The roof supporting construction for the steel angle shall consist of a minimum of three 2 inch by 6 inch (51 mm by 152 mm) wood members. The wood member abutting the vertical wall stud construction shall be anchored with a minimum of three $^{5}/_{8}$-inch (16 mm) diameter by 5-inch (127 mm) lag screws to every wood stud spacing. Each additional roof member shall be anchored by the use of two 10d nails at every wood stud spacing. A minimum of two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.7.2.2. The maximum height of the masonry veneer above the steel angle support shall be 12 feet, 8 inches (3861 mm). The air space separating the masonry veneer from the wood backing shall be in accordance with Sections R703.7.4 and R703.7.4.2. The support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.7.2.2.

The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3 inch by 3 inch by $^{1}/_{4}$ inch (76 mm by 76 mm by 6 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as *approved* by the *building official.*

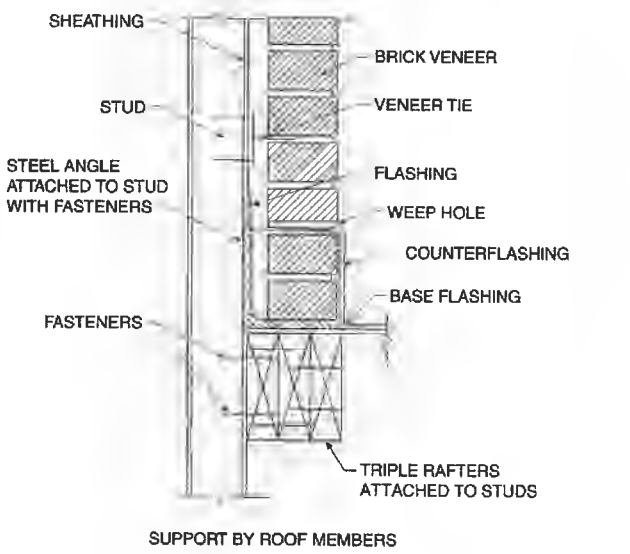


FIGURE R703.7.2.2
EXTERIOR MASONRY VENEER SUPPORT BY ROOF MEMBERS

R703.7.3 Lintels. Masonry veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of noncombustible materials. The lintels shall have a length of bearing not less than 4 inches (102 mm). Steel lintels shall be shop coated with a rust-inhibitive paint, except for lintels made of corrosion-resistant steel or steel treated with coatings to provide corrosion resistance. Construction of openings shall comply with either Section R703.7.3.1 or 703.7.3.2.

R703.7.3.1 Allowable span. The allowable span shall not exceed the values set forth in Table R703.7.3.1.

R703.7.3.2 Maximum span. The allowable span shall not exceed 18 feet 3 inches (5562 mm) and shall be constructed to comply with Figure R703.7.3.2 and the following:

1. Provide a minimum length of 18 inches (457 mm) of masonry veneer on each side of opening as shown in Figure R703.7.3.2.

2. Provide a minimum 5-inch by $3^1/_2$-inch by $^5/_{16}$-inch (127 mm by 89 mm by 7.9 mm) steel angle above the opening and shore for a minimum of 7 days after installation.
3. Provide double-wire joint reinforcement extending 12 inches (305 mm) beyond each side of the opening. Lap splices of joint reinforcement a minimum of 12 inches (305 mm). Comply with one of the following:
   3.1. Double-wire joint reinforcement shall be $^3/_{16}$-inch (4.8 mm) diameter and shall be placed in the first two bed joints above the opening.
   3.2. Double-wire joint reinforcement shall be 9 gauge (0.144 inch or 3.66 mm diameter) and shall be placed in the first three bed joints above the opening.
4. Provide the height of masonry veneer above opening, in accordance with Table R703.7.3.2.

TABLE R703.7.3.2
HEIGHT OF MASONRY VENEER ABOVE OPENING

MINIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (INCH)	MAXIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (FEET)
13	< 5
24	5 to < 12
60	12 to height above support allowed by Section R703.7

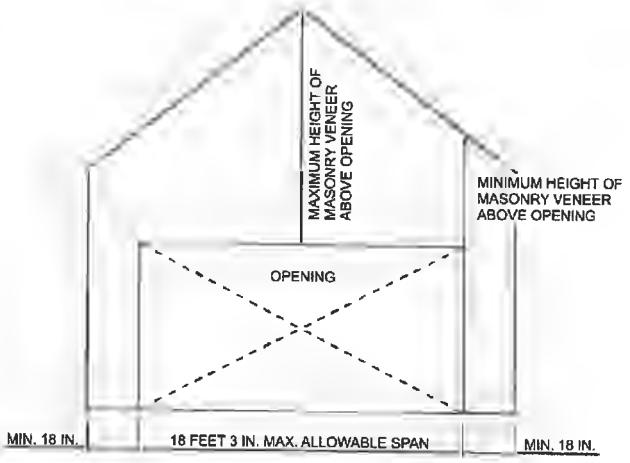
For SI:1 inch = 25.4 mm, 1 foot = 304.8 mm.

R703.7.4 Anchorage. Masonry veneer shall be anchored to the supporting wall studs with corrosion-resistant metal ties embedded in mortar or grout and extending into the veneer a minimum of $1^1/_2$ inches (38 mm), with not less than $^5/_8$-inch (15.9 mm) mortar or grout cover to outside face. Masonry veneer shall conform to Table R703.7.4.

R703.7.4.1 Size and spacing. Veneer ties, if strand wire, shall not be less in thickness than No. 9 U.S. gage [(0.148 inch) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 inch) (0.76 mm)] $^7/_8$ inch (22 mm) corrugated. Each tie shall support not more than 2.67 square feet (0.25 m^2) of wall area and shall be spaced not more than 32 inches (813 mm) on center horizontally and 24 inches (635 mm) on center vertically.

Exception: In Seismic Design Category D_0, D_1 or D_2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m^2) of wall area.

R703.7.4.1.1 Veneer ties around wall openings. Additional metal ties shall be provided around all wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (9144 mm) on center and placed within 12 inches (305 mm) of the wall opening.



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R703.7.3.2
MASONRY VENEER OPENING

TABLE R703.7.3.1
ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER[a, b, c, d]

SIZE OF STEEL ANGLE[a, c, d] (Inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE	NO. OF $^1/_2$-INCH OR EQUIVALENT REINFORCING BARS IN REINFORCED LINTEL[b, d]
$3 \times 3 \times {}^1/_4$	6′-0″	4′-6″	3′-0″	1
$4 \times 3 \times {}^1/_4$	8′-0″	6′-0″	4′-6″	1
$5 \times 3^1/_2 \times {}^5/_{16}$	10′-0″	8′-0″	6′-0″	2
$6 \times 3^1/_2 \times {}^5/_{16}$	14′-0″	9′-6″	7′-0″	2
$2\text{-}6 \times 3^1/_2 \times {}^5/_{16}$	20′-0″	12′-0″	9′-6″	4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Long leg of the angle shall be placed in a vertical position.

b. Depth of reinforced lintels shall not be less than 8 inches and all cells of hollow masonry lintels shall be grouted solid. Reinforcing bars shall extend not less than 8 inches into the support.

c. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements may be used.

d. Either steel angle or reinforced lintel shall span opening.

TABLE R703.7.4
TIE ATTACHMENT AND AIR SPACE REQUIREMENTS

BACKING AND TIE	MINIMUM TIE	MINIMUM TIE FASTENER[a]	AIR SPACE	
Wood stud backing with corrugated sheet metal	22 U.S. gage (0.0299 in.) × $^{7}/_{8}$ in. wide	8d common nail [b] ($2^{1}/_{2}$ in. × 0.131 in.)	Nominal 1 in. between sheathing and veneer	
Wood stud backing with metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	8d common nail [b] ($2^{1}/_{2}$ in. × 0.131 in.)	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{1}/_{2}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	No. 10 screw extending through the steel framing a minimum of three exposed threads	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{1}/_{2}$ in. between backing and veneer

For SI: 1 inch = 25.4 mm.

a. In Seismic Design Category D_0, D_1 or D_2, the minimum tie fastener shall be an 8d ring-shank nail ($2^{1}/_{2}$ in. × 0.131 in.) or a No. 10 screw extending through the steel framing a minimum of three exposed threads.

b. All fasteners shall have rust-inhibitive coating suitable for the installation in which they are being used, or be manufactured from material not susceptible to corrosion.

R703.7.4.2 Grout fill. As an alternative to the air space required by Table R703.7.4, grout shall be permitted to fill the air space. When the air space is filled with grout, a water-resistive barrier is required over studs or sheathing. When filling the air space, replacing the sheathing and water-resistive barrier with a wire mesh and *approved* water-resistive barrier or an *approved* water-resistive barrier-backed reinforcement attached directly to the studs is permitted.

R703.7.5 Flashing. Flashing shall be located beneath the first course of masonry above finished ground level above the foundation wall or slab and at other points of support, including structural floors, shelf angles and lintels when masonry veneers are designed in accordance with Section R703.7. See Section R703.8 for additional requirements.

R703.7.6 Weepholes. Weepholes shall be provided in the outside wythe of masonry walls at a maximum spacing of 33 inches (838 mm) on center. Weepholes shall not be less than $^{3}/_{16}$ inch (5 mm) in diameter. Weepholes shall be located immediately above the flashing.

R703.8 Flashing. *Approved* corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. The flashing shall extend to the surface of the exterior wall finish. *Approved* corrosion-resistant flashings shall be installed at all of the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:
   1.1. The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Openings using pan flashing shall also incorporate flashing or protection at the head and sides.
   1.2. In accordance with the flashing design or method of a registered design professional.
   1.3. In accordance with other approved methods.
2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

R703.9 Exterior insulation and finish system (EIFS)/EIFS with drainage. Exterior Insulation and Finish System (EIFS) shall comply with this chapter and Sections R703.9.1 and R703.9.3. EIFS with drainage shall comply with this chapter and Sections R703.9.2, R703.9.3 and R703.9.4.

R703.9.1 Exterior insulation and finish system (EIFS). EIFS shall comply with ASTM E 2568.

R703.9.2 Exterior insulation and finish system (EIFS) with drainage. EIFS with drainage shall comply with ASTM E 2568 and shall have an average minimum drainage efficiency of 90 percent when tested in accordance with ASTM E 2273.

R703.9.2.1 Water-resistive barrier. The water-resistive barrier shall comply with Section R703.2 or ASTM E 2570.

R703.9.2.2 Installation. The water-resistive barrier shall be applied between the EIFS and the wall sheathing.

R703.9.3 Flashing, general. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8.

R703.9.4 EIFS/EIFS with drainage installation. All EIFS shall be installed in accordance with the manufacturer's installation instructions and the requirements of this section.

R703.9.4.1 Terminations. The EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.

R703.9.4.2 Decorative trim. Decorative trim shall not be face nailed though the EIFS.

R703.10 Fiber cement siding.

R703.10.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Panels shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be sealed with caulking, covered with battens or shall be designed to comply with Section R703.1. Panel siding shall be installed with fasteners according to Table R703.4 or *approved* manufacturer's installation instructions.

R703.10.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II. Lap siding shall be lapped a minimum of $1^1/_4$ inches (32 mm) and lap siding not having tongue-and-groove end joints shall have the ends sealed with caulking, installed with an H-section joint cover, located over a strip of flashing or shall be designed to comply with Section R703.1. Lap siding courses may be installed with the fastener heads exposed or concealed, according to Table R703.4 or *approved* manufacturers' installation instructions.

R703.11 Vinyl siding. Vinyl siding shall be certified and *labeled* as conforming to the requirements of ASTM D 3679 by an *approved* quality control agency.

R703.11.1 Installation. Vinyl siding, soffit and accessories shall be installed in accordance with the manufacturer's installation instructions.

R703.11.1.1 Vinyl soffit panels. Soffit panels shall be individually fastened to a supporting component such as a nailing strip, fascia or subfascia component or as specified by the manufacturer's instructions.

R703.11.2 Foam plastic sheathing. Vinyl siding used with foam plastic sheathing shall be installed in accordance with Section R703.11.2.1, R703.11.2.2, or R703.11.2.3.

Exception: Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other *approved* backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with Section R703.11.1.

R703.11.2.1 Basic wind speed not exceeding 90 miles per hour and Exposure Category B. Where the basic wind speed does not exceed 90 miles per hour (40 m/s), the Exposure Category is B and gypsum wall board or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be $1^1/_4$ inches (32 mm) using minimum 0.120-inch diameter nail (shank) with a minimum 0.313-inch diameter head, 16 inches on center. The foam plastic sheathing shall be minimum $^1/_2$-inch-thick (12.7 mm) (nominal) extruded polystyrene per ASTM C 578, $^1/_2$-inch-thick (12.7 mm) (nominal) polyisocyanurate per ASTM C 1289, or 1-inch-thick (25 mm) (nominal) expanded polystyrene per ASTM C 578.

R703.11.2.2 Basic wind speed exceeding 90 miles per hour or Exposure Categories C and D. Where the basic wind speed exceeds 90 miles per hour (40 m/s) or the Exposure Category is C or D, or all conditions of Section R703.11.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Tables R301.2(2) adjusted for height and exposure using Table R301.2(3). The design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:

1. For wall assemblies with foam plastic sheathing on the exterior side and gypsum wall board or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39.
2. For wall assemblies with foam plastic sheathing on the exterior side and no gypsum wall board or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27.

R703.11.2.3 Manufacturer specification. Where the vinyl siding manufacturer's product specifications provide an *approved* design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's installation instructions.

R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall be installed in accordance with the manufacturer's instructions.

R703.12.1 Clearances. On exterior stud walls, adhered masonry veneer shall be installed:

1. Minimum of 4 inches (102 mm) above the earth;
2. Minimum of 2 inches (51 mm) above paved areas; or
3. Minimum of $^1/_2$ inch (12 mm) above exterior walking surfaces which are supported by the same foundation that supports the exterior wall.

R703.12.2 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26-gage galvanized or plastic with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be installed

to extend a minimum of 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section R703.8. The water-resistive barrier, as required by Table R703.4, Footnote w, shall lap over the exterior of the attachment flange of the screed or flashing.

2015 IRC®

INTERNATIONAL Residential Code®

FOR ONE- AND TWO-FAMILY DWELLINGS

CODE ALERT!

Sign up now to receive critical code updates and free access to videos, book excerpts and training resources.

Signup is easy, subscribe now! www.iccsafe.org/alerts



PLAINTIFF'S EXHIBIT 21.1

www.iccsafe.org

INTERNATIONAL CODE COUNCIL®

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:59 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R603.9.5(4)
REQUIRED LENGTH OF FULL-HEIGHT SHEATHING AND ASSOCIATED OVERTURNING ANCHORAGE FOR WALLS SUPPORTING WALLS WITH STONE OR MASONRY VENEER AND USING 43-MIL COLD-FORMED STEEL FRAMING AND 4-INCH SCREW SPACING ON THE PERIMETER OF EACH PANEL OF STRUCTURAL SHEATHING

SEISMIC DESIGN CATEGORY	STORY	BRACED WALL LINE LENGTH (feet)						SINGLE-STORY HOLD-DOWN FORCE (pounds)	CUMULATIVE HOLD-DOWN FORCE (pounds)
		10	20	30	40	50	60		
		Minimum total length of braced wall panels required along each braced wall line (feet)							
D_0		1.9	2.7	3.4	4.2	5.0	5.8	5,928	—
		3.0	4.9	6.8	8.8	10.7	12.6	5,928	11,856
D_1		2.3	3.3	4.3	5.2	6.2	7.2	5,928	—
		3.7	6.1	8.5	10.8	13.2	15.6	5,928	11,856
D_2		3.3	4.6	6.0	7.4	8.7	10.1	5,928	—
		5.2	8.6	11.9	15.3	18.6	22.0	5,928	11,856

SECTION R604
WOOD STRUCTURAL PANELS

R604.1 Identification and grade. Wood structural panels shall conform to DOC PS 1, DOC PS 2 or ANSI/APA PRP 210, CSA O437 or CSA O325. Panels shall be identified by a grade mark or certificate of inspection issued by an *approved* agency.

R604.2 Allowable spans. The maximum allowable spans for wood structural panel wall sheathing shall not exceed the values set forth in Table R602.3(3).

R604.3 Installation. Wood structural panel wall sheathing shall be attached to framing in accordance with Table R602.3(1) or R602.3(3).

SECTION R605
PARTICLEBOARD

R605.1 Identification and grade. Particleboard shall conform to ANSI A208.1 and shall be so identified by a grade mark or certificate of inspection issued by an *approved* agency. Particleboard shall comply with the grades specified in Table R602.3(4).

SECTION R606
GENERAL MASONRY CONSTRUCTION

R606.1 General. Masonry construction shall be designed and constructed in accordance with the provisions of this section, TMS 403 or in accordance with the provisions of TMS 402/ACI 530/ASCE 5.

R606.1.1 Professional registration not required. When the empirical design provisions of Appendix A of TMS 402/ACI 530/ASCE 5, the provisions of TMS 403, or the provisions of this section are used to design masonry, project drawings, typical details and specifications are not required to bear the seal of the architect or engineer responsible for design, unless otherwise required by the state law of the *jurisdiction* having authority.

R606.2 Masonry construction materials.

R606.2.1 Concrete masonry units. Concrete masonry units shall conform to the following standards: ASTM C 55 for concrete brick; ASTM C 73 for calcium silicate face brick; ASTM C 90 for load-bearing concrete masonry units; ASTM C 744 for prefaced concrete and calcium silicate masonry units; or ASTM C 1634 for concrete facing brick.

R606.2.2 Clay or shale masonry units. Clay or shale masonry units shall conform to the following standards: ASTM C 34 for structural clay *load-bearing wall* tile; ASTM C 56 for structural clay nonload-bearing wall tile; ASTM C 62 for building brick (solid masonry units made from clay or shale); ASTM C 1088 for solid units of thin veneer brick; ASTM C 126 for ceramic-glazed structural clay facing tile, facing brick and solid masonry units; ASTM C 212 for structural clay facing tile; ASTM C 216 for facing brick (solid masonry units made from clay or

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

shale); ASTM C652 for hollow brick (hollow masonry units made from clay or shale); or ASTM C1405 for glazed brick (single-fired solid brick units).

Exception: Structural clay tile for nonstructural use in fireproofing of structural members and in wall furring shall not be required to meet the compressive strength specifications. The fire-resistance rating shall be determined in accordance with ASTM E 119 or UL 263 and shall comply with the requirements of Section R302.

R606.2.3 AAC masonry. AAC masonry units shall conform to ASTM C 1386 for the strength class specified.

R606.2.4 Stone masonry units. Stone masonry units shall conform to the following standards: ASTM C 503 for marble building stone (exterior); ASTM C 568 for limestone building stone; ASTM C 615 for granite building stone; ASTM C 616 for sandstone building stone; or ASTM C 629 for slate building stone.

R606.2.5 Architectural cast stone. Architectural cast stone shall conform to ASTM C 1364.

R606.2.6 Second hand units. Second hand masonry units shall not be reused unless they conform to the requirements of new units. The units shall be of whole, sound materials and free from cracks and other defects that will interfere with proper laying or use. Old mortar shall be cleaned from the unit before reuse.

R606.2.7 Mortar. Except for mortars listed in Sections R606.2.8, R606.2.9 and R606.2.10, mortar for use in masonry construction shall meet the proportion specifications of Table R606.2.7 or the property specifications of ASTM C 270. The type of mortar shall be in accordance with Sections R606.2.7.1, R606.2.7.2 and R606.2.7.3.

R606.2.7.1 Foundation walls. Mortar for masonry foundation walls constructed as set forth in Tables R404.1.1(1) through R404.1.1(4) shall be Type M or S mortar.

R606.2.7.2 Masonry in Seismic Design Categories A, B and C. Mortar for masonry serving as the lateral-force-resisting system in Seismic Design Categories A, B and C shall be Type M, S or N mortar.

R606.2.7.3 Masonry in Seismic Design Categories D_0, D_1 and D_2. Mortar for masonry serving as the lateral-force-resisting system in Seismic Design Categories D_0, D_1 and D_2 shall be Type M or S Portland cement-lime or mortar cement mortar.

R606.2.8 Surface-bonding mortar. Surface-bonding mortar shall comply with ASTM C 887. Surface bonding of concrete masonry units shall comply with ASTM C 946.

R606.2.9 Mortar for AAC masonry. Thin-bed mortar for AAC masonry shall comply with Article 2.1 C.1 of TMS 602/ACI 530.1/ASCE 6. Mortar used for the leveling courses of AAC masonry shall comply with Article 2.1 C.2 of TMS 602/ACI 530.1/ASCE 6.

R606.2.10 Mortar for adhered masonry veneer. Mortar for use with adhered masonry veneer shall conform to ASTM C 270 Type S or Type N or shall comply with ANSI A118.4 for latex-modified portland cement mortar.

TABLE R606.2.7
MORTAR PROPORTIONS[a, b]

MORTAR	TYPE	PROPORTIONS BY VOLUME (cementitious materials)							
		Portland cement or blended cement	Mortar cement			Masonry cement			Hydrated lime[c] or lime putty	Aggregate ratio (measured in damp, loose conditions)
			M	S	N	M	S	N		
Cement-lime	M	1	—	—	—	—	—	—	1/4	Not less than 2 1/4 and not more than 3 times the sum of separate volumes of lime, if used, and cement
	S	1	—	—	—	—	—	—	over 1/4 to 1/2	
	N	1	—	—	—	—	—	—	over 1/2 to 1 1/4	
	O	1	—	—	—	—	—	—	over 1 1/4 to 2 1/2	
Mortar cement	M	1	—	—	1	—	—	—	—	
	M	—	1	—	—	—	—	—		
	S	1/2	—	—	1	—	—	—		
	S	—	—	1	—	—	—	—		
	N	—	—	—	1	—	—	—		
	O	—	—	—	1	—	—	—		
Masonry cement	M	1				—	—	1	—	
	M	—				1	—	—		
	S	1/2				—	—	1		
	S	—				—	1	—		
	N	—				—	—	1		
	O	—				—	—	1		

For SI: 1 cubic foot = 0.0283 m^3, 1 pound = 0.454 kg.

a. For the purpose of these specifications, the weight of 1 cubic foot of the respective materials shall be considered to be as follows:

Portland Cement	94 pounds	Masonry Cement	Weight printed on bag
Mortar Cement	Weight printed on bag	Hydrated Lime	40 pounds
Lime Putty (Quicklime)	80 pounds	Sand, damp and loose	80 pounds of dry sand

b. Two air-entraining materials shall not be combined in mortar.

c. Hydrated lime conforming to the requirements of ASTM C 207.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R606.2.11 Grout. Grout shall consist of cementitious material and aggregate in accordance with ASTM C 476 or the proportion specifications of Table R606.2.11. Type M or Type S mortar to which sufficient water has been added to produce pouring consistency shall be permitted to be used as grout.

R606.2.12 Metal reinforcement and accessories. Metal reinforcement and accessories shall conform to Article 2.4 of TMS 602/ACI 530.1/ASCE 6.

R606.3 Construction requirements.

R606.3.1 Bed and head joints. Unless otherwise required or indicated on the project drawings, head and bed joints shall be $^3/_8$ inch (9.5 mm) thick, except that the thickness of the bed joint of the starting course placed over foundations shall be not less than $^1/_4$ inch (6.4 mm) and not more than $^3/_4$ inch (19.1 mm). Mortar joint thickness for load-bearing masonry shall be within the following tolerances from the specified dimensions:

1. Bed joint: + $^1/_8$ inch (3.2 mm).
2. Head joint: - $^1/_4$ inch (6.4 mm), + $^3/_8$ inch (9.5 mm).
3. Collar joints: - $^1/_4$ inch (6.4 mm), + $^3/_8$ inch (9.5 mm).

R606.3.2 Masonry unit placement. The mortar shall be sufficiently plastic and units shall be placed with sufficient pressure to extrude mortar from the joint and produce a tight joint. Deep furrowing of bed joints that produces voids shall not be permitted. Any units disturbed to the extent that initial bond is broken after initial placement shall be removed and relaid in fresh mortar. Surfaces to be in contact with mortar shall be clean and free of deleterious materials.

R606.3.2.1 Solid masonry. *Solid masonry* units shall be laid with full head and bed joints and all interior vertical joints that are designed to receive mortar shall be filled.

R606.3.2.2 Hollow masonry. For hollow masonry units, head and bed joints shall be filled solidly with mortar for a distance in from the face of the unit not less than the thickness of the face shell.

R606.3.3 Installation of wall ties. The installation of wall ties shall be as follows:

1. The ends of wall ties shall be embedded in mortar joints. Wall ties shall have not less than $^5/_8$-inch (15.9 mm) mortar coverage from the exposed face.
2. Wall ties shall not be bent after being embedded in grout or mortar.
3. For solid masonry units, solid grouted hollow units, or hollow units in anchored masonry veneer, wall ties shall be embedded in mortar bed not less than $1^1/_2$ inches (38 mm).
4. For hollow masonry units in other than anchored masonry veneer, wall ties shall engage outer face shells by not less than $^1/_2$ inch (13 mm).

R606.3.4 Protection for reinforcement. Bars shall be completely embedded in mortar or grout. Joint reinforcement embedded in horizontal mortar joints shall not have less than $^5/_8$-inch (15.9 mm) mortar coverage from the exposed face. Other reinforcement shall have a minimum coverage of one bar diameter over all bars, but not less than $^3/_4$ inch (19 mm), except where exposed to weather or soil, in which case the minimum coverage shall be 2 inches (51 mm).

R606.3.4.1 Corrosion protection. Minimum corrosion protection of joint reinforcement, anchor ties and wire fabric for use in masonry wall construction shall conform to Table R606.3.4.1.

TABLE R606.3.4.1
MINIMUM CORROSION PROTECTION

MASONRY METAL ACCESSORY	STANDARD
Joint reinforcement, interior walls	ASTM A 641, Class 1
Wire ties or anchors in exterior walls completely embedded in mortar or grout	ASTM A 641, Class 3
Wire ties or anchors in exterior walls not completely embedded in mortar or grout	ASTM A 153, Class B-2
Joint reinforcement in exterior walls or interior walls exposed to moist environment	ASTM A 153, Class B-2
Sheet metal ties or anchors exposed to weather	ASTM A 153, Class B-2
Sheet metal ties or anchors completely embedded in mortar or grout	ASTM A 653, Coating Designation G60
Stainless steel hardware for any exposure	ASTM A 167, Type 304

R606.3.5 Grouting requirements.

R606.3.5.1 Grout placement. Grout shall be a plastic mix suitable for pumping without segregation of the constituents and shall be mixed thoroughly. Grout shall be placed by pumping or by an approved alternate method and shall be placed before any initial set occurs and not more than $1^1/_2$ hours after water has been added. Grout shall be consolidated by puddling or mechanical vibrating during placing and reconsolidated after excess moisture has been absorbed but before

TABLE R606.2.11
GROUT PROPORTIONS BY VOLUME FOR MASONRY CONSTRUCTION

TYPE	PORTLAND CEMENT OR BLENDED CEMENT SLAG CEMENT	HYDRATED LIME OR LIME PUTTY	AGGREGATE MEASURED IN A DAMP, LOOSE CONDITION	
			Fine	Coarse
Fine	1	0 to 1/10	$2^1/_4$ to 3 times the sum of the volume of the cementitious materials	—
Coarse	1	0 to 1/10	$2^1/_4$ to 3 times the sum of the volume of the cementitious materials	1 to 2 times the sum of the volumes of the cementitious materials

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

plasticity is lost. Grout shall not be pumped through aluminum pipes.

Maximum pour heights and the minimum dimensions of spaces provided for grout placement shall conform to Table R606.3.5.1. Grout shall be poured in lifts of 8-foot (2438 mm) maximum height. Where a total grout pour exceeds 8 feet (2438 mm) in height, the grout shall be placed in lifts not exceeding 64 inches (1626 mm) and special inspection during grouting shall be required. If the work is stopped for 1 hour or longer, the horizontal construction joints shall be formed by stopping all tiers at the same elevation and with the grout 1 inch (25 mm) below the top.

R606.3.5.2 Cleanouts. Provisions shall be made for cleaning the space to be grouted. Mortar that projects more than $^1/_2$ inch (12.7 mm) into the grout space and any other foreign matter shall be removed from the grout space prior to inspection and grouting. Where required by the building official, cleanouts shall be provided in the bottom course of masonry for each grout pour where the grout pour height exceeds 64 inches (1626 mm). In solid grouted masonry, cleanouts shall be spaced horizontally not more than 32 inches (813 mm) on center. The cleanouts shall be sealed before grouting and after inspection.

R606.3.5.3 Construction. Requirements for grouted masonry construction shall be as follows:

1. Masonry shall be built to preserve the unobstructed vertical continuity of the cells or spaces to be filled. In partially grouted construction, cross webs forming cells to be filled shall be full-bedded in mortar to prevent leakage of grout. Head and end joints shall be solidly filled with mortar for a distance in from the face of the wall or unit not less than the thickness of the longitudinal face shells.
2. Vertical reinforcement shall be held in position at top and bottom and at intervals not exceeding 200 diameters of the reinforcement.
3. Cells containing reinforcement shall be filled solidly with grout.
4. The thickness of grout or mortar between masonry units and reinforcement shall be not less than $^1/_4$ inch (6.4 mm), except that $^1/_4$-inch (6.4 mm) bars shall be permitted to be laid in horizontal mortar joints not less than $^1/_2$ inch (12.7 mm) thick, and steel wire reinforcement shall be permitted to be laid in horizontal mortar joints not less than twice the thickness of the wire diameter.

R606.3.6 Grouted multiple-wythe masonry. Grouted multiple-wythe masonry shall conform to all the requirements specified in Section R606.3.5 and the requirements of this section.

R606.3.6.1 Bonding of backup wythe. Where all interior vertical spaces are filled with grout in multiple-wythe construction, masonry headers shall not be permitted. Metal wall ties shall be used in accordance with Section R606.13.2 to prevent spreading of the wythes and to maintain the vertical alignment of the wall. Wall ties shall be installed in accordance with Section R606.13.2 where the backup wythe in multiple-wythe construction is fully grouted.

R606.3.6.2 Grout barriers. Vertical grout barriers or dams shall be built of *solid masonry* across the grout space the entire height of the wall to control the flow of the grout horizontally. Grout barriers shall be not more than 25 feet (7620 mm) apart. The grouting of any section of a wall between control barriers shall be completed in one day without interruptions greater than 1 hour.

R606.3.7 Masonry bonding pattern. Masonry laid in running and stack bond shall conform to Sections R606.3.7.1 and R606.3.7.2.

R606.3.7.1 Masonry laid in running bond. In each wythe of masonry laid in running bond, head joints in successive courses shall be offset by not less than one-fourth the unit length, or the masonry walls shall be reinforced longitudinally as required in Section R606.3.7.2.

TABLE R606.3.5.1
GROUT SPACE DIMENSIONS AND POUR HEIGHTS

GROUT TYPE	GROUT POUR MAXIMUM HEIGHT (feet)	MINIMUM WIDTH OF GROUT SPACES[a, b] (inches)	MINIMUM GROUT[b, c] SPACE DIMENSIONS FOR GROUTING CELLS OF HOLLOW UNITS (inches × inches)
Fine	1	0.75	1.5 × 2
	5	2	2 × 3
	12	2.5	2.5 × 3
	24	3	3 × 3
Coarse	1	1.5	1.5 × 3
	5	2	2.5 × 3
	12	2.5	3 × 3
	24	3	3 × 4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. For grouting between masonry wythes.

b. Grout space dimension is the clear dimension between any masonry protrusion and shall be increased by the horizontal projection of the diameters of the horizontal bars within the cross section of the grout space.

c. Area of vertical reinforcement shall not exceed 6 percent of the area of the grout space.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R606.3.7.2 Masonry laid in stack bond. Where unit masonry is laid with less head joint offset than in Section R606.3.7.1, the minimum area of horizontal reinforcement placed in mortar bed joints or in bond beams spaced not more than 48 inches (1219 mm) apart shall be 0.0007 times the vertical cross-sectional area of the wall.

R606.4 Thickness of masonry. The nominal thickness of masonry walls shall conform to the requirements of Sections R606.4.1 through R606.4.4.

R606.4.1 Minimum thickness. The minimum thickness of masonry bearing walls more than one story high shall be 8 inches (203 mm). *Solid masonry* walls of one-story dwellings and garages shall be not less than 6 inches (152 mm) in thickness where not greater than 9 feet (2743 mm) in height, provided that where gable construction is used, an additional 6 feet (1829 mm) is permitted to the peak of the gable. Masonry walls shall be laterally supported in either the horizontal or vertical direction at intervals as required by Section R606.6.4.

R606.4.2 Rubble stone masonry wall. The minimum thickness of rough, random or coursed rubble stone masonry walls shall be 16 inches (406 mm).

R606.4.3 Change in thickness. Where walls of masonry of hollow units or masonry-bonded hollow walls are decreased in thickness, a course of solid masonry or masonry units filled with mortar or grout shall be constructed between the wall below and the thinner wall above, or special units or construction shall be used to transmit the loads from face shells or wythes above to those below.

R606.4.4 Parapet walls. Unreinforced solid masonry parapet walls shall be not less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) located in Seismic Design Category D_0, D_1 or D_2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

R606.5 Corbeled masonry. Corbeled masonry shall be in accordance with Sections R606.5.1 through R606.5.3.

R606.5.1 Units. *Solid masonry* units or masonry units filled with mortar or grout shall be used for corbeling.

R606.5.2 Corbel projection. The maximum projection of one unit shall not exceed one-half the height of the unit or one-third the thickness at right angles to the wall. The maximum corbeled projection beyond the face of the wall shall not exceed:

1. One-half of the wall thickness for multiwythe walls bonded by mortar or grout and wall ties or masonry headers.
2. One-half the wythe thickness for single wythe walls, masonry-bonded hollow walls, multiwythe walls with open collar joints and veneer walls.

R606.5.3 Corbeled masonry supporting floor or roof-framing members. Where corbeled masonry is used to support floor or roof-framing members, the top course of the corbel shall be a header course or the top course bed joint shall have ties to the vertical wall.

R606.6 Support conditions. Bearing and support conditions shall be in accordance with Sections R606.6.1 through R606.6.4.

R606.6.1 Bearing on support. Each masonry wythe shall be supported by at least two-thirds of the wythe thickness.

R606.6.2 Support at foundation. Cavity wall or masonry veneer construction shall be permitted to be supported on an 8-inch (203 mm) foundation wall, provided the 8-inch (203 mm) wall is corbeled to the width of the wall system above with masonry constructed of solid masonry units or masonry units filled with mortar or grout. The total horizontal projection of the corbel shall not exceed 2 inches (51 mm) with individual corbels projecting not more than one-third the thickness of the unit or one-half the height of the unit. The hollow space behind the corbeled masonry shall be filled with mortar or grout.

R606.6.3 Beam supports. Beams, girders or other concentrated loads supported by a wall or column shall have a bearing of not less than 3 inches (76 mm) in length measured parallel to the beam upon *solid masonry* not less than 4 inches (102 mm) in thickness, or upon a metal bearing plate of adequate design and dimensions to distribute the load safely, or upon a continuous reinforced masonry member projecting not less than 4 inches (102 mm) from the face of the wall.

R606.6.3.1 Joist bearing. Joists shall have a bearing of not less than $1^1/_2$ inches (38 mm), except as provided in Section R606.6.3, and shall be supported in accordance with Figure R606.11(1).

R606.6.4 Lateral support. Masonry walls shall be laterally supported in either the horizontal or the vertical direction. The maximum spacing between lateral supports shall not exceed the distances in Table R606.6.4. Lateral support shall be provided by cross walls, pilasters, buttresses or structural frame members where the limiting distance is taken horizontally, or by floors or roofs where the limiting distance is taken vertically.

TABLE R606.6.4
SPACING OF LATERAL SUPPORT FOR MASONRY WALLS

CONSTRUCTION	MAXIMUM WALL LENGTH TO THICKNESS OR WALL HEIGHT TO THICKNESS[a, b]
Bearing walls:	
Solid or solid grouted	20
All other	18
Nonbearing walls:	
Exterior	18
Interior	36

For SI: 1 foot = 304.8 mm.

a. Except for cavity walls and cantilevered walls, the thickness of a wall shall be its nominal thickness measured perpendicular to the face of the wall. For cavity walls, the thickness shall be determined as the sum of the nominal thicknesses of the individual wythes. For cantilever walls, except for parapets, the ratio of height to nominal thickness shall not exceed 6 for solid masonry, or 4 for hollow masonry. For parapets, see Section R606.4.4.

b. An additional unsupported height of 6 feet is permitted for gable end walls.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R606.6.4.1 Horizontal lateral support. Lateral support in the horizontal direction provided by intersecting masonry walls shall be provided by one of the methods in Section R606.6.4.1.1 or R606.6.4.1.2.

R606.6.4.1.1 Bonding pattern. Fifty percent of the units at the intersection shall be laid in an overlapping masonry bonding pattern, with alternate units having a bearing of not less than 3 inches (76 mm) on the unit below.

R606.6.4.1.2 Metal reinforcement. Interior nonload- bearing walls shall be anchored at their intersections, at vertical intervals of not more than 16 inches (406 mm) with joint reinforcement of not less than 9 gage [0.148 inch (4mm)], or $^1/_4$-inch (6 mm) galvanized mesh hardware cloth. Intersecting masonry walls, other than interior nonloadbearing walls, shall be anchored at vertical intervals of not more than 8 inches (203 mm) with joint reinforcement of not less than 9 gage and shall extend not less than 30 inches (762 mm) in each direction at the intersection. Other metal ties, joint reinforcement or anchors, if used, shall be spaced to provide equivalent area of anchorage to that required by this section.

R606.6.4.2 Vertical lateral support. Vertical lateral support of masonry walls in Seismic Design Category A, B or C shall be provided in accordance with one of the methods in Section R606.6.4.2.1 or R606.6.4.2.2.

R606.6.4.2.1 Roof structures. Masonry walls shall be anchored to roof structures with metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch (13 mm) bolts spaced not more than 6 feet (1829 mm) on center, or other *approved* anchors. Anchors shall be embedded not less than 16 inches (406 mm) into the masonry, or be hooked or welded to bond beam reinforcement placed not less than 6 inches (152 mm) from the top of the wall.

R606.6.4.2.2 Floor diaphragms. Masonry walls shall be anchored to floor *diaphragm* framing by metal strap anchors spaced in accordance with the manufacturer's instructions, $^1/_2$-inch-diameter (13 mm) bolts spaced at intervals not to exceed 6 feet (1829 mm) and installed as shown in Figure R606.11(1), or by other *approved* methods.

R606.7 Piers. The unsupported height of masonry piers shall not exceed 10 times their least dimension. Where structural clay tile or hollow concrete masonry units are used for isolated piers to support beams and girders, the cellular spaces shall be filled solidly with grout or Type M or S mortar, except that unfilled hollow piers shall be permitted to be used if their unsupported height is not more than four times their least dimension. Where hollow masonry units are solidly filled with grout or Type M, S or N mortar, the allowable compressive stress shall be permitted to be increased as provided in Table R606.9.

