

# ONTARIO BUILDING CODE STANDARDS

#### Excavation and Backfill

- Excavation shall be undertaken in such a manner so as to prevent damage to existing structures, adjacent property and utilities
- The topsoil and vegetable matter in unexcavated areas under a building shall be removed. The bottom of excavations for foundations shall be free of all organic material
- If termites are known to exist, all stumps, roots and wood debris shall be removed to a minimum depth of 300mm in excavated areas under a building, and the clearance between untreated structural wood elements and the ground shall be
- no less than 450mm Backfill within 600mm of the foundation walls shall be free of deleterious debris and boulders over 250mm in diameter

#### Dampproofing and Drainage

- In normal soil conditions, the exterior surfaces of foundation walls enclosing basements and crawl spaces shall be dampproofed. Where hydrostation pressure occurs, a waterproofing system is
- Masonry foundation walls shall be parged with 6mm of mortar coved over the footing prior to
- 100mm dia. foundation drains shall be laid on level, undisturbed ground adjacent to the footings at or below the top of the basement slab or crawl space floor, and shall be covered with 150mm of crushed stone. Foundation drains shall drain to a storm sewer, drainage ditch, dry well or sump
- Window wells shall be drained to the footing level or to a ditch or sump pump. Downspouts not directly connected to a storm
- sewer shall have extensions to carry water away from the building, and provisions shall be made to prevent soil erosion
- Concrete slabs in attached garages shall be sloped to drain to the exterior The building site shall be graded so that surface, sump and roof drainage will not accumulate at or

near the building and will not adversely affect

adjacent properties Footings as per Structural Design and Structural Notes

- minimum 15MPa poured concrete minimum 1200mm below finished grade
- Footings shall be founded on natural undisturbed soil, rock or compacted granular fill with minimum bearing capacity of 150kPa to be site verified by Soil Engineer
- Footing Size as per Structural Design and Structural Notes see Structural Drawings
- The projection of an unreinforced footing beyond the wall supported shall not be greater than its thickness
- Step Footings
- 600mm max. rise 600mm min. run

# as per Structural Design and Structural Notes

above finished grade.

- To be poured concrete, unit masonry, ICF or preserved wood (see drawings for type and
- Dampproofing shall be a heavy coat of
- bituminous material. Foundation wall to extend minimum 150mm
- A drainage layer is required on the outside of a foundation wall where the interior insulation extends more than 900mm below exterior grade. A drainage layer shall consist of
- Min.19mm mineral fibre insulation with min. Density of 57 kg/m<sup>3</sup> of free drainage granular material,
- Min.100mm or An approved system which provides
- equivalent performance
- Foundation walls shall be braced or have the floor joists installed before backfilling

### Concrete Floor Slabs

- Garage, carport and exterior slabs and exterior steps shall be 32MPa concrete with 5-8% air
- Basement slab 25MPa concrete, minimum 75mm thick, placed on a minimum 100mm of coarse, clean, granular material
- All fill other than coarse clean material placed beneath concrete slabs shall be compacted to provide uniform support

# Masonry Walls

- Where constructed of 90mm brick, wall shall be bonded with a header course every 600mm o/c vertically and horizontally and 900mm o/c for
- Provide 50mm solid masonry, concrete filled top course or continuous 38x89 wood plate under
- all roof and floor framing members Provide190mm solid masonry under beams and
- Masonry wall to be tied to each tier of joists with 40mm x 4.76mm corrosion resistant steel straps, keyed minimum 100mm into masonry. When joists are parallel to wall, ties are to extend across at
- least 3 joists @ 2000mm o.c. Inside of wall to be parged and covered with No.15 breather-type asphalt paper
- For reduced foundation walls to allow a brick facing while maintaining lateral support, tie minimum 90mm brick to minimum 90mm backup block with corrosion resistant ties at least 17.8mm<sup>2</sup> in cross sectional area, spaced 200mm vertically and 900mm horizontally, with joints completely filled with mortar
- Masonry over openings shall be supported on corrosion resistant or prime painted steel lintels with a minimum of 150mm end bearing

- Minimum 70mm thick if joints are not raked and 90mm thick if joints are raked Minimum 25mm air space to sheathing
- Provide weep holes @800mm o.c. at the bottom of the cavity and over doors and windows • Direct drainage through weep holes with 0.5mm
- poly flashing extending minimum 50mm up behind the sheathing paper Veneer ties minimum0.76mm thick x 22mm wide corrosion resistant straps spaced @ 500mm
- vertically and 600mm horizontally Fasten ties with corrosion resistant 3.18mm diameter screws or spiral nails which penetrate at least 30mm into studs

#### Wood Frame Construction as per Structural Design and Structural Notes

- All lumber shall be spruce-pine-fir No.1 & 2, and shall be identified by a grade stamp
- Maximum moisture content 19% at time of Wood framing members which are supported on concrete in direct contact with soil shall be

separated from the concrete with 0.05mm

# polyethylene or type 'S' roll roofing

#### Exterior walls shall consist of:

- air barrier system lapped 100mm at joints lumber, plywood, OSB or gypsum sheathing
- 38x140 studs @ 400mm o.c.
- RSI 4.23 insulation 38x140 bottom plate
- 38x140 double top plate
- Interior loadbearing walls shall consist of: 38x89 studs @ 400mm o.c. 38x98 bottom plate and double 38x89 top plate
- 38x89 mid-girts if not sheathed 12.7mmgypsum board sheathing
- Wall Sheathing As per O.B.C. 9.23.16.

