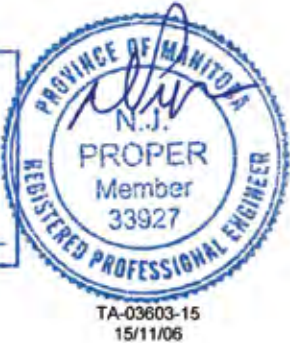




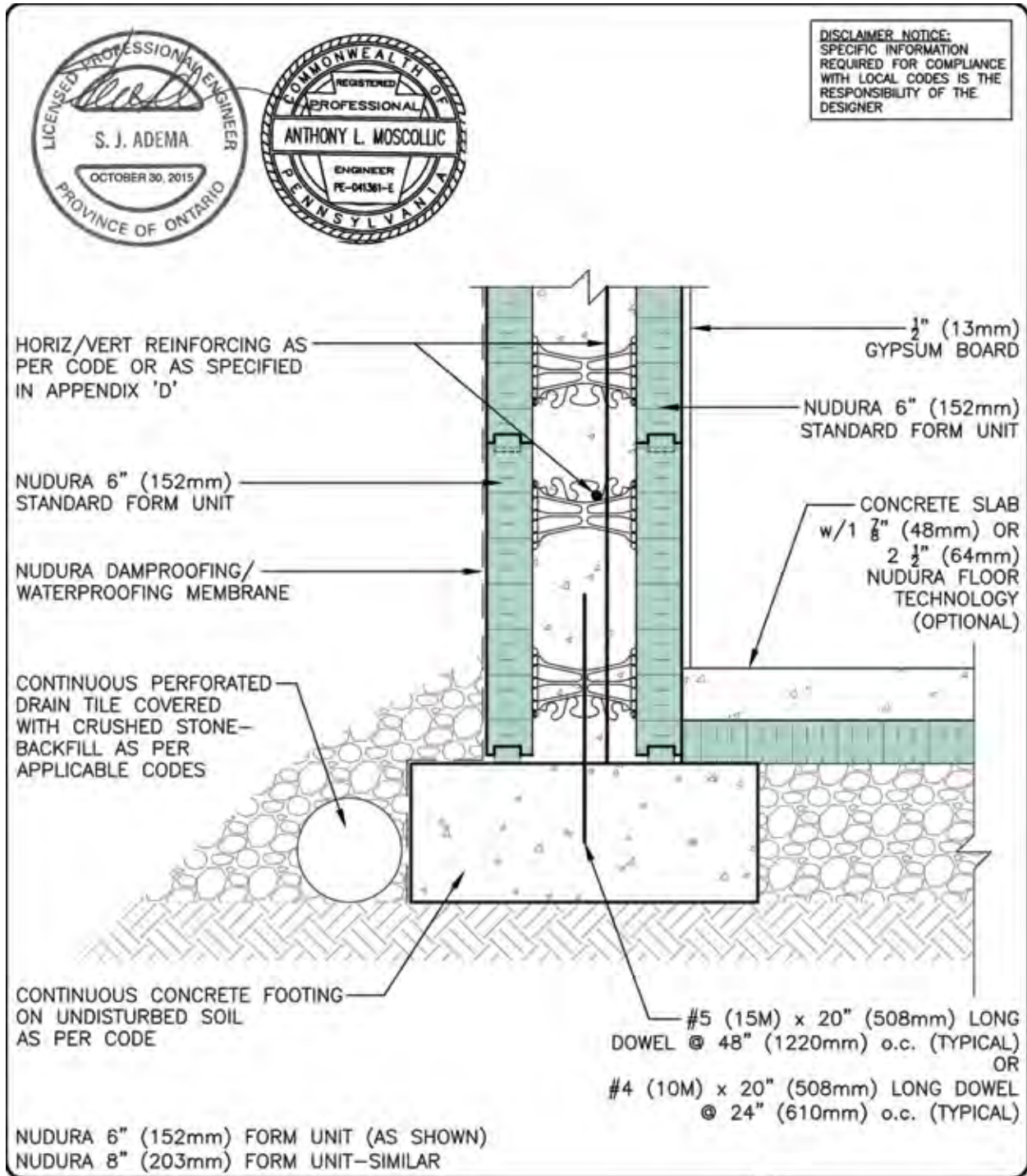
**Engineering Certification for Appendix C**

Drawings C-1 to C-20 in Appendix C of the NUDURA ICF Installation manual have been reviewed and certified on October 30, 2015 by Tacoma Engineers for use in the Province of Ontario. These drawings have also been reviewed for conformance to the following Codes and Regulations:

- 2014 Alberta Building Code
- 2012 British Columbia Building Code
- 2011 Manitoba Building Code
- 2014 Nova Scotia Building Code
- 2010 National Building Code as amended by The Uniform Building and Accessibility Standards Regulations in Saskatchewan



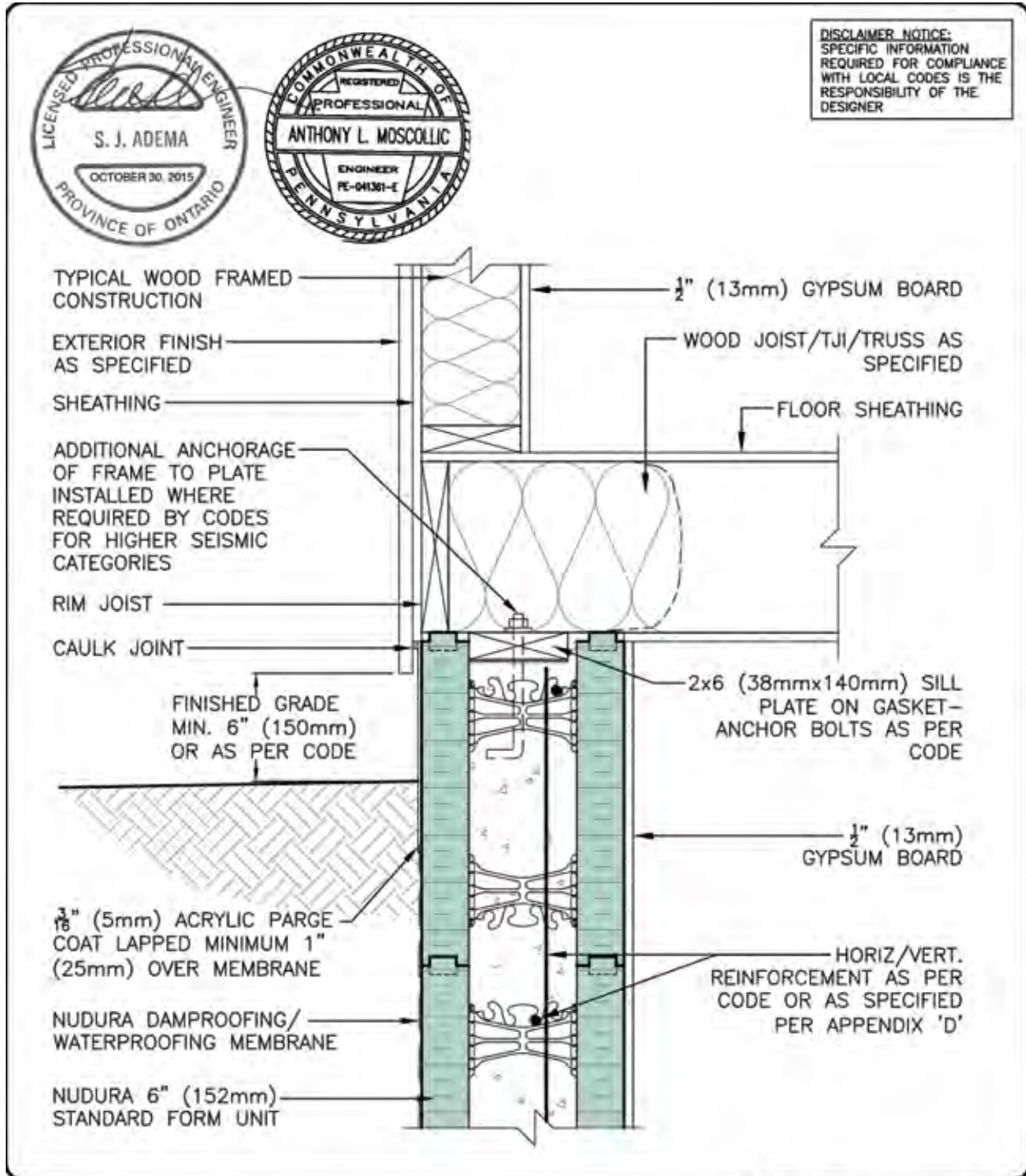
# TYPICAL DETAILS C-1



NUDURA 6" (152mm) FORM UNIT  
FOOTING DETAIL  
NUDURA FLOOR TECHNOLOGY  
(BEST OPTION)

REV. NO. 004 KS	DWG NO. C-1
DATE: SEPT 2015	
DRAWN BY: J. NEILON	SCALE: "Not to Scale"

# TYPICAL DETAILS C-2

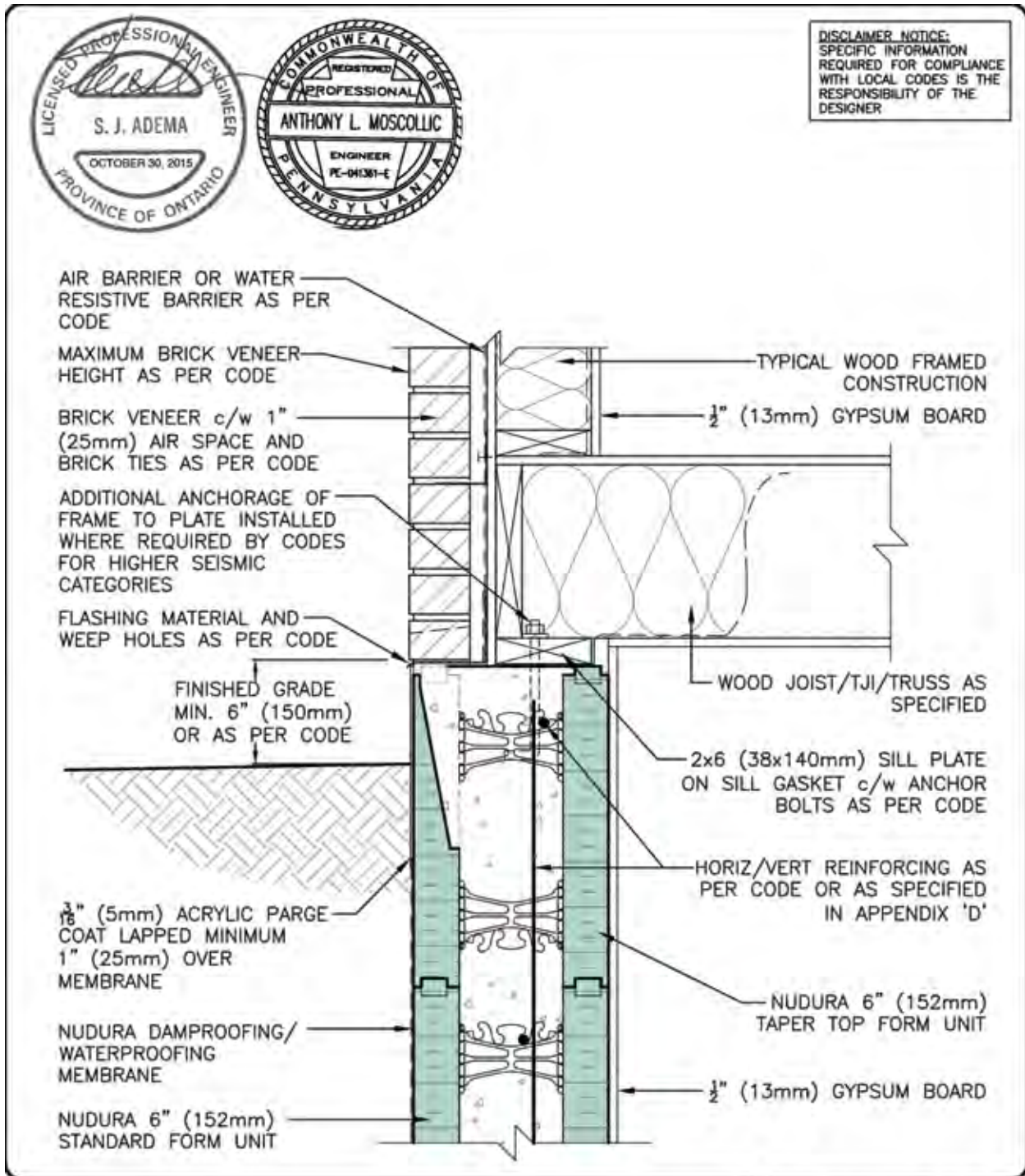


NUDURA 6" (152mm) FORM UNIT  
BELOW GRADE  
WOOD FRAME ABOVE GRADE  
NON-BRICK FINISH

REV. NO. 004 KS	DWG. NO. C-2
DATE: SEPT 2015	
DRAWN BY: J.N / N.L	SCALE: "Not to Scale"



# TYPICAL DETAILS C-3



NUDURA 6" (152mm) TAPER TOP  
NUDURA 6" (152mm) FORM UNIT  
BELOW GRADE  
WOOD FRAME ABOVE GRADE  
BRICK VENEER FINISH

REV. NO.