R606.7.1 Pier cap. Hollow piers shall be capped with 4 inches (102 mm) of *solid masonry* or concrete, a masonry cap block, or shall have cavities of the top course filled with concrete or grout.

R606.8 Chases. Chases and recesses in masonry walls shall not be deeper than one-third the wall thickness, and the maximum length of a horizontal chase or horizontal projection shall not exceed 4 feet (1219 mm), and shall have not less than 8 inches (203 mm) of masonry in back of the chases and recesses and between adjacent chases or recesses and the jambs of openings. Chases and recesses in masonry walls shall be designed and constructed so as not to reduce the required strength or required fire resistance of the wall and in no case shall a chase or recess be permitted within the required area of a pier. Masonry directly above chases or recesses wider than 12 inches (305 mm) shall be supported on noncombustible lintels.

R606.9 Allowable stresses. Allowable compressive stresses in masonry shall not exceed the values prescribed in Table R606.9. In determining the stresses in masonry, the effects of all loads and conditions of loading and the influence of all forces affecting the design and strength of the several parts shall be taken into account.

R606.9.1 Combined units. In walls or other structural members composed of different kinds or grades of units, materials or mortars, the maximum stress shall not exceed the allowable stress for the weakest of the combination of units, materials and mortars of which the member is composed. The net thickness of any facing unit that is used to resist stress shall be not less than $1^1/_2$ inches (38 mm).

R606.10 Lintels. Masonry over openings shall be supported by steel lintels, reinforced concrete or masonry lintels or masonry arches, designed to support load imposed.

R606.11 Anchorage. Masonry walls shall be anchored to floor and roof systems in accordance with the details shown in Figure R606.11(1), R606.11(2) or R606.11(3). Footings shall be permitted to be considered as points of lateral support.

R606.12 Seismic requirements. The seismic requirements of this section shall apply to the design of masonry and the construction of masonry building elements located in Seismic Design Category D_0, D_1 or D_2. Townhouses in Seismic Design Category C shall comply with the requirements of Section R606.12.2. These requirements shall not apply to glass unit masonry conforming to Section R610, anchored masonry veneer conforming to Section R703.8 or adhered masonry veneer conforming to Section R703.12.

R606.12.1 General. Masonry structures and masonry elements shall comply with the requirements of Sections R606.12.2 through R606.12.4 based on the seismic design category established in Table R301.2(1). Masonry structures and masonry elements shall comply with the requirements of Section R606.12 and Figures R606.11(1), R606.11(2) and R606.11(3) or shall be designed in accordance with TMS 402/ACI 530/ASCE 5 or TMS 403.

R606.12.1.1 Floor and roof diaphragm construction. Floor and roof *diaphragms* shall be constructed of wood structural panels attached to wood framing in accordance with Table R602.3(1) or to cold-formed steel floor framing in accordance with Table R505.3.1(2) or to cold-formed steel roof framing in accordance with Table R804.3. Additionally, sheathing panel edges perpendicular to framing members shall be backed by blocking, and sheathing shall be connected to the blocking with

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

3565

fasteners at the edge spacing. For Seismic Design Categories C, D_0, D_1 and D_2, where the width-to-thickness dimension of the *diaphragm* exceeds 2-to-1, edge spacing of fasteners shall be 4 inches (102 mm) on center.

TABLE R606.9
ALLOWABLE COMPRESSIVE STRESSES FOR EMPIRICAL DESIGN OF MASONRY

CONSTRUCTION; COMPRESSIVE STRENGTH OF UNIT, GROSS AREA	ALLOWABLE COMPRESSIVE STRESSES[a] GROSS CROSS-SECTIONAL AREA[b]	
	Type M or S mortar	Type N mortar
Solid masonry of brick and other solid units of clay or shale; sand-lime or concrete brick:		
8,000 + psi	350	300
4,500 psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Grouted[c] masonry, of clay or shale; sand-lime or concrete:		
4,500 + psi	225	200
2,500 psi	160	140
1,500 psi	115	100
Solid masonry of solid concrete masonry units:		
3,000 + psi	225	200
2,000 psi	160	140
1,200 psi	115	100
Masonry of hollow load-bearing units:		
2,000 + psi	140	120
1,500 psi	115	100
1,000 psi	75	70
700 psi	60	55
Hollow walls (cavity or masonry bonded[d]) solid units:		
2,500 + psi	160	140
1,500 psi	115	100
Hollow units	75	70
Stone ashlar masonry:		
Granite	720	640
Limestone or marble	450	400
Sandstone or cast stone	360	320
Rubble stone masonry:		
Coarse, rough or random	120	100

For SI: 1 pound per square inch = 6.895 kPa.

a. Linear interpolation shall be used for determining allowable stresses for masonry units having compressive strengths that are intermediate between those given in the table.

b. Gross cross-sectional area shall be calculated on the actual rather than nominal dimensions.

c. See Section R606.13.

d. Where floor and roof loads are carried upon one wythe, the gross cross-sectional area is that of the wythe under load; if both wythes are loaded, the gross cross-sectional area is that of the wall minus the area of the cavity between the wythes. Walls bonded with metal ties shall be considered as cavity walls unless the collar joints are filled with mortar or grout.

R606.12.2 Seismic Design Category C. Townhouses located in Seismic Design Category C shall comply with the requirements of this section.

R606.12.2.1 Minimum length of wall without openings. Table R606.12.2.1 shall be used to determine the minimum required solid wall length without openings at each masonry exterior wall. The provided percentage of solid wall length shall include only those wall segments that are 3 feet (914 mm) or longer. The maximum clear distance between wall segments included in determining the solid wall length shall not exceed 18 feet (5486 mm). Shear wall segments required to meet the minimum wall length shall be in accordance with Section R606.12.2.2.3.

R606.12.2.2 Design of elements not part of the lateral force-resisting system.

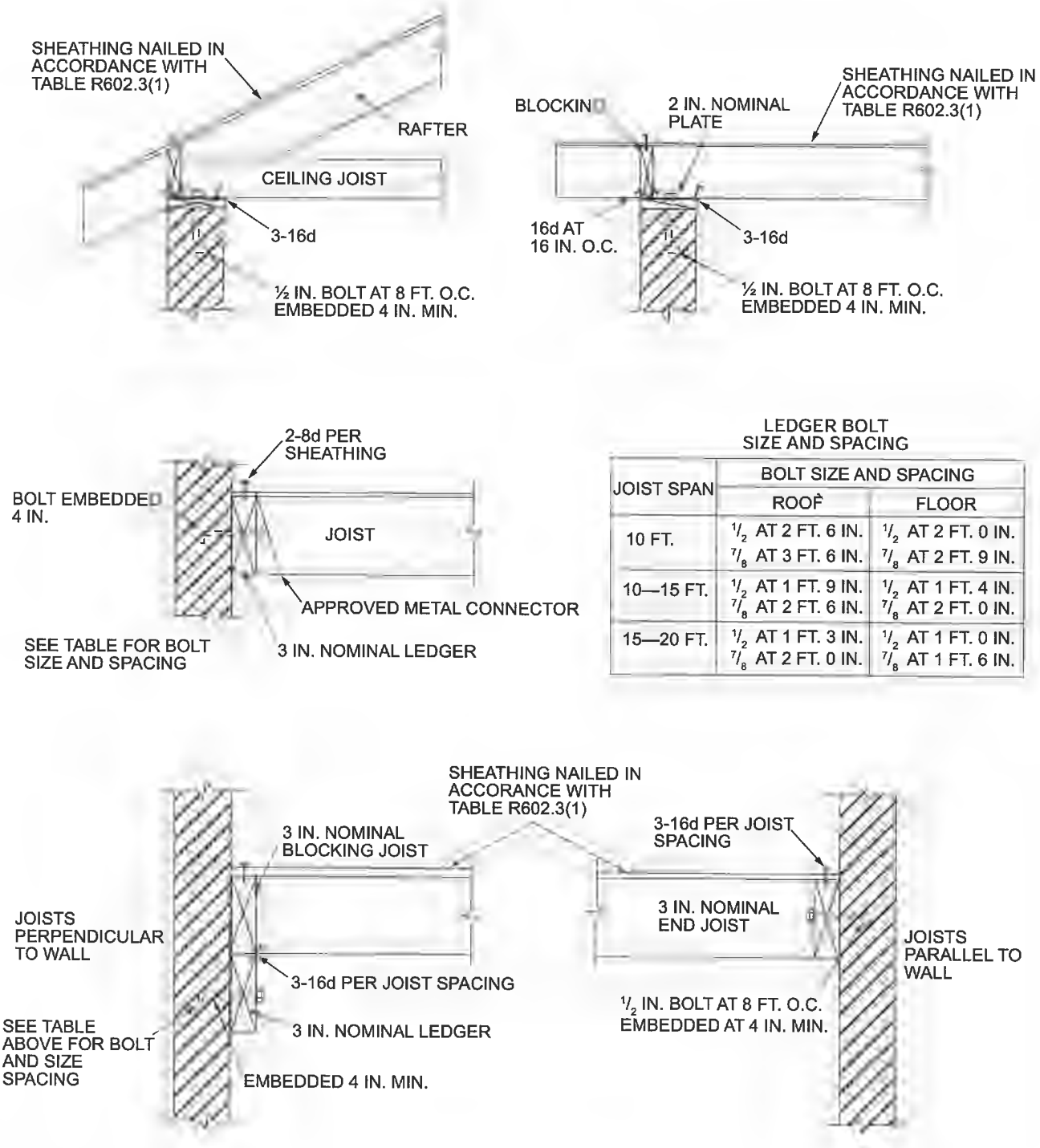
R606.12.2.2.1 Load-bearing frames or columns. Elements not part of the lateral force-resisting system shall be analyzed to determine their effect on the response of the system. The frames or columns shall be adequate for vertical load carrying capacity and induced moment caused by the design *story* drift.

R606.12.2.2.2 Masonry partition walls. Masonry partition walls, masonry screen walls and other masonry elements that are not designed to resist vertical or lateral loads, other than those induced by their own weight, shall be isolated from the structure so that vertical and lateral forces are not imparted to these elements. Isolation joints and connectors between these elements and the structure shall be designed to accommodate the design *story* drift.

R606.12.2.2.3 Reinforcement requirements for masonry elements. Masonry elements listed in Section R606.12.2.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of not less than two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and not less than one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or not less than one No. 4 bar spaced not more than 48 inches (1219 mm). Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate. Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.
2. Vertical reinforcement. Vertical reinforcement shall consist of not less than one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be located within 16 inches (406 mm) of the ends of masonry walls.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.
3566



LEDGER BOLT SIZE AND SPACING

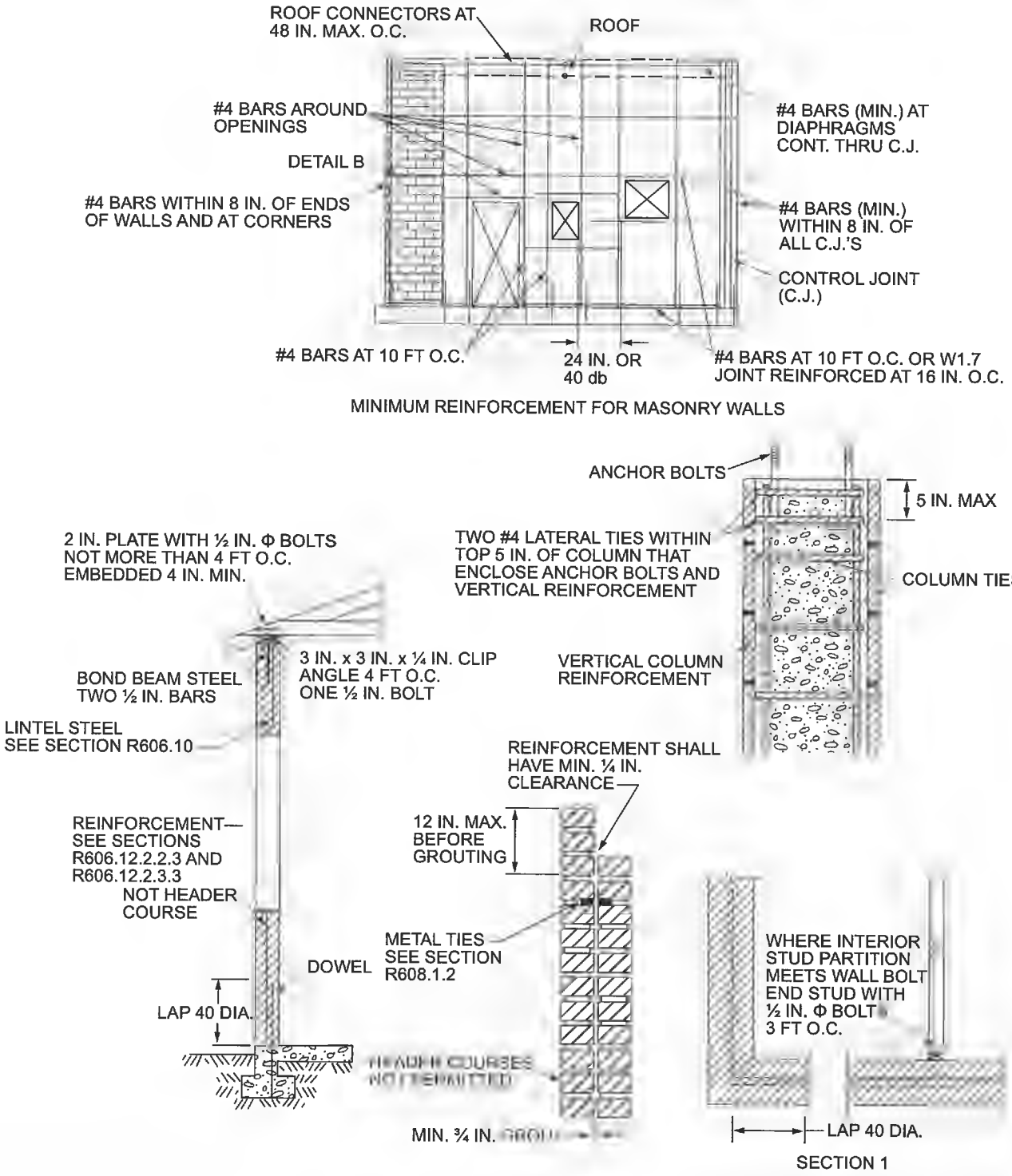
JOIST SPAN	BOLT SIZE AND SPACING	
	ROOF[a]	FLOOR
10 FT.	1/2 AT 2 FT. 6 IN. 7/8 AT 3 FT. 6 IN.	1/2 AT 2 FT. 0 IN. 7/8 AT 2 FT. 9 IN.
10—15 FT.	1/2 AT 1 FT. 9 IN. 7/8 AT 2 FT. 6 IN.	1/2 AT 1 FT. 4 IN. 7/8 AT 2 FT. 0 IN.
15—20 FT.	1/2 AT 1 FT. 3 IN. 7/8 AT 2 FT. 0 IN.	1/2 AT 1 FT. 0 IN. 7/8 AT 1 FT. 6 IN.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0.479 kPa.

Note: Where bolts are located in hollow masonry, the cells in the courses receiving the bolt shall be grouted solid.

FIGURE R606.11(1)
ANCHORAGE REQUIREMENTS FOR MASONRY WALLS LOCATED IN SEISMIC DESIGN CATEGORY A, B OR C AND WHERE WIND LOADS ARE LESS THAN 30 PSF

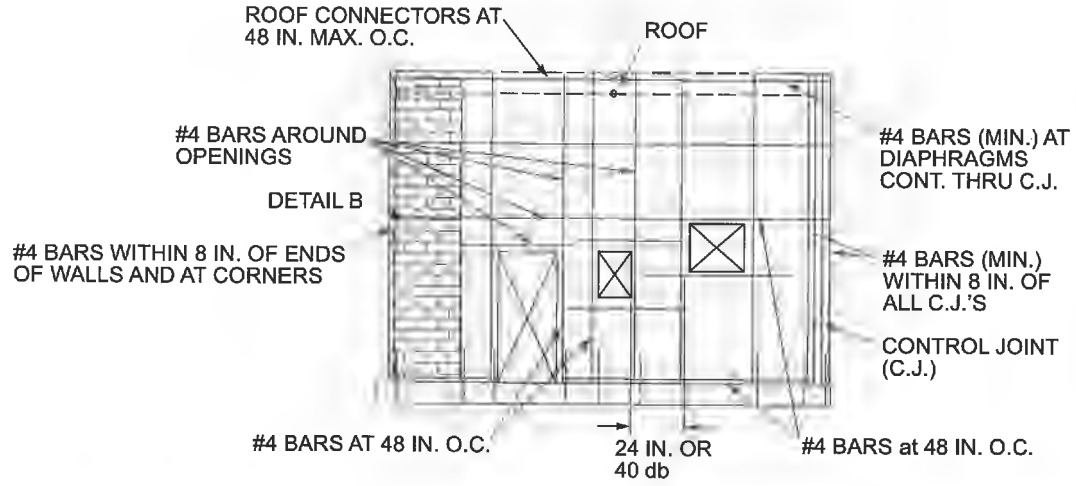
No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.



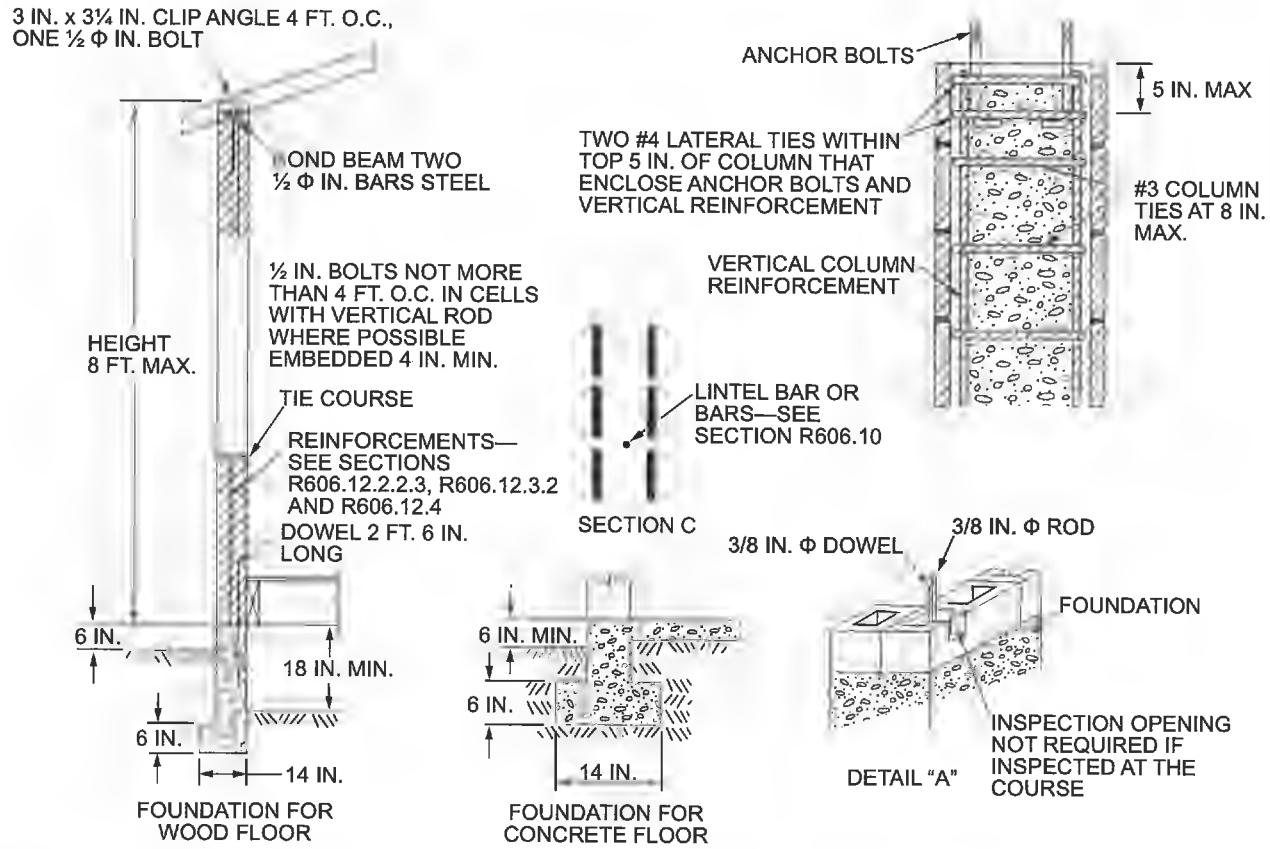
For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R606.11(2)
REQUIREMENTS FOR REINFORCED GROUTED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY C

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.



MINIMUM REINFORCEMENT FOR MASONRY WALLS



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

Note: A full bed joint must be provided. Cells containing vertical bars are to be filled to the top of wall and provide inspection opening as shown on detail "A." Horizontal bars are to be laid as shown on detail "B." Lintel bars are to be laid as shown on Section C.

FIGURE R606.11(3)
REQUIREMENTS FOR REINFORCED MASONRY CONSTRUCTION IN SEISMIC DESIGN CATEGORY D_0, D_1 OR D_2

INTERNATIONAL CODE COUNCIL®
pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.
3569

TABLE R606.12.2.1
MINIMUM SOLID WALL LENGTH ALONG EXTERIOR WALL LINES

SESIMIC DESIGN CATEGORY	MINIMUM SOLID WALL LENGTH (percent)[a]		
	One story or top story of two story	Wall supporting light-framed second story and roof	Wall supporting masonry second story and roof
Townhouses in C	20	25	35
D_0 or D_1	25	NP	NP
D_2	30	NP	NP

NP = Not permitted, except with design in accordance with the *International Building Code*.

a. For all walls, the minimum required length of solid walls shall be based on the table percent multiplied by the dimension, parallel to the wall direction under consideration, of a rectangle inscribing the overall building plan.

R606.12.2.3 Design of elements part of the lateral force-resisting system.

R606.12.2.3.1 Connections to masonry shear walls. Connectors shall be provided to transfer forces between masonry walls and horizontal elements in accordance with the requirements of Section 4.1.4 of TMS 402/ACI 530/ASCE 5. Connectors shall be designed to transfer horizontal design forces acting either perpendicular or parallel to the wall, but not less than 200 pounds per linear foot (2919 N/m) of wall. The maximum spacing between connectors shall be 4 feet (1219 mm). Such anchorage mechanisms shall not induce tension stresses perpendicular to grain in ledgers or nailers.

R606.12.2.3.2 Connections to masonry columns. Connectors shall be provided to transfer forces between masonry columns and horizontal elements in accordance with the requirements of Section 4.1.4 of TMS 402/ACI 530/ASCE 5. Where anchor bolts are used to connect horizontal elements to the tops of columns, the bolts shall be placed within lateral ties. Lateral ties shall enclose both the vertical bars in the column and the anchor bolts. There shall be not less than two No. 4 lateral ties provided in the top 5 inches (127 mm) of the column.

R606.12.2.3.3 Minimum reinforcement requirements for masonry shear walls. Vertical reinforcement of not less than one No. 4 bar shall be provided at corners, within 16 inches (406 mm) of each side of openings, within 8 inches (203 mm) of each side of movement joints, within 8 inches (203 mm) of the ends of walls, and at a maximum spacing of 10 feet (3048 mm).

Horizontal joint reinforcement shall consist of not less than two wires of W1.7 spaced not more than 16 inches (406 mm); or bond beam reinforcement of not less than one No. 4 bar spaced not more than 10 feet (3048 mm) shall be provided. Horizontal reinforcement shall be provided at the bottom and top of wall openings and shall extend not less than 24 inches (610 mm) nor less than 40 bar diameters past the opening; continuously at structurally connected roof and floor levels; and within 16 inches (406 mm) of the top of walls.

R606.12.3 Seismic Design Category D_0 or D_1. Structures in Seismic Design Category D_0 or D_1 shall comply with the requirements of Seismic Design Category C and the additional requirements of this section. AAC masonry shall not be used for the design of masonry elements that are part of the lateral force-resisting system.

R606.12.3.1 Design requirements. Masonry elements other than those covered by Section R606.12.2.2.2 shall be designed in accordance with the requirements of Chapters 1 through 7 and Sections 8.1 and 8.3 of TMS 402, ACI 530/ASCE 5 and shall meet the minimum reinforcement requirements contained in Sections R606.12.3.2 and R606.12.3.2.1. Otherwise, masonry shall be designed in accordance with TMS 403.

Exception: Masonry walls limited to one *story* in height and 9 feet (2743 mm) between lateral supports need not be designed provided they comply with the minimum reinforcement requirements of Sections R606.12.3.2 and R606.12.3.2.1.

R606.12.3.2 Minimum reinforcement requirements for masonry walls. Masonry walls other than those covered by Section R606.12.2.2.3 shall be reinforced in both the vertical and horizontal direction. The sum of the cross-sectional area of horizontal and vertical reinforcement shall be not less than 0.002 times the gross cross-sectional area of the wall, and the minimum cross-sectional area in each direction shall be not less than 0.0007 times the gross cross-sectional area of the wall. Reinforcement shall be uniformly distributed. Table R606.12.3.2 shows the minimum reinforcing bar sizes required for varying thicknesses of masonry walls. The maximum spacing of reinforcement shall be 48 inches (1219 mm) provided that the walls are solid grouted and constructed of hollow open-end units, hollow units laid with full head joints or two wythes of solid units. The maximum spacing of reinforcement shall be 24 inches (610 mm) for all other masonry.

R606.12.3.2.1 Shear wall reinforcement requirements. The maximum spacing of vertical and horizontal reinforcement shall be the smaller of one-third the length of the shear wall, one-third the height of the shear wall, or 48 inches (1219 mm). The minimum cross-sectional area of vertical reinforcement shall be one-third of the required shear reinforcement. Shear reinforcement shall be anchored around vertical reinforcing bars with a standard hook.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R606.12.3.2
MINIMUM DISTRIBUTED WALL REINFORCEMENT FOR BUILDINGS ASSIGNED TO SEISMIC DESIGN CATEGORY D_0 or D_1

NOMINAL WALL THICKNESS (inches)	MINIMUM SUM OF THE VERTICAL AND HORIZONTAL REINFORCEMENT AREAS[a] (square inches per foot)	MINIMUM REINFORCEMENT AS DISTRIBUTED IN BOTH HORIZONTAL AND VERTICAL DIRECTIONS[b] (square inches per foot)	MINUMUM BAR SIZE FOR REINFORCEMENT SPACED AT 48 INCHES
6	0.135	0.047	#4
8	0.183	0.064	#5
10	0.231	0.081	#6
12	0.279	0.098	#6

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square inch per foot = 2064 mm^2/m.

a. Based on the minimum reinforcing ratio of 0.002 times the gross cross-sectional area of the wall.

b. Based on the minimum reinforcing ratio each direction of 0.0007 times the gross cross-sectional area of the wall.

R606.12.3.3 Minimum reinforcement for masonry columns. Lateral ties in masonry columns shall be spaced not more than 8 inches (203 mm) on center and shall be not less than $^3/_8$-inch (9.5 mm) diameter. Lateral ties shall be embedded in grout.

R606.12.3.4 Material restrictions. Type N mortar or masonry cement shall not be used as part of the lateral force-resisting system.

R606.12.3.5 Lateral tie anchorage. Standard hooks for lateral tie anchorage shall be either a 135-degree (2.4 rad) standard hook or a 180-degree (3.2 rad) standard hook.

R606.12.4 Seismic Design Category D_2. Structures in Seismic Design Category D_2 shall comply with the requirements of Seismic Design Category D_1 and to the additional requirements of this section.

R606.12.4.1 Design of elements not part of the lateral force-resisting system. Stack bond masonry that is not part of the lateral force-resisting system shall have a horizontal cross-sectional area of reinforcement of not less than 0.0015 times the gross cross-sectional area of masonry. Table R606.12.4.1 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 24 inches (610 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.1
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 24 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

R606.12.4.2 Design of elements part of the lateral force-resisting system. Stack bond masonry that is part of the lateral force-resisting system shall have a horizontal cross-sectional area of reinforcement of not less than 0.0025 times the gross cross-sectional area of masonry. Table R606.12.4.2 shows minimum reinforcing bar sizes for masonry walls. The maximum spacing of horizontal reinforcement shall be 16 inches (406 mm). These elements shall be solidly grouted and shall be constructed of hollow open-end units or two wythes of solid units.

TABLE R606.12.4.2
MINIMUM REINFORCING FOR STACKED BONDED MASONRY WALLS IN SEISMIC DESIGN CATEGORY D_2

NOMINAL WALL THICKNESS (inches)	MINIMUM BAR SIZE SPACED AT 16 INCHES
6	#4
8	#5
10	#5
12	#6

For SI: 1 inch = 25.4 mm.

R606.13 Multiple-wythe masonry. The facing and backing of multiple-wythe masonry walls shall be bonded in accordance with Section R606.13.1, R606.13.2 or R606.13.3. In cavity walls, neither the facing nor the backing shall be less than 3 inches (76 mm) nominal in thickness and the cavity shall be not more than 4 inches (102 mm) nominal in width. The backing shall be not less than as thick as the facing.

Exception: Cavities shall be permitted to exceed the 4-inch (102 mm) nominal dimension provided tie size and tie spacing have been established by calculation.

R606.13.1 Bonding with masonry headers. Bonding with solid or hollow masonry headers shall comply with Sections R606.13.1.1 and R606.13.1.2.

R606.13.1.1 Solid units. Where the facing and backing (adjacent wythes) of *solid masonry* construction are bonded by means of masonry headers, not less than 4 percent of the wall surface of each face shall be composed of headers extending not less than 3 inches (76 mm) into the backing. The distance between adjacent full-length headers shall not exceed 24 inches (610 mm) either vertically or horizontally. In walls in which a single header does not extend through the wall, headers from the opposite sides shall overlap not less than 3 inches (76 mm), or headers from opposite sides shall be covered with another header course overlapping the header below not less than 3 inches (76 mm).

R606.13.1.2 Hollow units. Where two or more hollow units are used to make up the thickness of a wall, the stretcher courses shall be bonded at vertical intervals not exceeding 34 inches (864 mm) by lapping not less than 3 inches (76 mm) over the unit below, or by lapping at vertical intervals not exceeding 17 inches (432 mm) with units that are not less than 50 percent thicker than the units below.

INTERNATIONAL CODE COUNCIL®

pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

3571

R606.13.2 Bonding with wall ties or joint reinforcement. Bonding with wall ties or joint reinforcement shall comply with Section R606.13.2.3.

R606.13.2.1 Bonding with wall ties. Bonding with wall ties, except as required by Section R607, where the facing and backing (adjacent wythes) of masonry walls are bonded with $^3/_{16}$-inch-diameter (5 mm) wall ties embedded in the horizontal mortar joints, there shall be not less than one metal tie for each $4^1/_2$ square feet (0.418 m^2) of wall area. Ties in alternate courses shall be staggered. The maximum vertical distance between ties shall not exceed 24 inches (610 mm), and the maximum horizontal distance shall not exceed 36 inches (914 mm). Rods or ties bent to rectangular shape shall be used with hollow masonry units laid with the cells vertical. In other walls, the ends of ties shall be bent to 90-degree (0.79 rad) angles to provide hooks not less than 2 inches (51 mm) long. Additional bonding ties shall be provided at all openings, spaced not more than 3 feet (914 mm) apart around the perimeter and within 12 inches (305 mm) of the opening.

R606.13.2.2 Bonding with adjustable wall ties. Where the facing and backing (adjacent wythes) of masonry are bonded with adjustable wall ties, there shall be not less than one tie for each 2.67 square feet (0.248 m^2) of wall area. Neither the vertical nor the horizontal spacing of the adjustable wall ties shall exceed 24 inches (610 mm). The maximum vertical offset of bed joints from one wythe to the other shall be 1.25 inches (32 mm). The maximum clearance between connecting parts of the ties shall be $^1/_{16}$ inch (2 mm). Where pintle legs are used, ties shall have not less than two $^3/_{16}$-inch-diameter (5 mm) legs.

R606.13.2.3 Bonding with prefabricated joint reinforcement. Where the facing and backing (adjacent wythes) of masonry are bonded with prefabricated joint reinforcement, there shall be not less than one cross wire serving as a tie for each 2.67 square feet (0.248 m^2) of wall area. The vertical spacing of the joint reinforcement shall not exceed 16 inches (406 mm). Cross wires on prefabricated joint reinforcement shall not be smaller than No. 9 gage. The longitudinal wires shall be embedded in the mortar.

R606.13.3 Bonding with natural or cast stone. Bonding with natural and cast stone shall conform to Sections R606.13.3.1 and R606.13.3.2.

R606.13.3.1 Ashlar masonry. In ashlar masonry, bonder units, uniformly distributed, shall be provided to the extent of not less than 10 percent of the wall area. Such bonder units shall extend not less than 4 inches (102 mm) into the backing wall.

R606.13.3.2 Rubble stone masonry. Rubble stone masonry 24 inches (610 mm) or less in thickness shall have bonder units with a maximum spacing of 3 feet (914 mm) vertically and 3 feet (914 mm) horizontally, and if the masonry is of greater thickness than 24 inches (610 mm), shall have one bonder unit for each 6 square feet (0.557 m^2) of wall surface on both sides.

R606.14 Anchored and adhered masonry veneer.

R606.14.1 Anchored veneer. Anchored masonry veneer installed over a backing of wood or cold-formed steel shall meet the requirements of Section R703.8.

R606.14.2 Adhered veneer. Adhered masonry veneer shall be installed in accordance with the requirements of Section R703.12.

SECTION R607
GLASS UNIT MASONRY

R607.1 General. Panels of glass unit masonry located in load-bearing and nonload-bearing exterior and interior walls shall be constructed in accordance with this section.

R607.2 Materials. Hollow glass units shall be partially evacuated and have a minimum average glass face thickness of $^3/_{16}$ inch (5 mm). The surface of units in contact with mortar shall be treated with a polyvinyl butyral coating or latex-based paint. The use of reclaimed units is prohibited.

R607.3 Units. Hollow or solid glass block units shall be standard or thin units.

R607.3.1 Standard units. The specified thickness of standard units shall be not less than $3^7/_8$ inches (98 mm).

R607.3.2 Thin units. The specified thickness of thin units shall be not less than $3^1/_8$ inches (79 mm) for hollow units and not less than 3 inches (76 mm) for solid units.

R607.4 Isolated panels. Isolated panels of glass unit masonry shall conform to the requirements of this section.

R607.4.1 Exterior standard-unit panels. The maximum area of each individual standard-unit panel shall be 144 square feet (13.4 m^2) where the design wind pressure is 20 pounds per square foot (958 Pa). The maximum area of such panels subjected to design wind pressures other than 20 pounds per square foot (958 Pa) shall be in accordance with Figure R607.4.1. The maximum panel dimension between structural supports shall be 25 feet (7620 mm) in width or 20 feet (6096 mm) in height.

R607.4.2 Exterior thin-unit panels. The maximum area of each individual thin-unit panel shall be 85 square feet (7.9 m^2). The maximum dimension between structural supports shall be 15 feet (4572 mm) in width or 10 feet (3048 mm) in height. Thin units shall not be used in applications where the design wind pressure as stated in Table R301.2(1) exceeds 20 pounds per square foot (958 Pa).

R607.4.3 Interior panels. The maximum area of each individual standard-unit panel shall be 250 square feet (23.2 m^2). The maximum area of each thin-unit panel shall be 150 square feet (13.9 m^2). The maximum dimension between structural supports shall be 25 feet (7620 mm) in width or 20 feet (6096 mm) in height.

R607.4.4 Curved panels. The width of curved panels shall conform to the requirements of Sections R607.4.1, R607.4.2 and R607.4.3, except additional structural supports shall be provided at locations where a curved section joins a straight section, and at inflection points in multicurved walls.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

CHAPTER 7
WALL COVERING

SECTION R701
GENERAL

R701.1 Application. The provisions of this chapter shall control the design and construction of the interior and exterior wall covering for buildings.

R701.2 Installation. Products sensitive to adverse weather shall not be installed until adequate weather protection for the installation is provided. Exterior sheathing shall be dry before applying exterior cover.

SECTION R702
INTERIOR COVERING

R702.1 General. Interior coverings or wall finishes shall be installed in accordance with this chapter and Table R702.1(1), Table R702.1(2), Table R702.1(3) and Table R702.3.5. Interior masonry veneer shall comply with the requirements of Section R703.7.1 for support and Section R703.7.4 for anchorage, except an airspace is not required. Interior finishes and materials shall conform to the flame spread and smoke-development requirements of Section R302.9.

R702.2 Interior plaster.

R702.2.1 Gypsum plaster. Gypsum plaster materials shall conform to ASTM C 5, C 22, C 28, C 35, C 59, C 61, C 587, C 631, C 847, C 933, C 1032 and C 1047, and shall be installed or applied in compliance with ASTM C 843 and C 844. Gypsum lath or gypsum base for veneer plaster shall conform to ASTM C 1396. Plaster shall be not less than three coats where applied over metal lath and not less than two coats where applied over other bases permitted by this section, except that veneer plaster shall be applied in one coat not to exceed $^3/_{16}$ inch (4.76 mm) thickness, provided the total thickness is in accordance with Table R702.1(1).

R702.2.2 Cement plaster. Cement plaster materials shall conform to ASTM C 91 (Type M, S or N), C 150 (Type I, II and III), C 595 [Type IP, I (PM), IS and I (SM), C 847, C 897, C 926, C 933, C 1032, C 1047 and C 1328, and shall be installed or applied in compliance with ASTM C 1063. Gypsum lath shall conform to ASTM C 1396. Plaster shall be not less than three coats where applied over metal lath and not less than two coats where applied over other bases permitted by this section, except that veneer plaster shall be applied in one coat not to exceed $^3/_{16}$ inch (4.76 mm) thickness, provided the total thickness is in accordance with Table R702.1(1).

R702.2.2.1 Application. Each coat shall be kept in a moist condition for not less than 24 hours prior to application of the next coat.

Exception: Applications installed in accordance with ASTM C 926.

R702.2.2.2 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than 48 hours after application of the first coat. For three-coat cement plaster, the second coat shall not be applied sooner than 24 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than 48 hours after application of the second coat.

TABLE R702.1(1)
THICKNESS OF PLASTER

PLASTER BASE	FINISHED THICKNESS OF PLASTER FROM FACE OF LATH, MASONRY, CONCRETE (inches)	
	Gypsum Plaster	Cement Plaster
Expanded metal lath	$^5/_8$, minimum[a]	$^5/_8$, minimum[a]
Wire lath	$^5/_8$, minimum[a]	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]
Gypsum lath[g]	$^1/_2$, minimum	$^3/_4$, minimum (interior)[b]
Masonry walls[c]	$^1/_2$, minimum	$^1/_2$, minimum
Monolithic concrete walls[c, d]	$^5/_8$, maximum	$^7/_8$, maximum
Monolithic concrete ceilings[c, d]	$^3/_8$, maximum[e]	$^1/_2$, maximum
Gypsum veneer base[f, g]	$^1/_{16}$, minimum	$^3/_4$, minimum (interior)[b]
Gypsum sheathing[g]	—	$^3/_4$, minimum (interior)[b] $^7/_8$, minimum (exterior)[b]

For SI: 1 inch = 25.4 mm.

a. Where measured from back plane of expanded metal lath, exclusive of ribs, or self-furring lath, plaster thickness shall be $^3/_4$ inch minimum.
b. Where measured from face of support or backing.
c. Because masonry and concrete surfaces vary in plane, thickness of plaster need not be uniform.
d. Where applied over a liquid bonding agent, finish coat shall be permitted to be applied directly to concrete surface.
e. Approved acoustical plaster shall be permitted to be applied directly to concrete or over base coat plaster, beyond the maximum plaster thickness shown.
f. Attachment shall be in accordance with Table R702.3.5.
g. Where gypsum board is used as a base for cement plaster, a water-resistive barrier complying with Section R703.2 shall be provided.

INTERNATIONAL CODE COUNCIL
No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.
3574

R702.2.3 Support. Support spacing for gypsum or metal lath on walls or ceilings shall not exceed 16 inches (406 mm) for $^3/_8$-inch-thick (9.5 mm) or 24 inches (610 mm) for $^1/_2$-inch-thick (12.7 mm) plain gypsum lath. Gypsum lath shall be installed at right angles to support framing with end joints in adjacent courses staggered by not less than one framing space.

R702.3 Gypsum board and gypsum panel products.

R702.3.1 Materials. Gypsum board and gypsum panel product materials and accessories shall conform to ASTM C 22, C 475, C 514, C 1002, C 1047, C 1177, C 1178, C 1278, C 1396 or C 1658 and shall be installed in accordance with the provisions of this section. Adhesives for the installation of gypsum board and gypsum panel products shall conform to ASTM C 557.

R702.3.2 Wood framing. Wood framing supporting gypsum board and gypsum panel products shall be not less than 2 inches (51 mm) nominal thickness in the least dimension except that wood furring strips not less than 1-inch by 2-inch (25 mm by 51 mm) nominal dimension shall be permitted to be used over solid backing or framing spaced not more than 24 inches (610 mm) on center.

R702.3.3 Cold-formed steel framing. Cold-formed steel framing supporting gypsum board and gypsum panel products shall be not less than $1^1/_4$ inches (32 mm) wide in the least dimension. Nonload-bearing cold-formed steel framing shall comply with AISI S220 and ASTM C645, Section 10. Load-bearing cold-formed steel framing shall comply with AISI S200 and ASTM C 955, Section 8.

TABLE R702.1(2)
GYPSUM PLASTER PROPORTIONS[a]

NUMBER	COAT	PLASTER BASE OR LATH	MAXIMUM VOLUME AGGREGATE PER 100 POUNDS NEAT PLASTER[b] (cubic feet)	
			Damp Loose Sand[a]	Perlite or Vermiculite[c]
Two-coat work	Base coat	Gypsum lath	2.5	2
	Base coat	Masonry	3	3
Three-coat work	First coat	Lath	2[d]	2
	Second coat	Lath	3[d]	2[e]
	First and second coats	Masonry	3	3

For SI: 1 inch = 25.4 mm, 1 cubic foot = 0.0283 m^3, 1 pound = 0.454 kg.

a. Wood-fibered gypsum plaster shall be mixed in the proportions of 100 pounds of gypsum to not more than 1 cubic foot of sand where applied on masonry or concrete.

b. Where determining the amount of aggregate in set plaster, a tolerance of 10 percent shall be allowed.

c. Combinations of sand and lightweight aggregate shall be permitted to be used, provided the volume and weight relationship of the combined aggregate to gypsum plaster is maintained.

d. If used for both first and second coats, the volume of aggregate shall be permitted to be 2.5 cubic feet.

e. Where plaster is 1 inch or more in total thickness, the proportions for the second coat may be increased to 3 cubic feet.

TABLE R702.1(3)
CEMENT PLASTER PROPORTIONS, PARTS BY VOLUME

COAT	CEMENT PLASTER TYPE	CEMENTITIOUS MATERIALS				VOLUME OF AGGREGATE PER SUM OF SEPARATE VOLUMES OF CEMENTITIOUS MATERIALS[b]
		Portland Cement Type I, II or III or Blended Cement Type IP, I (PM), IS or I (SM)	Plastic Cement	Masonry Cement Type M, S or N	Lime	
First	Portland or blended	1			$^3/_4$ - $1^1/_2$[a]	$2^1/_2$ - 4
	Masonry				1	$2^1/_2$ - 4
	Plastic		1			$2^1/_2$ - 4
Second	Portland or blended	1			$^3/_4$ - $1^1/_2$	3 - 5
	Masonry			1		3 - 5
	Plastic		1			3 - 5
Finish	Portland or blended	1			$^3/_4$ - 2	$1^1/_2$ - 3
	Masonry			1		$1^1/_2$ - 3
	Plastic		1			$1^1/_2$ - 3

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.

a. Lime by volume of 0 to $^3/_4$ shall be used where the plaster will be placed over low-absorption surfaces such as dense clay tile or brick.

b. The same or greater sand proportion shall be used in the second coat than used in the first coat.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R702.3.4 Insulating concrete form walls. Foam plastics for insulating concrete form walls constructed in accordance with Sections R404.1.2 and R608 on the interior of *habitable spaces* shall be protected in accordance with Section R316.4. Use of adhesives in conjunction with mechanical fasteners is permitted. Adhesives used for interior and exterior finishes shall be compatible with the insulating form materials.

R702.3.5 Application. Supports and fasteners used to attach gypsum board and gypsum panel products shall comply with Table R702.3.5. Gypsum sheathing shall be attached to exterior walls in accordance with Table R602.3(1). Gypsum board and gypsum panel products shall be applied at right angles or parallel to framing members. All edges and ends of gypsum board and gypsum panel products shall occur on the framing members, except those edges and ends that are perpendicular to the framing members. Interior gypsum board shall not be installed where it is directly exposed to the weather or to water.

TABLE R702.3.5
MINIMUM THICKNESS AND APPLICATION OF GYPSUM BOARD AND GYPSUM PANEL PRODUCTS

THICKNESS OF GYPSUM BOARD OR GYPSUM PANEL PRODUCTS (inches)	APPLICATION	ORIENTATION OF GYPSUM BOARD OR GYPSUM PANEL PRODUCTS TO FRAMING	MAXIMUM SPACING OF FRAMING MEMBERS (inches o.c.)	MAXIMUM SPACING OF FASTENERS (inches)		SIZE OF NAILS FOR APPLICATION TO WOOD FRAMING[c]
				Nails[a]	Screws[b]	
Application without adhesive						
3/8	Ceiling[d]	Perpendicular	16	7	12	13 gage, 1 1/4" long, 19/64" head; 0.098" diameter, 1 1/4" long, annular-ringed; or 4d cooler nail, 0.080" diameter, 1 3/8" long, 7/32" head.
	Wall	Either direction	16	8	16	
1/2	Ceiling	Either direction	16	7	12	13 gage, 1 3/8" long, 19/64" head; 0.098" diameter, 1 1/4" long, annular-ringed; 5d cooler nail, 0.086" diameter, 1 5/8" long, 15/64" head; or gypsum board nail, 0.086" diameter, 1 5/8" long, 9/32" head.
	Ceiling[d]	Perpendicular	24	7	12	
	Wall	Either direction	24	8	12	
	Wall	Either direction	16	8	16	
5/8	Ceiling	Either direction	16	7	12	13 gage, 1 5/8" long, 19/64" head; 0.098" diameter, 1 3/8" long, annular-ringed; 6d cooler nail, 0.092" diameter, 1 7/8" long, 1/4" head; or gypsum board nail, 0.0915" diameter, 1 7/8" long, 19/64" head.
	Ceiling	Perpendicular	24	7	12	
	Type X at garage ceiling beneath habitable rooms	Perpendicular	24	6	6	1 7/8" long 6d coated nails or equivalent drywall screws. Screws shall comply with Section R702.3.5.1
	Wall	Either direction	24	8	12	13 gage, 1 5/8" long, 19/64" head; 0.098" diameter, 1 3/8" long, annular-ringed; 6d cooler nail, 0.092" diameter, 1 7/8" long, 1/4" head; or gypsum board nail, 0.0915" diameter, 1 7/8" long, 19/64" head.
	Wall	Either direction	16	8	16	
Application with adhesive						
3/8	Ceiling[d]	Perpendicular	16	16	16	Same as above for 3/8" gypsum board and gypsum panel products.
	Wall	Either direction	16	16	24	
1/2 or 5/8	Ceiling	Either direction	16	16	16	Same as above for 1/2" and 5/8" gypsum board and gypsum panel products, respectively.
	Ceiling[d]	Perpendicular	24	12	16	
	Wall	Either direction	24	16	24	
Two 3/8 layers	Ceiling	Perpendicular	16	16	16	Base ply nailed as above for 1/2" gypsum board and gypsum panel products; face ply installed with adhesive.
	Wall	Either direction	24	24	24	

For SI: 1 inch = 25.4 mm.

a. For application without adhesive, a pair of nails spaced not less than 2 inches apart or more than 2 1/2 inches apart shall be permitted to be used with the pair of nails spaced 12 inches on center.

b. Screws shall be in accordance with Section R702.3.6. Screws for attaching gypsum board or gypsum panel products to structural insulated panels shall penetrate the wood structural panel facing not less than 7/16 inch.

c. Where cold-formed steel framing is used with a clinching design to receive nails by two edges of metal, the nails shall be not less than 5/8 inch longer than the gypsum board or gypsum panel product thickness and shall have ringed shanks. Where the cold-formed steel framing has a nailing groove formed to receive the nails, the nails shall have barbed shanks or be 5d, 13 1/2 gage, 1 5/8 inches long, 15/64-inch head for 1/2-inch gypsum board or gypsum panel product; and 6d, 13 gage, 1 7/8 inches long, 15/64-inch head for 5/8-inch gypsum board or gypsum panel product.

d. Three-eighths-inch-thick single-ply gypsum board or gypsum panel product shall not be used on a ceiling where a water-based textured finish is to be applied, or where it will be required to support insulation above a ceiling. On ceiling applications to receive a water-based texture material, either hand or spray applied, the gypsum board or gypsum panel product shall be applied perpendicular to framing. Where applying a water-based texture material, the minimum gypsum board thickness shall be increased from 3/8 inch to 1/2 inch for 16-inch on center framing, and from 1/2 inch to 5/8 inch for 24-inch on center framing or 1/2-inch sag-resistant gypsum ceiling board shall be used.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R702.3.5.1 Screw fastening. Screws for attaching gypsum board and gypsum panel products to wood framing shall be Type W or Type S in accordance with ASTM C 1002 and shall penetrate the wood not less than $^5/_8$ inch (15.9 mm). Gypsum board and gypsum panel products shall be attached to cold-formed steel framing with minimum No. 6 screws. Screws for attaching gypsum board and gypsum panel products to cold-formed steel framing less than 0.033 inch (1 mm) thick shall be Type S in accordance with ASTM C 1002 or bugle head style in accordance with ASTM C 1513 and shall penetrate the steel not less than $^3/_8$ inch (9.5 mm). Screws for attaching gypsum board and gypsum panel products to cold-formed steel framing 0.033 inch to 0.112 inch (1 mm to 3 mm) thick shall be in accordance with ASTM C 954 or bugle head style in accordance with ASTM C 1513. Screws for attaching gypsum board and gypsum panel products to structural insulated panels shall penetrate the wood structural panel facing not less than $^7/_{16}$ inch (11.1 mm).

R702.3.6 Horizontal gypsum board diaphragm ceilings. Gypsum board and gypsum panel products shall be permitted on wood joists to create a horizontal *diaphragm* in accordance with Table R702.3.6. Gypsum board and gypsum panel products shall be installed perpendicular to ceiling framing members. End joints of adjacent courses of board and panels shall not occur on the same joist. The maximum allowable *diaphragm* proportions shall be $1^1/_2$:1 between shear resisting elements. Rotation or cantilever conditions shall not be permitted. Gypsum board or gypsum panel products shall not be used in *diaphragm* ceilings to resist lateral forces imposed by masonry or concrete construction. Perimeter edges shall be blocked using wood members not less than 2-inch by 6-inch (51 mm by 152 mm) nominal dimension. Blocking material shall be installed flat over the top plate of the wall to provide a nailing surface not less than 2 inches (51 mm) in width for the attachment of the gypsum board or gypsum panel product.

R702.3.7 Water-resistant gypsum backing board. Gypsum board used as the base or backer for adhesive application of ceramic tile or other required nonabsorbent finish material shall conform to ASTM C 1396, C 1178 or C 1278. Use of water-resistant gypsum backing board shall be permitted on ceilings. Water-resistant gypsum board shall not be installed over a Class I or II vapor retarder in a shower or tub compartment. Cut or exposed edges, including those at wall intersections, shall be sealed as recommended by the manufacturer.

R702.3.7.1 Limitations. Water-resistant gypsum backing board shall not be used where there will be direct exposure to water, or in areas subject to continuous high humidity.

R702.4 Ceramic tile.

R702.4.1 General. Ceramic tile surfaces shall be installed in accordance with ANSI A108.1, A108.4, A108.5, A108.6, A108.11, A118.1, A118.3, A136.1 and A137.1.

R702.4.2 Backer boards. Materials used as backers for wall tile in tub and shower areas and wall panels in shower areas shall be of materials listed in Table R702.4.2, and installed in accordance with the manufacturer's recommendations.

TABLE R702.4.2
BACKER BOARD MATERIALS

MATERIAL	STANDARD
Glass mat gypsum backing panel	ASTM C 1178
Fiber-reinforced gypsum panels	ASTM C 1278
Nonasbestos fiber-cement backer board	ASTM C 1288 or ISO 8336, Category C
Nonasbestos fiber mat reinforced cementitious backer units	ASTM C 1325

R702.5 Other finishes. Wood veneer paneling and hardboard paneling shall be placed on wood or cold-formed steel framing spaced not more than 16 inches (406 mm) on center. Wood veneer and hard board paneling less than $^1/_4$-inch (6 mm) nominal thickness shall not have less than a $^3/_8$-inch (10 mm) gypsum board or gypsum panel product backer. Wood veneer paneling not less than $^1/_4$-inch (6 mm) nominal thickness shall conform to ANSI/HPVA HP-1. Hardboard paneling shall conform to CPA/ANSI A135.5.

R702.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles* and shall be permitted to be installed directly to the studs with maximum 24 inches (610 mm) on-center spacing.

TABLE R702.3.6
SHEAR CAPACITY FOR HORIZONTAL WOOD-FRAMED GYPSUM BOARD DIAPHRAGM CEILING ASSEMBLIES

MATERIAL	THICKNESS OF MATERIAL (min.) (inch)	SPACING OF FRAMING MEMBERS (max.) (inch)	SHEAR VALUE[a, b] (plf of ceiling)	MINIMUM FASTENER SIZE[c, d]
Gypsum board or gypsum panel product	$^1/_2$	16 o.c.	90	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head
Gypsum board or gypsum panel product	$^1/_2$	24 o.c.	70	5d cooler or wallboard nail; $1^5/_8$-inch long; 0.086-inch shank; $^{15}/_{64}$-inch head

For SI: 1 inch = 25.4 mm, 1 pound per linear foot = 1.488 kg/m.

a. Values are not cumulative with other horizontal diaphragm values and are for short-term loading caused by wind or seismic loading. Values shall be reduced 25 percent for normal loading.

b. Values shall be reduced 50 percent in Seismic Design Categories D_0, D_1, D_2 and E.

c. $1^1/_4$-inch, No. 6 Type S or W screws shall be permitted to be substituted for the listed nails.

d. Fasteners shall be spaced not more than 7 inches on center at all supports, including perimeter blocking, and not less than $^3/_8$ inch from the edges and ends of the gypsum board.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R702.6.1 Attachment. Nails, staples or glue are permitted for attaching shakes or shingles to the wall, and attachment of the shakes or shingles directly to the surface shall be permitted provided the fasteners are appropriate for the type of wall surface material. Where nails or staples are used, two fasteners shall be provided and shall be placed so that they are covered by the course above.

R702.6.2 Furring strips. Where furring strips are used, they shall be 1 inch by 2 inches or 1 inch by 3 inches (25 mm by 51 mm or 25 mm by 76 mm), spaced a distance on center equal to the desired exposure, and shall be attached to the wall by nailing through other wall material into the studs.

R702.7 Vapor retarders. Class I or II vapor retarders are required on the interior side of frame walls in Climate Zones 5, 6, 7, 8 and Marine 4.

Exceptions:

1. Basement walls.
2. Below-grade portion of any wall.
3. Construction where moisture or its freezing will not damage the materials.

R702.7.1 Class III vapor retarders. Class III vapor retarders shall be permitted where any one of the conditions in Table R702.7.1 is met.

TABLE R702.7.1
CLASS III VAPOR RETARDERS

CLIMATE ZONE	CLASS III VAPOR RETARDERS PERMITTED FOR:[a]
Marine 4	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Continuous insulation with R-value ≥ 2.5 over 2 × 4 wall.
	Continuous insulation with R-value ≥ 3.75 over 2 × 6 wall.
5	Vented cladding over wood structural panels.
	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Continuous insulation with R-value ≥ 5 over 2 × 4 wall.
	Continuous insulation with R-value ≥ 7.5 over 2 × 6 wall.
6	Vented cladding over fiberboard.
	Vented cladding over gypsum.
	Continuous insulation with R-value ≥ 7.5 over 2 × 4 wall.
	Continuous insulation with R-value ≥ 11.25 over 2 × 6 wall.
7 and 8	Continuous insulation with R-value ≥ 10 over 2 × 4 wall.
	Continuous insulation with R-value ≥ 15 over 2 × 6 wall.

For SI: 1 pound per cubic foot = 16 kg/m^3.

a. Spray foam with a maximum permeance of 1.5 perms at the installed thickness, applied to the interior cavity side of wood structural panels, fiberboard, insulating sheathing or gypsum is deemed to meet the continuous insulation requirement where the spray foam R-value meets or exceeds the specified continuous insulation R-value.

R702.7.2 Material vapor retarder class. The vapor retarder class shall be based on the manufacturer's certified testing or a tested assembly.

The following shall be deemed to meet the class specified:

Class I: Sheet polyethylene, unperforated aluminum foil.

Class II: Kraft-faced fiberglass batts.

Class III: Latex or enamel paint.

R702.7.3 Minimum clear airspaces and vented openings for vented cladding. For the purposes of this section, vented cladding shall include the following minimum clear airspaces. Other openings with the equivalent vent area shall be permitted.

1. Vinyl lap or horizontal aluminum siding applied over a weather-resistive barrier as specified in Table R703.3(1).
2. Brick veneer with a clear airspace as specified in Table R703.8.4.
3. Other approved vented claddings.

SECTION R703
EXTERIOR COVERING

R703.1 General. Exterior walls shall provide the building with a weather-resistant exterior wall envelope. The exterior wall envelope shall include flashing as described in Section R703.4.

Exception: Log walls designed and constructed in accordance with the provisions of ICC 400.

R703.1.1 Water resistance. The exterior wall envelope shall be designed and constructed in a manner that prevents the accumulation of water within the wall assembly by providing a water-resistant barrier behind the exterior veneer as required by Section R703.2 and a means of draining to the exterior water that enters the assembly. Protection against condensation in the exterior wall assembly shall be provided in accordance with Section R702.7 of this code.

Exceptions:

1. A weather-resistant exterior wall envelope shall not be required over concrete or masonry walls designed in accordance with Chapter 6 and flashed in accordance with Section R703.4 or R703.8.
2. Compliance with the requirements for a means of drainage, and the requirements of Sections R703.2 and R703.4, shall not be required for an exterior wall envelope that has been demonstrated to resist wind-driven rain through testing of the exterior wall envelope, including joints, penetrations and intersections with dissimilar materials, in accordance with ASTM E 331 under the following conditions:
   2.1. Exterior wall envelope test assemblies shall include at least one opening, one control joint, one wall/eave interface and one wall sill. All tested openings and penetrations shall be representative of the intended end-use configuration.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

2.2. Exterior wall envelope test assemblies shall be at least 4 feet by 8 feet (1219 mm by 2438 mm) in size.

2.3. Exterior wall assemblies shall be tested at a minimum differential pressure of 6.24 pounds per square foot (299 Pa).

2.4. Exterior wall envelope assemblies shall be subjected to the minimum test exposure for a minimum of 2 hours.

The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings penetration or intersections of terminations with dissimilar materials.

R703.1.2 Wind resistance. Wall coverings, backing materials and their attachments shall be capable of resisting wind loads in accordance with Tables R301.2(2) and R301.2(3). Wind-pressure resistance of the siding and backing materials shall be determined by ASTM E 330 or other applicable standard test methods. Where wind-pressure resistance is determined by design analysis, data from approved design standards and analysis conforming to generally accepted engineering practice shall be used to evaluate the siding and backing material and its fastening. All applicable failure modes including bending rupture of siding, fastener withdrawal and fastener head pull-through shall be considered in the testing or design analysis. Where the wall covering and the backing material resist wind load as an assembly, use of the design capacity of the assembly shall be permitted.

R703.2 Water-resistive barrier. One layer of No. 15 asphalt felt, free from holes and breaks, complying with ASTM D 226 for Type 1 felt or other approved water-resistive barrier shall be applied over studs or sheathing of all exterior walls. Such felt or material shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches (51 mm). Where joints occur, felt shall be lapped not less than 6 inches (152 mm). The felt or other approved material shall be continuous to the top of walls and terminated at penetrations and building appendages in a manner to meet the requirements of the exterior wall envelope as described in Section R703.1. The water-resistive barrier is not required for detached accessory buildings.

R703.3 Nominal thickness and attachments. The nominal thickness and attachment of exterior wall coverings shall be in accordance with Table R703.3(1), the wall covering material requirements of this section, and the wall covering manufacturer's installation instructions. Cladding attachment over foam sheathing shall comply with the additional requirements and limitations of Sections R703.15 through R703.17. Nominal material thicknesses in Table R703.3(1) are based on a maximum stud spacing of 16 inches (406 mm) on center. Where specified by the siding manufacturer's instructions and supported by a test report or other documentation, attachment to studs with greater spacing is permitted. Fasteners for exterior wall coverings attached to wood framing shall be in accordance with Section R703.3.2 and Table R703.3(1). Exterior wall coverings shall be attached to cold-formed steel light frame construction in accordance with the cladding manufacturer's installation instructions, the requirements of Table R703.3(1) using screw fasteners substituted for the nails specified in accordance with Table R703.3(2), or an approved design.

TABLE R703.3(2)
SCREW FASTENER SUBSTITUTION FOR SIDING ATTACHMENT TO COLD-FORMED STEEL LIGHT FRAME CONSTRUCTION[a, b, c, d, e]

NAIL DIAMETER PER TABLE R703.3(1)	MINIMUM SCREW FASTENER SIZE
0.099″	No. 6
0.113″	No. 7
0.120″	No. 8

For SI: 1 inch = 25.4 mm

a. Screws shall comply with ASTM C 1513 and shall penetrate a minimum of three threads through minimum 33 mil (20 gage) cold-formed steel frame construction.

b. Screw head diameter shall be not less than the nail head diameter required by Table R703.3(1).

c. Number and spacing of screw fasteners shall comply with Table R703.3(1).

d. Pan head, hex washer head, modified truss head or other screw head types with a flat attachment surface under the head shall be used for vinyl siding attachment.

e. Aluminum siding shall not be fastened directly to cold-formed steel light frame construction.

R703.3.1 Wind limitations. Where the design wind pressure exceeds 30 psf or where the limits of Table R703.3.1 are exceeded, the attachment of wall coverings shall be designed to resist the component and cladding loads specified in Table R301.2(2), adjusted for height and exposure in accordance with Table R301.2(3). For the determination of wall covering attachment, component and cladding loads shall be determined using an effective wind area of 10 square feet (0.93 m^2).

TABLE R703.3.1
LIMITS FOR ATTACHMENT PER TABLE R703.3(1)

Ultimate Wind Speed (mph 3-second gust)	MAXIMUM MEAN ROOF HEIGHT		
	Exposure		
	B	C	D
115	NL	50′	20′
120	NL	30′	DR
130	60′	15′	DR
140	35′	DR	DR

For SI: 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.
NL = Not limited by Table R703.3.1, DR = Design required.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.3(1)
SIDING MINIMUM ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS (inches)	JOINT TREATMENT	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS					
				Wood or wood structural panel sheathing into stud	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud[i]	Direct to studs	Number or spacing of fasteners
Anchored veneer: brick, concrete, masonry or stone (see Section R703.8)		2	Section R703.8	Section R703.8					
Adhered veneer: concrete, stone or masonry (see Section R703.12)		—	Section R703.12	Section R703.12					
Fiber cement siding	Panel siding (see Section R703.10.1)	5/16	Section R703.10.1	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	4d common (1½″ × 0.099″)	6″ panel edges 12″ inter. sup.
	Lap siding (see Section R703.10.2)	5/16	Section R703.10.2	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	6d common (2″ × 0.113″)	6d common (2″ × 0.113″) or 11 gage roofing nail	Note f
Hardboard panel siding (see Section R703.3)		7/16	—	0.120″ nail (shank) with 0.225″ head	0.120″ nail (shank) with 0.225″ head	0.120″ nail (shank) with 0.225″ head	0.120″ nail (shank) with 0.225″ head	0.120″ nail (shank) with 0.225″ head	6″ panel edges 12″ inter. sup.[d]
Hardboard lap siding (see Section R703.3)		7/16	Note e	0.099″ nail (shank) with 0.240″ head	0.099″ nail (shank) with 0.240″ head	0.099″ nail (shank) with 0.240″ head	0.099″ nail (shank) with 0.240″ head	0.099″ nail (shank) with 0.240″ head	Same as stud spacing 2 per bearing
Horizontal aluminum[a]	Without insulation	0.019[b]	Lap	Siding nail 1½″ × 0.120″	Siding nail 2″ × 0.120″	Siding nail 2″ × 0.120″	Siding nail[h] 1½″ × 0.120″	Not allowed	Same as stud spacing
		0.024	Lap	Siding nail 1½″ × 0.120″	Siding nail 2″ × 0.120″	Siding nail 2″ × 0.120″	Siding nail 1½″ × 0.120″	Not allowed	
	With insulation	0.019	Lap	Siding nail 1½″ × 0.120″	Siding nail 2½″ × 0.120″	Siding nail 2½″ × 0.120″	Siding nail[h] 1½″ × 0.120″	Siding nail 1½″ × 0.120″	
Insulated vinyl siding[j]		0.035 (vinyl siding layer only)	Lap	0.120 nail (shank) with a 0.313 head or 16-gage crown[h, l]	0.120 nail (shank) with a 0.313 head or 16-gage crown[h]	0.120 nail (shank) with a 0.313 head or 16-gage crown[h]	0.120 nail (shank) with a 0.313 head Section R703.11.2	Not allowed	16 inches on center or specified by manufacturer instructions, test report or other sections of this code
Particleboard panels		3/8	—	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	Not allowed	6″ panel edges 12″ inter. sup.
		1/2	—	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	
		5/8	—	6d box nail (2″ × 0.099″)	8d box nail (2½″ × 0.113″)	8d box nail (2½″ × 0.113″)	6d box nail (2″ × 0.099″)	6d box nail (2″ × 0.099″)	
Polypropylene siding[k]		Not applicable	Lap	Section 703.14.1	Section 703.14.1	Section 703.14.1	Section 703.14.1	Not allowed	As specified by the manufacturer instructions, test report or other sections of this code

(continued)

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.3(1)—continued
SIDING MINIMUM ATTACHMENT AND MINIMUM THICKNESS

SIDING MATERIAL		NOMINAL THICKNESS (inches)	JOINT TREATMENT	TYPE OF SUPPORTS FOR THE SIDING MATERIAL AND FASTENERS					
				Wood or wood structural panel sheathing into stud	Fiberboard sheathing into stud	Gypsum sheathing into stud	Foam plastic sheathing into stud[l]	Direct to studs	Number or spacing of fasteners
Steel[c]		29 ga.	Lap	Siding nail ($1^{3}/_{4}$″ × 0.113″) Staple–$1^{3}/_{4}$″	Siding nail ($2^{3}/_{4}$″ × 0.113″) Staple–$2^{1}/_{2}$″	Siding nail ($2^{1}/_{2}$″ × 0.113″) Staple–$2^{1}/_{4}$″	Siding nail ($1^{3}/_{4}$″ × 0.113″) Staple–$1^{3}/_{4}$″	Not allowed	Same as stud spacing
Vinyl siding (see Section R703.11)		0.035	Lap	0.120″ nail (shank) with a 0.313″ head or 16-gage staple with $^{3}/_{8}$- to $^{1}/_{2}$-inch crown[h, i]	0.120″ nail (shank) with a 0.313″ head or 16-gage staple with $^{3}/_{8}$- to $^{1}/_{2}$-inch crown[h]	0.120″ nail (shank) with a 0.313″ head or 16- gage staple with $^{3}/_{8}$- to $^{1}/_{2}$-inch crown[h]	0.120″ nail (shank) with a 0.313 head Section R703.11.2	Not allowed	16 inches on center or as specified by the manufacturer instructions or test report
Wood siding (see Section R703.3)	Wood rustic, drop	$^{3}/_{8}$ min.	Lap	6d box or siding nail (2″ × 0.099″)	6d box or siding nail (2″ × 0.099″)	6d box or siding nail (2″ × 0.099″)	6d box or siding nail (2″ × 0.099″)	8d box or siding nail ($2^{1}/_{2}$″ × 0.113″) Staple–2″	Face nailing up to 6″ widths, 1 nail per bearing; 8″ widths and over, 2 nails per bearing
	Shiplap	$^{19}/_{32}$ average	Lap						
	Bevel	$^{7}/_{16}$							
	Butt tip	$^{3}/_{16}$	Lap						
Wood structural panel ANSI/APA PRP-210 siding (exterior grade) (see Section R703.3)		$^{3}/_{8}$ – $^{1}/_{2}$	Note e	2″ × 0.099″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	2″ × 0.099″ siding nail	6″ panel edges 12″ inter. sup.
Wood structural panel lap siding (see Section R703.3)		$^{3}/_{8}$ – $^{1}/_{2}$	Note e Note g	2″ × 0.099″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	$2^{1}/_{2}$″ × 0.113″ siding nail	2″ × 0.099″ siding nail	8″ along bottom edge

For SI: 1 inch = 25.4 mm.

a. Aluminum nails shall be used to attach aluminum siding.

b. Aluminum (0.019 inch) shall be unbacked only where the maximum panel width is 10 inches and the maximum flat area is 8 inches. The tolerance for aluminum siding shall be +0.002 inch of the nominal dimension.

c. Shall be of approved type.

d. Where used to resist shear forces, the spacing must be 4 inches at panel edges and 8 inches on interior supports.

e. Vertical end joints shall occur at studs and shall be covered with a joint cover or shall be caulked.

f. Face nailing: one 6d common nail through the overlapping planks at each stud. Concealed nailing: one 11-gage $1^{1}/_{2}$-inch-long galv. roofing nail through the top edge of each plank at each stud in accordance with the manufacturer's installation instructions.

g. Vertical joints, if staggered, shall be permitted to be away from studs if applied over wood structural panel sheathing.

h. Minimum fastener length must be sufficient to penetrate sheathing other nailable substrate and framing a total of a minimum of $1^{1}/_{4}$ inches or in accordance with the manufacturer's installation instructions.

i. Where specified by the manufacturer's instructions and supported by a test report, fasteners are permitted to penetrate into or fully through nailable sheathing or other nailable substrate of minimum thickness specified by the instructions or test report, without penetrating into framing.

j. Insulated vinyl siding shall comply with ASTM D 7793.

k. Polypropylene siding shall comply with ASTM D 7254.

l. Cladding attachment over foam sheathing shall comply with the additional requirements and limitations of Sections R703.15, R703.16 and R703.17.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R703.3.2 Fasteners. Exterior wall coverings shall be securely fastened with aluminum, galvanized, stainless steel or rust-preventative coated nails or staples in accordance with Table R703.3(1) or with other approved corrosion-resistant fasteners in accordance with the wall covering manufacturer's installation instructions. Nails and staples shall comply with ASTM F 1667. Nails shall be T-head, modified round head, or round head with smooth or deformed shanks. Staples shall have a minimum crown width of $^{7}/_{16}$ inch (11.1 mm) outside diameter and be manufactured of minimum 16-gage wire. Where fiberboard, gypsum, or foam plastic sheathing backing is used, nails or staples shall be driven into the studs. Where wood or wood structural panel sheathing is used, fasteners shall be driven into studs unless otherwise permitted to be driven into sheathing in accordance with either the siding manufacturer's installation instructions or Table R703.3.2.

R703.3.3 Minimum fastener length and penetration. Fasteners shall have the greater of the minimum length specified in Table R703.3(1) or as required to provide a minimum penetration into framing as follows:

1. Fasteners for horizontal aluminum siding, steel siding, particleboard panel siding, wood structural panel siding in accordance with ANSI/APA-PRP 210, fiber-cement panel siding and fiber-cement lap siding installed over foam plastic sheathing shall penetrate not less than $1^{1}/_{2}$ inches (38 mm) into framing or shall be in accordance with the manufacturer's installation instructions.
2. Fasteners for hardboard panel and lap siding shall penetrate not less than $1^{1}/_{2}$ inches (38 mm) into framing.
3. Fasteners for vinyl siding and insulated vinyl siding installed over wood or wood structural panel sheathing shall penetrate not less than $1^{1}/_{4}$ inches (32 mm) into sheathing and framing combined. Vinyl siding and insulated vinyl siding shall be permitted to be installed with fasteners penetrating into or through wood or wood structural sheathing of minimum thickness as specified by the manufacturer's instructions or test report, with or without penetration into the framing. Where the fastener penetrates fully through the sheathing, the end of the fastener shall extend not less than $^{1}/_{4}$ inch (6.4 mm) beyond the opposite face of the sheathing. Fasteners for vinyl siding and insulated vinyl siding installed over foam plastic sheathing shall be in accordance with Section R703.11.2. Fasteners for vinyl siding and insulated vinyl siding installed over fiberboard or gypsum sheathing shall penetrate not less than $1^{1}/_{4}$ inches (32 mm) into framing.
4. Fasteners for vertical or horizontal wood siding shall penetrate not less than $1^{1}/_{2}$ inches (38 mm) into studs, studs and wood sheathing combined, or blocking.
5. Fasteners for siding material installed over foam plastic sheathing shall have sufficient length to accommodate foam plastic sheathing thickness and to penetrate framing or sheathing and framing combined, as specified in Items 1 through 4.

R703.4 Flashing. Approved corrosion-resistant flashing shall be applied shingle-fashion in a manner to prevent entry of water into the wall cavity or penetration of water to the building structural framing components. Self-adhered membranes used as flashing shall comply with AAMA 711. Fluid-applied membranes used as flashing in exterior walls shall comply with AAMA 714. The flashing shall extend to the surface of the exterior wall finish. Approved corrosion-resistant flashings shall be installed at the following locations:

1. Exterior window and door openings. Flashing at exterior window and door openings shall extend to the surface of the exterior wall finish or to the water-resistive barrier complying with Section 703.2 for subsequent drainage. Mechanically attached flexible flashings shall comply with AAMA 712. Flashing at exterior window and door openings shall be installed in accordance with one or more of the following:
   1.1. The fenestration manufacturer's installation and flashing instructions, or for applications not addressed in the fenestration manufacturer's instructions, in accordance with the flashing manufacturer's instructions. Where flashing instructions or details are not provided, pan flashing shall be installed at the sill of exterior window and door openings. Pan flashing shall be sealed or sloped in such a manner as to direct water to the surface of the exterior wall finish or to the water-resistive barrier for subsequent drainage. Openings using pan flashing shall incorporate flashing or protection at the head and sides.
   1.2. In accordance with the flashing design or method of a registered design professional.

TABLE R703.3.2
OPTIONAL SIDING ATTACHMENT SCHEDULE FOR FASTENERS WHERE NO STUD PENETRATION NECESSARY

APPLICATION	NUMBER AND TYPE OF FASTENER	SPACING OF FASTENERS[b]
Exterior wall covering (weighing 3 psf or less) attachment to wood structural panel sheathing, either direct or over foam sheathing a maximum of 2 inches thick.[a] Note: Does not apply to vertical siding.	Ring shank roofing nail (0.120″ min. dia.)	12″ o.c.
	Ring shank nail (0.148″ min. dia.)	15″ o.c.
	No. 6 screw (0.138″ min. dia.)	12″ o.c.
	No. 8 screw (0.164″ min. dia.)	16″ o.c.

For SI: 1 inch = 25.4 mm.

a. Fastener length shall be sufficient to penetrate back side of the wood structural panel sheathing by at least $^{1}/_{4}$ inch. The wood structural panel sheathing shall be not less than $^{7}/_{16}$ inch in thickness.

b. Spacing of fasteners is per 12 inches of siding width. For other siding widths, multiply "Spacing of Fasteners" above by a factor of 12/s, where "s" is the siding width in inches. Fastener spacing shall never be greater than the manufacturer's minimum recommendations.

INTERNATIONAL CODE COUNCIL®

distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

1.3. In accordance with other approved methods.

2. At the intersection of chimneys or other masonry construction with frame or stucco walls, with projecting lips on both sides under stucco copings.
3. Under and at the ends of masonry, wood or metal copings and sills.
4. Continuously above all projecting wood trim.
5. Where exterior porches, decks or stairs attach to a wall or floor assembly of wood-frame construction.
6. At wall and roof intersections.
7. At built-in gutters.

R703.5 Wood, hardboard and wood structural panel siding. Wood, hardboard, and wood structural panel siding shall be installed in accordance with this section and Table R703.3. Hardboard siding shall comply with CPA/ANSI A135.6. Hardboard siding used as architectural trim shall comply with CPA/ANSI A 135.7.

R703.5.1 Vertical wood siding. Wood siding applied vertically shall be nailed to horizontal nailing strips or blocking set not more than 24 inches (610 mm) on center.

R703.5.2 Panel siding. $^3/_8$-inch (9.5 mm) wood structural panel siding shall not be applied directly to studs spaced more than 16 inches (406 mm) on center where long dimension is parallel to studs. Wood structural panel siding $^7/_{16}$ inch (11.1 mm) or thinner shall not be applied directly to studs spaced more than 24 inches (610 mm) on center. The stud spacing shall not exceed the panel span rating provided by the manufacturer unless the panels are installed with the face grain perpendicular to the studs or over sheathing approved for that stud spacing.

Joints in wood, hardboard or wood structural panel siding shall be made as follows unless otherwise approved. Vertical joints in panel siding shall occur over framing members, unless wood or wood structural panel sheathing is used, and shall be shiplapped or covered with a batten. Horizontal joints in panel siding shall be lapped not less than 1 inch (25 mm) or shall be shiplapped or flashed with Z-flashing and occur over solid blocking, wood or wood structural panel sheathing.