004 KS

DATE:

SEPT 2015

DRAWN BY:

J.N / N.L

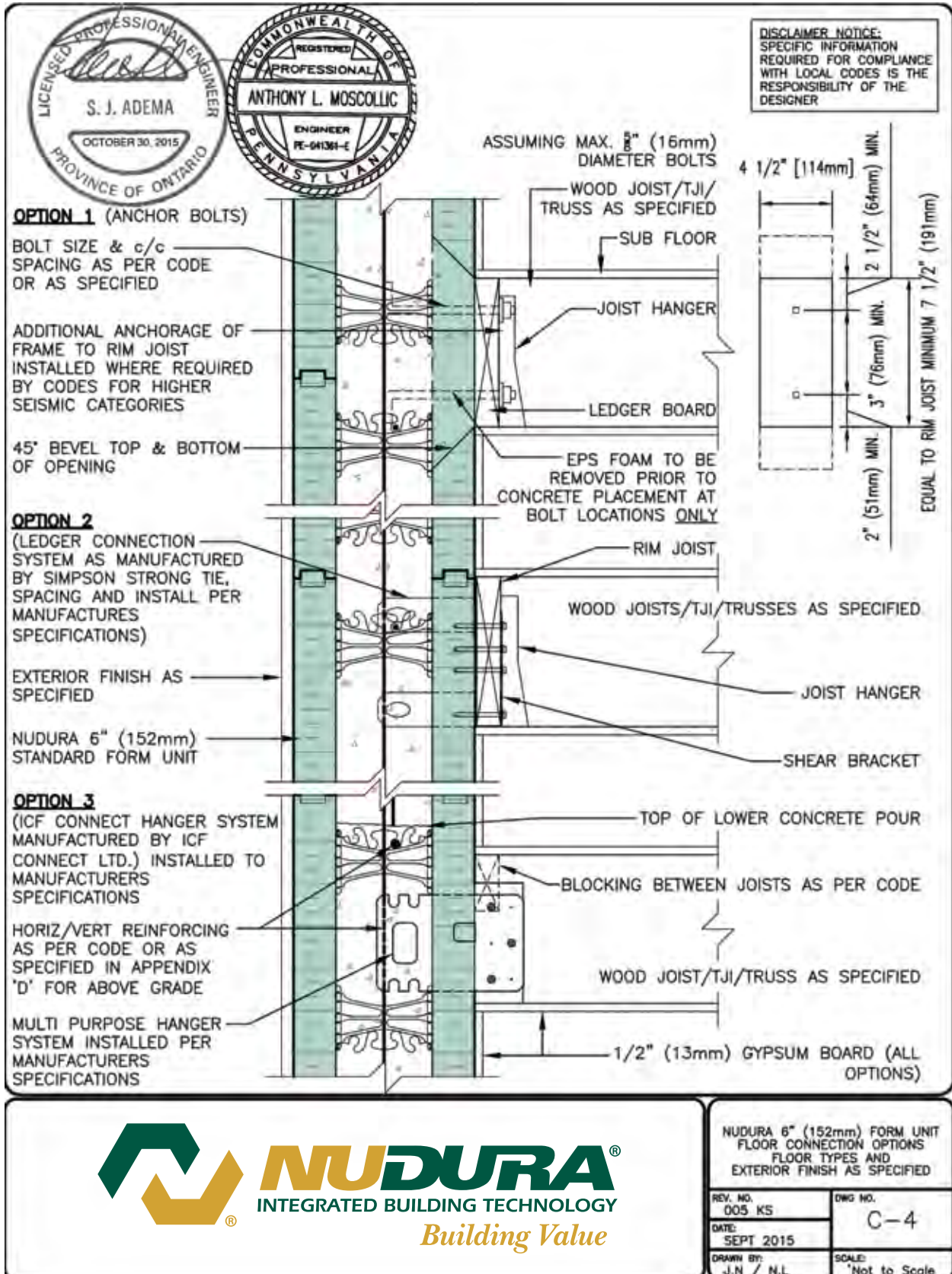
DWG NO.

C-3

SCALE:

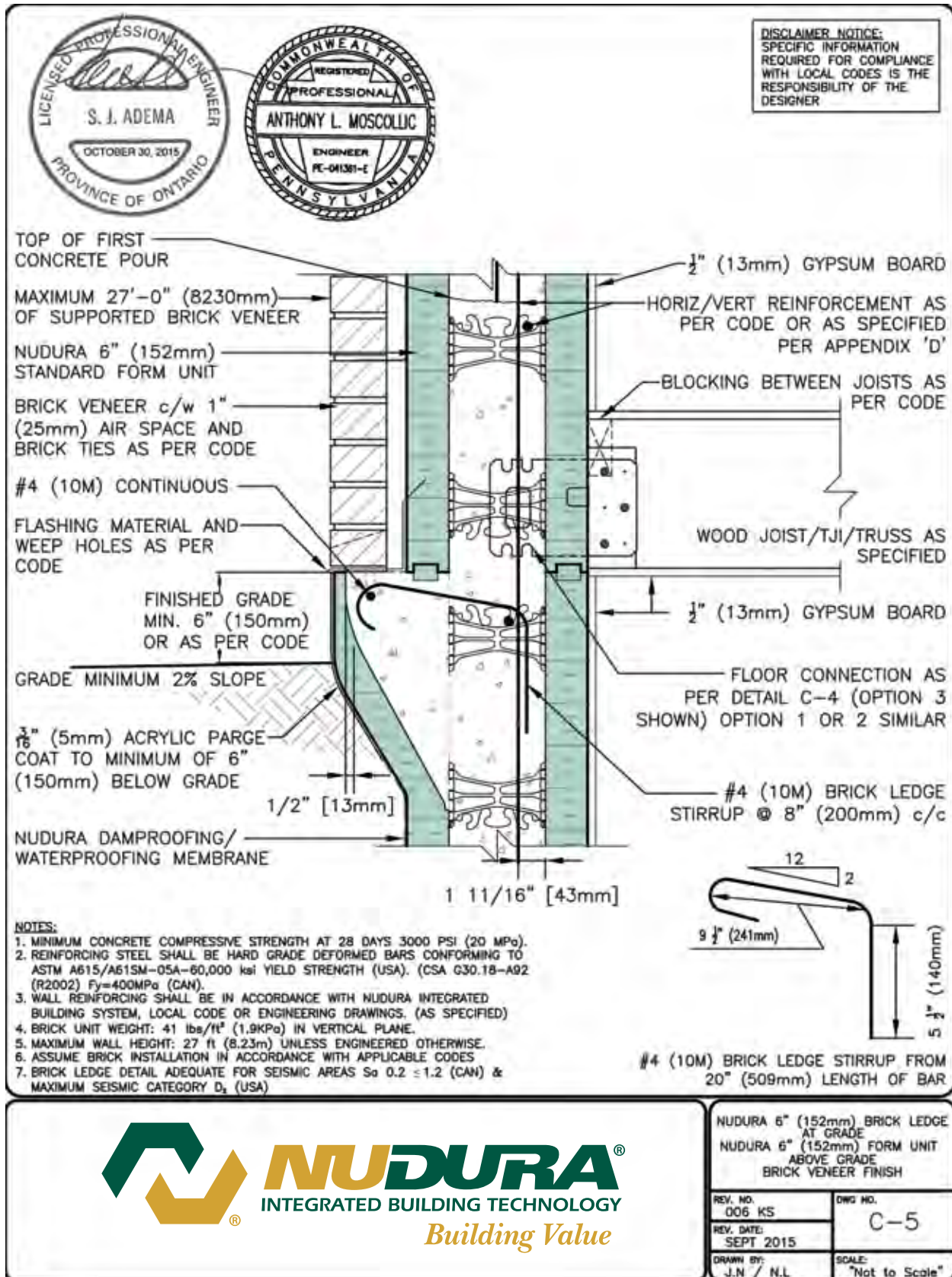
"Not to Scale"