R703.5.3 Horizontal wood siding. Horizontal lap siding shall be installed in accordance with the manufacturer's recommendations. Where there are no recommendations the siding shall be lapped not less than 1 inch (25 mm), or $^1/_2$ inch (12.7 mm) if rabbeted, and shall have the ends caulked, covered with a batten or sealed and installed over a strip of flashing.

R703.6 Wood shakes and shingles. Wood shakes and shingles shall conform to CSSB *Grading Rules for Wood Shakes and Shingles.*

R703.6.1 Application. Wood shakes or shingles shall be applied either single course or double course over nominal $^1/_2$-inch (12.7 mm) wood-based sheathing or to furring strips over $^1/_2$-inch (12.7 mm) nominal nonwood sheathing. A water-resistive barrier shall be provided over all sheathing, with horizontal overlaps in the membrane of not less than 2 inches (51 mm) and vertical overlaps of not less than 6 inches (152 mm). Where horizontal furring strips are used, they shall be 1 inch by 3 inches or 1 inch by 4 inches (25 mm by 76 mm or 25 mm by 102 mm) and shall be fastened to the studs with minimum 7d or 8d box nails and shall be spaced a distance on center equal to the actual weather exposure of the shakes or shingles, not to exceed the maximum exposure specified in Table R703.6.1. When installing shakes or shingles over a nonpermeable water-resistive barrier, furring strips shall be placed first vertically over the barrier and in addition, horizontal furring strips shall be fastened to the vertical furring strips prior to attaching the shakes or shingles to the horizontal furring strips. The spacing between adjacent shingles to allow for expansion shall be $^1/_8$ inch (3.2 mm) to $^1/_4$ inch (6.4 mm) apart, and between adjacent shakes shall be $^3/_8$ inch (9.5 mm) to $^1/_2$ inch (12.7 mm) apart. The offset spacing between joints in adjacent courses shall be not less than $1^1/_2$ inches (38 mm).

TABLE R703.6.1
MAXIMUM WEATHER EXPOSURE FOR WOOD SHAKES AND SHINGLES ON EXTERIOR WALLS[a, b, c]
(Dimensions are in inches)

LENGTH	EXPOSURE FOR SINGLE COURSE	EXPOSURE FOR DOUBLE COURSE
Shingles[a]		
16	7	12[b]
18	8	14[c]
24	$10^1/_2$	16[d]
Shakes[a]		
18	8	14
24	$10^1/_2$	18

For SI: 1 inch = 25.4 mm.
a. Dimensions given are for No. 1 grade.
b. A maximum 9-inch exposure is permitted for No. 2 grade.
c. A maximum 10-inch exposure is permitted for No. 2 grade.
d. A maximum 14-inch exposure is permitted for No. 2 grade.

R703.6.2 Weather exposure. The maximum weather exposure for shakes and shingles shall not exceed that specified in Table 703.6.1.

R703.6.3 Attachment. Wood shakes or shingles shall be installed according to this chapter and the manufacturer's instructions. Each shake or shingle shall be held in place by two stainless steel Type 304, Type 316 or hot-dipped zinc-coated galvanized corrosion-resistant box nails in accordance with Table R703.6.3(1) or R703.6.3(2). The hot-dipped zinc-coated galvanizing shall conform to minimum standard ASTM A 153D, 1.0 ounce per square foot. Alternatively, 16-gage stainless steel Type 304 or Type 316 staples with crown widths $^7/_{16}$ inch (11 mm) minimum, $^3/_4$ inch (19 mm) maximum, shall be used and the crown of the staple shall be placed parallel with the butt of the shake or the shingle. In single-course application, the fasteners shall be concealed by the course above and shall be driven approximately 1 inch (25 mm) above the butt line of the succeeding course and $^3/_4$ inch (19 mm) from the edge. In double-course applications, the exposed shake or shingle shall be face-nailed with two fasteners, driven approximately 2 inches (51 mm) above the butt line and $^3/_4$

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

inch (19 mm) from each edge. Fasteners installed within 15 miles (24 km) of salt water coastal areas shall be stainless steel Type 316. Fasteners for fire-retardant-treated shakes or shingles in accordance with Section R902 or pressure-impregnated-preservative-treated shakes or shingles in accordance with AWPA U1 shall be stainless steel Type 316. The fasteners shall penetrate the sheathing or furring strips by not less than $^1/_2$ inch (13 mm) and shall not be overdriven. Fasteners for untreated (natural) and treated products shall comply with ASTM F 1667.

R703.6.4 Bottom courses. The bottom courses shall be doubled.

R703.7 Exterior plaster. Installation of these materials shall be in compliance with ASTM C 926, ASTM C 1063 and the provisions of this code.

R703.7.1 Lath. Lath and lath attachments shall be of corrosion-resistant materials. Expanded metal or woven wire lath shall be attached with $1^1/_2$-inch-long (38 mm), 11 gage nails having a $^7/_{16}$-inch (11.1 mm) head, or $^7/_8$-inch-long (22.2 mm), 16 gage staples, spaced not less than 6 inches (152 mm), or as otherwise approved.

R703.7.2 Plaster. Plastering with portland cement plaster shall be not less than three coats where applied over metal lath or wire lath and shall be not less than two coats where applied over masonry, concrete, pressure-preservative-treated wood or decay-resistant wood as specified in Section R317.1 or gypsum backing. If the plaster surface is completely covered by veneer or other facing material or is completely concealed, plaster application need be only two coats, provided the total thickness is as set forth in Table R702.1(1).

On wood-frame construction with an on-grade floor slab system, exterior plaster shall be applied to cover, but not extend below, lath, paper and screed.

The proportion of aggregate to cementitious materials shall be as set forth in Table R702.1(3).

R703.7.2.1 Weep screeds. A minimum 0.019-inch (0.5 mm) (No. 26 galvanized sheet gage), corrosion-resistant weep screed or plastic weep screed, with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be provided at or below the foundation plate line on exterior stud walls in accordance with ASTM C 926. The weep screed shall be placed not less than 4 inches

TABLE R703.6.3(1)
SINGLE COURSE SIDEWALL FASTENERS

SINGLE COURSE SIDEWALL FASTENERS			
Product type	**Nail type and minimum length (inches)**	**Minimum head diameter (inches)**	**Minimum shank thickness (inches)**
R & R and sanded shingles	**Type**		
16″ and 18″ shingles	3d box $1^1/_4$	0.19	0.08
24″ shingles	4d box $1^1/_2$	0.19	0.08
Grooved shingles	**Type**		
16″ and 18″ shingles	3d box $1^1/_4$	0.19	0.08
24″ shingles	4d box $1^1/_2$	0.19	0.08
Split and sawn shakes	**Type**		
18″ straight-split shakes	5d box $1^3/_4$	0.19	0.08
18″ and 24″ handsplit shakes	6d box 2	0.19	0.0915
24″ tapersplit shakes	5d box $1^3/_4$	0.19	0.08
18″ and 24″ tapersawn shakes	6d box 2	0.19	0.0915

For SI: 1 inch = 25.4 mm.

TABLE R703.6.3(2)
DOUBLE COURSE SIDEWALL FASTENERS

DOUBLE COURSE SIDEWALL FASTENERS			
Product type	**Nail type and minimum length**	**Minimum head diameter (inches)**	**Minimum shank thickness (inches)**
R & R and sanded shingles			
16," 8″ and 24″ shingles	5d box $1^3/_4$ or same size casing nails	0.19	0.08
Grooved shingles			
16," 18″ and 24″shingles	5d box $1^3/_4$	0.19	0.08
Split and sawn shakes			
18″ straight-split shakes	7d box $2^1/_4$ or 8d $2^1/_2$	0.19	0.099
18″ and 24″ handsplit shakes	7d box $2^1/_4$ or 8d $2^1/_2$	0.19	0.099
24″ tapersplit shakes	7d box $2^1/_4$ or 8d $2^1/_2$	0.19	0.099
18″ and 24″ tapersawn shakes	7d box $2^1/_4$ or 8d $2^1/_2$	0.19	0.099

For SI: 1 inch = 25.4 mm.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

(102 mm) above the earth or 2 inches (51 mm) above paved areas and shall be of a type that will allow trapped water to drain to the exterior of the building. The weather-resistant barrier shall lap the attachment flange. The exterior lath shall cover and terminate on the attachment flange of the weep screed.

R703.7.3 Water-resistive barriers. Water-resistive barriers shall be installed as required in Section R703.2 and, where applied over wood-based sheathing, shall include a water-resistive vapor-permeable barrier with a performance at least equivalent to two layers of Grade D paper. The individual layers shall be installed independently such that each layer provides a separate continuous plane and any flashing (installed in accordance with Section R703.4) intended to drain to the water-resistive barrier is directed between the layers.

Exception: Where the water-resistive barrier that is applied over wood-based sheathing has a water resistance equal to or greater than that of 60-minute Grade D paper and is separated from the stucco by an intervening, substantially nonwater-absorbing layer or designed drainage space.

R703.7.4 Application. Each coat shall be kept in a moist condition for at least 48 hours prior to application of the next coat.

Exception: Applications installed in accordance with ASTM C 926.

R703.7.5 Curing. The finish coat for two-coat cement plaster shall not be applied sooner than seven days after application of the first coat. For three-coat cement plaster, the second coat shall not be applied sooner than 48 hours after application of the first coat. The finish coat for three-coat cement plaster shall not be applied sooner than seven days after application of the second coat.

R703.8 Anchored stone and masonry veneer, general. Anchored stone and masonry veneer shall be installed in accordance with this chapter, Table R703.3(1) and Figure R703.8. These veneers installed over a backing of wood or cold-formed steel shall be limited to the first story above grade plane and shall not exceed 5 inches (127 mm) in thickness. See Section R602.10 for wall bracing requirements for masonry veneer for wood-framed construction and Section R603.9.5 for wall bracing requirements for masonry veneer for cold-formed steel construction.

Exceptions:

1. For buildings in Seismic Design Categories A, B and C, exterior stone or masonry veneer, as specified in Table R703.8(1), with a backing of wood or steel framing shall be permitted to the height specified in Table R703.8(1) above a noncombustible foundation.
2. For detached one- or two-family dwellings in Seismic Design Categories D_0, D_1 and D_2, exterior stone or masonry veneer, as specified in Table R703.8(2), with a backing of wood framing shall be permitted to the height specified in Table R703.8(2) above a noncombustible foundation.

R703.8.1 Interior veneer support. Veneers used as interior wall finishes shall be permitted to be supported on wood or cold-formed steel floors that are designed to support the loads imposed.

R703.8.2 Exterior veneer support. Except in Seismic Design Categories D_0, D_1 and D_2, exterior masonry veneers having an installed weight of 40 pounds per square foot (195 kg/m^2) or less shall be permitted to be supported on wood or cold-formed steel construction. Where masonry veneer supported by wood or cold-formed steel construction adjoins masonry veneer supported by the foundation, there shall be a movement joint between the veneer supported by the wood or cold-formed steel construction and the veneer supported by the foundation. The wood or cold-formed steel construction supporting the masonry veneer shall be designed to limit the deflection to $^1/_{600}$ of the span for the supporting members. The design of the wood or cold-formed steel construction shall consider the weight of the veneer and any other loads.

R703.8.2.1 Support by steel angle. A minimum 6-inch by 4-inch by $^5/_{16}$-inch (152 mm by 102 mm by 8 mm) steel angle, with the long leg placed vertically, shall be anchored to double 2-inch by 4-inch (51 mm by 102 mm) wood studs or double 350S162 cold-formed steel studs at a maximum on-center spacing of 16 inches (406 mm). Anchorage of the steel angle at every double stud spacing shall be not less than two $^7/_{16}$-inch-diameter (11 mm) by 4-inch (102 mm) lag screws for wood construction or two $^7/_{16}$-inch (11.1 mm) bolts with washers for cold-formed steel construction. The steel angle shall have a minimum clearance to underlying construction of $^1/_{16}$ inch (1.6 mm). Not less than two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer in accordance with Figure R703.8.2.1. The maximum height of masonry veneer above the steel angle support shall be 12 feet 8 inches (3861 mm). The airspace separating the masonry veneer from the wood backing shall be in accordance with Sections R703.8.4 and R703.8.4.2. The method of support for the masonry veneer on wood construction shall be constructed in accordance with Figure R703.8.2.1

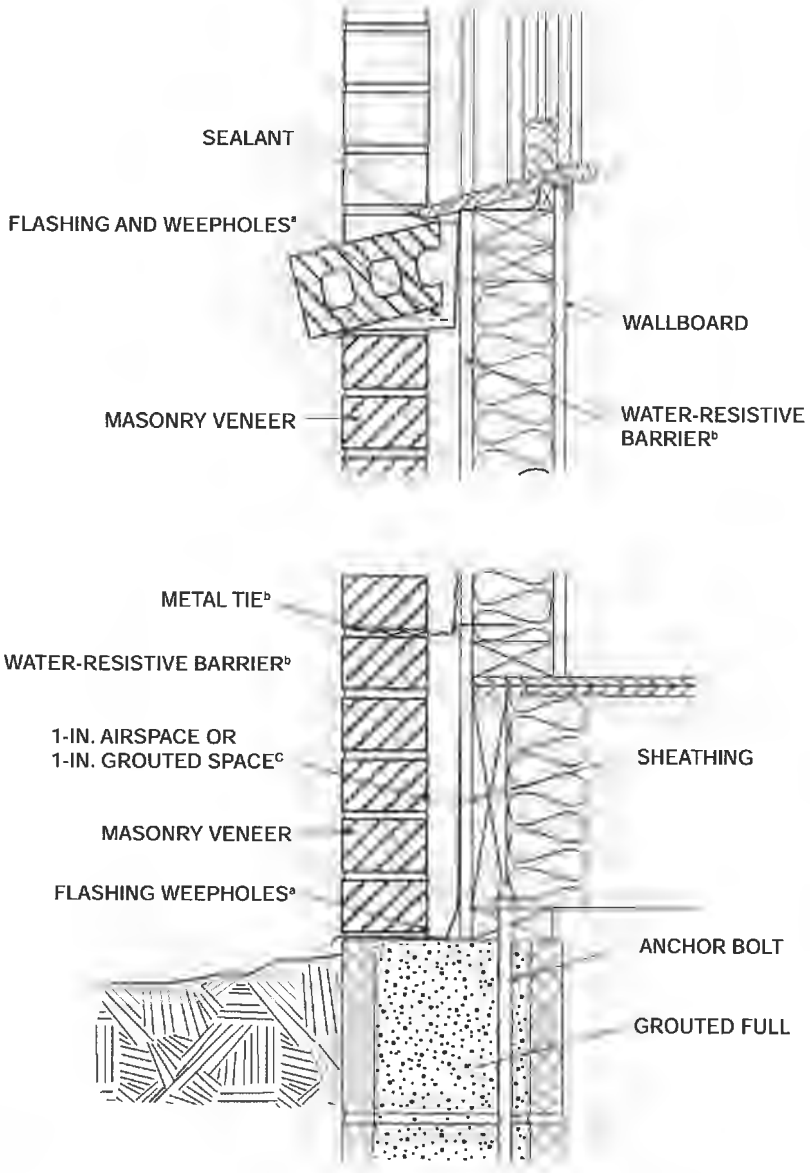
The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3-inch by 3-inch by $^1/_4$-inch (76 mm by 76 mm by 6.4 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as *approved* by the *building official.*

R703.8.2.2 Support by roof construction. A steel angle shall be placed directly on top of the roof construction. The roof supporting construction for the steel angle shall consist of not fewer than three 2-inch by 6-inch (51 mm by 152 mm) wood members for wood construction or three 550S162 cold-formed steel members for cold-formed steel light frame construction. A wood member abutting the vertical wall stud construction shall be anchored with not fewer than three $^5/_8$-inch (15.9 mm) diameter by 5-inch (127 mm) lag screws to every wood

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

stud spacing. Each additional wood roof member shall be anchored by the use of two 10d nails at every wood stud spacing. A cold-formed steel member abutting the vertical wall stud shall be anchored with not fewer than nine No. 8 screws to every cold-formed steel stud. Each additional cold-formed steel roof member shall be anchored to the adjoining roof member using two No. 8 screws at every stud spacing. Not less than two-thirds the width of the masonry veneer thickness shall bear on the steel angle. Flashing and weep holes shall be located in the masonry veneer wythe in accordance with Figure R703.8.2.2. The maximum height of the masonry veneer above the steel angle support shall be 12 feet 8 inches (38.61 mm). The airspace separating the masonry veneer from the wood backing shall be in accordance with Sections R703.8.4 and R703.8.4.2. The support for the masonry veneer shall be constructed in accordance with Figure R703.8.2.2.

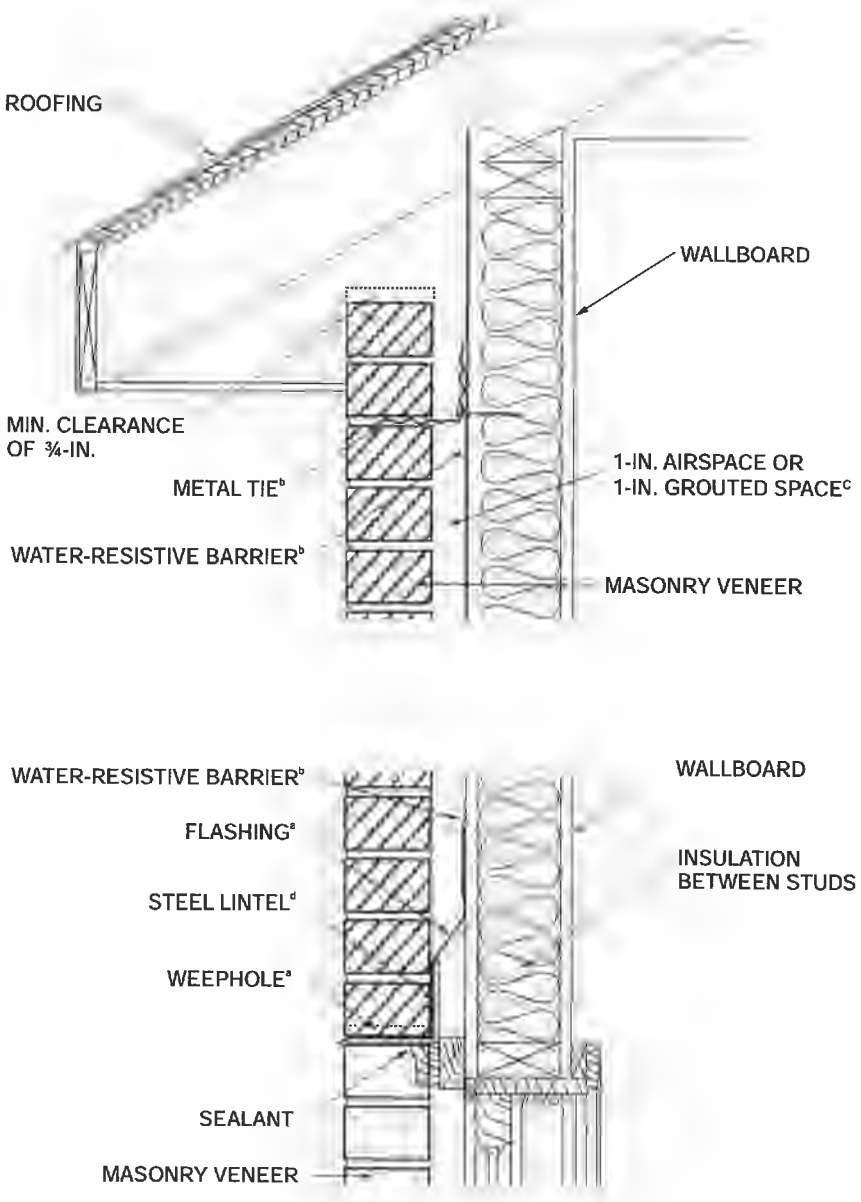
The maximum slope of the roof construction without stops shall be 7:12. Roof construction with slopes greater than 7:12 but not more than 12:12 shall have stops of a minimum 3-inch by 3-inch by $^1/_4$-inch (76 mm by 76 mm by 6.4 mm) steel plate welded to the angle at 24 inches (610 mm) on center along the angle or as *approved* by the *building official*.



For SI: 1 inch = 24.5 mm.

FIGURE R703.8
TYPICAL MASONRY VENEER WALL DETAILS
(continued)

INTERNATIONAL CODE COUNCIL
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.



For SI: 1 inch = 25.4 mm.

a. See Sections R703.8.5, R703.8.6 and R703.4.
b. See Sections R703.2 and R703.8.4.
c. See Section R703.8.4.2 and Table R703.8.4.
d. See Section R703.8.3.
e. Figure R703.8 illustrates typical construction details for a masonry veneer wall. For the actual mandatory requirements of this code, see the indicated sections of text. Other details of masonry veneer wall construction shall be permitted provided the requirements of the indicated sections of text are met.

FIGURE R703.8—continued
TYPICAL MASONRY VENEER WALL DETAILS[e]

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.8(1)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, WOOD OR STEEL FRAMING, SEISMIC DESIGN CATEGORIES A, B AND C

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD- OR STEEL-FRAMED STORIES	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION[a] (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]	WOOD- OR STEEL-FRAMED STORY
A or B	Steel: 1 or 2 Wood: 1, 2 or 3	30	5	50	all
C	1	30	5	50	1 only
	2	30	5	50	top
					bottom
	Wood only: 3	30	5	50	top
					middle
					bottom

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa.

a. An additional 8 feet is permitted for gable end walls. See also story height limitations of Section R301.3.

b. Maximum weight is installed weight and includes weight of mortar, grout, lath and other materials used for installation. Where veneer is placed on both faces of a wall, the combined weight shall not exceed that specified in this table.

TABLE R703.8(2)
STONE OR MASONRY VENEER LIMITATIONS AND REQUIREMENTS, ONE- AND TWO-FAMILY DETACHED DWELLINGS, SEISMIC DESIGN CATEGORIES D_0, D_1 AND D_2

SEISMIC DESIGN CATEGORY	NUMBER OF WOOD-FRAMED STORIES[a]	MAXIMUM HEIGHT OF VENEER ABOVE NONCOMBUSTIBLE FOUNDATION OR FOUNDATION WALL (feet)	MAXIMUM NOMINAL THICKNESS OF VENEER (inches)	MAXIMUM WEIGHT OF VENEER (psf)[b]
D_0	1	20[c]	4	40
	2	20[c]	4	40
	3	30[d]	4	40
D_1	1	20[c]	4	40
	2	20[c]	4	40
	3	20[c]	4	40
D_2	1	20[c]	3	30
	2	20[c]	3	30

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.479 kPa, 1 pound-force = 4.448 N.

a. Cripple walls are not permitted in Seismic Design Categories D_0, D_1 and D_2.

b. Maximum weight is installed weight and includes weight of mortar, grout and lath, and other materials used for installation.

c. The veneer shall not exceed 20 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls, or 30 feet in height with an additional 8 feet for gable end walls where the lower 10 feet have a backing of concrete or masonry wall. See story height limitations of Section R301.3.

d. The veneer shall not exceed 30 feet in height above a noncombustible foundation, with an additional 8 feet permitted for gable end walls. See story height limitations of Section R301.3.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

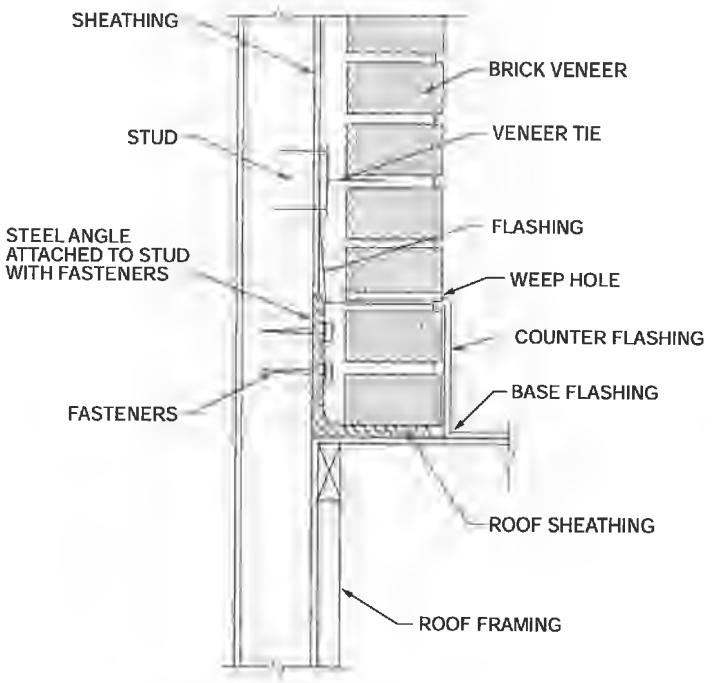


FIGURE R703.8.2.1
EXTERIOR MASONRY VENEER SUPPORT BY STEEL ANGLES

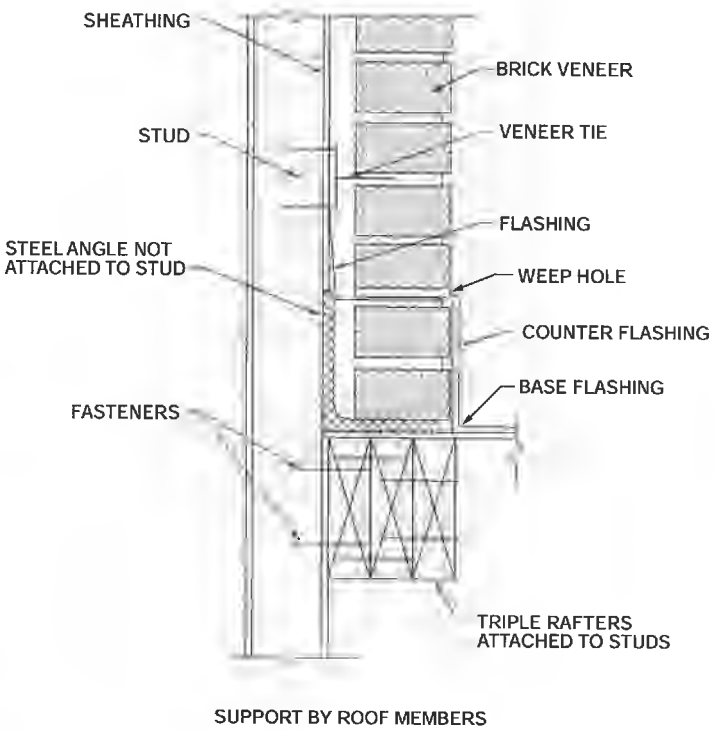


FIGURE R703.8.2.2
EXTERIOR MASONRY VENEER SUPPORT BY ROOF MEMBERS

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R703.8.3 Lintels. Masonry veneer shall not support any vertical load other than the dead load of the veneer above. Veneer above openings shall be supported on lintels of noncombustible materials. The lintels shall have a length of bearing not less than 4 inches (102 mm). Steel lintels shall be shop coated with a rust-inhibitive paint, except for lintels made of corrosion-resistant steel or steel treated with coatings to provide corrosion resistance. Construction of openings shall comply with either Section R703.8.3.1 or 703.8.3.2.

R703.8.3.1 Allowable span. The allowable span shall not exceed the values set forth in Table R703.8.3.1.

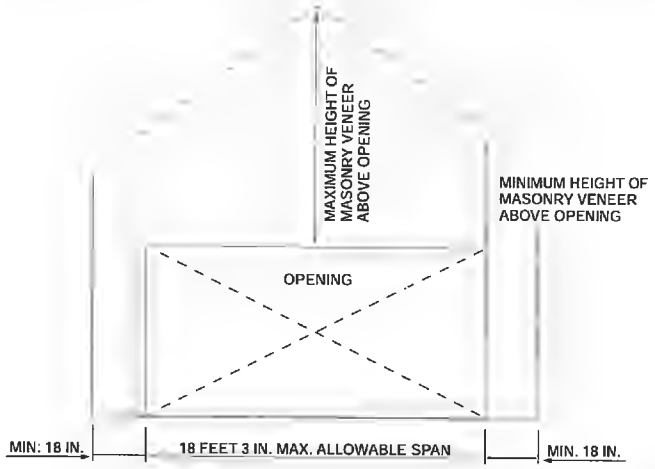
R703.8.3.2 Maximum span. The allowable span shall not exceed 18 feet 3 inches (5562 mm) and shall be constructed to comply with Figure R703.8.3.2 and the following:

1. Provide a minimum length of 18 inches (457 mm) of masonry veneer on each side of opening as shown in Figure R703.8.3.2.
2. Provide a minimum 5-inch by $3^1/_2$-inch by $^5/_{16}$-inch (127 mm by 89 mm by 7.9 mm) steel angle above the opening and shore for a minimum of 7 days after installation.
3. Provide double-wire joint reinforcement extending 12 inches (305 mm) beyond each side of the opening. Lap splices of joint reinforcement not less than 12 inches (305 mm). Comply with one of the following:
   - 3.1. Double-wire joint reinforcement shall be $^3/_{16}$-inch (4.8 mm) diameter and shall be placed in the first two bed joints above the opening.
   - 3.2. Double-wire joint reinforcement shall be 9 gauge (0.144 inch or 3.66 mm diameter) and shall be placed in the first three bed joints above the opening.
4. Provide the height of masonry veneer above opening, in accordance with Table R703.8.3.2.

TABLE R703.8.3.2
HEIGHT OF MASONRY VENEER ABOVE OPENING

MINIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (INCH)	MAXIMUM HEIGHT OF MASONRY VENEER ABOVE OPENING (FEET)
13	< 5
24	5 to < 12
60	12 to height above support allowed by Section R703.8

For SI:1 inch = 25.4 mm, 1 foot = 304.8 mm.



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R703.8.3.2
MASONRY VENEER OPENING

R703.8.4 Anchorage. Masonry veneer shall be anchored to the supporting wall studs with corrosion-resistant metal ties embedded in mortar or grout and extending into the veneer a minimum of $1^1/_2$ inches (38 mm), with not less than $^5/_8$-inch (15.9 mm) mortar or grout cover to outside face. Masonry veneer shall conform to Table R703.8.4.

TABLE R703.8.3.1
ALLOWABLE SPANS FOR LINTELS SUPPORTING MASONRY VENEER[a, b, c, d]

SIZE OF STEEL ANGLE[a, c, d] (inches)	NO STORY ABOVE	ONE STORY ABOVE	TWO STORIES ABOVE	NO. OF $^1/_2$-INCH OR EQUIVALENT REINFORCING BARS IN REINFORCED LINTEL[b, d]
$3 \times 3 \times {}^1/_4$	6′-0″	4′-6″	3′-0″	1
$4 \times 3 \times {}^1/_4$	8′-0″	6′-0″	4′-6″	1
$5 \times 3^1/_2 \times {}^5/_{16}$	10′-0″	8′-0″	6′-0″	2
$6 \times 3^1/_2 \times {}^5/_{16}$	14′-0″	9′-6″	7′-0″	2
$2\text{-}6 \times 3^1/_2 \times {}^5/_{16}$	20′-0″	12′-0″	9′-6″	4

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

a. Long leg of the angle shall be placed in a vertical position.

b. Depth of reinforced lintels shall be not less than 8 inches and all cells of hollow masonry lintels shall be grouted solid. Reinforcing bars shall extend not less than 8 inches into the support.

c. Steel members indicated are adequate typical examples; other steel members meeting structural design requirements shall be permitted to be used.

d. Either steel angle or reinforced lintel shall span opening.

INTERNATIONAL CODE COUNCIL®
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.8.4
TIE ATTACHMENT AND AIRSPACE REQUIREMENTS

BACKING AND TIE	MINIMUM TIE	MINIMUM TIE FASTENER[a]	AIRSPACE	
Wood stud backing with corrugated sheet metal	22 U.S. gage (0.0299 in.) × $^{7}/_{8}$ in. wide	8d common nail [b] ($2^{1}/_{2}$ in. × 0.131 in.)	Nominal 1 in. between sheathing and veneer	
Wood stud backing with metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	8d common nail [b] ($2^{1}/_{2}$ in. × 0.131 in.)	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{1}/_{2}$ in. between backing and veneer
Cold-formed steel stud backing with adjustable metal strand wire	W1.7 (No. 9 U.S. gage; 0.148 in.) with hook embedded in mortar joint	No. 10 screw extending through the steel framing a minimum of three exposed threads	Minimum nominal 1 in. between sheathing and veneer	Maximum $4^{1}/_{2}$ in. between backing and veneer

For SI: 1 inch = 25.4 mm.

a. In Seismic Design Category D_0, D_1 or D_2, the minimum tie fastener shall be an 8d ring-shank nail ($2^{1}/_{2}$ in. × 0.131 in.) or a No. 10 screw extending through the steel framing a minimum of three exposed threads.

b. All fasteners shall have rust-inhibitive coating suitable for the installation in which they are being used, or be manufactured from material not susceptible to corrosion.

R703.8.4.1 Size and spacing. Veneer ties, if strand wire, shall be not less in thickness than No. 9 U.S. gage [(0.148 inch) (4 mm)] wire and shall have a hook embedded in the mortar joint, or if sheet metal, shall be not less than No. 22 U.S. gage by [(0.0299 inch) (0.76 mm)] $^{7}/_{8}$ inch (22 mm) corrugated. Each tie shall support not more than 2.67 square feet (0.25 m^2) of wall area and shall be spaced not more than 32 inches (813 mm) on center horizontally and 24 inches (635 mm) on center vertically.

Exception: In Seismic Design Category D_0, D_1 or D_2 or townhouses in Seismic Design Category C or in wind areas of more than 30 pounds per square foot pressure (1.44 kPa), each tie shall support not more than 2 square feet (0.2 m^2) of wall area.

R703.8.4.1.1 Veneer ties around wall openings. Additional metal ties shall be provided around wall openings greater than 16 inches (406 mm) in either dimension. Metal ties around the perimeter of openings shall be spaced not more than 3 feet (9144 mm) on center and placed within 12 inches (305 mm) of the wall opening.

R703.8.4.2 Grout fill. As an alternative to the airspace required by Table R703.8.4, grout shall be permitted to fill the airspace. Where the airspace is filled with grout, a water-resistive barrier is required over studs or sheathing. Where the airspace is filled, replacing the sheathing and water-resistive barrier with a wire mesh and *approved* water-resistive barrier or an *approved* water-resistive barrier-backed reinforcement attached directly to the studs is permitted.

R703.8.5 Flashing. Flashing shall be located beneath the first course of masonry above finished ground level above the foundation wall or slab and at other points of support, including structural floors, shelf angles and lintels where masonry veneers are designed in accordance with Section R703.8. See Section R703.4 for additional requirements.

R703.8.6 Weepholes. Weepholes shall be provided in the outside wythe of masonry walls at a maximum spacing of 33 inches (838 mm) on center. Weepholes shall be not less than $^{3}/_{16}$ inch (5 mm) in diameter. Weepholes shall be located immediately above the flashing.

R703.9 Exterior insulation and finish system (EIFS)/EIFS with drainage. Exterior insulation and finish systems (EIFS) shall comply with this chapter and Section R703.9.1. EIFS with drainage shall comply with this chapter and Section R703.9.2.

R703.9.1 Exterior insulation and finish systems (EIFS). EIFS shall comply with the following:

1. ASTM E 2568.
2. EIFS shall be limited to applications over substrates of concrete or masonry wall assemblies.
3. Flashing of EIFS shall be provided in accordance with the requirements of Section R703.8.
4. EIFS shall be installed in accordance with the manufacturer's instructions.
5. EIFS shall terminate not less than 6 inches (152 mm) above the finished ground level.
6. Decorative trim shall not be face-nailed through the EIFS.

R703.9.2 Exterior insulation and finish system (EIFS) with drainage. EIFS with drainage shall comply with the following:

1. ASTM E 2568.
2. EIFS with drainage shall be required over all wall assemblies with the exception of substrates of concrete or masonry wall assemblies.
3. EIFS with drainage shall have an average minimum drainage efficiency of 90 percent when tested in accordance with ASTM E 2273.
4. The water-resistive barrier shall comply with Section R703.2 or ASTM E 2570.
5. The water-resistive barrier shall be applied between the EIFS and the wall sheathing.
6. Flashing of EIFS with drainage shall be provided in accordance with the requirements of Section R703.8.
7. EIFS with drainage shall be installed in accordance with the manufacturer's instructions.
8. EIFS with drainage shall terminate not less than 6 inches (152 mm) above the finished ground level.
9. Decorative trim shall not be face-nailed through the EIFS with drainage.

R703.10 Fiber cement siding.

R703.10.1 Panel siding. Fiber-cement panels shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Pan-

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

els shall be installed with the long dimension either parallel or perpendicular to framing. Vertical and horizontal joints shall occur over framing members and shall be protected with caulking, or with battens or flashing, or be vertical or horizontal shiplap, or otherwise designed to comply with Section R703.1. Panel siding shall be installed with fasteners in accordance with Table R703.3(1) or the approved manufacturer's instructions.

R703.10.2 Lap siding. Fiber-cement lap siding having a maximum width of 12 inches (305 mm) shall comply with the requirements of ASTM C 1186, Type A, minimum Grade II or ISO 8336, Category A, minimum Class 2. Lap siding shall be lapped a minimum of $1^1/_4$ inches (32 mm) and lap siding not having tongue-and-groove end joints shall have the ends protected with caulking, covered with an H-section joint cover, located over a strip of flashing, or shall be designed to comply with Section R703.1. Lap siding courses shall be installed with the fastener heads exposed or concealed, in accordance with Table R703.3(1) or approved manufacturer's instructions.

R703.11 Vinyl siding. Vinyl siding shall be certified and *labeled* as conforming to the requirements of ASTM D 3679 by an *approved* quality control agency.

R703.11.1 Installation. Vinyl siding, soffit and accessories shall be installed in accordance with the manufacturer's instructions.

R703.11.1.1 Fasteners. Unless specified otherwise by the manufacturer's instructions, fasteners for vinyl siding shall be 0.120-inch (3 mm) shank diameter nail with a 0.313-inch (8 mm) head or 16-gage staple with a $^3/_8$-inch (9.5 mm) to $^1/_2$-inch (12.7 mm) crown.

R703.11.1.2 Penetration depth. Unless specified otherwise by the manufacturer's instructions, fasteners shall penetrate into building framing. The total penetration into sheathing, furring framing or other nailable substrate shall be a minimum $1^1/_4$ inches (32 mm). Where specified by the manufacturer's instructions and supported by a test report, fasteners are permitted to penetrate into or fully through nailable sheathing or other nailable substrate of minimum thickness specified by the instructions or test report without penetrating into framing. Where the fastener penetrates fully through the sheathing, the end of the fastener shall extend a minimum of $^1/_4$ inch (6.4 mm) beyond the opposite face of the sheathing or nailable substrate.

R703.11.1.3 Spacing. Unless specified otherwise by the manufacturer's instructions, the maximum spacing between fasteners for horizontal siding shall be 16 inches (406 mm), and for vertical siding 12 inches (305 mm) both horizontally and vertically. Where specified by the manufacturer's instructions and supported by a test report, greater fastener spacing is permitted.

R703.11.1.4 Vinyl soffit panels. Soffit panels shall be individually fastened to a supporting component such as a nailing strip, fascia or subfascia component or as specified by the manufacturer's instructions.

R703.11.2 Foam plastic sheathing. Vinyl siding and insulated vinyl siding used with foam plastic sheathing shall be installed in accordance with Section R703.11.2.1, R703.11.2.2 or R703.11.2.3.

Exception: Where the foam plastic sheathing is applied directly over wood structural panels, fiberboard, gypsum sheathing or other *approved* backing capable of independently resisting the design wind pressure, the vinyl siding shall be installed in accordance with Section R703.11.1.

R703.11.2.1 Basic wind speed not exceeding 115 miles per hour and Exposure Category B. Where the ultimate design wind speed does not exceed 115 miles per hour (51 m/s), the exposure category is B and gypsum board, gypsum panel product or equivalent is installed on the side of the wall opposite the foam plastic sheathing, the minimum siding fastener penetration into wood framing shall be $1^1/_4$ inches (32 mm) using minimum 0.120-inch-diameter (3 mm) nail (shank) with a minimum 0.313-inch-diameter head, 16 inches (406 mm) on center. The foam plastic sheathing shall be minimum $^1/_2$-inch-thick (12.7 mm) (nominal) extruded polystyrene in accordance with ASTM C 578, $^1/_2$-inch-thick (12.7 mm) (nominal) polyisocyanurate in accordance with ASTM C 1289 or 1-inch-thick (25 mm) (nominal) expanded polystyrene in accordance with ASTM C 578.

R703.11.2.2 Basic wind speed exceeding 115 miles per hour or Exposure Categories C and D. Where the ultimate design wind speed exceeds 115 miles per hour (51 m/s), the exposure category is C or D, or all conditions of Section R703.11.2.1 are not met, the adjusted design pressure rating for the assembly shall meet or exceed the loads listed in Table R301.2(2) adjusted for height and exposure using Table R301.2(3). The design wind pressure rating of the vinyl siding for installation over solid sheathing as provided in the vinyl siding manufacturer's product specifications shall be adjusted for the following wall assembly conditions:

1. For wall assemblies with foam plastic sheathing on the exterior side and gypsum wall board, gypsum panel product or equivalent on the interior side of the wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.39.
2. For wall assemblies with foam plastic sheathing on the exterior side and without gypsum wall board, gypsum panel product or equivalent on the interior side of wall, the vinyl siding's design wind pressure rating shall be multiplied by 0.27.

R703.11.2.3 Manufacturer specification. Where the vinyl siding manufacturer's product specifications provide an *approved* design wind pressure rating for installation over foam plastic sheathing, use of this design wind pressure rating shall be permitted and the siding shall be installed in accordance with the manufacturer's instructions.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R703.12 Adhered masonry veneer installation. Adhered masonry veneer shall comply with the requirements of Section R703.7.3 and the requirements in Sections 12.1 and 12.3 of TMS 402/ACI 530/ASCE 5. Adhered masonry veneer shall be installed in accordance with Section R703.7.1, Article 3.3C of TMS 602/ACI 530.1/ASCE 6 or the manufacturer's instructions.

R703.12.1 Clearances. On exterior stud walls, adhered masonry veneer shall be installed:

1. Minimum of 4 inches (102 mm) above the earth;
2. Minimum of 2 inches (51 mm) above paved areas; or
3. Minimum of $^1/_2$ inch (12.7 mm) above exterior walking surfaces that are supported by the same foundation that supports the exterior wall.

R703.12.2 Flashing at foundation. A corrosion-resistant screed or flashing of a minimum 0.019-inch (0.48 mm) or 26-gage galvanized or plastic with a minimum vertical attachment flange of $3^1/_2$ inches (89 mm) shall be installed to extend a minimum of 1 inch (25 mm) below the foundation plate line on exterior stud walls in accordance with Section R703.4.

R703.12.3 Water-resistive barrier. A water-resistive barrier shall be installed as required by Section R703.2 and shall comply with the requirements of Section R703.6.3. The water-resistive barrier shall lap over the exterior of the attachment flange of the screed or flashing provided in accordance with Section R703.12.2.

R703.13 Insulated vinyl siding. Insulated vinyl siding shall be certified and labeled as conforming to the requirements of ASTM D 7793 by an approved quality control agency.

R703.13.1 Insulated vinyl siding and accessories. Insulated vinyl siding and accessories shall be installed in accordance with manufacturer's instructions.

R703.14 Polypropylene siding. Polypropylene siding shall be certified and labeled as conforming to the requirements of ASTM D 7254 by an approved quality control agency.

R703.14.1 Polypropylene siding and accessories. Polypropylene siding and accessories shall be installed in accordance with manufacturer's installation instructions.

R703.14.1.1 Installation. Polypropylene siding shall be installed over and attached to wood structural panel sheathing with minimum thickness of $^7/_{16}$ inch (11.1 mm), or other substrate, composed of wood or wood-based material and fasteners having equivalent withdrawal resistance.

R703.14.1.2 Fastener requirements. Unless otherwise specified in the approved manufacturer's instructions, nails shall be corrosion resistant, with a minimum 0.120-inch (3 mm) shank and minimum 0.313-inch (8 mm) head diameter. Nails shall be a minimum of $1^1/_4$ inches (32 mm) long or as necessary to penetrate sheathing or substrate not less than $^3/_4$ inch (19.1 mm). Where the nail fully penetrates the sheathing or nailable substrate, the end of the fastener shall extend not less than $^1/_4$ inch (6.4 mm) beyond the opposite face of the sheathing or substrate. Staples are not permitted.

R703.14.2 Fire separation. Polypropylene siding shall not be installed on walls with a fire separation distance of less than 5 feet (1524 mm) and walls closer than 10 feet (3048 mm) to a building on another lot.

Exception: Walls perpendicular to the line used to determine the fire separation distance.

R703.15 Cladding attachment over foam sheathing to wood framing. Cladding shall be specified and installed in accordance with Section R703, the cladding manufacturer's approved instructions, including any limitations for use over foam plastic sheathing, or an approved design. In addition, the cladding or furring attachments through foam sheathing to framing shall meet or exceed the minimum fastening requirements of Section R703.15.1, Section R703.15.2, or an approved design for support of cladding weight.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section R703.9.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section R703.7.

R703.15.1 Direct attachment. Where cladding is installed directly over foam sheathing without the use of furring, cladding minimum fastening requirements to support the cladding weight shall be as specified in Table R703.15.1.

R703.15.2 Furred cladding attachment. Where wood furring is used to attach cladding over foam sheathing, furring minimum fastening requirements to support the cladding weight shall be as specified in Table R703.15.2. Where placed horizontally, wood furring shall be preservative-treated wood in accordance with Section R317.1 or naturally durable wood and fasteners shall be corrosion resistant in accordance Section R317.3.

R703.16 Cladding attachment over foam sheathing to cold-formed steel framing. Cladding shall be specified and installed in accordance with Section R703, the cladding manufacturer's approved instructions, including any limitations for use over foam plastic sheathing, or an approved design. In addition, the cladding or furring attachments through foam sheathing to framing shall meet or exceed the minimum fastening requirements of Section R703.16.1, Section R703.16.2 or an approved design for support of cladding weight.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section R703.9.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section R703.7.

INTERNATIONAL CODE COUNCIL®

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.15.1
CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

CLADDING FASTENER THROUGH FOAD SHEATHING	CLADDING FASTENER TYPE AND MINIMUM SIZE[b]	CLADDING FASTENER VERTICAL SPACING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[c] (inches)					
			16" o.c. Fastener Horizontal Spacing			24" o.c. Fastener Horizontal Spacing		
			Cladding Weight:			Cladding Weight:		
			3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Wood Framing (minimum $1^1/_4$-inch penetration)	0.113" diameter nail	6	2	1	DR	2	0.75	DR
		8	2	1	DR	2	0.5	DR
		12	2	0.5	DR	2	DR	DR
	0.120" diameter nail	6	3	1.5	0.5	3	0.75	DR
		8	3	1	DR	3	0.5	DR
		12	3	0.5	DR	2	DR	DR
	0.131" diameter nail	6	4	2	0.75	4	1	DR
		8	4	1.5	0.5	4	0.75	DR
		12	4	0.75	DR	2	0.5	DR
	0.162" diameter nail	6	4	4	1.5	4	2	1
		8	4	3	1	4	1.5	0.75
		12	4	2	0.75	4	1	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.
DR = Design required.
o.c. = On center.
a. Wood framing shall be Spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with AWC NDS.
b. Nail fasteners shall comply with ASTM F 1667, except nail length shall be permitted to exceed ASTM F 1667 standard lengths.
c. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.

TABLE R703.15.2
FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a, b]

FURRING MATERIAL	FRAMING MEMBER	FASTENER TYPE AND MINIMUM SIZE	MINIMUM PENETRATION INTO WALL FRAMING (inches)	FASTENER SPACING IN FURRING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[d] (inches)					
					16" o.c. Furring[e]			24" o.c. Furring[e]		
					Siding Weight:			Siding Weight:		
					3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Minimum 1× Wood Furring[c]	Minimum 2× Wood Stud	0.131" diameter nail	$1^1/_4$	8	4	2	1	4	1.5	DR
				12	4	1.5	DR	3	1	DR
				16	4	1	DR	3	0.5	DR
		0.162" diameter nail	$1^1/_4$	8	4	4	1.5	4	2	0.75
				12	4	2	0.75	4	1.5	DR
				16	4	1.5	DR	4	1	DR
		No.10 wood screw	1	12	4	2	0.75	4	1.5	DR
				16	4	1.5	DR	4	1	DR
				24	4	1	DR	3	DR	DR
		$^1/_4$" lag screw	$1^1/_2$	12	4	3	1	4	2	0.5
				16	4	1.5	DR	4	1.5	DR
				24	4	1.5	DR	4	0.75	DR

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.
DR = Design required.
o.c. = On center.
a. Wood framing and furring shall be Spruce-pine-fir or any wood species with a specific gravity of 0.42 or greater in accordance with AWC NDS.
b. Nail fasteners shall comply with ASTM F 1667, except nail length shall be permitted to exceed ASTM F 1667 standard lengths.
c. Where the required cladding fastener penetration into wood material exceeds $^3/_4$ inch and is not more than $1^1/_2$ inches, a minimum 2× wood furring or an approved design shall be used.
d. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.
e. Furring shall be spaced not more than 24 inches on center, in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.

INTERNATIONAL CODE COUNCIL
Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

R703.16.1 Direct attachment. Where cladding is installed directly over foam sheathing without the use of furring, cladding minimum fastening requirements to support the cladding weight shall be as specified in Table R703.16.1.

R703.16.2 Furred cladding attachment. Where steel or wood furring is used to attach cladding over foam sheathing, furring minimum fastening requirements to support the cladding weight shall be as specified in Table R703.16.2. Where placed horizontally, wood furring shall be preservative-treated wood in accordance with Section R317.1 or naturally durable wood and fasteners shall be corrosion resistant in accordance with Section R317.3. Steel furring shall have a minimum G60 galvanized coating.

R703.17 Cladding attachment over foam sheathing to masonry or concrete wall construction. Cladding shall be specified and installed in accordance with Section 703.3 and the cladding manufacturer's instructions or an approved design. Foam sheathing shall be attached to masonry or concrete construction in accordance with the insulation manufacturer's installation instructions or an approved design. Furring and furring attachments through foam sheathing into concrete or masonry substrate shall be designed to resist design loads determined in accordance with Section R301, including support of cladding weight as applicable. Fasteners used to attach cladding or furring through foam sheathing to masonry or concrete substrates shall be approved for application into masonry or concrete material and shall be installed in accordance with the fastener manufacturer's instructions.

Exceptions:

1. Where the cladding manufacturer has provided approved installation instructions for application over foam sheathing and connection to a masonry or concrete substrate, those requirements shall apply.
2. For exterior insulation and finish systems, refer to Section R703.9.
3. For anchored masonry or stone veneer installed over foam sheathing, refer to Section R703.7

TABLE R703.16.1
CLADDING MINIMUM FASTENING REQUIREMENTS FOR DIRECT ATTACHMENT OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

CLADDING FASTENER THROUGH FOAM SHEATHING INTO:	CLADDING FASTENER TYPE AND MINIMUM SIZE[b]	CLADDING FASTENER VERTICAL SPACING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[c] (inches)					
			16" o.c. Fastener Horizontal Spacing			24" o.c. Fastener Horizontal Spacing		
			Cladding Weight:			Cladding Weight:		
			3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Steel Framing (minimum penetration of steel thickness + 3 threads)	No. 8 screw into 33 mil steel or thicker	6	3	3	1.5	3	2	DR
		8	3	2	0.5	3	1.5	DR
		12	3	1.5	DR	3	0.75	DR
	No. 10 screw into 33 mil steel	6	4	3	2	4	3	0.5
		8	4	3	1	4	2	DR
		12	4	2	DR	3	1	DR
	No. 10 screw into 43 mil steel or thicker	6	4	4	3	4	4	2
		8	4	4	2	4	3	1.5
		12	4	3	1.5	4	3	DR

For SI: 1 inch = 25.4 mm, 1 mil = 0.0254 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.
DR = Design required.
o.c. = On center.
a. Steel framing shall be minimum 33 ksi steel for 33 mil and 43 mil steel, and 50 ksi steel for 54 mil steel or thicker.
b. Screws shall comply with the requirements of ASTM C 1513.
c. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

TABLE R703.16.2
FURRING MINIMUM FASTENING REQUIREMENTS FOR APPLICATION OVER FOAM PLASTIC SHEATHING TO SUPPORT CLADDING WEIGHT[a]

FURRING MATERIAL	FRAMING MEMBER	FASTENER TYPE AND MINIMUM SIZE[b]	MINIMUM PENETRATION INTO WALL FRAMING (inches)	FASTENER SPACING IN FURRING (inches)	MAXIMUM THICKNESS OF FOAM SHEATHING[d] (inches)					
					16" o.c. Furring[e]			24" o.c. Furring[e]		
					Cladding Weight:			Cladding Weight:		
					3 psf	11 psf	25 psf	3 psf	11 psf	25 psf
Minimum 33 mil Steel Furring or Minimum 1× Wood Furring[c]	33 mil Steel Stud	No. 8 screw	Steel thickness + 3 threads	12	3	1.5	DR	3	0.5	DR
				16	3	1	DR	2	DR	DR
				24	2	DR	DR	2	DR	DR
		No. 10 screw	Steel thickness + 3 threads	12	4	2	DR	4	1	DR
				16	4	1.5	DR	3	DR	DR
				24	3	DR	DR	2	DR	DR
	43 mil or thicker Steel Stud	No. 8 Screw	Steel thickness + 3 threads	12	3	1.5	DR	3	0.5	DR
				16	3	1	DR	2	DR	DR
				24	2	DR	DR	2	DR	DR
		No. 10 screw	Steel thickness + 3 threads	12	4	3	1.5	4	3	DR
				16	4	3	0.5	4	2	DR
				24	4	2	DR	4	0.5	DR

For SI: 1 inch = 25.4 mm, 1 mil = 0.0254 mm, 1 pound per square foot = 0.0479 kPa, 1 pound per square inch = 6.895 kPa.

DR = Design required.

o.c. = On center.

a. Wood furring shall be Spruce-pine-fir or any softwood species with a specific gravity of 0.42 or greater. Steel furring shall be minimum 33 ksi steel. Steel studs shall be minimum 33 ksi steel for 33mil and 43 mil thickness, and 50 ksi steel for 54 mil steel or thicker.

b. Screws shall comply with the requirements of ASTM C 1513.

c. Where the required cladding fastener penetration into wood material exceeds $^3/_4$ inch and is not more than $1^1/_2$ inches, a minimum 2-inch nominal wood furring or an approved design shall be used.

d. Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with ASTM C 578 or ASTM C 1289.

e. Furring shall be spaced not more than 24 inches (610 mm) on center, in a vertical or horizontal orientation. In a vertical orientation, furring shall be located over wall studs and attached with the required fastener spacing. In a horizontal orientation, the indicated 8-inch and 12-inch fastener spacing in furring shall be achieved by use of two fasteners into studs at 16 inches and 24 inches on center, respectively.

INTERNATIONAL CODE COUNCIL

Copyright © 2014 ICC. ALL RIGHTS RESERVED. Accessed by Scott Twogood on Feb 23, 2017 7:46:39 AM pursuant to License Agreement with ICC. No further reproduction or distribution authorized. ANY UNAUTHORIZED REPRODUCTION OR DISTRIBUTION IS A VIOLATION OF THE FEDERAL COPYRIGHT ACT AND THE LICENSE AGREEMENT, AND SUBJECT TO CIVIL AND CRIMINAL PENALTIES THEREUNDER.

Rose Hill Repair Cost Summary

January 20, 2022

WDP & Associates Consulting Engineers

Home Type Category	Number of Homes	Avg. Cost of Repair	Total Repair Cost
Basic	82	$ 107,305.17	$ 8,799,024.20
Moderate	74	$ 108,812.85	$ 8,052,151.20
Complex	65	$ 225,492.80	$ 14,657,032.25
	221	**$ 147,203.61**	**$ 31,508,207.65**

PLAINTIFF'S EXHIBIT
24.16
exhibitsticker.com

MASTER

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	ea		$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	day		$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	lf		$ 2.11 /lf	$ 2.48 /lf	$ -	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ -		
Brick Demo							
Remove trim	lf		$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove brick	sf		$ 3.61 /sf	$ 4.24 /sf	$ -	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	sf		$ 0.65 /sf	$ 0.76 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	ea		$ 9.93 /ea	$ 11.66 /ea	$ -	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	sf		$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	sf		$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	sf		$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	lf		$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	sf		$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	sf		$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	lf		$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	sf		$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Stone Demo							
Remove trim	lf		$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	sf		$ 2.81 /sf	$ 3.30 /sf	$ -	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	sf		$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	sf		$ 1.51 /sf	$ 1.77 /sf	$ -	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	sf		$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	sf		$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	sf		$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	lf		$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	sf		$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	sf		$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	lf		$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	sf		$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Patio Door Removal							
Remove siding	sf		$ 0.99 /sf	$ 1.16 /sf	$ -	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	ea		$ 42.00 /ea	$ 49.35 /ea	$ -	08 05 05.10 0200	Doors, exterior, double
Remove door framing	ea		$ 40.00 /ea	$ 47.00 /ea	$ -	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	sf		$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	sf		$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	sf		$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged framing	lf		$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ -		

Window Removal

Remove shutters and store	pr	$	21.25	/pr	$	24.97	/pr	$ -	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	sf	$	0.99	/sf	$	1.16	/sf	$ -	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	lf	$	0.38	/lf	$	0.45	/lf	$ -	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	ea	$	31.50	/ea	$	37.01	/ea	$ -	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	sf	$	0.14	/sf	$	0.16	/sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	sf	$	14.50	/sf	$	17.04	/sf	$ -	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	sf	$	0.36	/sf	$	0.42	/sf	$ -	07 05 05.10 0670	Insulation
Remove damaged window structural framing	lf	$	0.84	/lf	$	0.99	/lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
				Total cost				$ -		

Interior

Protect flooring	sf	$	1.70	/sf	$	2.00	/sf	$ -	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	home	$	318.18	/home	$	373.86	/home	$ -	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	lf	$	0.84	/lf	$	0.99	/lf	$ -	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	sf	$	4.20	/sf	$	4.94	/sf	$ -	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
				Total cost				$ -		

Total removal cost $ -

Replacement Cost

Item Description	Quantity	Unit	Unit Cost		Greenville Adjusted Cost		Sub Total	Reference	Comment
Site Preparation									
Reconnect HVAC units		ea	$ 945.00	/ea	$ 1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires		day	$ 1,502.40	/day	$ 1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading		home	$ 14,641.45	/home	$ 17,203.70	/home	$ -	Site consultants, Inc. estimat	Total SCI estimate divided by 220 homes
Replace gutters/down spouts		lf	$ 6.61	/lf	$ 7.77	/lf	$ -	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
				Total cost			$ -		
Brick Replacement									
New structural framing (2x4)		lf	$ 1.95	/lf	$ 2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation		sf	$ 0.95	/sf	$ 1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing		sf	$ 1.39	/sf	$ 1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier		sf	$ 0.34	/sf	$ 0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)		ea	$ 0.79	/ea	$ 0.92	/ea	$ -	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels		ea	$ 69.00	/ea	$ 81.08	/ea	$ -	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings		sf	$ 5.85	/sf	$ 6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer		sf	$ 18.55	/sf	$ 21.80	/sf	$ -	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)		lf	$ 7.44	/lf	$ 8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim		lf	$ 4.02	/lf	$ 4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting			$ 4.16	/lf	$ 4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing		sf	$ 1.54	/sf	$ 1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment		sf	$ 2.50	/sf	$ 2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels		sf	$ 7.20	/sf	$ 8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim		lf	$ 16.30	/lf	$ 19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
				Total cost			$ -		

Stone Replacement

New structural framing (2x4)	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New flashings	sf	$	5.85	/sf	$	6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	sf	$	32.27	/sf	$	37.91	/sf	$ -	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
				Total cost				$ -		

Patio Door Replacement

New structural framing (2x4)	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ -	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	sf	$	3.59	/sf	$	4.22	/sf	$ -	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
				Total cost				$ -		

Window Replacement

New structural framing (2x4)	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New window SAF	lf	$	1.23	/lf	$	1.45	/lf	$ -	07 65 26.10 0060	SAF, 9" wide
New window units	ea	$	460.00	/ea	$	540.50	/ea	$ -	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	sf	$	1.72	/sf	$	2.02	/sf	$ -	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	pr	$	21.25	/pr	$	24.97	/pr	$ -	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
				Total cost				$ -		

Interior

New drywall and painting	sf	$	3.08	/sf	$	3.62	/sf	$ -	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	lf	$	7.43	/lf	$	8.73	/lf	$ -	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	sf	$	0.68	/sf	$	0.80	/sf	$ -	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
				Total cost				$ -		

Crack Injections

Foundation wall and garage slab crack injection	lf	$	14.05	/lf	$	16.51	/lf	$ -	2020 RS Means Res. Repair & Remodeling	-
				Total cost				$ -		

HVAC

Duct work (2 story house)	home	$	11,800.00	/home	$	13,865.00	/home	$ -	-	Maddox letter in file
Duct work (1 story house)	home	$	9,200.00	/home	$	10,810.00	/home	$ -	-	Maddox letter in file
Remove and replace drywall (2 story only)	sf	$	3.20	/sf	$	3.76	/sf	$ -	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
				Total cost				$ -		

Total replacement cost	$ -
Total removal and replacement cost	$ -

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost		sf	$ 0.75 /sf	$ 0.88 /sf	$ -	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost		day	$ 730.00 /day	$ 857.75 /day	$ -	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal		day	$ 730.00 /day	$ 857.75 /day	$ -	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ -		
Site office							
10x50 trailer with furnishings		month	$ 179.00 /month	$ 210.33 /month	$ -	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet		month	$ 51.40 /month	$ 60.40 /month	$ -	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ -		
Debris removal							
Dumpster monthly		month	$ 541.25 /month	$ 635.97 /month	$ -	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		$ -		
			Total Misc. cost		$ -		
			Sub Total Home Repair Cost		**$ -**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)		week	$ 760.00 /week	$ 893.00 /week	$ -	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)		week	$ 705.00 /week	$ 828.38 /week	$ -	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)		week	$ 505.00 /week	$ 593.38 /week	$ -	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)		week	$ 150.00 /week	$ 176.25 /week	$ -	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ -		
Building Permit							
Building Permit		ea	$ - /ea	$ - /ea	$ -	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ -		

General Contractors Costs and General Conditions and Relate				Fee	Reference	Comment
*Contingency	10%			$ -	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ -	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ -	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ -	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ -	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ -		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost		yr	$ 230.00 /yr	$ 230.00 /yr	$ -	-	Maddox letter in file
			Total cost		$ -		
			Total Home Repair Cost		**$ -**		

102 YOUNT

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	0	lf	$ 2.11 /lf	$ 2.48 /lf	$ -	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ -		
Brick Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove brick	0	sf	$ 3.61 /sf	$ 4.24 /sf	$ -	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	0	sf	$ 0.65 /sf	$ 0.76 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	0	ea	$ 9.93 /ea	$ 11.66 /ea	$ -	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Stone Demo							
Remove trim	76	lf	$ 0.84 /lf	$ 0.99 /lf	$ 75.01	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	90	sf	$ 2.81 /sf	$ 3.30 /sf	$ 297.16	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	90	sf	$ 1.51 /sf	$ 1.77 /sf	$ 159.68	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	90	sf	$ 0.14 /sf	$ 0.16 /sf	$ 14.81	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	18	sf	$ 14.50 /sf	$ 17.04 /sf	$ 306.76	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	18	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.61	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	18	lf	$ 0.84 /lf	$ 0.99 /lf	$ 17.77	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 878.80		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	2	pr	$ 21.25	/pr	$ 24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	475	sf	$ 0.99	/sf	$ 1.16	/sf	$ 552.54	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	190	lf	$ 0.38	/lf	$ 0.45	/lf	$ 84.84	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	9.5	ea	$ 31.50	/ea	$ 37.01	/ea	$ 351.62	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	475	sf	$ 0.14	/sf	$ 0.16	/sf	$ 78.14	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	57	sf	$ 14.50	/sf	$ 17.04	/sf	$ 971.41	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	57	sf	$ 0.36	/sf	$ 0.42	/sf	$ 24.11	07 05 05.10 0670	Insulation
Remove damaged window structural framing	57	lf	$ 0.84	/lf	$ 0.99	/lf	$ 56.26	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
				Total cost			$ 2,168.85		

Interior

Protect flooring	95	sf	$ 1.70	/sf	$ 2.00	/sf	$ 189.76	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	0.5	home	$ 318.18	/home	$ 373.86	/home	$ 186.93	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	50	lf	$ 0.84	/lf	$ 0.99	/lf	$ 49.35	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	10	sf	$ 4.20	/sf	$ 4.94	/sf	$ 49.35	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
				Total cost			$ 475.39		

Total removal cost	$ 3,993.30

Replacement Cost

Item Description	Quantity	Unit	Unit Cost		Greenville Adjusted Cost		Sub Total	Reference	Comments
Site Preparation									
Reconnect HVAC units	0	ea	$ 945.00	/ea	$ 1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$ 1,502.40	/day	$ 1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$ 14,641.45	/home	$ 17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	0	lf	$ 6.61	/lf	$ 7.77	/lf	$ -	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
				Total cost			$ 17,203.70		
Brick Replacement									
New structural framing (2x4)	0	lf	$ 1.95	/lf	$ 2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$ 0.95	/sf	$ 1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$ 1.39	/sf	$ 1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$ 0.34	/sf	$ 0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	0	ea	$ 0.79	/ea	$ 0.92	/ea	$ -	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	0	ea	$ 69.00	/ea	$ 81.08	/ea	$ -	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	0	sf	$ 5.85	/sf	$ 6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	0	sf	$ 18.55	/sf	$ 21.80	/sf	$ -	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$ 7.44	/lf	$ 8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$ 4.02	/lf	$ 4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$ 4.16	/lf	$ 4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$ 1.54	/sf	$ 1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$ 2.50	/sf	$ 2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$ 7.20	/sf	$ 8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$ 16.30	/lf	$ 19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
				Total cost			$ -		

Stone Replacement

New structural framing (2x4)	18	lf	$	1.95	/lf	$	2.29	/lf	$ 41.24	06 11 10.40 6145	Studs, 2x4
New insulation	18	sf	$	0.95	/sf	$	1.12	/sf	$ 20.09	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	18	sf	$	1.39	/sf	$	1.63	/sf	$ 29.40	06 16 36.10 4615	7/16" OSB
New weather barrier	90	sf	$	0.34	/sf	$	0.40	/sf	$ 35.96	07 25 10.10 0470	House wrap, small or large roll
New flashings	40	sf	$	5.85	/sf	$	6.87	/sf	$ 274.95	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	90	sf	$	32.27	/sf	$	37.91	/sf	$ 3,412.20	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	76	lf	$	4.02	/lf	$	4.72	/lf	$ 358.99	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	76	lf	$	4.16	/lf	$	4.89	/lf	$ 371.49	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 4,544.31		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	57	lf	$	1.95	/lf	$	2.29	/lf	$ 130.60	06 11 10.40 6145	Studs, 2x4
New insulation	57	sf	$	0.95	/sf	$	1.12	/sf	$ 63.63	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	57	sf	$	1.39	/sf	$	1.63	/sf	$ 93.10	06 16 36.10 4615	7/16" OSB
New weather barrier	475	sf	$	0.34	/sf	$	0.40	/sf	$ 189.76	07 25 10.10 0470	House wrap, small or large roll
New window SAF	190	lf	$	1.23	/lf	$	1.45	/lf	$ 274.60	07 65 26.10 0060	SAF, 9" wide
New window units	9.5	ea	$	460.00	/ea	$	540.50	/ea	$ 5,134.75	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	475	sf	$	1.72	/sf	$	2.02	/sf	$ 959.98	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 6,896.35		

Interior

New drywall and painting	10	sf	$	3.08	/sf	$	3.62	/sf	$ 36.19	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	50	lf	$	7.43	/lf	$	8.73	/lf	$ 436.51	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	95	sf	$	0.68	/sf	$	0.80	/sf	$ 75.91	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 548.61		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (1 story house)	1	home	$	9,200.00	/home	$	10,810.00	/home	$ 10,810.00	-	Maddox letter in file
					Total cost				$ 10,810.00		

Total replacement cost	$ 41,705.63
Total removal and replacement cost	$ 45,698.93

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	90	sf	$ 0.75 /sf	$ 0.88 /sf	$ 78.89	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.125	day	$ 730.00 /day	$ 857.75 /day	$ 107.22	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.125	day	$ 730.00 /day	$ 857.75 /day	$ 107.22	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 293.33		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,200.02		
			Sub Total Home Repair Cost		**$ 46,898.95**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 468.99 /ea	$ 440.85 /ea	$ 440.85	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 440.85		

General Contractors Costs and General Conditions and Relatec				Fee	Reference	Comment
*Contingency	10%			$ 3,745	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 5,465	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 5,465	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 2,733	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 4,919	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 22,327.14		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	9	yr	$ 230.00 /yr	$ 230.00 /yr	$ 2,070.00	-	Maddox letter in file
			Total cost		$ 2,070.00		
			Total Home Repair Cost		**$ 79,050.59**		

102 YOUNT

Bare cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ -	$ -	$ -	0.00%
Stone	$ 878.80	$ 4,544.31	$ 5,423.11	19.74%
Window	$ 2,168.85	$ 6,896.35	$ 9,065.19	33.00%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	7.31%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.60%
HVAC	$ -	$ 10,810.00	$ 10,810.00	39.35%
Total bare cost of above items	$ 3,517.91	$ 23,953.32	$ 27,471.23	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ -	$ 17,203.70	$ 17,203.70
Interior repairs	$ 475.39	$ 548.61	$ 1,024.00
Scaffolding	$ -	$ 293.33	$ 293.33
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 440.85	$ 440.85

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		NA	
Stone Veneer		$ 394.08	
Windows	$ 1,934.39		
Patio Doors	$ 4,070.23		
Concrete crack repairs			$ 312.68
HVAC			$ 20,474.20

177 HAVERHILL

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	12	lf	$ 2.11 /lf	$ 2.48 /lf	$ 29.75	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 29.75		
Brick Demo							
Remove trim	20	lf	$ 0.84 /lf	$ 0.99 /lf	$ 19.74	06 05 05.20 3000	Trim, 6" wide
Remove brick	150	sf	$ 3.61 /sf	$ 4.24 /sf	$ 636.26	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	5	sf	$ 0.65 /sf	$ 0.76 /sf	$ 3.82	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	1	ea	$ 9.93 /ea	$ 11.66 /ea	$ 11.66	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	150	sf	$ 0.14 /sf	$ 0.16 /sf	$ 24.68	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	30	sf	$ 14.50 /sf	$ 17.04 /sf	$ 511.27	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	30	sf	$ 0.36 /sf	$ 0.42 /sf	$ 12.69	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	30	lf	$ 0.84 /lf	$ 0.99 /lf	$ 29.61	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	6	sf	$ 0.73 /sf	$ 0.86 /sf	$ 5.15	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	34	lf	$ 0.89 /lf	$ 1.05 /lf	$ 35.56	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 1,290.43		
Stone Demo							
Remove trim	40	lf	$ 0.84 /lf	$ 0.99 /lf	$ 39.48	06 05 05.20 3000	Trim, 6" wide
Remove stone veneer	140	sf	$ 2.81 /sf	$ 3.30 /sf	$ 462.25	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	140	sf	$ 1.51 /sf	$ 1.77 /sf	$ 248.40	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	140	sf	$ 0.14 /sf	$ 0.16 /sf	$ 23.03	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	28	sf	$ 14.50 /sf	$ 17.04 /sf	$ 477.18	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	28	sf	$ 0.36 /sf	$ 0.42 /sf	$ 11.84	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	28	lf	$ 0.84 /lf	$ 0.99 /lf	$ 27.64	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	26	lf	$ 0.89 /lf	$ 1.05 /lf	$ 27.19	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 1,338.44		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	2	pr	$	21.25	/pr	$	24.97	/pr	$	49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	550	sf	$	0.99	/sf	$	1.16	/sf	$	639.79	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	300	lf	$	0.38	/lf	$	0.45	/lf	$	133.95	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	15.0	ea	$	31.50	/ea	$	37.01	/ea	$	555.19	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	550	sf	$	0.14	/sf	$	0.16	/sf	$	90.48	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	90	sf	$	14.50	/sf	$	17.04	/sf	$	1,533.80	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	90	sf	$	0.36	/sf	$	0.42	/sf	$	38.07	07 05 05.10 0670	Insulation
Remove damaged window structural framing	90	lf	$	0.84	/lf	$	0.99	/lf	$	88.83	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$	3,130.04		

Interior

Protect flooring	150	sf	$	1.70	/sf	$	2.00	/sf	$	299.63	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$	373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	50	lf	$	0.84	/lf	$	0.99	/lf	$	49.35	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	10	sf	$	4.20	/sf	$	4.94	/sf	$	49.35	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$	772.19		

Total removal cost	$	7,031.11

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	0	ea	$	945.00	/ea	$	1,110.38	/ea	$	-	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$	1,502.40	/day	$	1,765.32	/day	$	-	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$	17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	12	lf	$	6.61	/lf	$	7.77	/lf	$	93.20	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$	17,296.91		

Brick Replacement

New structural framing (2x4)	30	lf	$	1.95	/lf	$	2.29	/lf	$	68.74	06 11 10.40 6145	Studs, 2x4
New insulation	30	sf	$	0.95	/sf	$	1.12	/sf	$	33.49	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	30	sf	$	1.39	/sf	$	1.63	/sf	$	49.00	06 16 36.10 4615	7/16" OSB
New weather barrier	150	sf	$	0.34	/sf	$	0.40	/sf	$	59.93	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	84	ea	$	0.79	/ea	$	0.92	/ea	$	77.73	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	1	ea	$	69.00	/ea	$	81.08	/ea	$	81.08	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	5	sf	$	5.85	/sf	$	6.87	/sf	$	34.37	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	150	sf	$	18.55	/sf	$	21.80	/sf	$	3,269.44	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$	-	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$	-	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$	4.16	/lf	$	4.89	/lf	$	-	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$	-	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	6	sf	$	2.50	/sf	$	2.94	/sf	$	17.65	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$	-	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	34	lf	$	16.30	/lf	$	19.15	/lf	$	651.19	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$	4,342.59		

Stone Replacement

New structural framing (2x4)	28	lf	$	1.95	/lf	$	2.29	/lf	$ 64.16	06 11 10.40 6145	Studs, 2x4
New insulation	28	sf	$	0.95	/sf	$	1.12	/sf	$ 31.26	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	28	sf	$	1.39	/sf	$	1.63	/sf	$ 45.73	06 16 36.10 4615	7/16" OSB
New weather barrier	140	sf	$	0.34	/sf	$	0.40	/sf	$ 55.93	07 25 10.10 0470	House wrap, small or large roll
New flashings	50	sf	$	5.85	/sf	$	6.87	/sf	$ 342.71	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	140	sf	$	32.27	/sf	$	37.91	/sf	$ 5,307.87	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	40	lf	$	4.02	/lf	$	4.72	/lf	$ 188.94	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	40	lf	$	4.16	/lf	$	4.89	/lf	$ 195.52	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	26	lf	$	16.30	/lf	$	19.15	/lf	$ 497.97	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 6,803.62		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	90	lf	$	1.95	/lf	$	2.29	/lf	$ 206.21	06 11 10.40 6145	Studs, 2x4
New insulation	90	sf	$	0.95	/sf	$	1.12	/sf	$ 100.46	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	90	sf	$	1.39	/sf	$	1.63	/sf	$ 146.99	06 16 36.10 4615	7/16" OSB
New weather barrier	550	sf	$	0.34	/sf	$	0.40	/sf	$ 219.73	07 25 10.10 0470	House wrap, small or large roll
New window SAF	300	lf	$	1.23	/lf	$	1.45	/lf	$ 433.58	07 65 26.10 0060	SAF, 9" wide
New window units	15.0	ea	$	460.00	/ea	$	540.50	/ea	$ 8,107.50	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	550	sf	$	1.72	/sf	$	2.02	/sf	$ 1,111.55	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 10,375.96		

Interior

New drywall and painting	10	sf	$	3.08	/sf	$	3.62	/sf	$ 36.19	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	50	lf	$	7.43	/lf	$	8.73	/lf	$ 436.51	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	150	sf	$	0.68	/sf	$	0.80	/sf	$ 119.85	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 592.55		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 56,483.28
Total removal and replacement cost	$ 63,514.39

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	290	sf	$ 0.75 /sf	$ 0.88 /sf	$ 254.21	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 897.52		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,804.21		
			Sub Total Home Repair Cost		**$ 65,318.60**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 653.19 /ea	$ 613.99 /ea	$ 613.99	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 613.99		

General Contractors Costs and General Conditions and Relate				Fee	Reference	Comment
*Contingency	10%			$ 5,604	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 7,325	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 7,325	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 3,662	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 6,592	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 30,507.97		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	6	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,380.00	-	Maddox letter in file
			Total cost		$ 1,380.00		
			Total Home Repair Cost		**$ 105,134.21**		

177 HAVERHILL

Bare Ccost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 1,290.43	$ 4,342.59	$ 5,633.02	12.57%
Stone	$ 1,338.44	$ 6,803.62	$ 8,142.06	18.16%
Window	$ 3,130.04	$ 10,375.96	$ 13,505.99	30.13%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.48%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.37%
HVAC	$ -	$ 15,369.00	$ 15,369.00	34.29%
Total bare cost of above items	$ 6,229.17	$ 38,593.82	$ 44,822.99	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 29.75	$ 17,296.91	$ 17,326.66
Interior repairs	$ 772.19	$ 592.55	$ 1,364.74
Scaffolding	$ -	$ 897.52	$ 897.52
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 613.99	$ 613.99