# TYPICAL DETAILS C-4

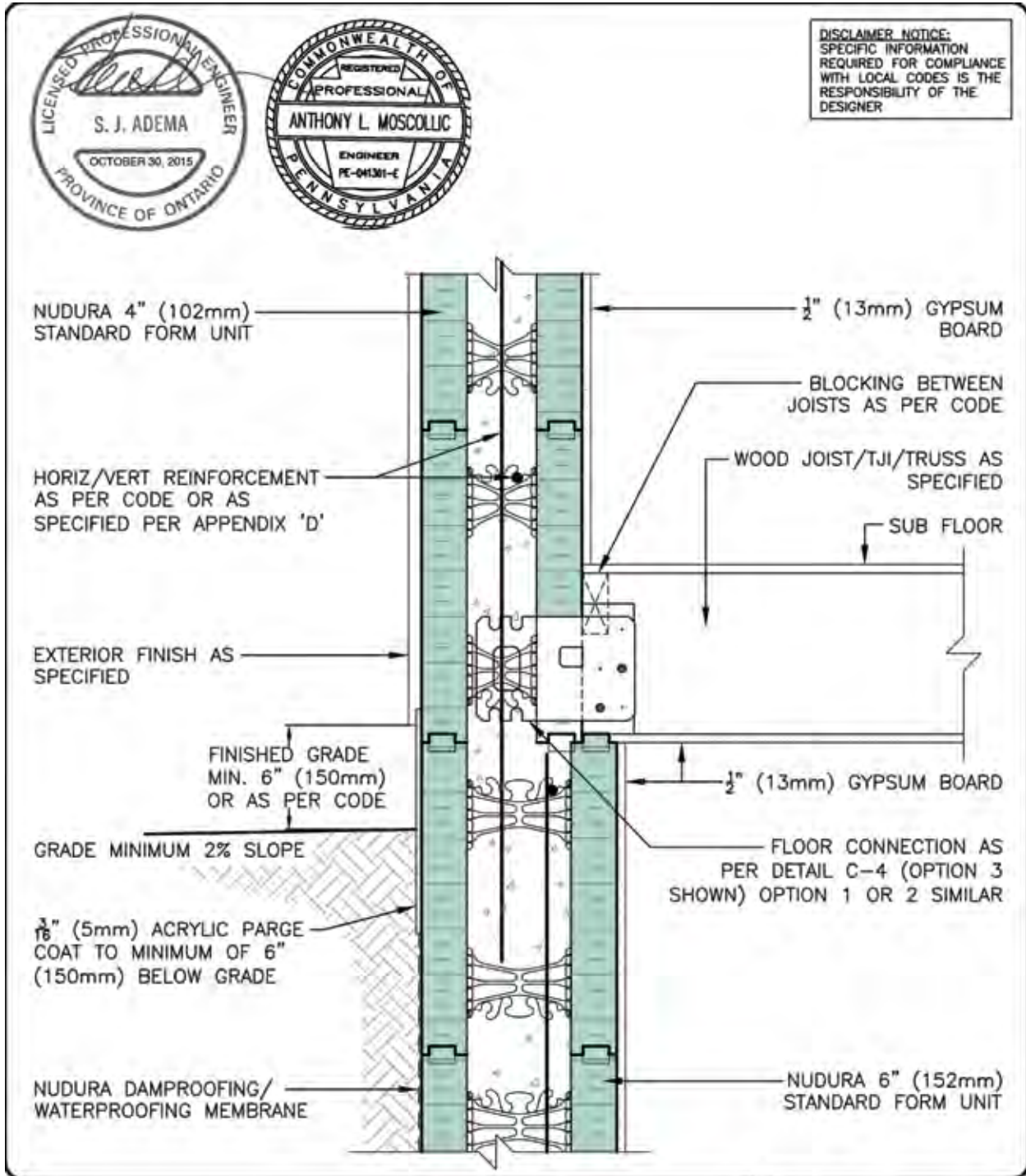




# TYPICAL DETAILS C-5



# TYPICAL DETAILS C-6

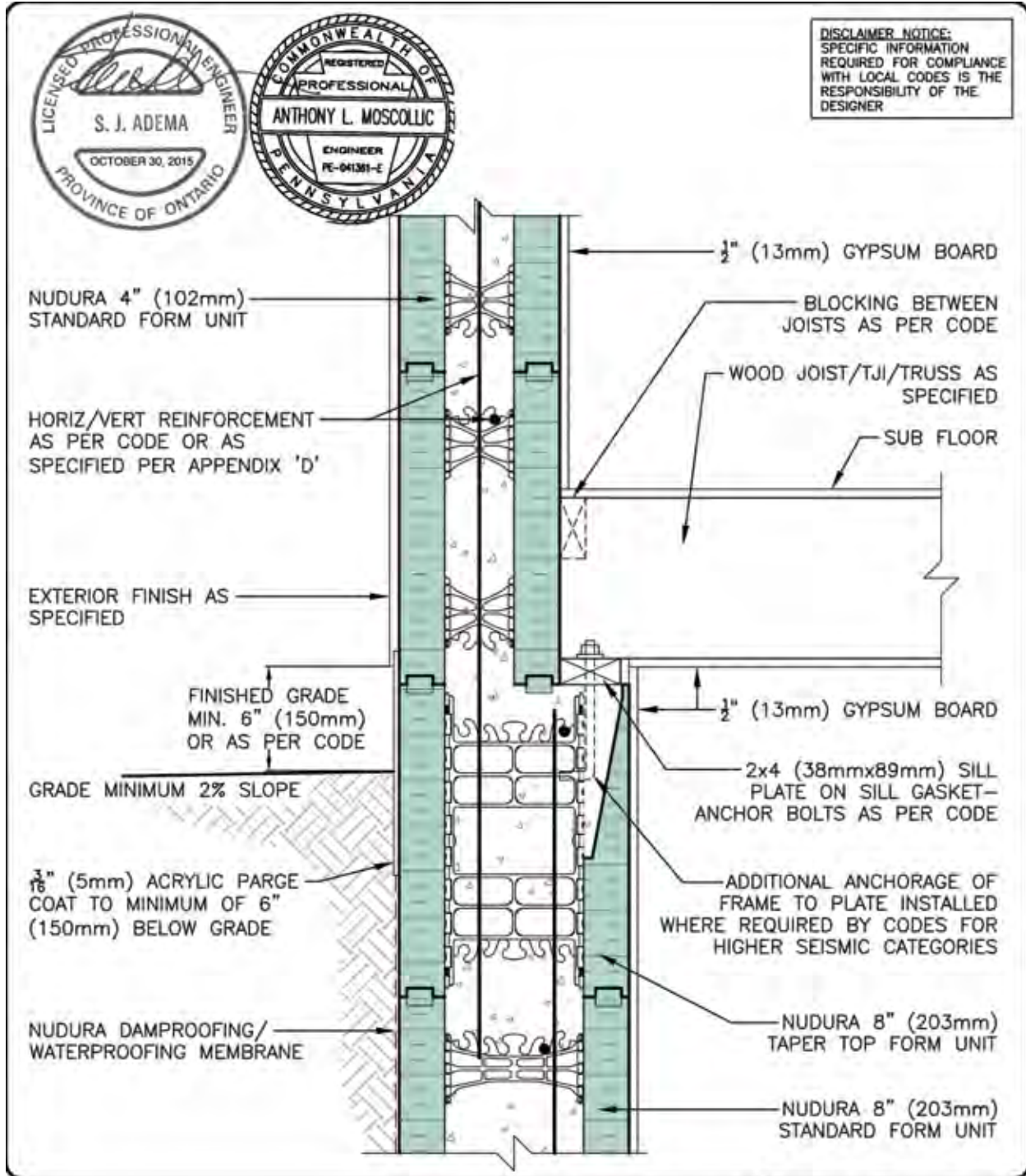


NUDURA 6" (152mm) FORM UNIT BELOW GRADE  
NUDURA 4" (102mm) FORM UNIT ABOVE GRADE  
NON-BRICK FINISH

REV. NO. 002 KS	DWG. NO. C-6
DATE: SEPT 2015	
DRAWN BY: T. VAN CLEAF	SCALE: "Not to Scale"



# TYPICAL DETAILS C-7

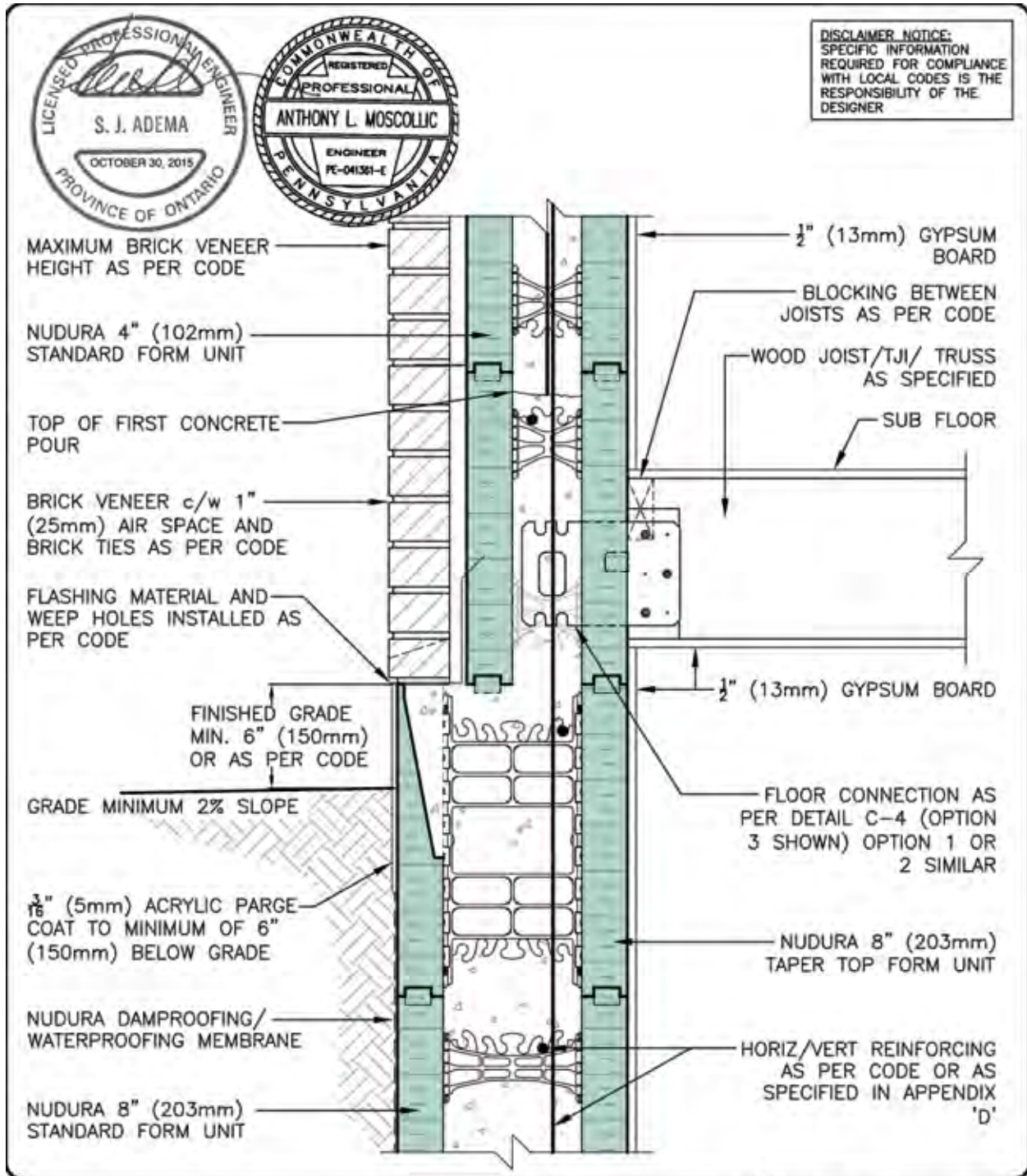


NUDURA 8" (203mm) FORM UNIT  
BELOW GRADE  
NUDURA 4" (102mm) FORM UNIT  
ABOVE GRADE  
NON-BRICK FINISH

REV. NO. 004 KS	DWG NO. C-7
DATE: SEPT 2015	
DRAWN BY: J. N / N. L	SCALE: "Not to Scale"



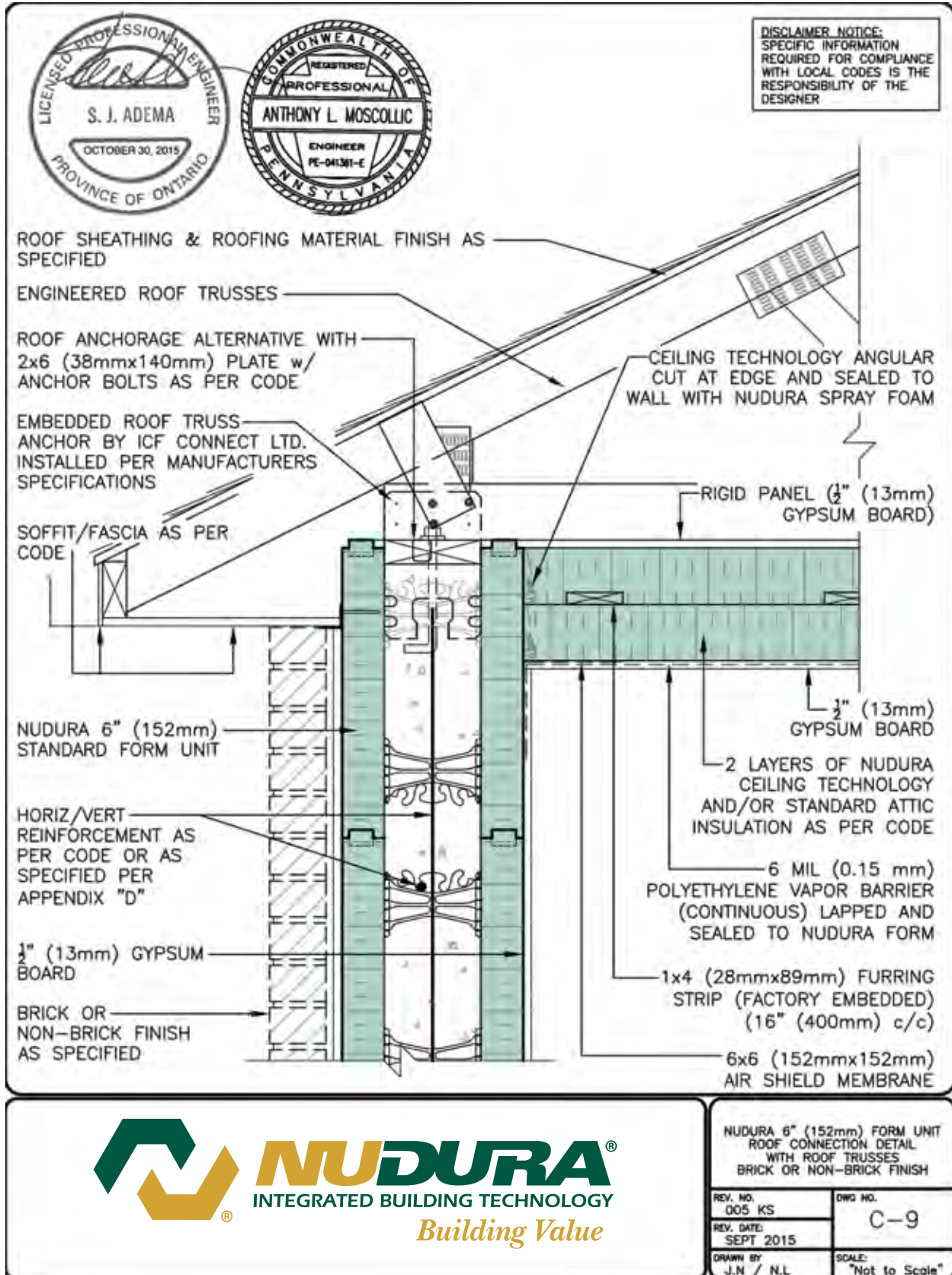
# TYPICAL DETAILS C-8



NUDURA 8" (203mm) FORM UNIT BELOW GRADE  
NUDURA 4" (102mm) FORM UNIT ABOVE GRADE  
BRICK VENEER FINISH

REV. NO. 005 KS	DWG NO. C-8
REV. DATE SEPT 2015	
DRAWN BY: J.N / N.L	SCALE: "Not to Scale"

# TYPICAL DETAILS C-9

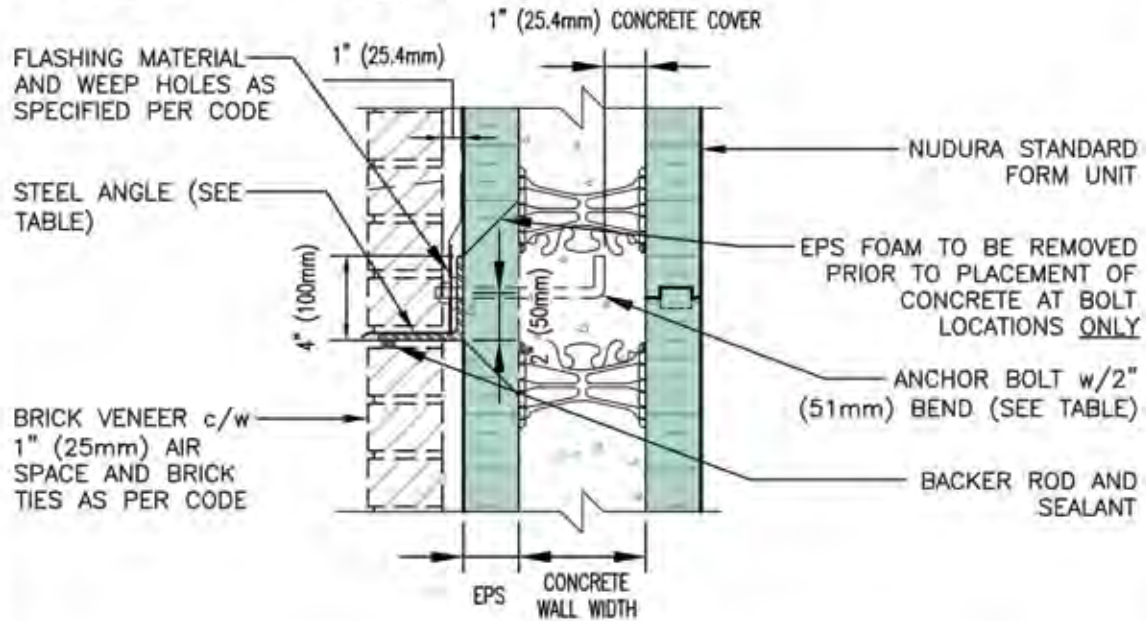




# TYPICAL DETAILS C-10



DISCLAIMER NOTICE:  
SPECIFIC INFORMATION  
REQUIRED FOR COMPLIANCE  
WITH LOCAL CODES IS THE  
RESPONSIBILITY OF THE  
DESIGNER



	HEIGHT OF SUPPORTED BRICK ABOVE ANGLE	
	10'-0" (3050mm)	20'-0" (6100mm)
ANGLE SIZE	L4" x 4" x 1/4" (L102mm x 102mm x 6.35mm)	L4" x 4" x 1/4" (L102mm x 102mm x 6.35mm)
ANCHOR SIZE	1/2" DIAMETER (12.5mm DIAMETER)	1/2" DIAMETER (12.5mm DIAMETER)
ANCHOR SPACING	24" (610mm)	16" (406mm)

## NOTES:



- 1 ASSUMES BRICK INSTALLATION IN ACCORDANCE WITH APPLICABLE CODES.
- 2 MINIMUM STEEL  $F_y=43.5$  ksi (300 MPa) YIELD STRENGTH FOR ANGLES.
- 3 ANGLES AND BOLTS TO BE GALVANIZED OR STAINLESS STEEL TO MEET THE REQUIREMENT OF TABLE 5.1 OF CSA A370-04 (CAN) OR ASTM E754 (USA) (CONNECTIONS FOR MASONRY ANCHORS AND TIES).



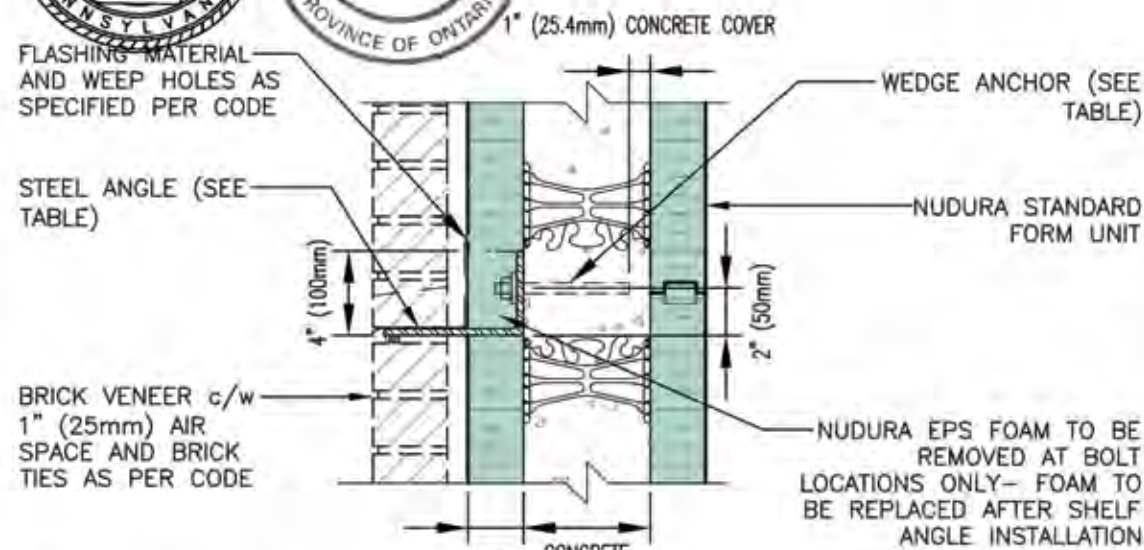
BRICK SHELF ANGLE  
BACK OF ANGLE FLUSH  
WITH EPS EXTERIOR  
(MULTI-STORY APPLICATION)  
PRE-INSTALLATION MOUNT

REV. NO. 004 KS	DWG NO. C-10
REV. DATE SEPT 2015	
DRAWN BY J.N / N.L	SCALE: "Not to Scale"

# TYPICAL DETAILS C-11

**DISCLAIMER NOTICE:**  
SPECIFIC INFORMATION  
REQUIRED FOR COMPLIANCE  
WITH LOCAL CODES IS THE  
RESPONSIBILITY OF THE  
DESIGNER



FLASHING MATERIAL AND WEEP HOLES AS SPECIFIED PER CODE

STEEL ANGLE (SEE TABLE)

BRICK VENEER c/w 1" (25mm) AIR SPACE AND BRICK TIES AS PER CODE

1" (25.4mm) CONCRETE COVER

WEDGE ANCHOR (SEE TABLE)

NUDURA STANDARD FORM UNIT

4" (100mm)

2" (50mm)

NUDURA EPS FOAM TO BE REMOVED AT BOLT LOCATIONS ONLY— FOAM TO BE REPLACED AFTER SHELF ANGLE INSTALLATION

EPS CONCRETE WALL WIDTH

**NOTE:**  
MAINTAIN u/s OF ANCHOR SHAFT 2" (50mm) MINIMUM CLEARANCE FROM WEBS AND 1" (25mm) COVER ALL AROUND

HILTI ANCHORS TO BE SIZED AS PER TABLE BELOW

ANGLE SIZE	HEIGHT OF SUPPORTED BRICK ABOVE ANGLE	
	10'-0" (3050mm)	20'-0" (6100mm)
	L6" x 4" x 5/16" (L152mm x 102mm x 7.9mm)	L6" x 4" x 3/8" (L152mm x 102mm x 9.5mm)
ANCHOR SIZE */ EMBEDMENT	HSL M12/25 3.2" (80mm)	HSL M16/25 4.2" (105mm)
ANCHOR SPACING	16" (406mm)	16" (406mm)

\* ANCHORS SPECIFIED ABOVE ARE HILTI HEAVY DUTY ANCHORS

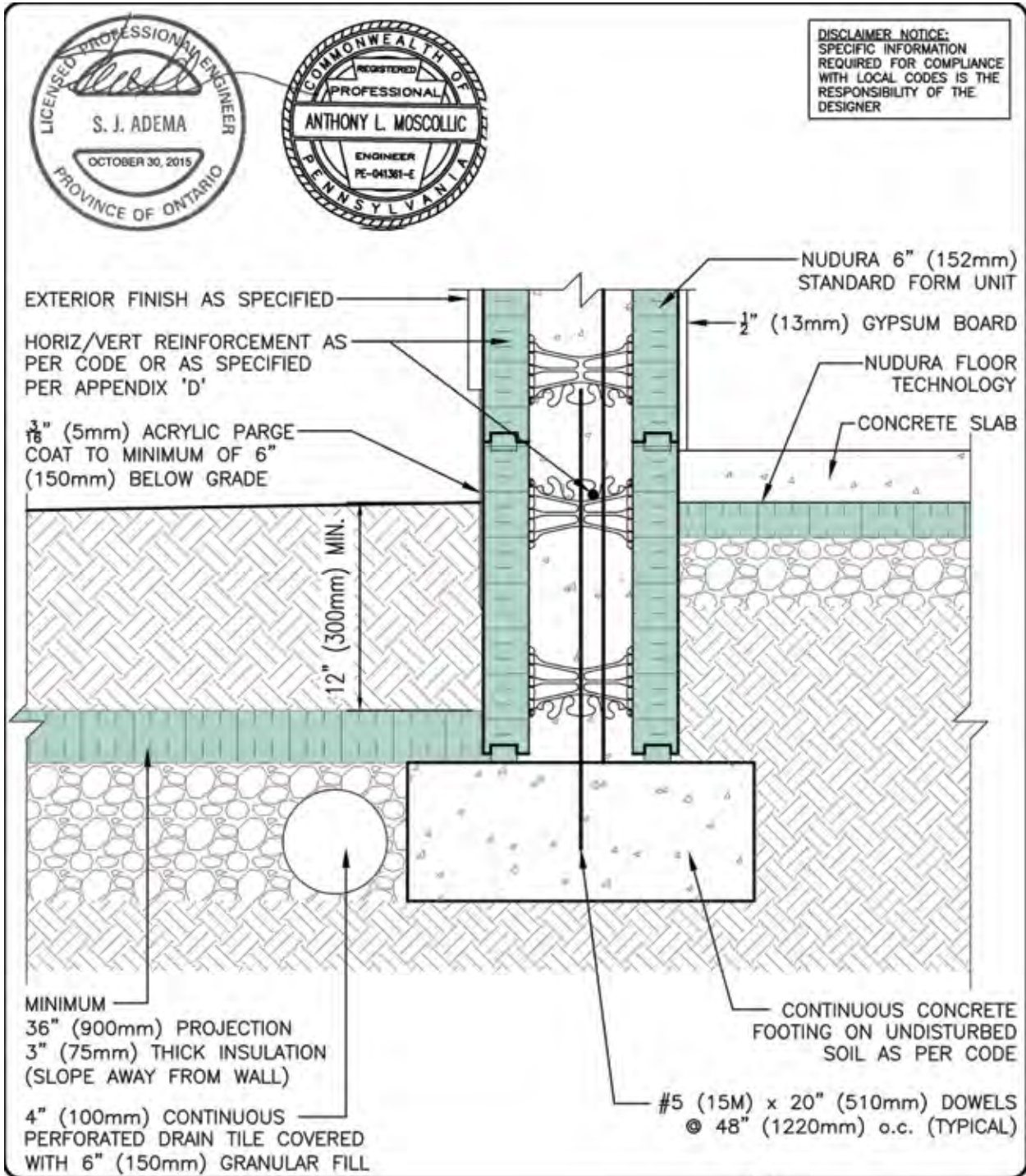
**NOTE:**  
1 CONTRACTOR TO INSTALL ANCHORS AS PER SUPPLIER'S SPECIFICATIONS.  
2 ASSUMES BRICK INSTALLATION IN ACCORDANCE WITH APPLICABLE CODES.  
3 MINIMUM STEEL Fy=43.5 ksi (300 MPa) YIELD STRENGTH FOR ANGLES  
4 ANGLES AND BOLTS TO BE GALVANIZED OR STAINLESS STEEL TO MEET THE REQUIREMENT OF TABLE 5.1 OF CSA A370-04 (CAN) OR ASTM E754 (USA) (CONNECTIONS FOR MASONRY ANCHORS AND TIES).



BRICK SHELF ANGLE BACK OF ANGLE FLUSH WITH CONCRETE (POST INSTALLATION MOUNT)	
REV. NO. 004 KS	DWG. NO. C-11
REV. DATE SEPT 2015	
DRAWN BY J.N / N.L.	SCALE: "Not to Scale"



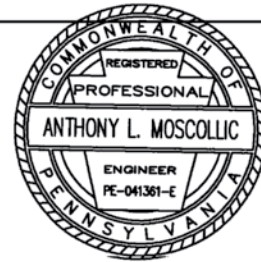
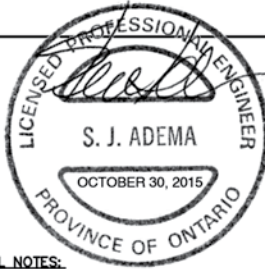
# TYPICAL DETAILS C-12



NUDURA 6" (152mm) FORM UNIT AT SHALLOW INSULATED FOOTING EXTERIOR FINISH AS SPECIFIED

REV. NO. 005 KS	DWG. NO. C-12
REV. DATE SEPT 2015	
DRAWN BY J.N / N.L.	SCALE: "Not to Scale"

# TYPICAL DETAILS C-13



## STRUCTURAL NOTES

(DETAIL C-14, C-15, C-16)

### GENERAL NOTES:

1. THE DESIGN AND CONSTRUCTION OF ALL WORK ON THIS PROJECT SHALL CONFORM TO THE LATEST EDITIONS OF PART 9 OF THE NATIONAL BUILDING CODE (CAN), SECTION R404/R611 OF THE 2012 IRC, SECTIONS R404 AND R608 OF THE 2015 IBC, LOCAL REGULATIONS AND BYLAWS AND THE OCCUPATIONAL HEALTH AND SAFETY ACT. THIS DESIGN APPLIES TO RESIDENTIAL BUILDINGS ONLY.
2. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND MEASUREMENTS AT THE SITE AND REPORT TO THE ENGINEER ANY DISCREPANCIES OR UNSATISFACTORY CONDITIONS WHICH MAY ADVERSELY AFFECT THE PROPER COMPLETION OF THE PROJECT BEFORE PROCEEDING WITH THE WORK.
3. AN AUTHORIZED NUDURA TRAINED INSTALLER SHALL BE CONTACTED BY THE CONTRACTOR FOR INSPECTIONS OF THE FOUNDATION, REINFORCING STEEL PLACEMENT, ONLY IF REQUIRED BY THE BUILDING OFFICIAL.