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 136.28	
Stone Veneer		$ 211.05	
Windows	$ 1,666.18		
Patio Doors	$ 3,715.48		
Concrete crack repairs			$ 284.58
HVAC			$ 26,493.31

104 Sturbridge

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	1	ea	$ 735.00 /ea	$ 863.63 /ea	$ 863.63	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	1	day	$ 730.80 /day	$ 858.69 /day	$ 858.69	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	150	lf	$ 2.11 /lf	$ 2.48 /lf	$ 371.89	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 2,094.20		
Brick Demo							
Remove trim	40	lf	$ 0.84 /lf	$ 0.99 /lf	$ 39.48	06 05 05.20 3000	Trim, to 6" wide
Remove brick	2690	sf	$ 3.61 /sf	$ 4.24 /sf	$ 11,410.31	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	110	sf	$ 0.65 /sf	$ 0.76 /sf	$ 84.01	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	22.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 256.56	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	2690	sf	$ 0.14 /sf	$ 0.16 /sf	$ 442.51	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	538	sf	$ 14.50 /sf	$ 17.04 /sf	$ 9,168.70	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	538	sf	$ 0.36 /sf	$ 0.42 /sf	$ 227.57	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	538	lf	$ 0.84 /lf	$ 0.99 /lf	$ 531.01	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	100	sf	$ 0.73 /sf	$ 0.86 /sf	$ 85.78	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 22,272.07		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	190	sf	$ 2.81 /sf	$ 3.30 /sf	$ 627.33	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	190	sf	$ 1.51 /sf	$ 1.77 /sf	$ 337.11	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	190	sf	$ 0.14 /sf	$ 0.16 /sf	$ 31.26	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	38	sf	$ 14.50 /sf	$ 17.04 /sf	$ 647.60	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	38	sf	$ 0.36 /sf	$ 0.42 /sf	$ 16.07	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	38	lf	$ 0.84 /lf	$ 0.99 /lf	$ 37.51	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	40	sf	$ 0.73 /sf	$ 0.86 /sf	$ 34.31	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	10	lf	$ 0.89 /lf	$ 1.05 /lf	$ 10.46	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 1,741.65		
Patio Door Removal							
Remove siding	0	sf	$ 0.99 /sf	$ 1.16 /sf	$ -	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 403.88		

Window Removal

Remove shutters and store	7	pr	$	21.25	/pr	$	24.97	/pr	$	174.78	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	0	sf	$	0.99	/sf	$	1.16	/sf	$	-	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	480	lf	$	0.38	/lf	$	0.45	/lf	$	214.32	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	24.0	ea	$	31.50	/ea	$	37.01	/ea	$	888.30	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	0	sf	$	0.14	/sf	$	0.16	/sf	$	-	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	144	sf	$	14.50	/sf	$	17.04	/sf	$	2,454.08	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	144	sf	$	0.36	/sf	$	0.42	/sf	$	60.91	07 05 05.10 0670	Insulation
Remove damaged window structural framing	144	lf	$	0.84	/lf	$	0.99	/lf	$	142.13	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$	3,934.52		

Interior

Protect flooring	240	sf	$	1.70	/sf	$	2.00	/sf	$	479.40	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$	373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	80	lf	$	0.84	/lf	$	0.99	/lf	$	78.96	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	20	sf	$	4.20	/sf	$	4.94	/sf	$	98.70	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$	1,030.92		

Total removal cost	$	31,477.23

Replacement Cost

Item Description	Quantity	Unit		Unit Cost			Greenville Adjusted Cost			Sub Total	Reference	Comments
Site Preparation												
Reconnect HVAC units	1	ea	$	945.00	/ea	$	1,110.38	/ea	$	1,110.38	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	1	day	$	1,502.40	/day	$	1,765.32	/day	$	1,765.32	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$	17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	150	lf	$	6.61	/lf	$	7.77	/lf	$	1,165.01	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$	21,244.41		
Brick Replacement												
New structural framing (2x4)	538	lf	$	1.95	/lf	$	2.29	/lf	$	1,232.69	06 11 10.40 6145	Studs, 2x4
New insulation	538	sf	$	0.95	/sf	$	1.12	/sf	$	600.54	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	538	sf	$	1.39	/sf	$	1.63	/sf	$	878.69	06 16 36.10 4615	7/16" OSB
New weather barrier	2690	sf	$	0.34	/sf	$	0.40	/sf	$	1,074.66	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	1511	ea	$	0.79	/ea	$	0.92	/ea	$	1,393.93	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	22	ea	$	69.00	/ea	$	81.08	/ea	$	1,783.65	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	110	sf	$	5.85	/sf	$	6.87	/sf	$	756.11	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	2690	sf	$	18.55	/sf	$	21.80	/sf	$	58,631.91	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$	-	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$	-	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$	4.16	/lf	$	4.89	/lf	$	-	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$	-	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	100	sf	$	2.50	/sf	$	2.94	/sf	$	294.16	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$	-	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$	16.30	/lf	$	19.15	/lf	$	478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$	67,125.15		

Stone Replacement

New structural framing (2x4)	38	lf	$	1.95	/lf	$	2.29	/lf	$ 87.07	06 11 10.40 6145	Studs, 2x4
New insulation	38	sf	$	0.95	/sf	$	1.12	/sf	$ 42.42	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	38	sf	$	1.39	/sf	$	1.63	/sf	$ 62.06	06 16 36.10 4615	7/16" OSB
New weather barrier	190	sf	$	0.34	/sf	$	0.40	/sf	$ 75.91	07 25 10.10 0470	House wrap, small or large roll
New flashings	55	sf	$	5.85	/sf	$	6.87	/sf	$ 378.06	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	190	sf	$	32.27	/sf	$	37.91	/sf	$ 7,203.53	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	40	sf	$	2.50	/sf	$	2.94	/sf	$ 117.66	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	10	lf	$	16.30	/lf	$	19.15	/lf	$ 191.53	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
				Total cost					$ 8,158.23		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	0	sf	$	3.59	/sf	$	4.22	/sf	$ -	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
				Total cost					$ 1,306.68		

Window Replacement

New structural framing (2x4)	144	lf	$	1.95	/lf	$	2.29	/lf	$ 329.94	06 11 10.40 6145	Studs, 2x4
New insulation	144	sf	$	0.95	/sf	$	1.12	/sf	$ 160.74	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	144	sf	$	1.39	/sf	$	1.63	/sf	$ 235.19	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New window SAF	480	lf	$	1.23	/lf	$	1.45	/lf	$ 693.72	07 65 26.10 0060	SAF, 9" wide
New window units	24.0	ea	$	460.00	/ea	$	540.50	/ea	$ 12,972.00	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	0	sf	$	1.72	/sf	$	2.02	/sf	$ -	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	7	pr	$	21.25	/pr	$	24.97	/pr	$ 174.78	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
				Total cost					$ 14,566.37		

Interior

New drywall and painting	20	sf	$	3.08	/sf	$	3.62	/sf	$ 72.38	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	80	lf	$	7.43	/lf	$	8.73	/lf	$ 698.42	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	240	sf	$	0.68	/sf	$	0.80	/sf	$ 191.76	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
				Total cost					$ 962.56		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
				Total cost					$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
				Total cost					$ 15,369.00		

Total replacement cost	$ 128,897.50
Total removal and replacement cost	$ 160,374.73

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	2880	sf	$ 0.75 /sf	$ 0.88 /sf	$ 2,524.57	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	3	day	$ 730.00 /day	$ 857.75 /day	$ 2,573.25	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	3	day	$ 730.00 /day	$ 857.75 /day	$ 2,573.25	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 7,671.07		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 8,577.76		
			Sub Total Home Repair Cost		**$ 168,952.49**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 1,689.52 /ea	$ 1,588.15 /ea	$ 1,588.15	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 1,588.15		

General Contractors Costs and General Conditions and Relate				Fee	Reference	Comment
*Contingency	10%			$ 16,065	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 17,785	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 17,785	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 8,893	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 16,007	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 76,535.52		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	9	yr	$ 230.00 /yr	$ 230.00 /yr	$ 2,070.00	-	Maddox letter in file
			Total cost		$ 2,070.00		
			Total Home Repair Cost		**$ 256,459.80**		

104 Sturbridge

Bare Cost

Item	Removal	Replacement	Total	Percent of total bare cost
Brick	$ 22,272.07	$ 67,125.15	$ 89,397.22	66.20%
Stone	$ 1,741.65	$ 8,158.23	$ 9,899.88	7.33%
Window	$ 3,934.52	$ 14,566.37	$ 18,500.89	13.70%
Patio Doors	$ 403.88	$ 1,306.68	$ 1,710.56	1.27%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.12%
HVAC	$ -	$ 15,369.00	$ 15,369.00	11.38%
Total bare cost of above items	$ 28,352.11	$ 106,690.53	$ 135,042.64	100%

Other Cost to be Allocated

Item	Removal	Replacement	Total
Site Prep	$ 2,094.20	$ 21,244.41	$ 23,338.61
Interior repairs	$ 1,030.92	$ 962.56	$ 1,993.48
Scaffolding	$ -	$ 7,671.07	$ 7,671.07
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 1,588.15	$ 1,588.15

Demolition and Replacement Cost including Ancillary Repairs

Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 66.28	
Stone Veneer		$ 103.91	
Windows	$ 1,300.17		
Patio Doors	$ 2,885.07		
Concrete crack repairs			$ 254.99
HVAC			$ 23,738.82

120 Berwick

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	0	lf	$ 2.11 /lf	$ 2.48 /lf	$ -	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ -		
Brick Demo							
Remove trim	30	lf	$ 0.84 /lf	$ 0.99 /lf	$ 29.61	06 05 05.20 3000	Trim, to 6" wide
Remove brick	260	sf	$ 3.61 /sf	$ 4.24 /sf	$ 1,102.86	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	15	sf	$ 0.65 /sf	$ 0.76 /sf	$ 11.46	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	3.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 34.99	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	260	sf	$ 0.14 /sf	$ 0.16 /sf	$ 42.77	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	52	sf	$ 14.50 /sf	$ 17.04 /sf	$ 886.19	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	52	sf	$ 0.36 /sf	$ 0.42 /sf	$ 22.00	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	52	lf	$ 0.84 /lf	$ 0.99 /lf	$ 51.32	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 2,228.78		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	0	sf	$ 2.81 /sf	$ 3.30 /sf	$ -	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	0	sf	$ 1.51 /sf	$ 1.77 /sf	$ -	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	4	pr	$	21.25	/pr	$	24.97	/pr	$ 99.88	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	725	sf	$	0.99	/sf	$	1.16	/sf	$ 843.36	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	350	lf	$	0.38	/lf	$	0.45	/lf	$ 156.28	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	17.5	ea	$	31.50	/ea	$	37.01	/ea	$ 647.72	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	725	sf	$	0.14	/sf	$	0.16	/sf	$ 119.26	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	105	sf	$	14.50	/sf	$	17.04	/sf	$ 1,789.43	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	105	sf	$	0.36	/sf	$	0.42	/sf	$ 44.42	07 05 05.10 0670	Insulation
Remove damaged window structural framing	105	lf	$	0.84	/lf	$	0.99	/lf	$ 103.64	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 3,803.97		

Interior

Protect flooring	175	sf	$	1.70	/sf	$	2.00	/sf	$ 349.56	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	74	lf	$	0.84	/lf	$	0.99	/lf	$ 73.04	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	19	sf	$	4.20	/sf	$	4.94	/sf	$ 91.30	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 887.76		

Total removal cost	$ 7,390.77

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	0	ea	$	945.00	/ea	$	1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$	1,502.40	/day	$	1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	0	lf	$	6.61	/lf	$	7.77	/lf	$ -	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 17,203.70		

Brick Replacement

New structural framing (2x4)	52	lf	$	1.95	/lf	$	2.29	/lf	$ 119.15	06 11 10.40 6145	Studs, 2x4
New insulation	52	sf	$	0.95	/sf	$	1.12	/sf	$ 58.05	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	52	sf	$	1.39	/sf	$	1.63	/sf	$ 84.93	06 16 36.10 4615	7/16" OSB
New weather barrier	260	sf	$	0.34	/sf	$	0.40	/sf	$ 103.87	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	146	ea	$	0.79	/ea	$	0.92	/ea	$ 134.73	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	3	ea	$	69.00	/ea	$	81.08	/ea	$ 243.23	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	15	sf	$	5.85	/sf	$	6.87	/sf	$ 103.11	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	260	sf	$	18.55	/sf	$	21.80	/sf	$ 5,667.03	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	30	lf	$	4.02	/lf	$	4.72	/lf	$ 141.71	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	30	$ -	$	4.16	/lf	$	4.89	/lf	$ 146.64	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$	16.30	/lf	$	19.15	/lf	$ 478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 7,354.77		

Stone Replacement

New structural framing (2x4)	0	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New flashings	0	sf	$	5.85	/sf	$	6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	0	sf	$	32.27	/sf	$	37.91	/sf	$ -	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ -		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	105	lf	$	1.95	/lf	$	2.29	/lf	$ 240.58	06 11 10.40 6145	Studs, 2x4
New insulation	105	sf	$	0.95	/sf	$	1.12	/sf	$ 117.21	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	105	sf	$	1.39	/sf	$	1.63	/sf	$ 171.49	06 16 36.10 4615	7/16" OSB
New weather barrier	725	sf	$	0.34	/sf	$	0.40	/sf	$ 289.64	07 25 10.10 0470	House wrap, small or large roll
New window SAF	350	lf	$	1.23	/lf	$	1.45	/lf	$ 505.84	07 65 26.10 0060	SAF, 9" wide
New window units	17.5	ea	$	460.00	/ea	$	540.50	/ea	$ 9,458.75	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	725	sf	$	1.72	/sf	$	2.02	/sf	$ 1,465.23	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	4	pr	$	21.25	/pr	$	24.97	/pr	$ 99.88	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 12,348.60		

Interior

New drywall and painting	19	sf	$	3.08	/sf	$	3.62	/sf	$ 66.95	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	74	lf	$	7.43	/lf	$	8.73	/lf	$ 646.04	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	175	sf	$	0.68	/sf	$	0.80	/sf	$ 139.83	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 852.82		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 54,831.56
Total removal and replacement cost	$ 62,222.33

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	260	sf	$ 0.75 /sf	$ 0.88 /sf	$ 227.91	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 871.23		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,777.91		
			Sub Total Home Repair Cost		**$ 64,000.24**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 640.00 /ea	$ 601.60 /ea	$ 601.60	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 601.60		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 5,471	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 7,192	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 7,192	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 3,596	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 6,472	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 29,922.44		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost						
Excess Energy Cost	9	yr	$ 230.00 /yr	$ 230.00 /yr	$ 2,070.00 -	Maddox letter in file
			Total cost		$ 2,070.00	
			Total Home Repair Cost		**$ 103,907.93**	

120 Berwick

Bare Cost				
Item	Removal	Replacement	Total	Percent of total bare cost
Brick	$ 2,228.78	$ 7,354.77	$ 9,583.55	22.14%
Stone	$ -	$ -	$ -	0.00%
Window	$ 3,803.97	$ 12,348.60	$ 16,152.57	37.32%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.64%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.38%
HVAC	$ -	$ 15,369.00	$ 15,369.00	35.51%
Total bare cost of above items	$ 6,503.01	$ 36,775.04	$ 43,278.05	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ -	$ 17,203.70	$ 17,203.70
Interior repairs	$ 887.76	$ 852.82	$ 1,740.57
Scaffolding	$ -	$ 871.23	$ 871.23
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 601.60	$ 601.60

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 164.01	
Stone Veneer		NA	
Windows	$ 1,727.45		
Patio Doors	$ 3,757.77		
Concrete crack repairs			$ 286.18
HVAC			$ 26,642.69

314 Amesbury

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	36	lf	$ 2.11 /lf	$ 2.48 /lf	$ 89.25	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 89.25		
Brick Demo							
Remove trim	36	lf	$ 0.84 /lf	$ 0.99 /lf	$ 35.53	06 05 05.20 3000	Trim, to 6" wide
Remove brick	300	sf	$ 3.61 /sf	$ 4.24 /sf	$ 1,272.53	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	20	sf	$ 0.65 /sf	$ 0.76 /sf	$ 15.28	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	4.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 46.65	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	300	sf	$ 0.14 /sf	$ 0.16 /sf	$ 49.35	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	60	sf	$ 14.50 /sf	$ 17.04 /sf	$ 1,022.53	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	60	sf	$ 0.36 /sf	$ 0.42 /sf	$ 25.38	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	60	lf	$ 0.84 /lf	$ 0.99 /lf	$ 59.22	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	30	sf	$ 0.73 /sf	$ 0.86 /sf	$ 25.73	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 2,578.34		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	0	sf	$ 2.81 /sf	$ 3.30 /sf	$ -	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	0	sf	$ 1.51 /sf	$ 1.77 /sf	$ -	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	1	pr	$	21.25	/pr	$	24.97	/pr	$ 24.97	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	800	sf	$	0.99	/sf	$	1.16	/sf	$ 930.60	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	400	lf	$	0.38	/lf	$	0.45	/lf	$ 178.60	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	20.0	ea	$	31.50	/ea	$	37.01	/ea	$ 740.25	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	800	sf	$	0.14	/sf	$	0.16	/sf	$ 131.60	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	120	sf	$	14.50	/sf	$	17.04	/sf	$ 2,045.06	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	120	sf	$	0.36	/sf	$	0.42	/sf	$ 50.76	07 05 05.10 0670	Insulation
Remove damaged window structural framing	120	lf	$	0.84	/lf	$	0.99	/lf	$ 118.44	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 4,220.28		

Interior

Protect flooring	200	sf	$	1.70	/sf	$	2.00	/sf	$ 399.50	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	84	lf	$	0.84	/lf	$	0.99	/lf	$ 82.91	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	21	sf	$	4.20	/sf	$	4.94	/sf	$ 103.64	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 959.90		

Total removal cost	$ 8,318.04

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	0	ea	$	945.00	/ea	$	1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$	1,502.40	/day	$	1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	36	lf	$	6.61	/lf	$	7.77	/lf	$ 279.60	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 17,483.31		

Brick Replacement

New structural framing (2x4)	60	lf	$	1.95	/lf	$	2.29	/lf	$ 137.48	06 11 10.40 6145	Studs, 2x4
New insulation	60	sf	$	0.95	/sf	$	1.12	/sf	$ 66.98	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	60	sf	$	1.39	/sf	$	1.63	/sf	$ 98.00	06 16 36.10 4615	7/16" OSB
New weather barrier	300	sf	$	0.34	/sf	$	0.40	/sf	$ 119.85	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	169	ea	$	0.79	/ea	$	0.92	/ea	$ 155.46	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	4	ea	$	69.00	/ea	$	81.08	/ea	$ 324.30	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	20	sf	$	5.85	/sf	$	6.87	/sf	$ 137.48	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	300	sf	$	18.55	/sf	$	21.80	/sf	$ 6,538.88	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	36	lf	$	4.02	/lf	$	4.72	/lf	$ 170.05	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	36	$ -	$	4.16	/lf	$	4.89	/lf	$ 175.97	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	30	sf	$	2.50	/sf	$	2.94	/sf	$ 88.25	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$	16.30	/lf	$	19.15	/lf	$ 478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 8,491.48		

Stone Replacement

New structural framing (2x4)	0	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New flashings	0	sf	$	5.85	/sf	$	6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	0	sf	$	32.27	/sf	$	37.91	/sf	$ -	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ -		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	120	lf	$	1.95	/lf	$	2.29	/lf	$ 274.95	06 11 10.40 6145	Studs, 2x4
New insulation	120	sf	$	0.95	/sf	$	1.12	/sf	$ 133.95	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	120	sf	$	1.39	/sf	$	1.63	/sf	$ 195.99	06 16 36.10 4615	7/16" OSB
New weather barrier	800	sf	$	0.34	/sf	$	0.40	/sf	$ 319.60	07 25 10.10 0470	House wrap, small or large roll
New window SAF	400	lf	$	1.23	/lf	$	1.45	/lf	$ 578.10	07 65 26.10 0060	SAF, 9" wide
New window units	20.0	ea	$	460.00	/ea	$	540.50	/ea	$ 10,810.00	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	800	sf	$	1.72	/sf	$	2.02	/sf	$ 1,616.80	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	1	pr	$	21.25	/pr	$	24.97	/pr	$ 24.97	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 13,954.36		

Interior

New drywall and painting	21	sf	$	3.08	/sf	$	3.62	/sf	$ 76.00	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	84	lf	$	7.43	/lf	$	8.73	/lf	$ 733.34	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	200	sf	$	0.68	/sf	$	0.80	/sf	$ 159.80	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 969.14		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 57,969.94
Total removal and replacement cost	$ 66,287.99

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	300	sf	$ 0.75 /sf	$ 0.88 /sf	$ 262.98	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 906.29		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,812.98		
			Sub Total Home Repair Cost		**$ 68,100.96**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 681.01 /ea	$ 640.15 /ea	$ 640.15	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 640.15		

General Contractors Costs and General Conditions and Relate	Fee			Reference	Comment
*Contingency	10%		$ 5,885	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%		$ 7,605	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%		$ 7,605	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%		$ 3,803	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%		$ 6,845	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%		$ 31,743.72		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	7	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,610.00	-	Maddox letter in file
			Total cost		$ 1,610.00		
			Total Home Repair Cost		**$ 109,408.47**		

314 Amesbury

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 2,578.34	$ 8,491.48	$ 11,069.81	23.66%
Stone	$ -	$ -	$ -	0.00%
Window	$ 4,220.28	$ 13,954.36	$ 18,174.64	38.85%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.29%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.35%
HVAC	$ -	$ 15,369.00	$ 15,369.00	32.85%
Total bare cost of above items	$ 7,268.89	$ 39,517.49	$ 46,786.38	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 89.25	$ 17,483.31	$ 17,572.56
Interior repairs	$ 959.90	$ 969.14	$ 1,929.04
Scaffolding	$ -	$ 906.29	$ 906.29
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 640.15	$ 640.15

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 151.90	
Stone Veneer		NA	
Windows	$ 1,681.47		
Patio Doors	$ 3,715.19		
Concrete crack repairs			$ 282.75
HVAC			$ 26,322.63

4 Kettering

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	1	ea	$ 735.00 /ea	$ 863.63 /ea	$ 863.63	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	1	day	$ 730.80 /day	$ 858.69 /day	$ 858.69	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	80	lf	$ 2.11 /lf	$ 2.48 /lf	$ 198.34	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 1,920.66		
Brick Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove brick	3170	sf	$ 3.61 /sf	$ 4.24 /sf	$ 13,446.35	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	172.5	sf	$ 0.65 /sf	$ 0.76 /sf	$ 131.75	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	34.5	ea	$ 9.93 /ea	$ 11.66 /ea	$ 402.33	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	3170	sf	$ 0.14 /sf	$ 0.16 /sf	$ 521.47	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	634	sf	$ 14.50 /sf	$ 17.04 /sf	$ 10,804.75	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	634	sf	$ 0.36 /sf	$ 0.42 /sf	$ 268.18	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	634	lf	$ 0.84 /lf	$ 0.99 /lf	$ 625.76	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	175	sf	$ 0.73 /sf	$ 0.86 /sf	$ 150.11	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	45	lf	$ 0.89 /lf	$ 1.05 /lf	$ 47.06	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 26,397.75		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	100	sf	$ 2.81 /sf	$ 3.30 /sf	$ 330.18	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	100	sf	$ 1.51 /sf	$ 1.77 /sf	$ 177.43	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	100	sf	$ 0.14 /sf	$ 0.16 /sf	$ 16.45	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	20	sf	$ 14.50 /sf	$ 17.04 /sf	$ 340.84	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	20	sf	$ 0.36 /sf	$ 0.42 /sf	$ 8.46	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	20	lf	$ 0.84 /lf	$ 0.99 /lf	$ 19.74	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 893.09		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	7	pr	$	21.25	/pr	$	24.97	/pr	$ 174.78	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	0	sf	$	0.99	/sf	$	1.16	/sf	$ -	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	690	lf	$	0.38	/lf	$	0.45	/lf	$ 308.09	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	34.5	ea	$	31.50	/ea	$	37.01	/ea	$ 1,276.93	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	0	sf	$	0.14	/sf	$	0.16	/sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	207	sf	$	14.50	/sf	$	17.04	/sf	$ 3,527.74	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	207	sf	$	0.36	/sf	$	0.42	/sf	$ 87.56	07 05 05.10 0670	Insulation
Remove damaged window structural framing	207	lf	$	0.84	/lf	$	0.99	/lf	$ 204.31	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 5,579.40		

Interior

Protect flooring	345	sf	$	1.70	/sf	$	2.00	/sf	$ 689.14	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	142	lf	$	0.84	/lf	$	0.99	/lf	$ 140.15	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	36	sf	$	4.20	/sf	$	4.94	/sf	$ 175.19	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 1,378.35		

Total removal cost	$ 36,639.52

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	1	ea	$	945.00	/ea	$	1,110.38	/ea	$ 1,110.38	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	1	day	$	1,502.40	/day	$	1,765.32	/day	$ 1,765.32	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	80	lf	$	6.61	/lf	$	7.77	/lf	$ 621.34	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 20,700.74		

Brick Replacement

New structural framing (2x4)	634	lf	$	1.95	/lf	$	2.29	/lf	$ 1,452.65	06 11 10.40 6145	Studs, 2x4
New insulation	634	sf	$	0.95	/sf	$	1.12	/sf	$ 707.70	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	634	sf	$	1.39	/sf	$	1.63	/sf	$ 1,035.48	06 16 36.10 4615	7/16" OSB
New weather barrier	3170	sf	$	0.34	/sf	$	0.40	/sf	$ 1,266.42	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	1781	ea	$	0.79	/ea	$	0.92	/ea	$ 1,642.66	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	34.5	ea	$	69.00	/ea	$	81.08	/ea	$ 2,797.09	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	172.5	sf	$	5.85	/sf	$	6.87	/sf	$ 1,185.72	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	3170	sf	$	18.55	/sf	$	21.80	/sf	$ 69,094.11	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	175	sf	$	2.50	/sf	$	2.94	/sf	$ 514.78	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	45	lf	$	16.30	/lf	$	19.15	/lf	$ 861.86	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 80,558.47		

Stone Replacement

New structural framing (2x4)	20	lf	$	1.95	/lf	$	2.29	/lf	$ 45.83	06 11 10.40 6145	Studs, 2x4
New insulation	20	sf	$	0.95	/sf	$	1.12	/sf	$ 22.33	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	20	sf	$	1.39	/sf	$	1.63	/sf	$ 32.67	06 16 36.10 4615	7/16" OSB
New weather barrier	100	sf	$	0.34	/sf	$	0.40	/sf	$ 39.95	07 25 10.10 0470	House wrap, small or large roll
New flashings	45	sf	$	5.85	/sf	$	6.87	/sf	$ 309.32	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	100	sf	$	32.27	/sf	$	37.91	/sf	$ 3,791.33	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 4,241.42		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	207	lf	$	1.95	/lf	$	2.29	/lf	$ 474.29	06 11 10.40 6145	Studs, 2x4
New insulation	207	sf	$	0.95	/sf	$	1.12	/sf	$ 231.06	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	207	sf	$	1.39	/sf	$	1.63	/sf	$ 338.08	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New window SAF	690	lf	$	1.23	/lf	$	1.45	/lf	$ 997.22	07 65 26.10 0060	SAF, 9" wide
New window units	34.5	ea	$	460.00	/ea	$	540.50	/ea	$ 18,647.25	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	0	sf	$	1.72	/sf	$	2.02	/sf	$ -	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	7	pr	$	21.25	/pr	$	24.97	/pr	$ 174.78	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 20,862.69		

Interior

New drywall and painting	36	sf	$	3.08	/sf	$	3.62	/sf	$ 128.47	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	142	lf	$	7.43	/lf	$	8.73	/lf	$ 1,239.70	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	345	sf	$	0.68	/sf	$	0.80	/sf	$ 275.66	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 1,643.83		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 145,078.80
Total removal and replacement cost	$ 181,718.32

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	3270	sf	$ 0.75 /sf	$ 0.88 /sf	$ 2,866.44	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	3	day	$ 730.00 /day	$ 857.75 /day	$ 2,573.25	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	3	day	$ 730.00 /day	$ 857.75 /day	$ 2,573.25	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 8,012.94		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 8,919.63		
			Sub Total Home Repair Cost		**$ 190,637.95**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 1,906.38 /ea	$ 1,792.00 /ea	$ 1,792.00	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 1,792.00		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 18,254	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 19,974	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 19,974	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 9,987	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 17,977	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 86,166.81		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	9	yr	$ 230.00 /yr	$ 230.00 /yr	$ 2,070.00	-	Maddox letter in file
			Total cost		$ 2,070.00		
			Total Home Repair Cost		**$ 287,980.39**		

4 Kettering

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 26,397.75	$ 80,558.47	$ 106,956.23	68.53%
Stone	$ 893.09	$ 4,241.42	$ 5,134.51	3.29%
Window	$ 5,579.40	$ 20,862.69	$ 26,442.09	16.94%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	1.29%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.11%
HVAC	$ -	$ 15,369.00	$ 15,369.00	9.85%
Total bare cost of above items	$ 33,340.52	$ 122,734.24	$ 156,074.75	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 1,920.66	$ 20,700.74	$ 22,621.39
Interior repairs	$ 1,378.35	$ 1,643.83	$ 3,022.17
Scaffolding	$ -	$ 8,012.94	$ 8,012.94
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 1,792.00	$ 1,792.00

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 64.98	
Stone Veneer		$ 98.89	
Windows	$ 1,291.71		
Patio Doors	$ 3,383.90		
Concrete crack repairs			$ 252.98
HVAC			$ 23,551.11

1 Chatham

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	0	lf	$ 2.11 /lf	$ 2.48 /lf	$ -	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ -		
Brick Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove brick	0	sf	$ 3.61 /sf	$ 4.24 /sf	$ -	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	0	sf	$ 0.65 /sf	$ 0.76 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	0.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ -	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Stone Demo							
Remove trim	40	lf	$ 0.84 /lf	$ 0.99 /lf	$ 39.48	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	360	sf	$ 2.81 /sf	$ 3.30 /sf	$ 1,188.63	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	360	sf	$ 1.51 /sf	$ 1.77 /sf	$ 638.73	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	360	sf	$ 0.14 /sf	$ 0.16 /sf	$ 59.22	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	72	sf	$ 14.50 /sf	$ 17.04 /sf	$ 1,227.04	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	72	sf	$ 0.36 /sf	$ 0.42 /sf	$ 30.46	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	72	lf	$ 0.84 /lf	$ 0.99 /lf	$ 71.06	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	30	sf	$ 0.73 /sf	$ 0.86 /sf	$ 25.73	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	20	lf	$ 0.89 /lf	$ 1.05 /lf	$ 20.92	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 3,301.27		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	5	pr	$	21.25	/pr	$	24.97	/pr	$ 124.84	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	1475	sf	$	0.99	/sf	$	1.16	/sf	$ 1,715.79	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	680	lf	$	0.38	/lf	$	0.45	/lf	$ 303.62	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	34.0	ea	$	31.50	/ea	$	37.01	/ea	$ 1,258.43	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	1475	sf	$	0.14	/sf	$	0.16	/sf	$ 242.64	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	204	sf	$	14.50	/sf	$	17.04	/sf	$ 3,476.61	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	204	sf	$	0.36	/sf	$	0.42	/sf	$ 86.29	07 05 05.10 0670	Insulation
Remove damaged window structural framing	204	lf	$	0.84	/lf	$	0.99	/lf	$ 201.35	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 7,409.57		

Interior

Protect flooring	340	sf	$	1.70	/sf	$	2.00	/sf	$ 679.15	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	140	lf	$	0.84	/lf	$	0.99	/lf	$ 138.18	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	35	sf	$	4.20	/sf	$	4.94	/sf	$ 172.73	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 1,363.92		

Total removal cost	$ 12,545.02

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Site Preparation							
Reconnect HVAC units	0	ea	$ 945.00 /ea	$ 1,110.38 /ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$ 1,502.40 /day	$ 1,765.32 /day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$ 14,641.45 /home	$ 17,203.70 /home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	0	lf	$ 6.61 /lf	$ 7.77 /lf	$ -	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
			Total cost		$ 17,203.70		
Brick Replacement							
New structural framing (2x4)	0	lf	$ 1.95 /lf	$ 2.29 /lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$ 0.95 /sf	$ 1.12 /sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$ 1.39 /sf	$ 1.63 /sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$ 0.34 /sf	$ 0.40 /sf	$ -	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	0	ea	$ 0.79 /ea	$ 0.92 /ea	$ -	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	0	ea	$ 69.00 /ea	$ 81.08 /ea	$ -	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	0	sf	$ 5.85 /sf	$ 6.87 /sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	0	sf	$ 18.55 /sf	$ 21.80 /sf	$ -	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$ 7.44 /lf	$ 8.74 /lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$ 4.02 /lf	$ 4.72 /lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$ 4.16 /lf	$ 4.89 /lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$ 1.54 /sf	$ 1.81 /sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$ 2.50 /sf	$ 2.94 /sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$ 7.20 /sf	$ 8.46 /sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$ 16.30 /lf	$ 19.15 /lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
			Total cost		$ -		

Stone Replacement

New structural framing (2x4)	72	lf	$	1.95	/lf	$	2.29	/lf	$ 164.97	06 11 10.40 6145	Studs, 2x4
New insulation	72	sf	$	0.95	/sf	$	1.12	/sf	$ 80.37	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	72	sf	$	1.39	/sf	$	1.63	/sf	$ 117.59	06 16 36.10 4615	7/16" OSB
New weather barrier	360	sf	$	0.34	/sf	$	0.40	/sf	$ 143.82	07 25 10.10 0470	House wrap, small or large roll
New flashings	55	sf	$	5.85	/sf	$	6.87	/sf	$ 375.43	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	360	sf	$	32.27	/sf	$	37.91	/sf	$ 13,648.80	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	40	lf	$	4.02	/lf	$	4.72	/lf	$ 188.94	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	40	lf	$	4.16	/lf	$	4.89	/lf	$ 195.52	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	30	sf	$	2.50	/sf	$	2.94	/sf	$ 88.25	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	20	lf	$	16.30	/lf	$	19.15	/lf	$ 383.05	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 15,386.75		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	204	lf	$	1.95	/lf	$	2.29	/lf	$ 467.42	06 11 10.40 6145	Studs, 2x4
New insulation	204	sf	$	0.95	/sf	$	1.12	/sf	$ 227.72	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	204	sf	$	1.39	/sf	$	1.63	/sf	$ 333.18	06 16 36.10 4615	7/16" OSB
New weather barrier	1475	sf	$	0.34	/sf	$	0.40	/sf	$ 589.26	07 25 10.10 0470	House wrap, small or large roll
New window SAF	680	lf	$	1.23	/lf	$	1.45	/lf	$ 982.77	07 65 26.10 0060	SAF, 9" wide
New window units	34.0	ea	$	460.00	/ea	$	540.50	/ea	$ 18,377.00	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	1475	sf	$	1.72	/sf	$	2.02	/sf	$ 2,980.98	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	5	pr	$	21.25	/pr	$	24.97	/pr	$ 124.84	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 24,083.16		

Interior

New drywall and painting	35	sf	$	3.08	/sf	$	3.62	/sf	$ 126.67	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	140	lf	$	7.43	/lf	$	8.73	/lf	$ 1,222.24	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	340	sf	$	0.68	/sf	$	0.80	/sf	$ 271.66	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 1,620.56		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 75,365.83
Total removal and replacement cost	$ 87,910.85

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	360	sf	$ 0.75 /sf	$ 0.88 /sf	$ 315.57	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.5	day	$ 730.00 /day	$ 857.75 /day	$ 428.88	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.5	day	$ 730.00 /day	$ 857.75 /day	$ 428.88	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 1,173.32		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 2,080.01		
			Sub Total Home Repair Cost		**$ 89,990.86**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 899.91 /ea	$ 845.91 /ea	$ 845.91	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 845.91		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 8,095	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 9,815	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 9,815	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 4,908	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 8,834	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 41,465.81		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	9	yr	$ 230.00 /yr	$ 230.00 /yr	$ 2,070.00	-	Maddox letter in file
			Total cost		$ 2,070.00		
			Total Home Repair Cost		**$ 141,686.23**		

1 Chatham

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ -	$ -	$ -	0.00%
Stone	$ 3,301.27	$ 15,386.75	$ 18,688.01	27.59%
Window	$ 7,409.57	$ 24,083.16	$ 31,492.73	46.50%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	2.96%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.24%
HVAC	$ -	$ 15,369.00	$ 15,369.00	22.69%
Total bare cost of above items	$ 11,181.10	$ 56,541.57	$ 67,722.67	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ -	$ 17,203.70	$ 17,203.70
Interior repairs	$ 1,363.92	$ 1,620.56	$ 2,984.48
Scaffolding	$ -	$ 1,173.32	$ 1,173.32
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 845.91	$ 845.91

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		NA	
Stone Veneer		$ 158.27	
Windows	$ 1,631.20		
Patio Doors	$ 3,535.93		
Concrete crack repairs			$ 269.55
HVAC			$ 25,094.15

204 Marshfield

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	40	lf	$ 2.11 /lf	$ 2.48 /lf	$ 99.17	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 99.17		
Brick Demo							
Remove trim	30	lf	$ 0.84 /lf	$ 0.99 /lf	$ 29.61	06 05 05.20 3000	Trim, to 6" wide
Remove brick	430	sf	$ 3.61 /sf	$ 4.24 /sf	$ 1,823.95	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	15	sf	$ 0.65 /sf	$ 0.76 /sf	$ 11.46	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	3.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 34.99	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	430	sf	$ 0.14 /sf	$ 0.16 /sf	$ 70.74	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	86	sf	$ 14.50 /sf	$ 17.04 /sf	$ 1,465.63	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	86	sf	$ 0.36 /sf	$ 0.42 /sf	$ 36.38	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	86	lf	$ 0.84 /lf	$ 0.99 /lf	$ 84.88	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 3,605.22		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	0	sf	$ 2.81 /sf	$ 3.30 /sf	$ -	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	0	sf	$ 1.51 /sf	$ 1.77 /sf	$ -	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	3	pr	$	21.25	/pr	$	24.97	/pr	$ 74.91	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	700	sf	$	0.99	/sf	$	1.16	/sf	$ 814.28	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	360	lf	$	0.38	/lf	$	0.45	/lf	$ 160.74	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	18.0	ea	$	31.50	/ea	$	37.01	/ea	$ 666.23	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	700	sf	$	0.14	/sf	$	0.16	/sf	$ 115.15	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	108	sf	$	14.50	/sf	$	17.04	/sf	$ 1,840.56	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	108	sf	$	0.36	/sf	$	0.42	/sf	$ 45.68	07 05 05.10 0670	Insulation
Remove damaged window structural framing	108	lf	$	0.84	/lf	$	0.99	/lf	$ 106.60	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 3,824.13		