### DESIGN PARAMETERS:

1. DESIGN LOADS ARE UNFACTORED UNLESS NOTED OTHERWISE:
  - SOIL PRESSURE (LIVE) = 20.4 kN/m<sup>2</sup> (130 pcf)
  - DRAINED EARTH IN ACCORDANCE WITH NBC & IRC (CAN)
  - AREA SURCHARGE (LIVE) = 2.4 kPa (50 psf) (CAN AND USA)
2. FOUNDATIONS TO BEAR DIRECTLY ON MATERIAL SUITABLE FOR 75 kPa (1,566 psf) BEARING PRESSURE, UNLESS NOTED. REFER TO SOIL ENGINEERS REPORT FOR FOUNDATION DEPTHS, BEARING PREPARATION, ETC. AS MAY BE REQUIRED BY THE LOCAL BUILDING OFFICIAL.
3. SOIL BEARING CAPACITY SPECIFIED MAY NEED TO BE VERIFIED BY A GEOTECHNICAL ENGINEER PRIOR TO THE PLACING OF FOUNDATIONS AND SLABS, ANY NON-COMFORMANCE WITH THE SPECIFIED MINIMUM CATEGORIES MUST BE IMMEDIATELY REPORTED TO THE STRUCTURAL ENGINEER.

### CONCRETE AND REINFORCING STEEL:

1. CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF CSA. A23.1,2&3 (CAN) & ACI 318 (USA) FOR MATERIALS AND WORKMANSHIP.
2. USE MINIMUM GRADE 400 (60 ksi) YIELD STRENGTH DEFORMED REBAR PLACED IN ACCORDANCE WITH MANUAL OF STANDARD PRACTICE.
3. THE MINIMUM 28 DAY COMPRESSIVE STRENGTH OF CONCRETE SHALL BE:
  - 20 MPA (2,900 psi) FOR FOOTINGS
  - 20 MPA (2,900 psi) FOR WALLS
4. ALL CONCRETE SHALL BE TESTED BY A CSA CERTIFIED OR IAS ACCREDITED CONCRETE TESTING LABORATORY.
5. USE HIGH FREQUENCY VIBRATION TO PLACE ALL CONCRETE.
6. ALL CONCRETE SHALL BE KEPT MOIST DURING THE FIRST TWO DAYS OF CURING.
7. TAKE ADEQUATE MEASURES TO PROTECT CONCRETE FROM EXPOSURE TO FREEZING TEMPERATURES AT LEAST 7 DAYS AFTER CONCRETE PLACEMENT.
8. MAINTAIN THE FOLLOWING CLEAR CONCRETE COVER TO REINFORCEMENT:
  - 75 mm (3 inches) FOR CONCRETE PLACED AGAINST THE EARTH (BOTTOM OF FOOTINGS).
9. MINIMUM BAR LAP LENGTH SHALL BE:
  - MINIMUM 40 TIMES THE BAR DIAMETER (10M = 450mm, 15M = 640mm) (CAN) OR,
  - IN ACCORDANCE WITH TABLE R611.5.4(1) OF IRC 2009/2012 OR TABLE 608.5.4(1) OF IRC 2015 (USA)

### FOUNDATIONS:

1. FOOTINGS TO BEAR DIRECTLY ON UNDISTURBED NATIVE SOILS OR APPROVED ENGINEERED FILL SUITABLE FOR MINIMUM DESIGN BEARING PRESSURES (REFER TO SOIL ENGINEERS REPORT FOR RECOMMENDATIONS).
2. SOFT AREAS UNCOVERED DURING EXCAVATION SHALL BE SUB-EXCAVATED TO SOUND MATERIAL AND FILLED WITH CLEAN, FREE DRAINING GRANULAR SOIL COMPACTED TO 100% STANDARD PROCTOR DRY DENSITY (SPDD).
3. DO NOT EXCEED A RISE OF 7 IN A RUN OF 10 (35 DEGREES) IN THE LINE OF SLOPE BETWEEN ADJACENT FOOTING EXCAVATIONS OR ALONG STEPPED FOOTINGS. USE STEPS NOT EXCEEDING 600 mm (24 INCHES) IN HEIGHT AND NOT LESS THAN 600 mm (24 INCHES) IN LENGTH, IN ACCORDANCE WITH NBC OR PROV. CODES SECTION 9.15.3.9 (CAN) OR APPLICABLE CLAUSES FOR SLOPE CONDITION OF SECTION R403 OF THE 2009, 2012, AND 2015 IRC (USA).
4. MAINTAIN UNSUPPORTED SIDES OF EXCAVATION ONLY IF SAFE INCLINATION OF THE SIDES OF THE EXCAVATION IS PROVIDED IN ACCORDANCE WITH THE SOILS ENGINEER'S RECOMMENDATIONS.
5. ERECT, MAINTAIN, AND IF REQUIRED, REMOVE A SUPPORTING SHORING SYSTEM ALONG THE SIDES OF THE EXCAVATION, DESIGNED BY A PROFESSIONAL ENGINEER, IN ACCORDANCE WITH THE SOILS REPORT AND WPHMS OR OHSA STANDARDS.
6. PROTECT SOIL FROM FREEZING ADJACENT TO AND BELOW ALL FOOTINGS.
7. BACKFILL AGAINST FOUNDATION WALL IN SUCH A MANNER THAT THE LEVEL OF BACKFILL MATERIAL ON ONE SIDE OF THE WALL IS NEVER MORE THAN 450 mm (18 INCHES) DIFFERENT FROM THE LEVEL ON THE LOWER SIDE OF THE WALL, EXCEPT WHERE TEMPORARY SUPPORT FOR THE WALL IS PROVIDED OR WALLS ARE DESIGNED FOR SUCH UNEVEN PRESSURES (AS IN ATTACHED DETAIL).
8. SHOULD UNDERGROUND WATER BE ENCOUNTERED, PROVIDE DE-WATERING FACILITIES TO KEEP WATER LEVEL BELOW FOOTINGS AND POUR AN ADDITIONAL 75 mm (3") LAYER OF LEAN CONCRETE UNDER ALL FOOTINGS.
9. LOCATE ALL FOOTINGS AND PIERS CENTRALLY UNDER COLUMNS AND WALLS UNLESS NOTED OTHERWISE.

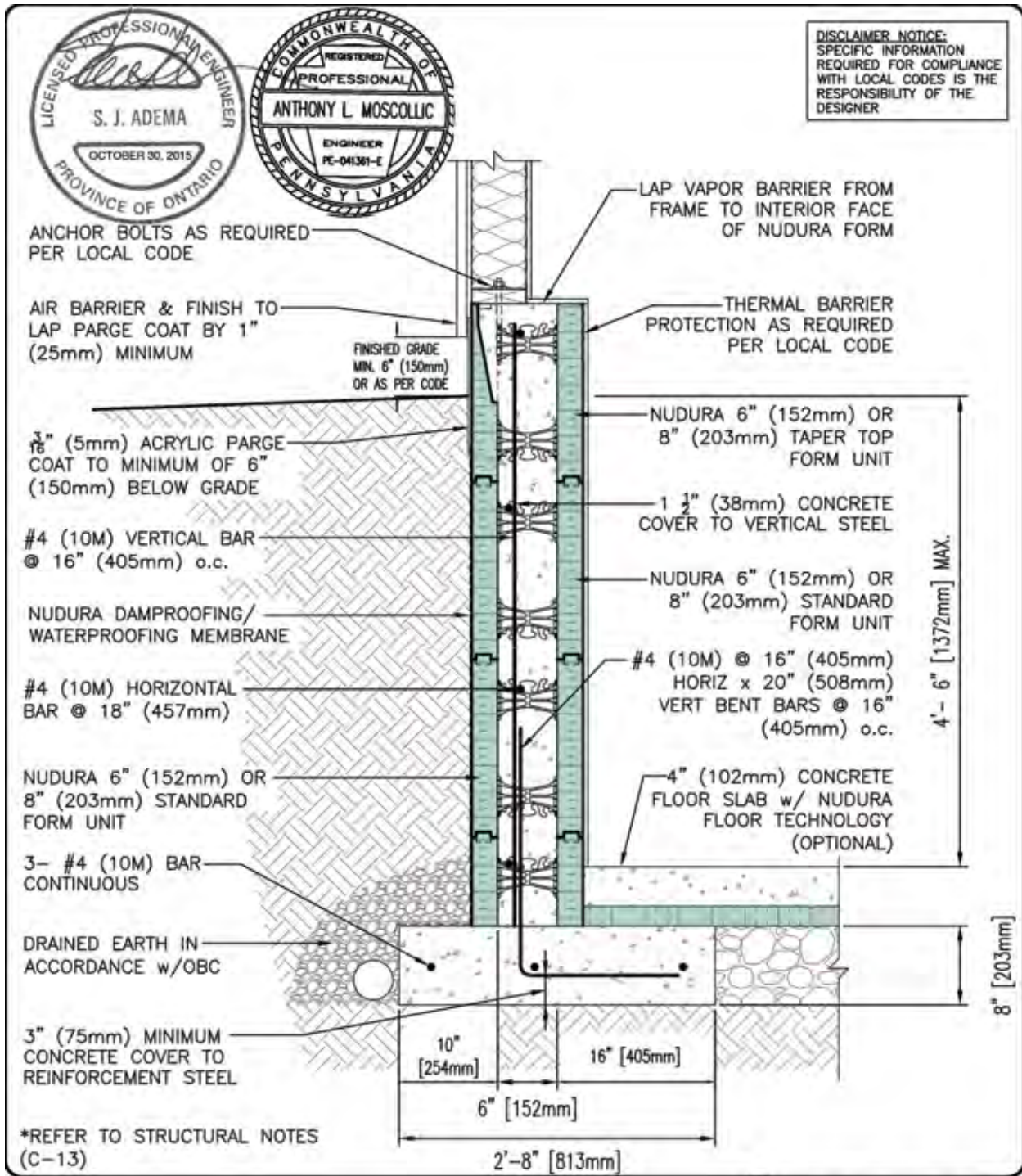


LATERALLY UNSUPPORTED  
KNEE WALL DETAILS FOR  
NUDURA FORM UNIT  
ONE OR TWO STOREY WOOD FRAME  
BRICK AND NON-BRICK FINISH

REV. NO. 005 KS	DWG NO. C-13
DATE: SEPT 2015	
DRAWN BY: T. VAN CLIEAF	SCALE:



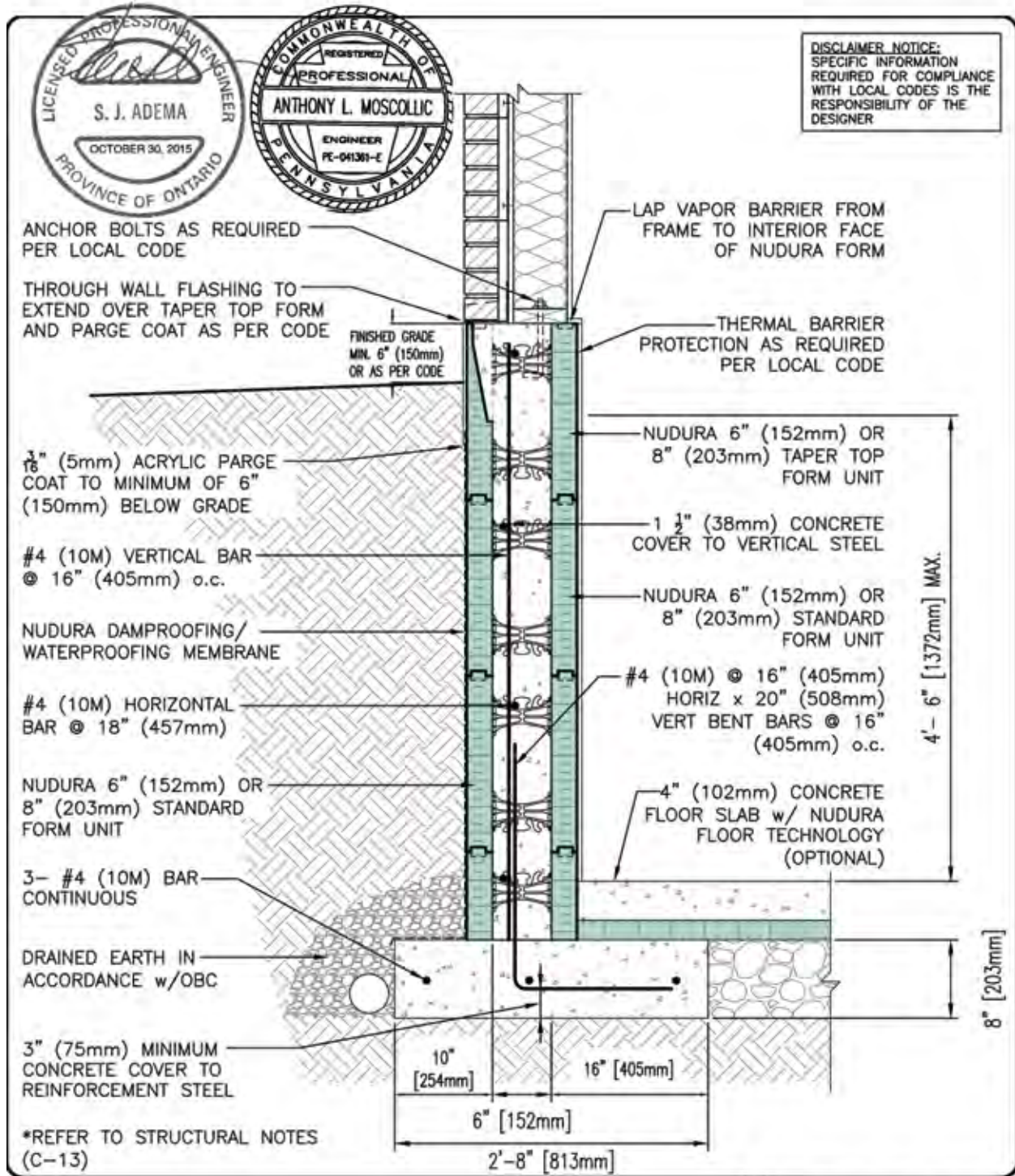
# TYPICAL DETAILS C-14



KNEE WALL DETAIL  
BASEMENT NUDURA FORM UNIT  
ONE OR TWO STOREY WOOD FRAME  
TAPER TOP FORM UNIT  
NON-BRICK FINISH

REV. NO. 007 KS	DWG NO. C-14
REV. DATE: SEPT 2015	
DRAWN BY: K. STILL	SCALE: "Not to Scale"