Interior

Protect flooring	180	sf	$	1.70	/sf	$	2.00	/sf	$ 359.55	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	76	lf	$	0.84	/lf	$	0.99	/lf	$ 75.01	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	19	sf	$	4.20	/sf	$	4.94	/sf	$ 93.77	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 902.19		

Total removal cost	$ 8,900.97

Replacement Cost

Item Description	Quantity	Unit	Unit Cost		Greenville Adjusted Cost		Sub Total	Reference	Comments
Site Preparation									
Reconnect HVAC units	0	ea	$ 945.00	/ea	$ 1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$ 1,502.40	/day	$ 1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$ 14,641.45	/home	$ 17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimat	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	40	lf	$ 6.61	/lf	$ 7.77	/lf	$ 310.67	07 71 23.10 0020 & 07 71 23	Down spout and gutter, labor cost only
				Total cost			$ 17,514.37		
Brick Replacement									
New structural framing (2x4)	86	lf	$ 1.95	/lf	$ 2.29	/lf	$ 197.05	06 11 10.40 6145	Studs, 2x4
New insulation	86	sf	$ 0.95	/sf	$ 1.12	/sf	$ 96.00	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	86	sf	$ 1.39	/sf	$ 1.63	/sf	$ 140.46	06 16 36.10 4615	7/16" OSB
New weather barrier	430	sf	$ 0.34	/sf	$ 0.40	/sf	$ 171.79	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	242	ea	$ 0.79	/ea	$ 0.92	/ea	$ 222.82	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	3	ea	$ 69.00	/ea	$ 81.08	/ea	$ 243.23	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	15	sf	$ 5.85	/sf	$ 6.87	/sf	$ 103.11	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	430	sf	$ 18.55	/sf	$ 21.80	/sf	$ 9,372.39	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$ 7.44	/lf	$ 8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	30	lf	$ 4.02	/lf	$ 4.72	/lf	$ 141.71	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	30	$ -	$ 4.16	/lf	$ 4.89	/lf	$ 146.64	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$ 1.54	/sf	$ 1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$ 2.50	/sf	$ 2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$ 7.20	/sf	$ 8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$ 16.30	/lf	$ 19.15	/lf	$ 478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
				Total cost			$ 11,387.53		

Stone Replacement

New structural framing (2x4)	0	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
New flashings	0	sf	$	5.85	/sf	$	6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	0	sf	$	32.27	/sf	$	37.91	/sf	$ -	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ -		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	108	lf	$	1.95	/lf	$	2.29	/lf	$ 247.46	06 11 10.40 6145	Studs, 2x4
New insulation	108	sf	$	0.95	/sf	$	1.12	/sf	$ 120.56	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	108	sf	$	1.39	/sf	$	1.63	/sf	$ 176.39	06 16 36.10 4615	7/16" OSB
New weather barrier	700	sf	$	0.34	/sf	$	0.40	/sf	$ 279.65	07 25 10.10 0470	House wrap, small or large roll
New window SAF	360	lf	$	1.23	/lf	$	1.45	/lf	$ 520.29	07 65 26.10 0060	SAF, 9" wide
New window units	18.0	ea	$	460.00	/ea	$	540.50	/ea	$ 9,729.00	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	700	sf	$	1.72	/sf	$	2.02	/sf	$ 1,414.70	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	3	pr	$	21.25	/pr	$	24.97	/pr	$ 74.91	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 12,562.95		

Interior

New drywall and painting	19	sf	$	3.08	/sf	$	3.62	/sf	$ 68.76	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	76	lf	$	7.43	/lf	$	8.73	/lf	$ 663.50	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	180	sf	$	0.68	/sf	$	0.80	/sf	$ 143.82	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 876.08		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair &	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.3	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 59,412.59
Total removal and replacement cost	$ 68,313.56

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	430	sf	$ 0.75 /sf	$ 0.88 /sf	$ 376.93	2020 RS Means Residential R	Rental cost
Scaffolding install cost	0.5	day	$ 730.00 /day	$ 857.75 /day	$ 428.88	2020 RS Means Residential R	Install for two laborers
Scaffolding removal	0.5	day	$ 730.00 /day	$ 857.75 /day	$ 428.88	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 1,234.68		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 2,141.37		
			Sub Total Home Repair Cost		**$ 70,454.93**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 704.55 /ea	$ 662.28 /ea	$ 662.28	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 662.28		

General Contractors Costs and General Conditions and Related Fees				Reference	Comment
*Contingency	10%		$ 6,123	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%		$ 7,843	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%		$ 7,843	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%		$ 3,922	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%		$ 7,059	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%		$ 32,789.20		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	6	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,380.00	-	Maddox letter in file
			Total cost		$ 1,380.00		
			Total Home Repair Cost		**$ 112,600.05**		

204 Marshfield

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 3,605.22	$ 11,387.53	$ 14,992.74	30.65%
Stone	$ -	$ -	$ -	0.00%
Window	$ 3,824.13	$ 12,562.95	$ 16,387.08	33.50%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.10%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.34%
HVAC	$ -	$ 15,369.00	$ 15,369.00	31.42%
Total bare cost of above items	$ 7,899.61	$ 41,022.13	$ 48,921.75	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 99.17	$ 17,514.37	$ 17,613.54
Interior repairs	$ 902.19	$ 876.08	$ 1,778.27
Scaffolding	$ -	$ 1,234.68	$ 1,234.68
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 662.28	$ 662.28

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 122.44	
Stone Veneer		NA	
Windows	$ 1,675.73		
Patio Doors	$ 3,695.75		
Concrete crack repairs			$ 280.89
HVAC			$ 26,149.70

404 Rowley

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	30	lf	$ 2.11 /lf	$ 2.48 /lf	$ 74.38	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 74.38		
Brick Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove brick	0	sf	$ 3.61 /sf	$ 4.24 /sf	$ -	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	0	sf	$ 0.65 /sf	$ 0.76 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	0.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ -	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	0	sf	$ 0.14 /sf	$ 0.16 /sf	$ -	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	0	sf	$ 14.50 /sf	$ 17.04 /sf	$ -	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	0	sf	$ 0.36 /sf	$ 0.42 /sf	$ -	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ -		
Stone Demo							
Remove trim	50	lf	$ 0.84 /lf	$ 0.99 /lf	$ 49.35	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	270	sf	$ 2.81 /sf	$ 3.30 /sf	$ 891.47	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	270	sf	$ 1.51 /sf	$ 1.77 /sf	$ 479.05	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	270	sf	$ 0.14 /sf	$ 0.16 /sf	$ 44.42	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	54	sf	$ 14.50 /sf	$ 17.04 /sf	$ 920.28	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	54	sf	$ 0.36 /sf	$ 0.42 /sf	$ 22.84	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	54	lf	$ 0.84 /lf	$ 0.99 /lf	$ 53.30	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	15	lf	$ 0.89 /lf	$ 1.05 /lf	$ 15.69	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 2,497.83		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	700	sf	$	0.99	/sf	$	1.16	/sf	$ 814.28	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	310	lf	$	0.38	/lf	$	0.45	/lf	$ 138.42	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	15.5	ea	$	31.50	/ea	$	37.01	/ea	$ 573.69	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	700	sf	$	0.14	/sf	$	0.16	/sf	$ 115.15	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	93	sf	$	14.50	/sf	$	17.04	/sf	$ 1,584.92	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	93	sf	$	0.36	/sf	$	0.42	/sf	$ 39.34	07 05 05.10 0670	Insulation
Remove damaged window structural framing	93	lf	$	0.84	/lf	$	0.99	/lf	$ 91.79	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 3,407.53		

Interior

Protect flooring	155	sf	$	1.70	/sf	$	2.00	/sf	$ 309.61	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	66	lf	$	0.84	/lf	$	0.99	/lf	$ 65.14	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	17	sf	$	4.20	/sf	$	4.94	/sf	$ 81.43	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 830.04		

Total removal cost	$ 7,280.05

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	0	ea	$	945.00	/ea	$	1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$	1,502.40	/day	$	1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	30	lf	$	6.61	/lf	$	7.77	/lf	$ 233.00	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 17,436.71		

Brick Replacement

New structural framing (2x4)	0	lf	$	1.95	/lf	$	2.29	/lf	$ -	06 11 10.40 6145	Studs, 2x4
New insulation	0	sf	$	0.95	/sf	$	1.12	/sf	$ -	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	0	sf	$	1.39	/sf	$	1.63	/sf	$ -	06 16 36.10 4615	7/16" OSB
New weather barrier	0	sf	$	0.34	/sf	$	0.40	/sf	$ -	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	0	ea	$	0.79	/ea	$	0.92	/ea	$ -	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	0	ea	$	69.00	/ea	$	81.08	/ea	$ -	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	0	sf	$	5.85	/sf	$	6.87	/sf	$ -	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	0	sf	$	18.55	/sf	$	21.80	/sf	$ -	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	$ -	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ -		

Stone Replacement

New structural framing (2x4)	54	lf	$	1.95	/lf	$	2.29	/lf	$ 123.73	06 11 10.40 6145	Studs, 2x4
New insulation	54	sf	$	0.95	/sf	$	1.12	/sf	$ 60.28	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	54	sf	$	1.39	/sf	$	1.63	/sf	$ 88.20	06 16 36.10 4615	7/16" OSB
New weather barrier	270	sf	$	0.34	/sf	$	0.40	/sf	$ 107.87	07 25 10.10 0470	House wrap, small or large roll
New flashings	55	sf	$	5.85	/sf	$	6.87	/sf	$ 374.96	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	270	sf	$	32.27	/sf	$	37.91	/sf	$ 10,236.60	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	50	lf	$	4.02	/lf	$	4.72	/lf	$ 236.18	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	50	lf	$	4.16	/lf	$	4.89	/lf	$ 244.40	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	15	lf	$	16.30	/lf	$	19.15	/lf	$ 287.29	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 11,833.03		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	93	lf	$	1.95	/lf	$	2.29	/lf	$ 213.09	06 11 10.40 6145	Studs, 2x4
New insulation	93	sf	$	0.95	/sf	$	1.12	/sf	$ 103.81	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	93	sf	$	1.39	/sf	$	1.63	/sf	$ 151.89	06 16 36.10 4615	7/16" OSB
New weather barrier	700	sf	$	0.34	/sf	$	0.40	/sf	$ 279.65	07 25 10.10 0470	House wrap, small or large roll
New window SAF	310	lf	$	1.23	/lf	$	1.45	/lf	$ 448.03	07 65 26.10 0060	SAF, 9" wide
New window units	15.5	ea	$	460.00	/ea	$	540.50	/ea	$ 8,377.75	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	700	sf	$	1.72	/sf	$	2.02	/sf	$ 1,414.70	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 11,038.85		

Interior

New drywall and painting	17	sf	$	3.08	/sf	$	3.62	/sf	$ 59.71	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	66	lf	$	7.43	/lf	$	8.73	/lf	$ 576.20	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	155	sf	$	0.68	/sf	$	0.80	/sf	$ 123.85	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 759.76		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 58,140.01
Total removal and replacement cost	$ 65,420.05

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	270	sf	$ 0.75 /sf	$ 0.88 /sf	$ 236.68	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 879.99		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,786.68		
			Sub Total Home Repair Cost		**$ 67,206.73**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 672.07 /ea	$ 631.74 /ea	$ 631.74	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 631.74		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 5,795	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 7,515	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 7,515	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 3,758	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 6,764	01 11 31.10 0070	Construction management fees, for work to $250,000
	44%			$ 31,346.56		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	7	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,610.00	-	Maddox letter in file
			Total cost		$ 1,610.00		

Total Home Repair Cost **$ 108,108.68**

404 Rowley

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ -	$ -	$ -	0.00%
Stone	$ 2,497.83	$ 11,833.03	$ 14,330.87	30.94%
Window	$ 3,407.53	$ 11,038.85	$ 14,446.38	31.19%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.33%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.36%
HVAC	$ -	$ 15,369.00	$ 15,369.00	33.18%
Total bare cost of above items	$ 6,375.62	$ 39,943.55	$ 46,319.17	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 74.38	$ 17,436.71	$ 17,511.08
Interior repairs	$ 830.04	$ 759.76	$ 1,589.80
Scaffolding	$ -	$ 879.99	$ 879.99
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 631.74	$ 631.74

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		NA	
Stone Veneer		$ 189.12	
Windows	$ 1,728.28		
Patio Doors	$ 3,723.19		
Concrete crack repairs			$ 283.16
HVAC			$ 26,360.89

201 Buxton

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	1	ea	$ 735.00 /ea	$ 863.63 /ea	$ 863.63	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	1	day	$ 730.80 /day	$ 858.69 /day	$ 858.69	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	75	lf	$ 2.11 /lf	$ 2.48 /lf	$ 185.94	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 1,908.26		
Brick Demo							
Remove trim	20	lf	$ 0.84 /lf	$ 0.99 /lf	$ 19.74	06 05 05.20 3000	Trim, to 6" wide
Remove brick	870	sf	$ 3.61 /sf	$ 4.24 /sf	$ 3,690.32	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	32.5	sf	$ 0.65 /sf	$ 0.76 /sf	$ 24.82	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	6.5	ea	$ 9.93 /ea	$ 11.66 /ea	$ 75.80	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	870	sf	$ 0.14 /sf	$ 0.16 /sf	$ 143.12	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	174	sf	$ 14.50 /sf	$ 17.04 /sf	$ 2,965.34	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	174	sf	$ 0.36 /sf	$ 0.42 /sf	$ 73.60	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	174	lf	$ 0.84 /lf	$ 0.99 /lf	$ 171.74	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	15	lf	$ 0.89 /lf	$ 1.05 /lf	$ 15.69	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 7,201.61		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	220	sf	$ 2.81 /sf	$ 3.30 /sf	$ 726.39	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	220	sf	$ 1.51 /sf	$ 1.77 /sf	$ 390.34	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	220	sf	$ 0.14 /sf	$ 0.16 /sf	$ 36.19	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	44	sf	$ 14.50 /sf	$ 17.04 /sf	$ 749.86	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	44	sf	$ 0.36 /sf	$ 0.42 /sf	$ 18.61	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	44	lf	$ 0.84 /lf	$ 0.99 /lf	$ 43.43	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	20	sf	$ 0.73 /sf	$ 0.86 /sf	$ 17.16	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	15	lf	$ 0.89 /lf	$ 1.05 /lf	$ 15.69	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 1,997.65		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	0	pr	$	21.25	/pr	$	24.97	/pr	$ -	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	650	sf	$	0.99	/sf	$	1.16	/sf	$ 756.11	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	420	lf	$	0.38	/lf	$	0.45	/lf	$ 187.53	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	21.0	ea	$	31.50	/ea	$	37.01	/ea	$ 777.26	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	650	sf	$	0.14	/sf	$	0.16	/sf	$ 106.93	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	126	sf	$	14.50	/sf	$	17.04	/sf	$ 2,147.32	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	126	sf	$	0.36	/sf	$	0.42	/sf	$ 53.30	07 05 05.10 0670	Insulation
Remove damaged window structural framing	126	lf	$	0.84	/lf	$	0.99	/lf	$ 124.36	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 4,152.81		

Interior

Protect flooring	210	sf	$	1.70	/sf	$	2.00	/sf	$ 419.48	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	0.5	home	$	318.18	/home	$	373.86	/home	$ 186.93	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	88	lf	$	0.84	/lf	$	0.99	/lf	$ 86.86	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	22	sf	$	4.20	/sf	$	4.94	/sf	$ 108.57	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 801.83		

Total removal cost	$ 16,532.42

Replacement Cost

Item Description	Quantity	Unit		Unit Cost			Greenville Adjusted Cost		Sub Total	Reference	Comments
Site Preparation											
Reconnect HVAC units	1	ea	$	945.00	/ea	$	1,110.38	/ea	$ 1,110.38	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	1	day	$	1,502.40	/day	$	1,765.32	/day	$ 1,765.32	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	75	lf	$	6.61	/lf	$	7.77	/lf	$ 582.51	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 20,661.91		
Brick Replacement											
New structural framing (2x4)	174	lf	$	1.95	/lf	$	2.29	/lf	$ 398.68	06 11 10.40 6145	Studs, 2x4
New insulation	174	sf	$	0.95	/sf	$	1.12	/sf	$ 194.23	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	174	sf	$	1.39	/sf	$	1.63	/sf	$ 284.19	06 16 36.10 4615	7/16" OSB
New weather barrier	870	sf	$	0.34	/sf	$	0.40	/sf	$ 347.57	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	489	ea	$	0.79	/ea	$	0.92	/ea	$ 450.82	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	6.5	ea	$	69.00	/ea	$	81.08	/ea	$ 526.99	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	32.5	sf	$	5.85	/sf	$	6.87	/sf	$ 223.40	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	870	sf	$	18.55	/sf	$	21.80	/sf	$ 18,962.74	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	20	lf	$	4.02	/lf	$	4.72	/lf	$ 94.47	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	20	$ -	$	4.16	/lf	$	4.89	/lf	$ 97.76	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	15	lf	$	16.30	/lf	$	19.15	/lf	$ 287.29	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 21,941.66		

Stone Replacement

New structural framing (2x4)	44	lf	$	1.95	/lf	$	2.29	/lf	$ 100.82	06 11 10.40 6145	Studs, 2x4
New insulation	44	sf	$	0.95	/sf	$	1.12	/sf	$ 49.12	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	44	sf	$	1.39	/sf	$	1.63	/sf	$ 71.86	06 16 36.10 4615	7/16" OSB
New weather barrier	220	sf	$	0.34	/sf	$	0.40	/sf	$ 87.89	07 25 10.10 0470	House wrap, small or large roll
New flashings	40	sf	$	5.85	/sf	$	6.87	/sf	$ 276.29	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	220	sf	$	32.27	/sf	$	37.91	/sf	$ 8,340.93	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	20	sf	$	2.50	/sf	$	2.94	/sf	$ 58.83	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	15	lf	$	16.30	/lf	$	19.15	/lf	$ 287.29	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 9,273.03		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	126	lf	$	1.95	/lf	$	2.29	/lf	$ 288.70	06 11 10.40 6145	Studs, 2x4
New insulation	126	sf	$	0.95	/sf	$	1.12	/sf	$ 140.65	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	126	sf	$	1.39	/sf	$	1.63	/sf	$ 205.79	06 16 36.10 4615	7/16" OSB
New weather barrier	650	sf	$	0.34	/sf	$	0.40	/sf	$ 259.68	07 25 10.10 0470	House wrap, small or large roll
New window SAF	420	lf	$	1.23	/lf	$	1.45	/lf	$ 607.01	07 65 26.10 0060	SAF, 9" wide
New window units	21.0	ea	$	460.00	/ea	$	540.50	/ea	$ 11,350.50	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	650	sf	$	1.72	/sf	$	2.02	/sf	$ 1,313.65	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	0	pr	$	21.25	/pr	$	24.97	/pr	$ -	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 14,165.96		

Interior

New drywall and painting	22	sf	$	3.08	/sf	$	3.62	/sf	$ 79.62	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	88	lf	$	7.43	/lf	$	8.73	/lf	$ 768.26	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	210	sf	$	0.68	/sf	$	0.80	/sf	$ 167.79	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 1,015.67		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (1 story house)	1	home	$	9,200.00	/home	$	10,810.00	/home	$ 10,810.00	-	Maddox letter in file
					Total cost				$ 10,810.00		

Total replacement cost	$ 79,570.89
Total removal and replacement cost	$ 96,103.31

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	1090	sf	$ 0.75 /sf	$ 0.88 /sf	$ 955.48	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	1	day	$ 730.00 /day	$ 857.75 /day	$ 857.75	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	1	day	$ 730.00 /day	$ 857.75 /day	$ 857.75	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 2,670.98		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 3,577.67		
			Sub Total Home Repair Cost		**$ 99,680.98**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 996.81 /ea	$ 937.00 /ea	$ 937.00	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 937.00		

General Contractors Costs and General Conditions and Relate	Fee			Reference	Comment
*Contingency	10%		$ 9,073	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%		$ 10,793	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%		$ 10,793	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%		$ 5,397	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%		$ 9,714	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%		$ 45,769.54		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	6	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,380.00	-	Maddox letter in file
			Total cost		$ 1,380.00		
			Total Home Repair Cost		**$ 155,081.16**		

201 Buxton

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 7,201.61	$ 21,941.66	$ 29,143.27	40.64%
Stone	$ 1,997.65	$ 9,273.03	$ 11,270.67	15.72%
Window	$ 4,152.81	$ 14,165.96	$ 18,318.77	25.54%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	2.80%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.23%
HVAC	$ -	$ 10,810.00	$ 10,810.00	15.07%
Total bare cost of above items	$ 13,822.33	$ 57,893.31	$ 71,715.64	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 1,908.26	$ 20,661.91	$ 22,570.16
Interior repairs	$ 801.83	$ 1,015.67	$ 1,817.50
Scaffolding	$ -	$ 2,670.98	$ 2,670.98
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 937.00	$ 937.00

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 84.52	
Stone Veneer		$ 129.27	
Windows	$ 1,528.86		
Patio Doors	$ 3,519.00		
Concrete crack repairs			$ 268.08
HVAC			$ 17,554.06

8 Duxbury

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	1	ea	$ 735.00 /ea	$ 863.63 /ea	$ 863.63	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	1	day	$ 730.80 /day	$ 858.69 /day	$ 858.69	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	85	lf	$ 2.11 /lf	$ 2.48 /lf	$ 210.74	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 1,933.05		
Brick Demo							
Remove trim	45	lf	$ 0.84 /lf	$ 0.99 /lf	$ 44.42	06 05 05.20 3000	Trim, to 6" wide
Remove brick	1700	sf	$ 3.61 /sf	$ 4.24 /sf	$ 7,210.98	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	25	sf	$ 0.65 /sf	$ 0.76 /sf	$ 19.09	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	5.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 58.31	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	1700	sf	$ 0.14 /sf	$ 0.16 /sf	$ 279.65	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	340	sf	$ 14.50 /sf	$ 17.04 /sf	$ 5,794.35	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	340	sf	$ 0.36 /sf	$ 0.42 /sf	$ 143.82	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	340	lf	$ 0.84 /lf	$ 0.99 /lf	$ 335.58	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 13,933.78		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	230	sf	$ 2.81 /sf	$ 3.30 /sf	$ 759.40	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	230	sf	$ 1.51 /sf	$ 1.77 /sf	$ 408.08	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	230	sf	$ 0.14 /sf	$ 0.16 /sf	$ 37.84	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	46	sf	$ 14.50 /sf	$ 17.04 /sf	$ 783.94	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	46	sf	$ 0.36 /sf	$ 0.42 /sf	$ 19.46	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	46	lf	$ 0.84 /lf	$ 0.99 /lf	$ 45.40	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	10	lf	$ 0.89 /lf	$ 1.05 /lf	$ 10.46	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 2,086.02		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	625	sf	$	0.99	/sf	$	1.16	/sf	$ 727.03	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	370	lf	$	0.38	/lf	$	0.45	/lf	$ 165.21	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	18.5	ea	$	31.50	/ea	$	37.01	/ea	$ 684.73	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	625	sf	$	0.14	/sf	$	0.16	/sf	$ 102.81	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	111	sf	$	14.50	/sf	$	17.04	/sf	$ 1,891.68	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	111	sf	$	0.36	/sf	$	0.42	/sf	$ 46.95	07 05 05.10 0670	Insulation
Remove damaged window structural framing	111	lf	$	0.84	/lf	$	0.99	/lf	$ 109.56	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 3,777.91		

Interior

Protect flooring	185	sf	$	1.70	/sf	$	2.00	/sf	$ 369.54	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	78	lf	$	0.84	/lf	$	0.99	/lf	$ 76.99	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	20	sf	$	4.20	/sf	$	4.94	/sf	$ 96.23	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 916.62		

Total removal cost $ 23,117.64

Replacement Cost

Item Description	Quantity	Unit		Unit Cost			Greenville Adjusted Cost		Sub Total	Reference	Comments
Site Preparation											
Reconnect HVAC units	1	ea	$	945.00	/ea	$	1,110.38	/ea	$ 1,110.38	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	1	day	$	1,502.40	/day	$	1,765.32	/day	$ 1,765.32	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	85	lf	$	6.61	/lf	$	7.77	/lf	$ 660.17	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 20,739.57		
Brick Replacement											
New structural framing (2x4)	340	lf	$	1.95	/lf	$	2.29	/lf	$ 779.03	06 11 10.40 6145	Studs, 2x4
New insulation	340	sf	$	0.95	/sf	$	1.12	/sf	$ 379.53	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	340	sf	$	1.39	/sf	$	1.63	/sf	$ 555.31	06 16 36.10 4615	7/16" OSB
New weather barrier	1700	sf	$	0.34	/sf	$	0.40	/sf	$ 679.15	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	955	ea	$	0.79	/ea	$	0.92	/ea	$ 880.92	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	5	ea	$	69.00	/ea	$	81.08	/ea	$ 405.38	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	25	sf	$	5.85	/sf	$	6.87	/sf	$ 171.84	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	1700	sf	$	18.55	/sf	$	21.80	/sf	$ 37,053.63	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	45	lf	$	4.02	/lf	$	4.72	/lf	$ 212.56	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	45	$ -	$	4.16	/lf	$	4.89	/lf	$ 219.96	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$	16.30	/lf	$	19.15	/lf	$ 478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 41,889.64		

Stone Replacement

New structural framing (2x4)	46	lf	$	1.95	/lf	$	2.29	/lf	$ 105.40	06 11 10.40 6145	Studs, 2x4
New insulation	46	sf	$	0.95	/sf	$	1.12	/sf	$ 51.35	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	46	sf	$	1.39	/sf	$	1.63	/sf	$ 75.13	06 16 36.10 4615	7/16" OSB
New weather barrier	230	sf	$	0.34	/sf	$	0.40	/sf	$ 91.89	07 25 10.10 0470	House wrap, small or large roll
New flashings	35	sf	$	5.85	/sf	$	6.87	/sf	$ 240.58	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	230	sf	$	32.27	/sf	$	37.91	/sf	$ 8,720.07	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	10	lf	$	16.30	/lf	$	19.15	/lf	$ 191.53	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 9,549.47		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	111	lf	$	1.95	/lf	$	2.29	/lf	$ 254.33	06 11 10.40 6145	Studs, 2x4
New insulation	111	sf	$	0.95	/sf	$	1.12	/sf	$ 123.90	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	111	sf	$	1.39	/sf	$	1.63	/sf	$ 181.29	06 16 36.10 4615	7/16" OSB
New weather barrier	625	sf	$	0.34	/sf	$	0.40	/sf	$ 249.69	07 25 10.10 0470	House wrap, small or large roll
New window SAF	370	lf	$	1.23	/lf	$	1.45	/lf	$ 534.74	07 65 26.10 0060	SAF, 9" wide
New window units	18.5	ea	$	460.00	/ea	$	540.50	/ea	$ 9,999.25	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	625	sf	$	1.72	/sf	$	2.02	/sf	$ 1,263.13	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 12,656.27		

Interior

New drywall and painting	20	sf	$	3.08	/sf	$	3.62	/sf	$ 70.57	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	78	lf	$	7.43	/lf	$	8.73	/lf	$ 680.96	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	185	sf	$	0.68	/sf	$	0.80	/sf	$ 147.82	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 899.35		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 102,805.96
Total removal and replacement cost	$ 125,923.60

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	1930	sf	$ 0.75 /sf	$ 0.88 /sf	$ 1,691.81	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	2	day	$ 730.00 /day	$ 857.75 /day	$ 1,715.50	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	2	day	$ 730.00 /day	$ 857.75 /day	$ 1,715.50	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 5,122.81		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 6,029.50		
			Sub Total Home Repair Cost		**$ 131,953.10**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 1,319.53 /ea	$ 1,240.36 /ea	$ 1,240.36	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 1,240.36		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 12,330	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 14,051	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 14,051	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 7,025	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 12,646	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 60,102.75		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	8	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,840.00	-	Maddox letter in file
			Total cost		$ 1,840.00		
			Total Home Repair Cost		**$ 202,449.85**		

8 Duxbury

Bare cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 13,933.78	$ 41,889.64	$ 55,823.42	55.03%
Stone	$ 2,086.02	$ 9,549.47	$ 11,635.49	11.47%
Window	$ 3,777.91	$ 12,656.27	$ 16,434.18	16.20%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	1.98%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.16%
HVAC	$ -	$ 15,369.00	$ 15,369.00	15.15%
Total bare cost of above items	$ 20,267.97	$ 81,167.04	$ 101,435.01	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 1,933.05	$ 20,739.57	$ 22,672.62
Interior repairs	$ 916.62	$ 899.35	$ 1,815.96
Scaffolding	$ -	$ 5,122.81	$ 5,122.81
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 1,240.36	$ 1,240.36

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 71.18	
Stone Veneer		$ 109.66	
Windows	$ 1,524.47		
Patio Doors	$ 3,445.65		
Concrete crack repairs			$ 259.90
HVAC			$ 24,195.52

151 Haverhill

Removal Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost and Market Conditions markup	Sub Total	Reference	Comment
Construction Cost Markup							
Cost mark-up				1.175			Location factor Adjusted for current market conditions (increased 25%)
Site Preparation							
Disconnect, remove and store HVAC units	0	ea	$ 735.00 /ea	$ 863.63 /ea	$ -	23 05 05.10 0150	Package unit, 3 ton
Remove, protect electrical and other boxes, conduits, wires	0	day	$ 730.80 /day	$ 858.69 /day	$ -	Means Crew cost	1 electrician
Remove gutters/down spouts, protect and store	10	lf	$ 2.11 /lf	$ 2.48 /lf	$ 24.79	07 05 05.10 0420	Gutters, edge hung
			Total cost		$ 24.79		
Brick Demo							
Remove trim	40	lf	$ 0.84 /lf	$ 0.99 /lf	$ 39.48	06 05 05.20 3000	Trim, to 6" wide
Remove brick	190	sf	$ 3.61 /sf	$ 4.24 /sf	$ 805.93	04 05 05.10 5000	Brick, soft mortar
Remove flashings (at grade, lintels, etc)	10	sf	$ 0.65 /sf	$ 0.76 /sf	$ 7.64	07 65 13.10 7300	Plastic sheet flashing labor cost only (1/2 labor cost, typ. for all labor unit cost)
Remove lintels and dispose	2.0	ea	$ 9.93 /ea	$ 11.66 /ea	$ 23.32	05 12 23.45 2600	Labor cost only, 5' long
Remove weather barrier	190	sf	$ 0.14 /sf	$ 0.16 /sf	$ 31.26	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	38	sf	$ 14.50 /sf	$ 17.04 /sf	$ 647.60	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	38	sf	$ 0.36 /sf	$ 0.42 /sf	$ 16.07	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	38	lf	$ 0.84 /lf	$ 0.99 /lf	$ 37.51	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	25	sf	$ 0.73 /sf	$ 0.86 /sf	$ 21.44	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	25	lf	$ 0.89 /lf	$ 1.05 /lf	$ 26.14	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 1,656.40		
Stone Demo							
Remove trim	0	lf	$ 0.84 /lf	$ 0.99 /lf	$ -	06 05 05.20 3000	Trim, to 6" wide
Remove stone veneer	100	sf	$ 2.81 /sf	$ 3.30 /sf	$ 330.18	04 05 05.10 5140	Stone, 4" thick
Remove flashings (at grade, lintels, etc)	0	sf	$ 1.30 /sf	$ 1.53 /sf	$ -	07 65 13.10 7300	Plastic sheet flashing labor cost only
Remove lath and scratch coat	100	sf	$ 1.51 /sf	$ 1.77 /sf	$ 177.43	09 05 05.30 3020	Plaster, on metal lath
Remove weather barrier	100	sf	$ 0.14 /sf	$ 0.16 /sf	$ 16.45	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	20	sf	$ 14.50 /sf	$ 17.04 /sf	$ 340.84	02 41 19.16 7410	walls, sheathing up to 1", cutout
Remove damaged wall insulation	20	sf	$ 0.36 /sf	$ 0.42 /sf	$ 8.46	07 05 05.10 0670	Insulation
Remove damaged structural framing (2x4)	20	lf	$ 0.84 /lf	$ 0.99 /lf	$ 19.74	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
Remove roof shingles	0	sf	$ 0.73 /sf	$ 0.86 /sf	$ -	07 05 05.10 3175	Asphalt, 1 layer
Remove metal roof panels	0	sf	$ 1.19 /sf	$ 1.40 /sf	$ -	07 05 05.10 4820	sheet metal roofing
Remove soffit panel/trim	0	lf	$ 0.89 /lf	$ 1.05 /lf	$ -	07 05 05.10 2120	Roof edge, aluminum soffit and fascia
Remove damaged roof sheathing	0	sf	$ 16.90 /sf	$ 19.86 /sf	$ -	02 41 19.13 7310	Roofs, sheathing up to 1", not including roofing
			Total cost		$ 893.09		
Patio Door Removal							
Remove siding	50	sf	$ 0.99 /sf	$ 1.16 /sf	$ 58.16	07 05 05.10 5720	Remove 50 sf of siding per door
Remove patio doors	1	ea	$ 42.00 /ea	$ 49.35 /ea	$ 49.35	08 05 05.10 0200	Doors, exterior, double
Remove door framing	1	ea	$ 40.00 /ea	$ 47.00 /ea	$ 47.00	08 05 05.10 2000	Frames, including trim, wood
Remove weather barrier	50	sf	$ 0.14 /sf	$ 0.16 /sf	$ 8.23	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	17	sf	$ 14.50 /sf	$ 17.04 /sf	$ 286.31	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	17	sf	$ 0.36 /sf	$ 0.42 /sf	$ 7.11	07 05 05.10 0670	Insulation
Remove damaged framing	17	lf	$ 0.84 /lf	$ 0.99 /lf	$ 14.11	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
			Total cost		$ 470.26		

Window Removal

Remove shutters and store	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
Remove siding	575	sf	$	0.99	/sf	$	1.16	/sf	$ 668.87	07 05 05.10 5720	Remove 50 sf of siding per window (window in siding only)
Remove window SAF	290	lf	$	0.38	/lf	$	0.45	/lf	$ 129.49	07 65 26.10 0060	SAF, 9" wide, labor cost only, assume 20 lf per window
Remove window units	14.5	ea	$	31.50	/ea	$	37.01	/ea	$ 536.68	08 05 05.20 0200	Window area up to 15 sf
Remove weather barrier	575	sf	$	0.14	/sf	$	0.16	/sf	$ 94.59	07 05 05.10 0620	Air/vapor barrier
Remove damaged sheathing	87	sf	$	14.50	/sf	$	17.04	/sf	$ 1,482.67	02 41 19.16 7410	Walls, sheathing up to 1", cutout
Remove damaged wall insulation	87	sf	$	0.36	/sf	$	0.42	/sf	$ 36.80	07 05 05.10 0670	Insulation
Remove damaged window structural framing	87	lf	$	0.84	/lf	$	0.99	/lf	$ 85.87	06 05 05.10 6720	Wall framing, including studs, plates and blocking, 2x4
					Total cost				$ 3,084.90		

Interior

Protect flooring	145	sf	$	1.70	/sf	$	2.00	/sf	$ 289.64	01 76 13.20 0020 & 0030	1/8" tempered hardboard and peel away carpet protection
Protect cabinets, fixtures, and appliances	1	home	$	318.18	/home	$	373.86	/home	$ 373.86	01 56 13.60 0400	Cover with reinforced sheeting
Remove damaged window framing/trim	62	lf	$	0.84	/lf	$	0.99	/lf	$ 61.19	06 05 05.20 3000	Used trim, baseboards, up to 6" for the window framing
Remove damaged drywall	16	sf	$	4.20	/sf	$	4.94	/sf	$ 76.49	02 41 19.16 6100	Walls, not including framing, drywall up to 5/8"
					Total cost				$ 801.19		

Total removal cost	$ 6,930.64

Replacement Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments

Site Preparation

Reconnect HVAC units	0	ea	$	945.00	/ea	$	1,110.38	/ea	$ -	23 81 19.20 0200	Package unit, 3 ton, labor only
Reconnect electrical and other boxes, conduits, wires	0	day	$	1,502.40	/day	$	1,765.32	/day	$ -	Means Crew cost, L-1	1 elec. and 1 plumber
Site grading	1	home	$	14,641.45	/home	$	17,203.70	/home	$ 17,203.70	Site consultants, Inc. estimate	Total SCI estimate divided by 220 homes
Replace gutters/down spouts	10	lf	$	6.61	/lf	$	7.77	/lf	$ 77.67	07 71 23.10 0020 & 07 71 23.30 0012	Down spout and gutter, labor cost only
					Total cost				$ 17,281.37		

Brick Replacement

New structural framing (2x4)	38	lf	$	1.95	/lf	$	2.29	/lf	$ 87.07	06 11 10.40 6145	Studs, 2x4
New insulation	38	sf	$	0.95	/sf	$	1.12	/sf	$ 42.42	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	38	sf	$	1.39	/sf	$	1.63	/sf	$ 62.06	06 16 36.10 4615	7/16" OSB
New weather barrier	190	sf	$	0.34	/sf	$	0.40	/sf	$ 75.91	07 25 10.10 0470	House wrap, small or large roll
Galvanized code approved wall-ties (1/1.78 sf)	107	ea	$	0.79	/ea	$	0.92	/ea	$ 98.46	04 05 19.16 0020	Brick veneer, galv., corrugated, 7/8"x7", 22 ga.
Replace lintels	2	ea	$	69.00	/ea	$	81.08	/ea	$ 162.15	05 12 23.45 2600	Steel angle, 4"x3.5", 1/4" think, 5' long
New flashings	10	sf	$	5.85	/sf	$	6.87	/sf	$ 68.74	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New brick veneer	190	sf	$	18.55	/sf	$	21.80	/sf	$ 4,141.29	04 21 13.13 2020	Standard, red, running bond
Expansion Joints and sealants (assume one full height joint for walls that are over 30 ft)	0	lf	$	7.44	/lf	$	8.74	/lf	$ -	07 91 26.10 5670 & 07 92 13.20 3500	Joint fillers, silicone, foam seal, 1/4"x3" and Polyurethane, 1/4"x1/4"
New trim	40	lf	$	4.02	/lf	$	4.72	/lf	$ 188.94	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	40	$ -	$	4.16	/lf	$	4.89	/lf	$ 195.52	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	25	sf	$	2.50	/sf	$	2.94	/sf	$ 73.54	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	25	lf	$	16.30	/lf	$	19.15	/lf	$ 478.81	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 5,674.90		