# TYPICAL DETAILS C-15



**NUDURA®**  
INTEGRATED BUILDING TECHNOLOGY

*Building Value*

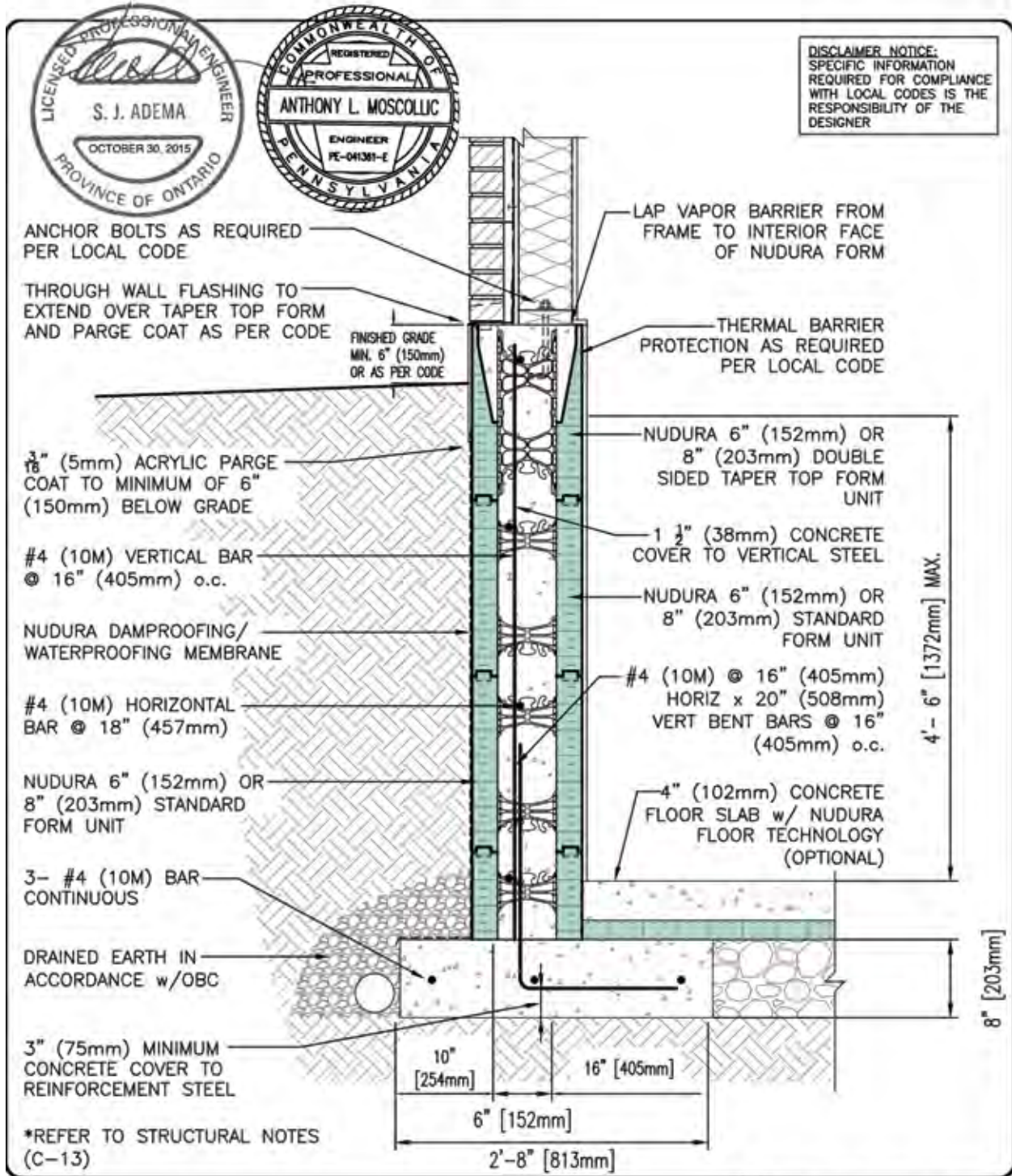
KNEE WALL DETAIL  
BASEMENT NUDURA FORM UNIT  
ONE OR TWO STOREY WOOD FRAME  
TAPER TOP FORM UNIT  
BRICK VENEER FINISH

REV. NO.  
007 KS  
REV. DATE:  
SEPT 2015  
DRAWN BY  
K. STILL

DWG. NO.  
C-15  
SCALE:  
"Not to Scale"



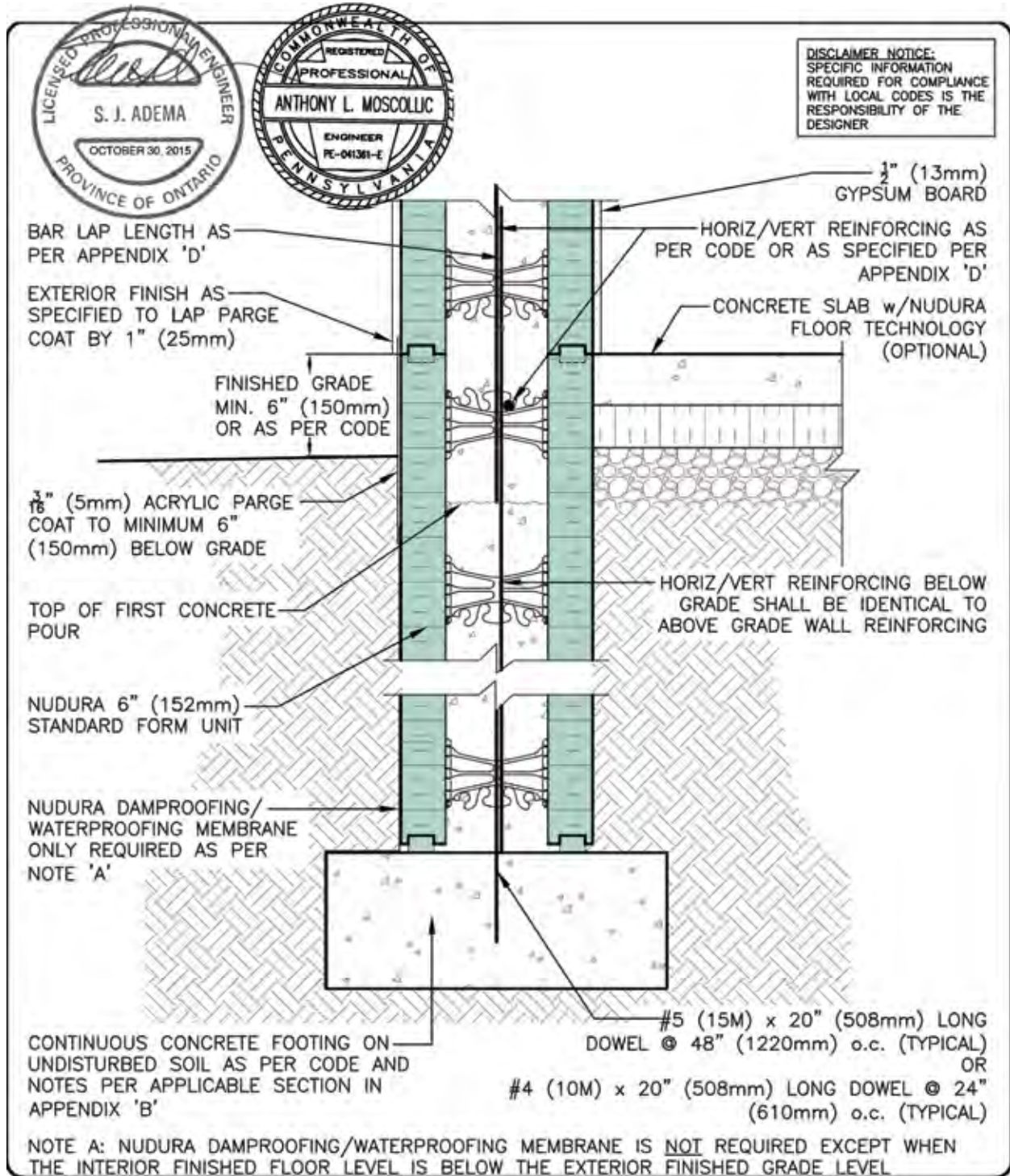
# TYPICAL DETAILS C-16



KNEE WALL DETAIL  
BASEMENT NUDURA FORM UNIT  
ONE OR TWO STOREY WOOD FRAME  
DOUBLE SIDED TAPER TOP FORM  
BRICK VENEER FINISH

REV. NO. 007 KS	DWG. NO. C-16
REV. DATE SEPT 2015	
DRAWN BY K. STILL	SCALE: "Not to Scale"

# TYPICAL DETAILS C-17



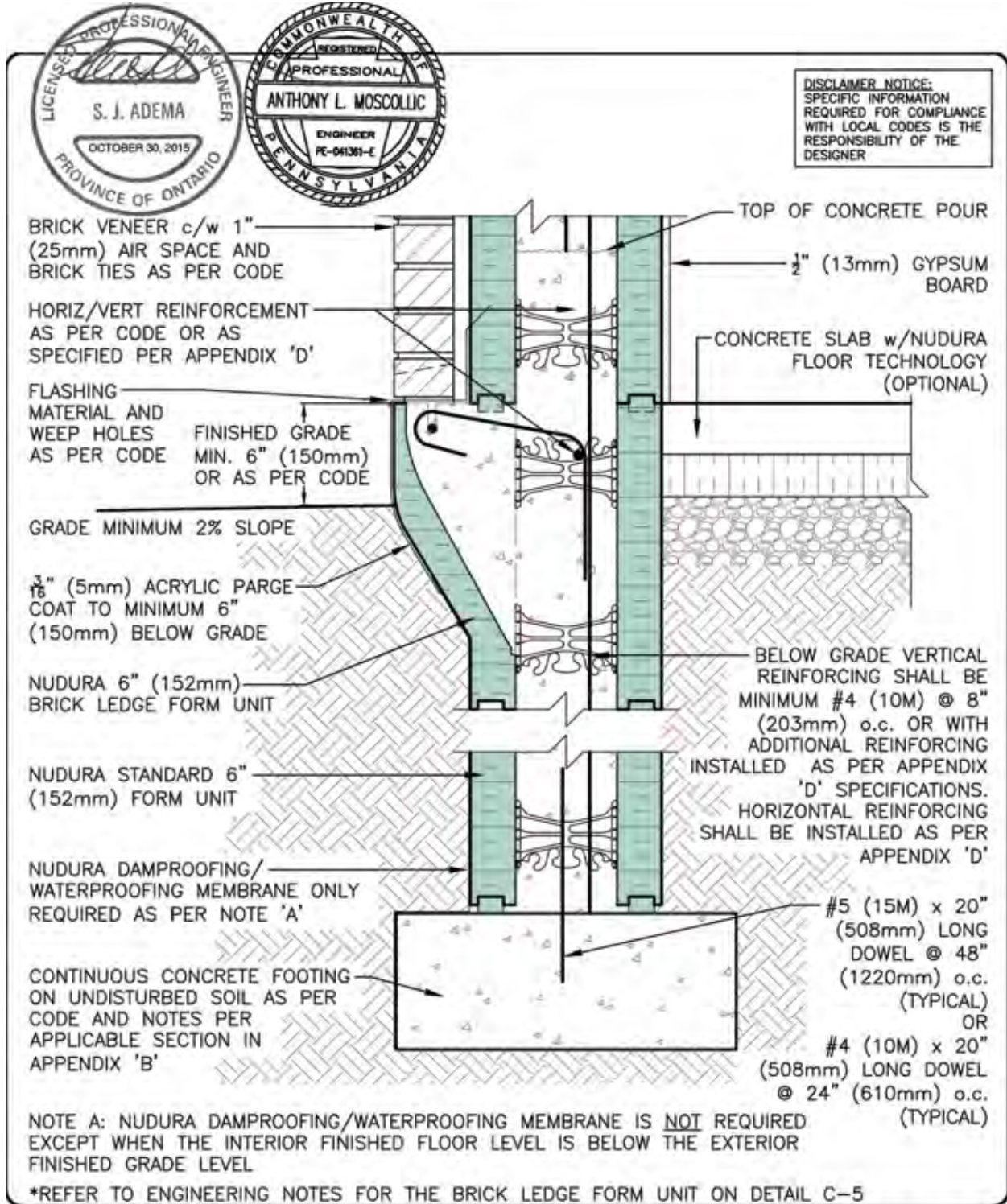
NUDURA 6" (152mm) FORM UNIT  
STEM WALL AT SLAB ON GRADE  
NUDURA FLOOR TECHNOLOGY  
NON-BRICK FINISH