Stone Replacement

New structural framing (2x4)	20	lf	$	1.95	/lf	$	2.29	/lf	$ 45.83	06 11 10.40 6145	Studs, 2x4
New insulation	20	sf	$	0.95	/sf	$	1.12	/sf	$ 22.33	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	20	sf	$	1.39	/sf	$	1.63	/sf	$ 32.67	06 16 36.10 4615	7/16" OSB
New weather barrier	100	sf	$	0.34	/sf	$	0.40	/sf	$ 39.95	07 25 10.10 0470	House wrap, small or large roll
New flashings	30	sf	$	5.85	/sf	$	6.87	/sf	$ 206.21	07 65 10.10 0060	0.019" aluminum sheet metal flashing
New stone veneer	100	sf	$	32.27	/sf	$	37.91	/sf	$ 3,791.33	04 72 20.10 0200 & 0360	Cultured stone veneer, random sized/textured faced, field stones and lath
New trim	0	lf	$	4.02	/lf	$	4.72	/lf	$ -	06 22 13.40 0540	Corner board, cedar, 1"x3"
Exterior sealants and painting	0	lf	$	4.16	/lf	$	4.89	/lf	$ -	07 92 13.20 3500 & 09 91 13.80 0410	Polyurethane, 1/4"x1/4" and primer 2 coats exterior paint
New roof sheathing	0	sf	$	1.54	/sf	$	1.81	/sf	$ -	06 16 36.10 4605	5/8" roof OSB
New roof shingles and underlayment	0	sf	$	2.50	/sf	$	2.94	/sf	$ -	07 31 13.10 0355 & 0800	Standard laminated mult-layered shingles, 250-275 lb, class A and #15 felt
New metal roof panels	0	sf	$	7.20	/sf	$	8.46	/sf	$ -	07 41 13.20 0890	steel roofing panel, flat finish 2"x2" batten, 26 gage
New soffit panel/trim	0	lf	$	16.30	/lf	$	19.15	/lf	$ -	07 46 33.10 4205	soffit/ fascia, 1' overhang, vented
					Total cost				$ 4,138.31		

Patio Door Replacement

New structural framing (2x4)	17	lf	$	1.95	/lf	$	2.29	/lf	$ 38.49	06 11 10.40 6145	Studs, 2x4
New insulation	17	sf	$	0.95	/sf	$	1.12	/sf	$ 18.75	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	17	sf	$	1.39	/sf	$	1.63	/sf	$ 27.44	06 16 36.10 4615	7/16" OSB
New weather barrier	50	sf	$	0.34	/sf	$	0.40	/sf	$ 19.98	07 25 10.10 0470	House wrap, small or large roll
New patio door and frame	1	ea	$	1,040.00	/ea	$	1,222.00	/ea	$ 1,222.00	08 14 33.20 0280	Exterior, combo. storm and screen, 3' wide (single), price doubled for double doors
New siding	50	sf	$	3.59	/sf	$	4.22	/sf	$ 210.91	07 46 33.10 4045	Vinyl siding, smooth texture, .042 thick, double 4
					Total cost				$ 1,537.57		

Window Replacement

New structural framing (2x4)	87	lf	$	1.95	/lf	$	2.29	/lf	$ 199.34	06 11 10.40 6145	Studs, 2x4
New insulation	87	sf	$	0.95	/sf	$	1.12	/sf	$ 97.11	07 21 16.20 0160	Blanket insulation, kraft faced, R19, 15" wide
New sheathing	87	sf	$	1.39	/sf	$	1.63	/sf	$ 142.09	06 16 36.10 4615	7/16" OSB
New weather barrier	575	sf	$	0.34	/sf	$	0.40	/sf	$ 229.71	07 25 10.10 0470	House wrap, small or large roll
New window SAF	290	lf	$	1.23	/lf	$	1.45	/lf	$ 419.12	07 65 26.10 0060	SAF, 9" wide
New window units	14.5	ea	$	460.00	/ea	$	540.50	/ea	$ 7,837.25	08 53 13.30 0202	Vinyl double hung window (used an average area for windows cost at 15 sf)
Replace siding	575	sf	$	1.72	/sf	$	2.02	/sf	$ 1,162.08	07 46 33.10 4045	Labor only, vinyl siding
Replace shutters	2	pr	$	21.25	/pr	$	24.97	/pr	$ 49.94	06 49 19.10 6000	Labor only, vinyl, louvered 4'-7" long
					Total cost				$ 10,136.64		

Interior

New drywall and painting	16	sf	$	3.08	/sf	$	3.62	/sf	$ 56.09	09 29 10.30 0390 & 09 91 23.72 0800	1/2" thick, taped and finished, with skim coat, 2 coats of paint
New window trim	62	lf	$	7.43	/lf	$	8.73	/lf	$ 541.28	06 22 13.30 0085 & 0310	Apron, 9/16" and band, finger jointed and primed
Remove floor protection	145	sf	$	0.68	/sf	$	0.80	/sf	$ 115.86	01 76 13.20 0020 & 0030	labor cost only for removal of floor protection
					Total cost				$ 713.23		

Crack Injections

Foundation wall and garage slab crack injection	10	lf	$	14.05	/lf	$	16.51	/lf	$ 165.09	2020 RS Means Res. Repair & Remodeling	-
					Total cost				$ 165.09		

HVAC

Duct work (2 story house)	1	home	$	11,800.00	/home	$	13,865.00	/home	$ 13,865.00	-	Maddox letter in file
Remove and replace drywall (2 story only)	400	sf	$	3.20	/sf	$	3.76	/sf	$ 1,504.00	09 91 23.72 0800, 09 29 10.30 0350, 09 05 05.30 1000	Includes painting. 400 sf is a rounded average from the 1st floor area per house multiplied by 25%
					Total cost				$ 15,369.00		

Total replacement cost	$ 55,016.11
Total removal and replacement cost	$ 61,946.75

Misc. Cost

Item Description	Quantity	Unit	Unit Cost	Greenville Adjusted Cost	Sub Total	Reference	Comments
Scaffolding							
Scaffolding rental cost	290	sf	$ 0.75 /sf	$ 0.88 /sf	$ 254.21	2020 RS Means Residential Repair & Remodeling	Rental cost
Scaffolding install cost	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Install for two laborers
Scaffolding removal	0.38	day	$ 730.00 /day	$ 857.75 /day	$ 321.66	2020 RS Means Residential Repair & Remodeling	Removal for two laborers
			Total cost		$ 897.52		
Site office							
10x50 trailer with furnishings	1	month	$ 179.00 /month	$ 210.33 /month	$ 210.33	01 52 13.20 0450 & 01 52 13.40 0100 & 0120 & 0160	Assume 5 homes repaired per month and share, unit cost broken down per home, includes trailer, equipment, supplies, lights and HVAC
Temporary toilet	1	month	$ 51.40 /month	$ 60.40 /month	$ 60.40	01 54 33.40 6420	Toilet, recycle flush type, Assume 5 homes repaired per month and share
			Total cost		$ 270.72		
Debris removal							
Dumpster monthly	1	month	$ 541.25 /month	$ 635.97 /month	$ 635.97	02 41 19.19 0725	20 C.Y. capacity (5 ton) 1 dump/week
			Total cost		635.96875		
			Total Misc. cost		$ 1,804.21		
			Sub Total Home Repair Cost		**$ 63,750.96**		
General Contractors Cost for Project Staffing							
Project Manager (1/4 time)	4.33	week	$ 760.00 /week	$ 893.00 /week	$ 966.67	01 31 13.20 0200	Average cost for Project Manager, shared between 5 homes per month
Superintendent (full time)	4.33	week	$ 705.00 /week	$ 828.38 /week	$ 3,586.86	01 31 13.20 0260	Average cost for Superintendent, shared between 5 homes per month
Laborer (full time)	4.33	week	$ 505.00 /week	$ 593.38 /week	$ 2,569.31	01 31 13.20 0160	General purpose laborer, average, shared between 5 homes per month
Office Clerical (1/4 time)	4.33	week	$ 150.00 /week	$ 176.25 /week	$ 190.79	01 31 13.20 0020	Clerk, average, shared between 5 homes per month
			Total Cost		$ 7,313.64		
Building Permit							
Building Permit	1	ea	$ 637.51 /ea	$ 599.26 /ea	$ 599.26	01 41 26.50 0100	Means range 0.5%-2%. Assume 1%
			Total cost		$ 599.26		

General Contractors Costs and General Conditions and Related Fees					Reference	Comment
*Contingency	10%			$ 7,166	01 21 16.50 0220	Contingencies, conceptual stage
GC Fee	10%			$ 7,166	01 11 31.10 0070	Construction management fees, for work to $250,000
Gen. Cond.	10%			$ 7,166	01 21 55.50 0200 & 1200	Job conditions, economic conditions unfavorable and subcontractor shortage
Planning Design and Repair Docs	5%			$ 3,583	01 21 16.50 0100	Preliminary working drawing stage (design div.)
PM and Inspection	9%			$ 6,450	01 11 31.10 0070	Construction management fees, for work to $250,000
Totals	44%			$ 31,532.10		

*10% excludes SCI site work due to the contingency being included in SCI's estimate

Excess Energy Cost							
Excess Energy Cost	6	yr	$ 230.00 /yr	$ 230.00 /yr	$ 1,380.00	-	Maddox letter in file
			Total cost		$ 1,380.00		
			Total Home Repair Cost		**$ 104,575.95**		

151 Haverhill

Bare Cost				
Item	Removal	Replacement	Total	Percent of Total Bare Cost
Brick	$ 1,656.40	$ 5,674.90	$ 7,331.30	17.00%
Stone	$ 893.09	$ 4,138.31	$ 5,031.40	11.67%
Window	$ 3,084.90	$ 10,136.64	$ 13,221.54	30.66%
Patio Doors	$ 470.26	$ 1,537.57	$ 2,007.84	4.66%
Concrete crack repairs	$ -	$ 165.09	$ 165.09	0.38%
HVAC	$ -	$ 15,369.00	$ 15,369.00	35.64%
Total bare cost of above items:	$ 6,104.66	$ 37,021.51	$ 43,126.17	100%

Other Cost to be Allocated			
Item	Removal	Replacement	Total
Site Prep	$ 24.79	$ 17,281.37	$ 17,306.16
Interior repairs	$ 801.19	$ 713.23	$ 1,514.41
Scaffolding	$ -	$ 897.52	$ 897.52
Site Office	$ -	$ 270.72	$ 270.72
Dumpster	$ -	$ 635.97	$ 635.97
Project staffing	$ -	$ 7,313.64	$ 7,313.64
Building permit	$ -	$ 599.26	$ 599.26

Demolition and Replacement Cost including Ancillary Repairs			
Items	Cost each	Cost per SF	Costs per home
Brick Veneer		$ 148.74	
Stone Veneer		$ 193.95	
Windows	$ 1,712.13		
Patio Doors	$ 3,770.08		
Concrete crack repairs			$ 286.34
HVAC			$ 26,657.37

Rose Hill Summary Repair Scope and Cost Estimate

Residence Address	No. of Floors	Home Type Category	Total Costs	Brick Veneer (per SF)	Stone Veneer (per SF)	Windows (per window)	Patio Doors (per door)	Concrete Crack Repairs (per home)	HVAC (per home)
314 Amesbury	2	Moderate	$ 109,408.47	$ 151.90	NA	$ 1,681.47	$ 3,715.19	$ 282.75	$ 26,322.63
120 Berwick	2	Basic	$ 103,907.93	$ 164.01	NA	$ 1,727.45	$ 3,757.77	$ 286.18	$ 26,642.69
201 Buxton	1	Complex	$ 155,081.16	$ 84.52	$ 129.27	$ 1,528.86	$ 3,519.00	$ 268.08	$ 17,554.06
1 Chatham	2	Basic	$ 141,686.23	NA	$ 158.27	$ 1,631.20	$ 3,535.93	$ 269.55	$ 25,094.15
8 Duxbury	2	Complex	$ 202,449.85	$ 71.18	$ 109.66	$ 1,524.47	$ 3,445.65	$ 259.90	$ 24,195.52
151 Haverhill	2	Basic	$ 104,575.95	$ 148.74	$ 193.95	$ 1,712.13	$ 3,770.08	$ 286.34	$ 26,657.37
177 Haverhill	2	Moderate	$ 105,134.21	$ 136.28	$ 211.05	$ 1,666.18	$ 3,715.48	$ 284.58	$ 26,493.31
4 Kettering	2	Complex	$ 287,980.39	$ 64.98	$ 98.89	$ 1,291.71	$ 3,383.90	$ 252.98	$ 23,551.11
204 Marshfield	2	Moderate	$ 112,600.05	$ 122.44	NA	$ 1,675.73	$ 3,695.75	$ 280.89	$ 26,149.70
404 Rowley	2	Moderate	$ 108,108.68		$ 189.12	$ 1,728.28	$ 3,723.19	$ 283.16	$ 26,360.89
104 Sturbridge	2	Complex	$ 256,459.80	$ 66.28	$ 103.91	$ 1,300.17	$ 2,885.07	$ 254.99	$ 23,738.82
102 Yount	1	Basic	$ 79,050.59		$ 394.08	$ 1,934.39	$ 4,070.23	$ 312.68	$ 20,474.20
Number			12	9	9	12	12	12	12
Average			$ 147,203.61	$ 112.26	$ 132.68	$ 1,455.64	$ 3,262.25	$ 250.78	$ 22,730.02
Basic			$ 107,305.17	$ 156.37	$ 248.77	$ 1,751.29	$ 3,783.50	$ 288.69	$ 24,717.10
Moderate			$ 108,812.85	$ 136.87	$ 200.09	$ 1,687.91	$ 3,712.41	$ 282.84	$ 26,331.63
Complex			$ 225,492.80	$ 71.74	$ 110.43	$ 1,411.30	$ 3,308.40	$ 258.99	$ 22,259.88

Costs Based on Unit Costs by Type

Home	Type	Brick	Stone	Windows	Patio Doors	Foundation/ Garage Cracking	MEP	Total
AMESBURY		per sf	per sf	each	each	LS	LS	
306	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 99,218
314	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 105,147
BERWICK								
106	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 123,857
120	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 100,094
123	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 162,486
125	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 123,574
BUXTON								
200	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 268,474
201	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 142,173
204	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 157,889
206	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 216,028
207	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 186,593
CARDIFF								
CHATHAM		`						
1	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 177,889
3	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 90,868
DARTFORD								
DUXBURY								
6	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 230,668
8	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 199,035
10	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 147,343
HARWICK								
5	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 86,199
10	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 56,917
HAVERHILL							$ -	
147	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 127,112
151	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 108,771
158	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 77,296
159	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 86,448
177	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 104,189

Costs Based on Unit Costs by Type

Home	Type	Brick	Stone	Windows	Patio Doors	Foundation/ Garage Cracking	MEP	Total
KETTERING							$ -	
2	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 224,028
4	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 312,718
8	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 301,910
16	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 180,197
17	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 245,590
MARSHFIELD								
204	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 119,282
READING								
ROWLEY								
404	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 110,513
408	Moderate	$ 137	$ 200	$ 1,688	$ 3,712	$ 283	$ 26,332	$ 99,960
STURBRIDGE								
104	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 273,662
106	Complex	$ 72	$ 110	$ 1,411	$ 3,308	$ 259	$ 22,260	$ 173,757
YOUNT								
102	Basic	$ 156	$ 249	$ 1,751	$ 3,784	$ 289	$ 24,717	$ 163,591

Total number of homes above		34
Maximum Cost	$	312,718
Minimum Cost	$	56,917
Total Cost of all	$	5,383,476
Average Cost	$	156,347

Extrapolated based on overall average	221	homes @	$	156,347	$	34,552,668
Extrapolated based on mixed weighted averages						
Basic	82	homes @	$	107,305	$	8,799,024
Moderate	74	homes @	$	108,813	$	8,052,151
Complex	65	homes @	$	225,493	$	14,657,032
	221					
		Average	$	147,204	$	31,508,208

Total Quantities

Address No.	Brick (ft²)	Stone (ft²)	Hardie (ft²)	Vinyl (ft²)	Siding (ft²)	Façade (ft²)	Windows (ea)	Patio Doors (ea)	Driveway (ft²)
125 Berwick	0	270	2430	150	2580	2850	15	1	621
106 Berwick	0	270	2430	150	2580	2850	15	1	492
404 Rowley	0	270	2430	150	2580	2850	15	1	1196
8 Duxbury	1700	230	710	210	920	2850	18	1	973
204 Marshfield	430	0	2270	150	2420	2850	17	1	774
147 Haverhill	500	0	2200	150	2350	2850	17	1	609
3 Chatham	260	0	2520	370	2890	3150	17	1	496
306 Amesbury	260	0	2520	370	2890	3150	17	1	629
120 Berwick	260	0	2520	370	2890	3150	17	1	448
16 Kettering	1760	80	780	0	780	2620	16	0	725
2 Kettering	1910	290	1050	150	1200	3400	23	0	1239
159 Haverhill	150	140	2180	110	2290	2580	11	1	721
408 Rowley	150	140	2160	110	2270	2560	11	1	801
177 Haverhill	150	140	2200	110	2310	2600	14	1	535
8 Kettering	3150	0	0	150	150	3300	34	1	1579
17 Kettering	2320	0	1070	0	1070	3390	32	1	1535
206 Buxton	2200	0	1070	0	1070	3270	27	1	382
201 Buxton	870	220	280	0	280	1370	21	1	652
314 Amesbury	300	0	1170	0	1170	1470	20	1	607
10 Duxbury	1070	180	350	80	430	1680	20	0	670
204 Buxton	1370	170	350	0	350	1890	13	0	902
1 Chatham	0	360	3420	150	3570	3930	31	1	485
123 Berwick	0	360	3420	150	3570	3930	26	1	699
6 Duxbury	2030	420	940	90	1030	3480	28	1	897
200 Buxton	2010	500	850	210	1060	3570	26	0	390
151 Haverhill	190	100	3260	150	3410	3700	13	1	616
4 Kettering	3170	100	0	130	130	3400	32	1	1260
158 Haverhill	260	0	2560	130	2690	2950	12	1	1205
5 Harwick	0	260	2430	260	2690	2950	12	1	577
207 Buxton	1620	50	320	70	390	2060	19	0	1348
106 Sturbridge	1680	0	310	80	390	2070	22	0	580
102 Yount	0	90	1200	60	1260	1350	9	1	523
10 Harwick	0	70	1620	0	1620	1690	8	0	493
104 Sturbridge	2690	190	0	0	0	2880	22	1	1605

Elevation Quant

	Brick (ft²)				Stone (ft²)				Hardie (ft²)				Vinyl (ft²)			
Address No.	Front	Left	Right	Rear	Front	Left	Right	Rear	Front	Left	Right	Rear	Front	Left	Right	Rear
125	0	0	0	0	270	0	0	0	130	790	800	710	150	0	0	0
106	0	0	0	0	270	0	0	0	130	800	790	710	150	0	0	0
404	0	0	0	0	270	0	0	0	130	800	790	710	150	0	0	0
8	160	750	790	0	180	50	0	0	0	0	0	710	210	0	0	0
204	400	0	30	0	0	0	0	0	0	790	770	710	150	0	0	0
147	400	100	0	0	0	0	0	0	0	700	790	710	150	0	0	0
3	240	10	10	0	0	0	0	0	0	900	910	710	310	60	0	0
306	240	10	10	0	0	0	0	0	0	910	900	710	310	0	60	0
120	240	10	10	0	0	0	0	0	0	910	900	710	310	0	60	0
16	310	750	700	0	80	0	0	0	70	0	0	710	0	0	0	0
2	160	640	1110	0	290	0	0	0	50	0	0	1000	150	0	0	0
159	150	0	0	0	140	0	0	0	0	810	800	570	110	0	0	0
408	150	0	0	0	140	0	0	0	0	790	800	570	110	0	0	0
177	150	0	0	0	140	0	0	0	0	830	800	570	110	0	0	0
8	450	880	960	860	0	0	0	0	0	0	0	0	150	0	0	0
17	450	990	880	0	0	0	0	0	150	0	0	920	0	0	0	0
206	350	890	960	0	0	0	0	0	140	0	0	930	0	0	0	0
201	100	310	460	0	220	0	0	0	0	0	0	280	0	0	0	0
314	300	0	0	0	0	0	0	0	20	410	390	350	0	0	0	0
10	230	450	390	0	180	0	0	0	0	0	0	350	80	0	0	0
204	300	160	910	0	60	40	70	0	0	0	0	350	0	0	0	0
1	0	0	0	0	360	0	0	0	320	1060	1160	880	150	0	0	0
123	0	0	0	0	360	0	0	0	320	1060	1160	880	150	0	0	0
6	300	840	890	0	360	0	60	0	70	0	0	870	90	0	0	0
200	230	890	890	0	440	60	0	0	0	0	0	850	210	0	0	0
151	190	0	0	0	80	20	0	0	410	1000	1000	850	150	0	0	0
4	530	810	970	860	100	0	0	0	0	0	0	0	130	0	0	0
158	260	0	0	0	0	0	0	0	50	740	1080	690	130	0	0	0
5	0	0	0	0	260	0	0	0	0	1000	740	690	260	0	0	0
207	130	860	630	0	50	0	0	0	10	0	0	310	70	0	0	0
106	190	630	860	0	0	0	0	0	0	0	0	310	80	0	0	0
102	0	0	0	0	90	0	0	0	130	410	330	330	60	0	0	0
10	0	0	0	0	70	0	0	0	200	570	530	320	0	0	0	0
104	490	650	790	760	170	0	20	0	0	0	0	0	0	0	0	0

:ities

Siding (ft²)				Façade (ft²)				Windows (ea)				Exposed Patio Doors (ea)			
Front	Left	Right	Rear	Front	Left	Right	Rear	Front	Left	Right	Rear	Front	Left	Right	Rear
280	790	800	710	550	790	800	710	6	1	3	5	0	0	0	1
280	800	790	710	550	800	790	710	6	3	1	5	0	0	0	1
280	800	790	710	550	800	790	710	6	3	1	5	0	0	0	1
210	0	0	710	550	800	790	710	6	1	3	8	0	0	0	1
150	790	770	710	550	790	800	710	5	3	1	8	0	0	0	1
150	700	790	710	550	800	790	710	5	1	3	8	0	0	0	1
310	960	910	710	550	970	920	710	5	1	3	8	0	0	0	1
310	910	960	710	550	920	970	710	5	3	1	8	0	0	0	1
310	910	960	710	550	920	970	710	5	3	1	8	0	0	0	1
70	0	0	710	460	750	700	710	5	3	0	8	0	0	0	0
200	0	0	1000	650	640	1110	1000	8	3	1	11	0	0	0	0
110	810	800	570	400	810	800	570	6	1	1	3	0	0	0	1
110	790	800	570	400	790	800	570	6	1	1	3	0	0	0	1
110	830	800	570	400	830	800	570	6	4	1	3	0	0	0	1
150	0	0	0	600	880	960	860	13	2	2	17	0	0	0	1
150	0	0	920	600	990	880	920	13	3	2	14	0	0	0	1
140	0	0	930	490	890	960	930	11	2	2	12	0	0	0	1
0	0	0	280	320	310	460	280	7	4	1	9	0	0	0	1
20	410	390	350	320	410	390	350	7	2	3	8	0	0	0	1
80	0	0	350	490	450	390	350	7	2	3	8	0	0	0	0
0	0	0	350	360	200	980	350	2	2	8	1	0	0	0	0
470	1060	1160	880	830	1060	1160	880	10	2	2	17	0	0	0	1
470	1060	1160	880	830	1060	1160	880	10	2	2	12	0	0	0	1
160	0	0	870	820	840	950	870	10	2	2	14	0	0	0	1
210	0	0	850	880	950	890	850	11	2	2	11	0	0	0	0
560	1000	1000	850	830	1020	1000	850	9	2	2	0	0	0	0	1
130	0	0	0	760	810	970	860	11	2	2	17	0	0	0	1
150	740	1080	690	410	740	1080	690	5	1	1	5	0	0	0	1
260	1000	740	690	520	1000	740	690	5	1	1	5	0	0	0	1
80	0	0	310	260	860	630	310	5	8	5	1	0	0	0	0
80	0	0	310	270	630	860	310	2	5	8	7	0	0	0	0
190	410	330	330	280	410	330	330	2	1	5	1	0	0	0	1
200	570	530	320	270	570	530	320	2	1	1	4	0	0	0	0
0	0	0	0	660	650	810	760	8	5	7	2	0	0	0	1

EXHIBIT C





8 Dartford

8 Kettering

17 kettering





104 Sturbridge

3676



159 Haverhill





EXHIBIT D











14 Duxbury


Guardian Angel

110 Sturbridge

112 Sturbridge

2100 Bircton


201 Buxton

EXHIBIT F





4 Kettering





9 Dartford

3698



10 Harwick

102 Amherst


Guardian Angel

2100 Burton



201 Buxton



EXHIBIT G















104 Sturbridge

151 Haverhill


204 Marshfield



206 Buxton

3715






www.rcruggles.com
PLAINTIFF'S
EXHIBIT
251
2.5.20 // IMG_0119 // WDP Photos 2381 // 6 Duxbury







10.2.19 // IMG_0671 // WDF Lisboa 521 // © Kalbaung















6.3.20 // IMG_3718 // WDP Photos 6344 // 4 Dartford




PLAINTIFF'S
EXHIBIT
253
www.nyaggies.com
6.2.20 // IMG_0380 // WDP Photos 5310 // 207 Buxton



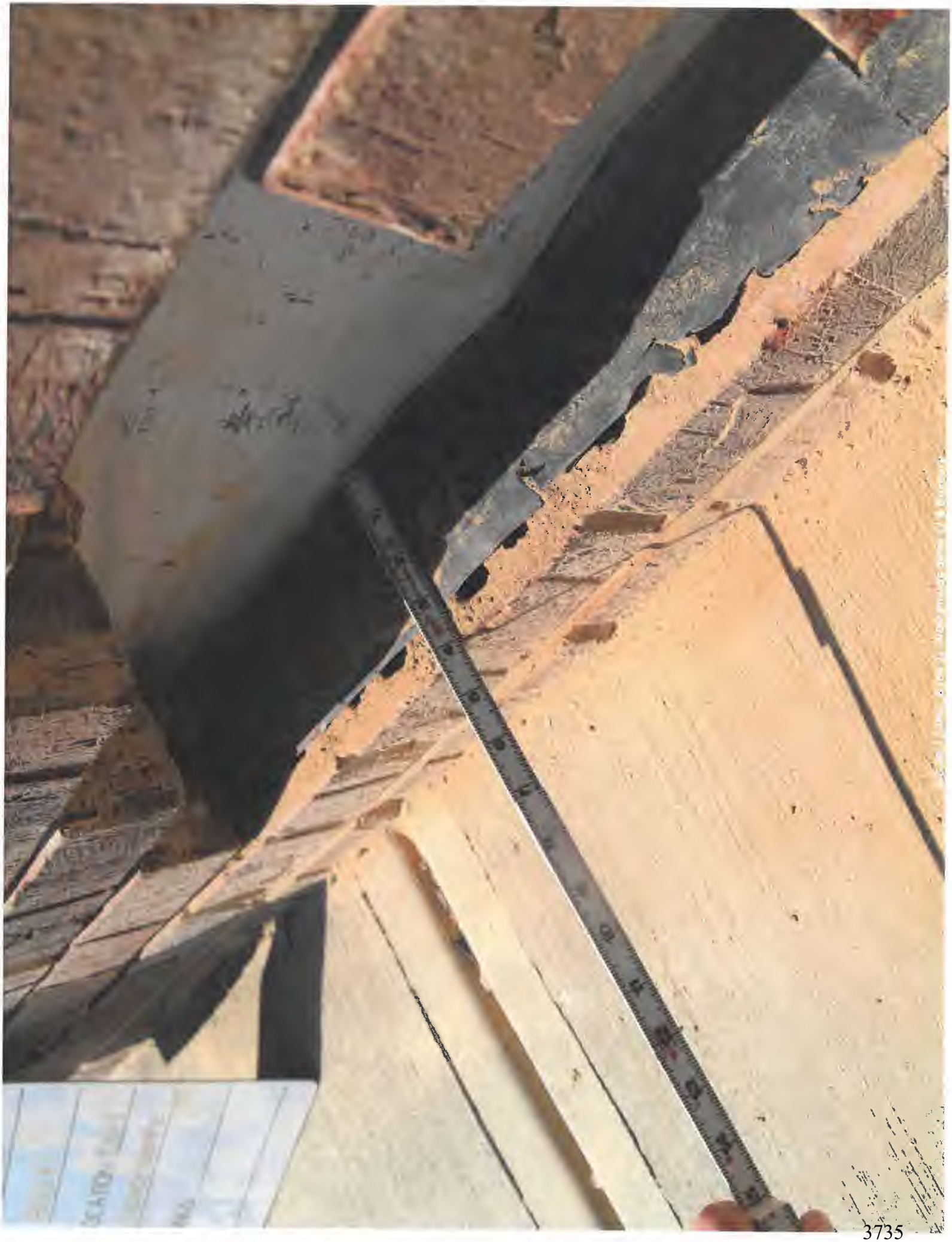
6.2.20 // IMG_0381 // WDP Photos 5311 // 207 Buxton



3732


PLAINTIFF'S
EXHIBIT
25.4
www.nwjpes.com
6.3.20 // I
0719 // WDF Photo
// S Dunbar

3734




6.3.20 // IMG_0257 // WDP Photos Stub // 206 Dowl
PLAINTIFF'S EXHIBIT
25-5
www.stuggies.com


PLAINTIFF'S
EXHIBIT
25.6
10.2.19 // IMG_0762 // WDP Photos 762 // 17 Kettering


WBP Photos 716 // 8 Kettering
PLAINTIFF'S
EXHIBIT
25.7


6.2.20 // IMG_0609 // WDP Photos
PLAINTIFF'S EXHIBIT
25.8
www.snapfax.com

PLAINTIFF'S EXHIBIT

25.16 3740

exhibitsticker.com



3741
3741

9.30.19 // IMG_0117 // WDP Photos 117 // 104 Sturbridge

PLAINTIFF'S EXHIBIT

25.17 3742

exhibitsticker.com



6.2.20 // IMG_0381 // WDP Photos 5311 // 207 Buxton

PLAINTIFF'S EXHIBIT

25.19

exhibitsticker.com



2.4.20 // IMG_0091 // WDP Photos 1760 // 10 Harwick



2.4.20 // IMG_0092 // WDP Photos 1761 // 10 Harwick



2.5.20 // IMG_0279 // WDP Photos 2508 // 2 Kettering

2.5.20 // IMG_0280 // WDP Photos 2509 // 2 Kettering



2.5.20 // IMG_0281 // WDP Photos 2510 // 2 Kettering


2.5.20 // IMG_0282 // WDP Photos 2511 // 2 Kettering



10.1.19 // IMG_0296 // WDP Photos 296 // 508 Cardiff



10.1.19 // IMG_0297 // WDP Photos 297 // 508 Cardiff



3755

PLAINTIFF'S EXHIBIT 25.27

exhibitsticker.com

305 Amesbury


305 Amesbury


305 Amesbury
3757


305 Amesbury
3758

102 Berwick



3760

102 Berwick

102 Berwick



3762

102 Berwick



2000 Buxton

201 Buxton

206 Buxton



207 Buxton

3767



207 Buxton

3768


207 Buxton

207 Buxton



207 Buxton



207 Buxton


207 Buxton


207 Buxton



3775

207 Buxton



207 Buxton

3776

207 Buxton



3778

208 Buxton



210 Buxton

379

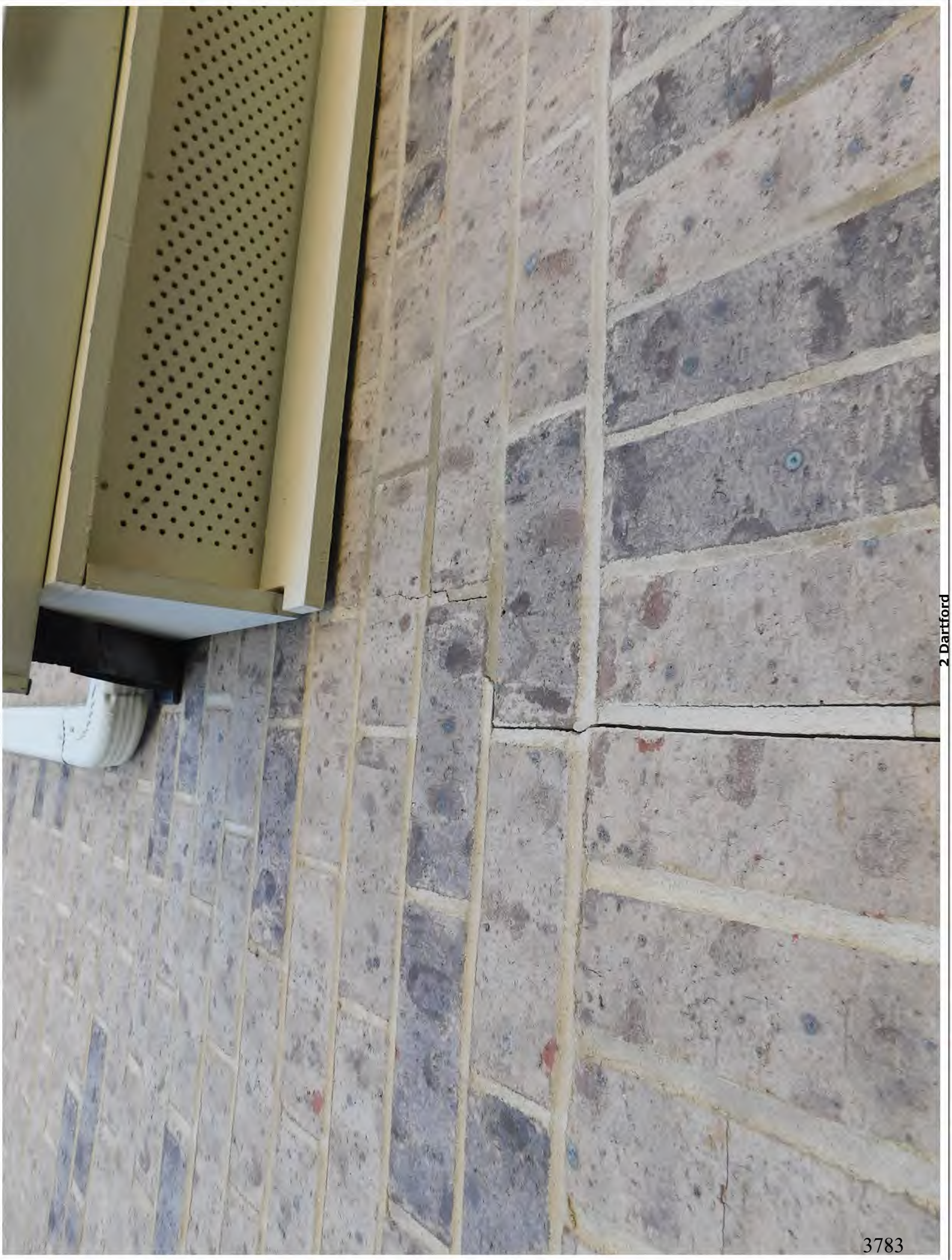


508. Cardiff


2 Dartford
3781

2 Dartford

3782


2 Dartford
3783



2 Dartford

2 Dartford

3785


2 Dartford
3786

4 Dartford

4 Dartford



4 Dartford

4 Dartford

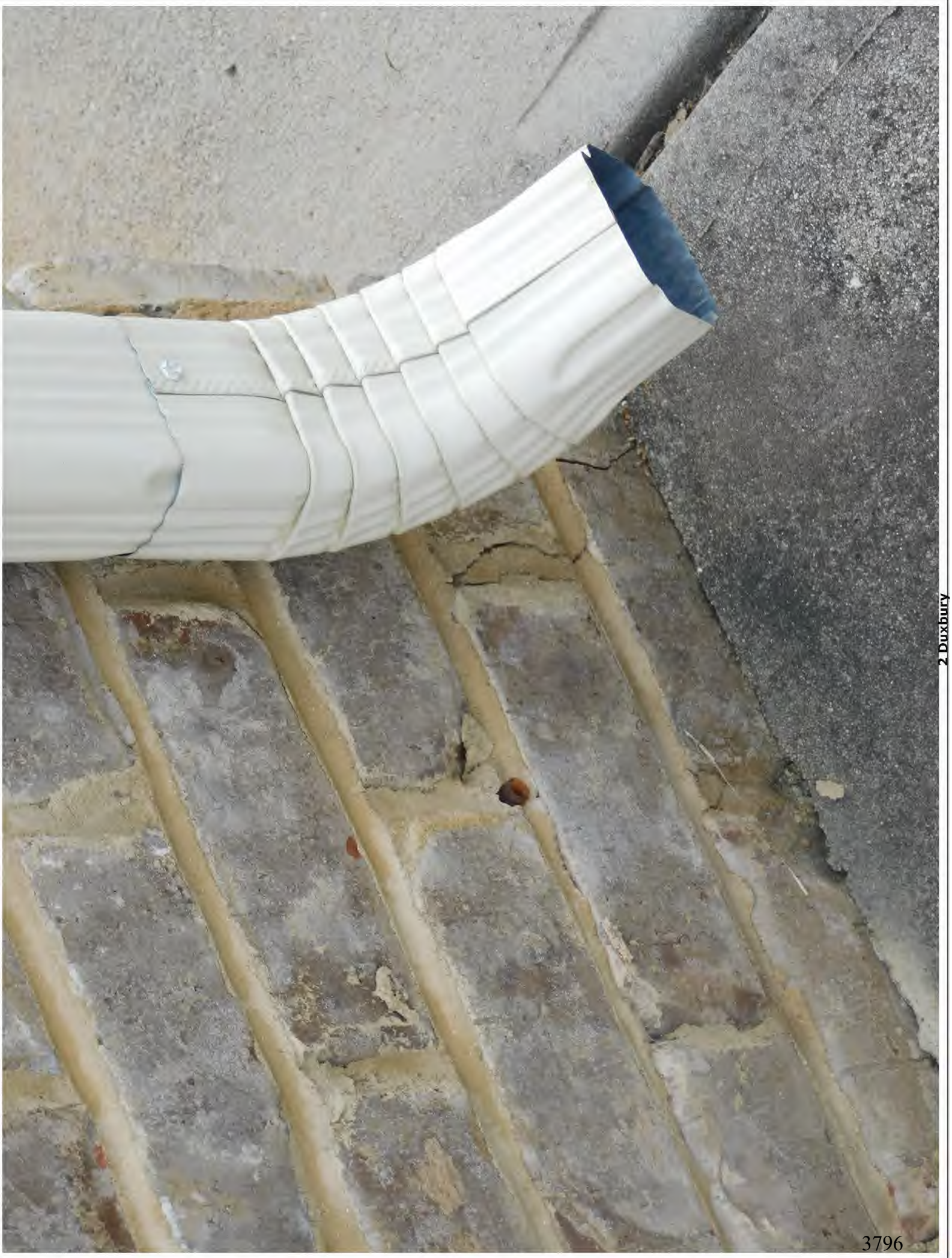

4 Dartford


104 Dartford
3792

108 Dartford


108 Dartford


108 Dartford



2 Duxbury



6 Duxbury

3797



6 Duxbury



8 Duxbury

3799



3 Harwick

3801


159 Haverhill



168 Haverhill


2 Kettering
3804



4 Kettering



8 Kettering

8 Kettering





9 Kettering

3809


16 Kettering


16 Kettering

17 Kettering

19 Kettering


19 Kettering

406 Rowley


100 Sturbridge



104 Sturbridge

3817


104 Sturbridge


104 Sturbridge



106 Sturbridge

3820


106 Sturbridge

110 Sturbridge