REV. NO.  
002 KS  
DATE:  
SEPT 2015  
DRAWN BY:  
K. STILL

DWG NO.  
C-17  
SCALE:  
"Not to Scale"



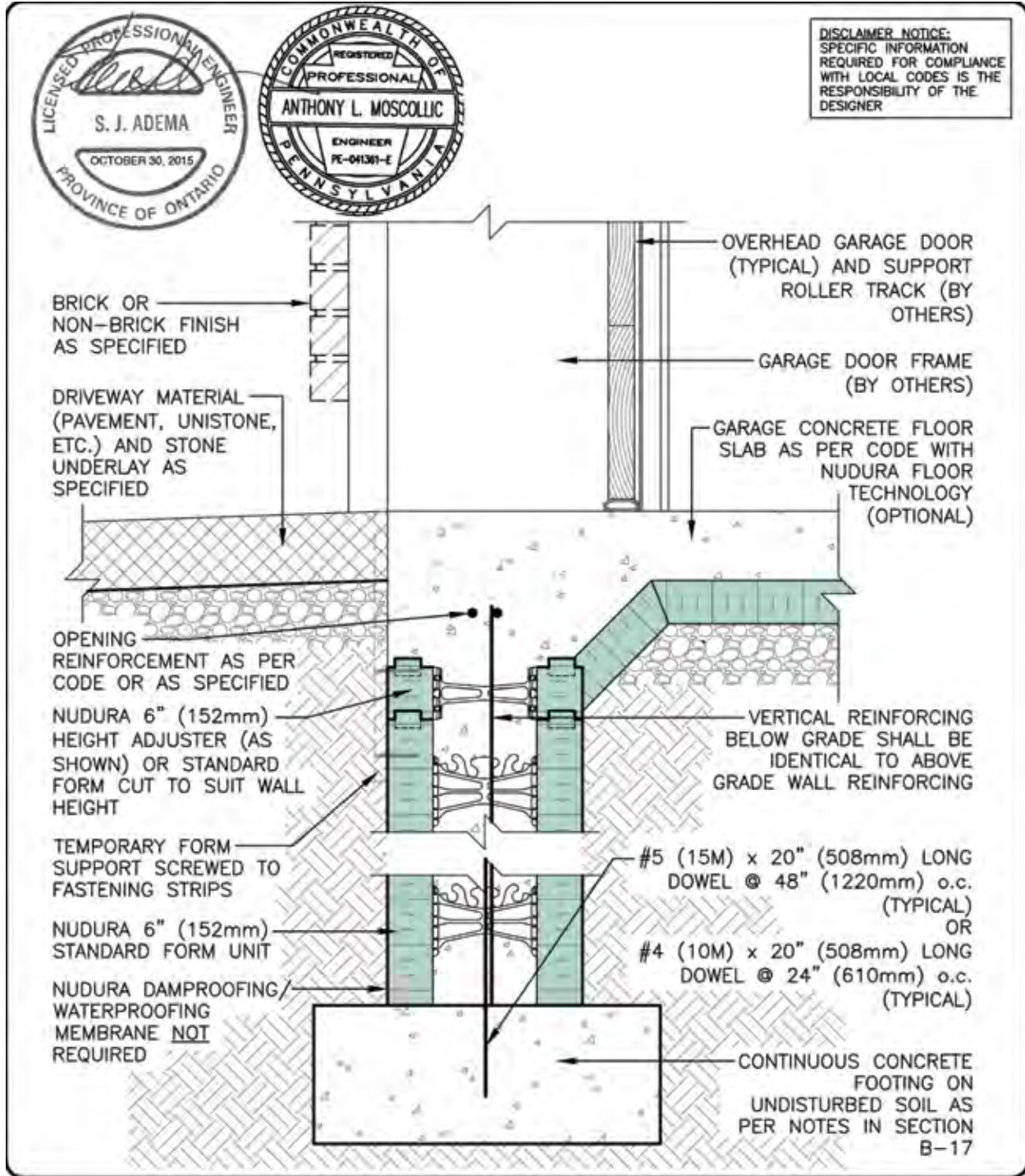
# TYPICAL DETAILS C-18



NUDURA 6" (152mm) BRICK LEDGE  
NUDURA 6" (152mm) FORM UNIT  
ABOVE GRADE  
STEM WALL AT SLAB ON GRADE  
BRICK VENEER FINISH

REV. NO. 002 KS	DWG NO. C-18
DATE: SEPT 2015	
DRAWN BY: K. STILL	SCALE: "Not to Scale"

# TYPICAL DETAILS C-19

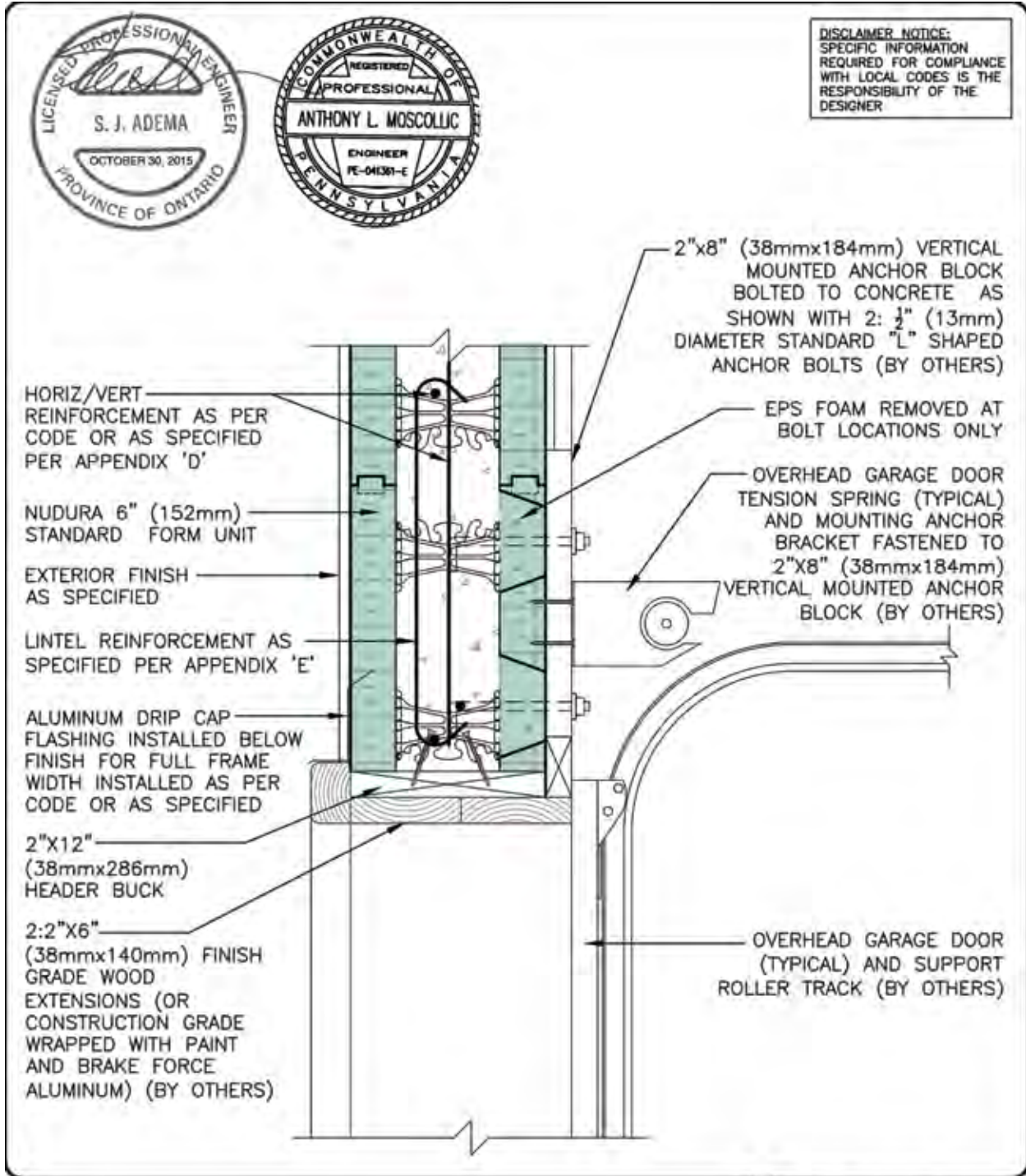


NUDURA 6" (152mm) FORM UNIT  
STEM WALL DETAIL  
TYPICAL GARAGE DOOR CONNECTION  
BRICK OR NON-BRICK FINISH

REV. NO. 002 KS	DWG NO. C-19
REV. DATE: SEPT 2015	
DRAWN BY K. STILL	SCALE: "Not to Scale"



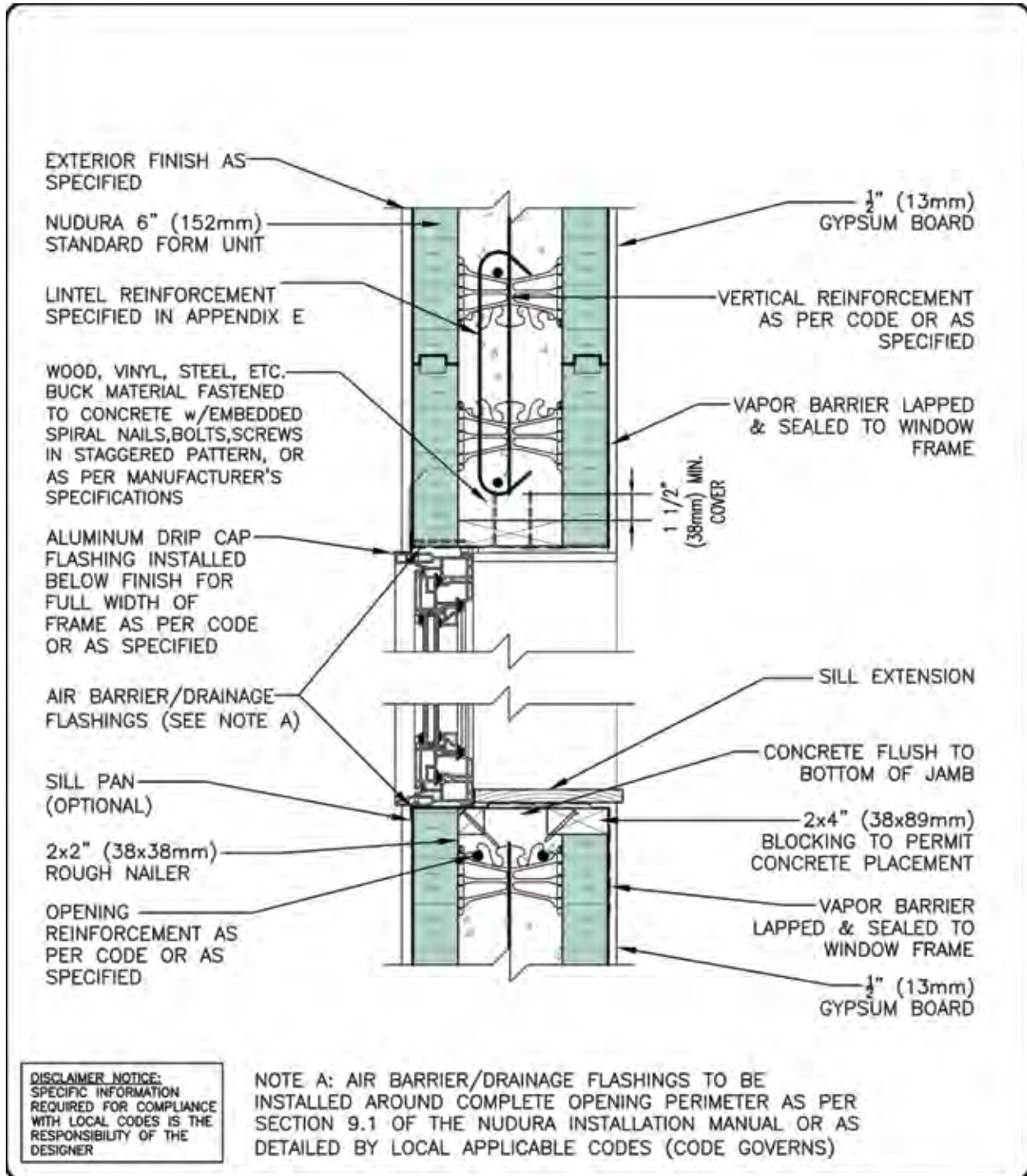
# TYPICAL DETAILS C-20



TYPICAL RESIDENTIAL GARAGE DOOR ATTACHMENT TO NUDURA 6" (152mm) FORM UNIT HEAD DETAIL NON-BRICK FINISH

REV. NO. 002 KS	DWG NO. C-20
REV. DATE: SEPT 2015	
DATE: K. STILL	SCALE: "Not to Scale"

# TYPICAL DETAILS C-21

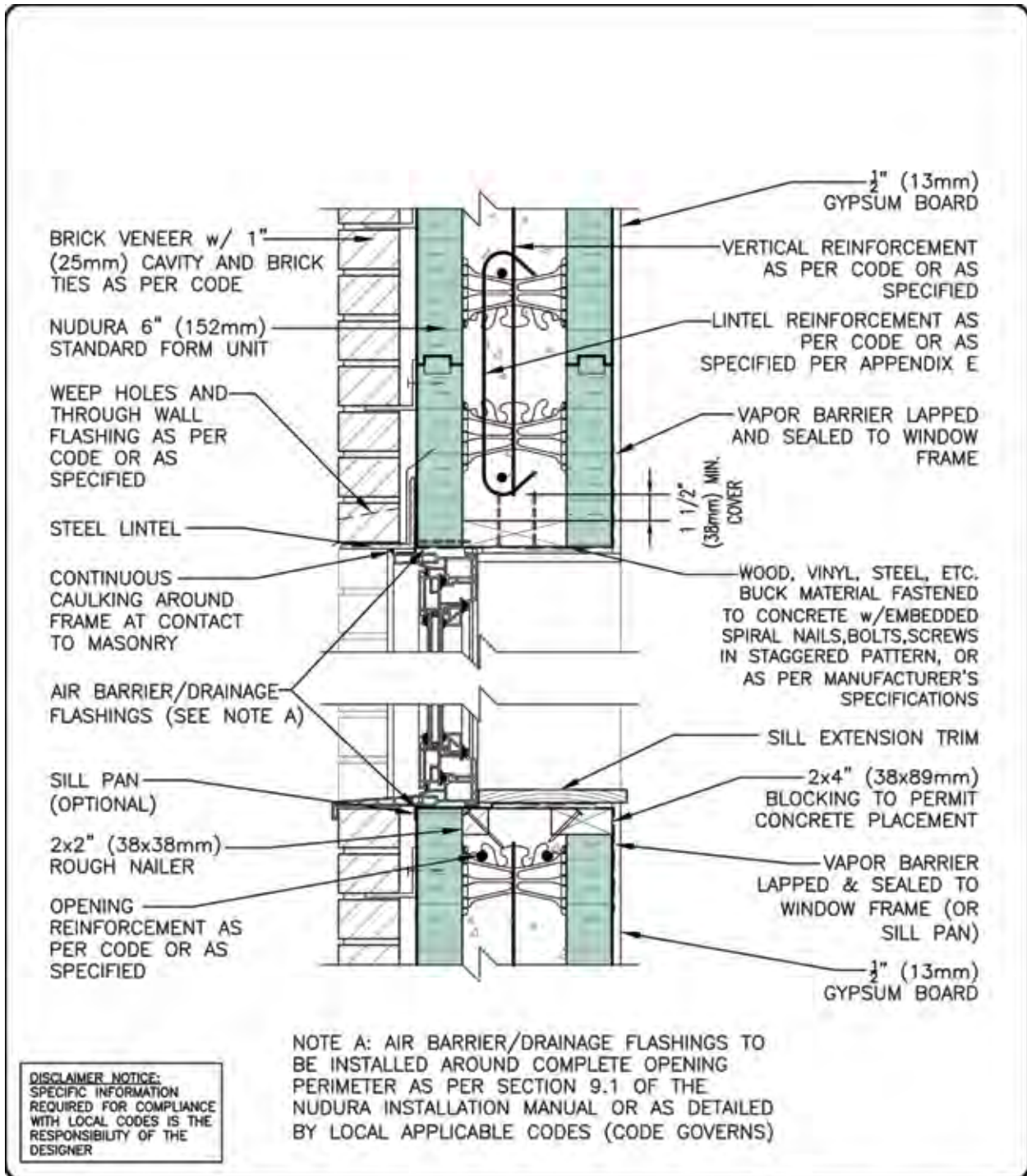


STANDARD 6" (152mm) FORM UNIT  
WINDOW HEAD/SILL DETAIL  
NON-BRICK FINISH  
WINDOW TO EXTERIOR

REV. NO. 001 KS	DWG. NO. C-21
DATE SEPT 2015	
DRAWN BY: K. STILL	SCALE: 1 1/2"=1'-0"



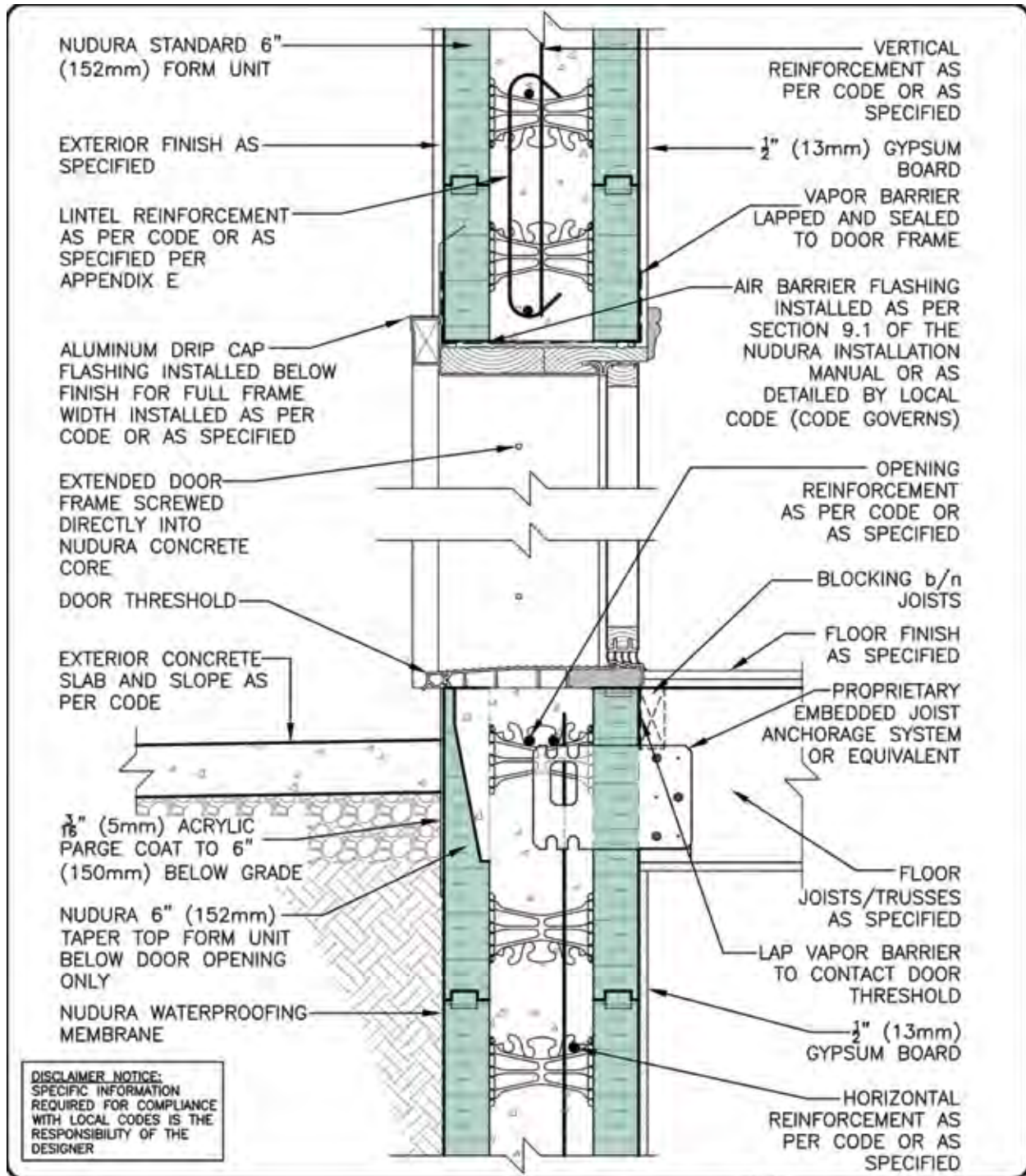
# TYPICAL DETAILS C-22



STANDARD 6" (152mm) FORM UNIT WINDOW HEAD/SILL DETAIL BRICK VENEER FINISH

REV. NO. 001 KS	DWG. NO. C-22
DATE: SEPT 2015	
DRAWN BY: K. STILL	SCALE: 1 1/2"=1'-0"

# TYPICAL DETAILS C-23

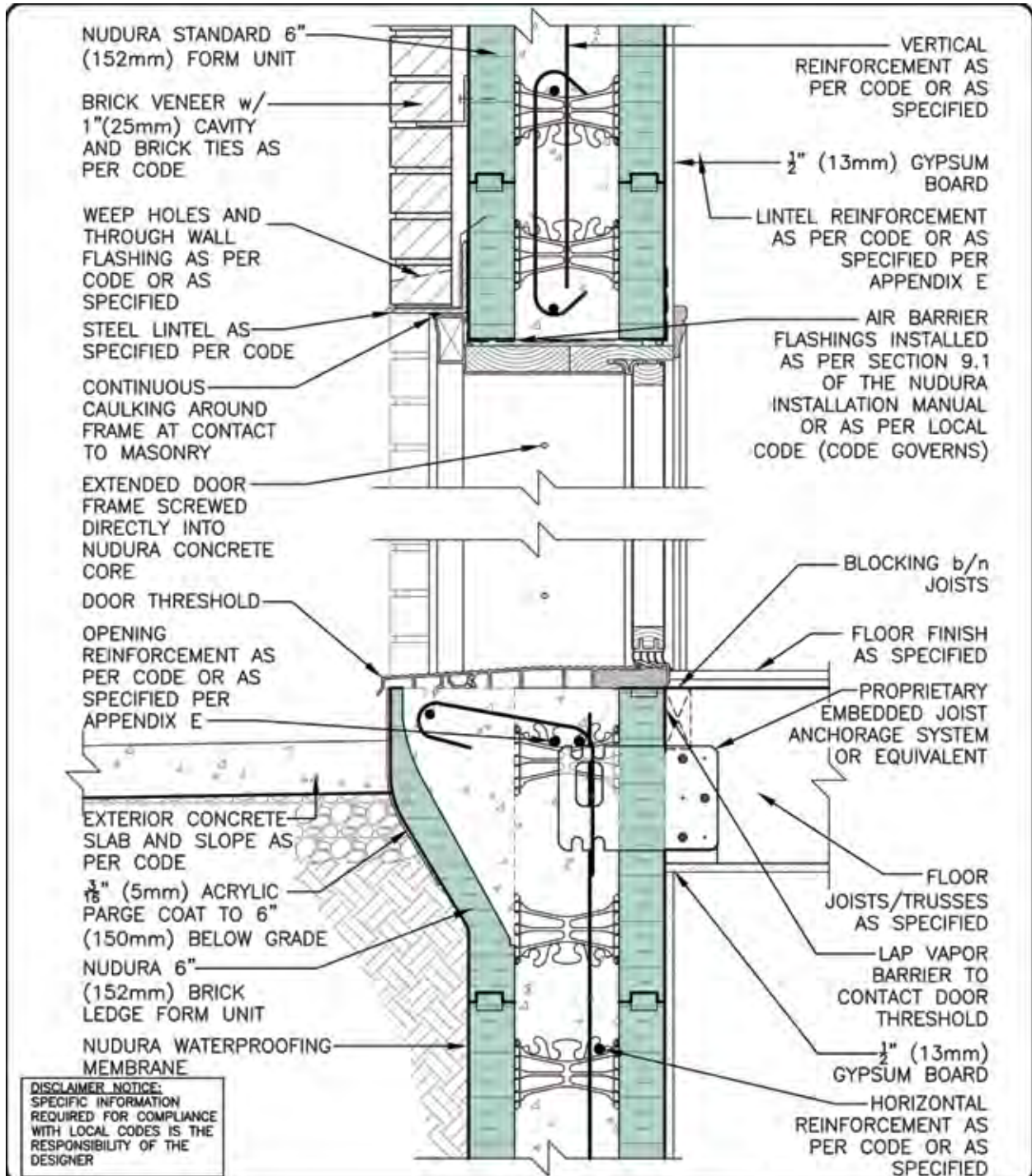


STANDARD 6" (152mm) FORM UNIT  
DOOR HEAD/THRESHOLD DETAIL  
NON-BRICK FINISH

REV. NO. 001 KS	DWG. NO. C-23
DATE: SEPT 2015	
DRAWN BY: K. STILL	SCALE: 1 1/2" = 1'-0"



# TYPICAL DETAILS C-24



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 SPECIFIC INFORMATION  
 REQUIRED FOR COMPLIANCE  
 WITH LOCAL CODES IS THE  
 RESPONSIBILITY OF THE  
 DESIGNER



STANDARD 6" (152mm) FORM UNIT  
 DOOR HEAD/THRESHOLD DETAIL  
 BRICK VENEER FINISH

REV. NO. 001 KS	DWG NO. C-24
DATE: SEPT 2015	
DRAWN BY: K. STILL	SCALE: 1 1/2" = 1'-0"