# Floors as per Structural Design and Structural Notes

- See Structural Design for floor joist size and spacing requirements
- Joists to have minimum 38mmof end bearing Joists shall bear on a sill plate fixed to
- foundation with 12.7mmanchor bolts @ 2400mm o.c Header joists between 1200mm and 3200mm in length shall be doubled. Header joists exceeding 3200mm shall be sized by calculations
- Trimmer joists shall be doubled when supported header is between 800mm and 2000mm. Trimmer joists shall be sized by calculations when
- supported header exceeds 2000mm 38x38 cross bridging required not more than 2100mm from each support and from other
- Joists shall be supported on joist hangers at all flush beams, trimmers, and headers. Non-loadbearing partitions shall be supported

# on a joist or on blocking between joists.

# As per O.B.C. 9.26.4.

#### Roof & Ceilings as per Structural Design and Structural Notes

- See Structural Design for roof structure -sizes and spacing
- Hip and valley rafter shall be 38mm deeper than common rafters 38x89 collar ties @ rafter spacing with 19x89
- continuous brace at mid span if collar tie exceeds 2400mm in length
- Roof Sheathing As per O.B.C. 9.23.15.

### Notching & Drilling of Trusses, Joists, Rafters

- Holes in floor, roof and ceiling members to be not larger than 1/4 the actual depth of member and not less than 50mm from edges
- Notches in floor, roof and ceiling members to be located on top of the member within 1/2 the actual depth from the edge of bearing and not greater than 1/3 the joist depth
- Wall studs may be notched or drilled provided that no less than 2/3 the depth of the stud remains, if load bearing, and 40mm if non-load

#### Roof truss members shall not be notched, drilled or weakened unless accommodated in the design

#### Columns, Beams & Lintels

- Steel beams and columns shall be shop primed 350W steel. Minimum 89mm end bearing for wood and steel
- beams, with 190mm solid masonry beneath the Steel columns to have minimum outside diameter of 73mm and minimum wall thickness
- Wood columns for carports and garages shall be minimum89mm x 89mm; in all other cases either 140mm x 140mm or 184mm round, unless calculations based on actual loads show lesser
- sizes are adequate. All columns shall be not less than the width of the supported member Masonry columns shall be a minimum of 290mm
- x 290mm or 240mm x 380mm Provide solid blocking the full width of the supported member under all concentrated loads

#### Insulation & Weatherproofing

INSULATION AS PER AMENDED REQUIREMENTS OF O.B.C. PART 12 COMPLIANCE PACKAGE " J "

Supply Ducts in unheated space RSI 2.11 Insulation shall be protected with gypsum board or an equivalent interior finish, except for unfinished basements where 0.15mm poly is sufficient for fibreglass type insulations Ducts passing through unheated space shall be made airtight with tape or sealant Caulking shall be provided for all exterior doors and windows between the frame and the exterior Weatherstripping shall be provided on all doors

and access hatches to the exterior, except doors from a garage to the exterior Exterior walls, ceilings and floors shall be constructed so as to provide a continuous barrier to the passage of water vapour from the interior and to the leakage of air from the exterior

#### Natural Ventilation

Every roof space above an insulated ceiling shall be ventilated with unobstructed openings equal to not less than 1/300 of the insulated ceiling area Insulated roof spaces not incorporating an attic shall be ventilated with unobstructed openings equal to not less than 1/150 of the insulated ceiling area. Roof vents shall be uniformly distributed with min. 25% at top of the space and 25% at bottom of the space designed to prevent the entry of rain, snow or insects Unheated crawl spaces shall be provided with 0.1m<sup>2</sup> of ventilation for each 50m<sup>2</sup>

Minimum natural ventilation areas, where mechanical ventilation is not provided, are: Bathrooms: 0.28m <sup>2</sup> Unfinished basement: 0.2% of floor area

Doors and Windows Every floor level containing a bedroom and not served by an exterior door shall contain at least 1 window having an unobstructed open area of 0.35m<sup>2</sup> and no dimension less than 380mm, which is openable from the inside without tools. Maximum sill height 1000mm for fin. floors above grade. Exterior house doors and windows within 2000mm from grade shall be constructed to resist forced entry. Doors shall have a deadbolt lock The principal entry door shall have either a door viewer, transparent glazing or a sidelight

As per O.B.C. 9.6.6.2. Resistance to forced entry As per O.B.C. 9.6.8. and 9.7.6.1.

Glass in Doors and Sidelights

#### Exterior Walls No windows or other unprotected openings are permitted in exterior walls less than 1200mm from

15.9mm type 'x' fire rated drywall shall be installed on the inside face of attached garage exterior walls and gable ends of roofs which are less than 1200mm and not less than 600mm from property lines Non combustible cladding shall be installed on all exterior walls less than 600mm from property

Caulking As per O.B.C. 9.27.4 Waterproof wall finish

#### As per O.B.C. 9.29.2 Gypsum Board Finish (Taped Joints)

#### As per O.B.C. 9.29.5 Water Resistance

#### As per O.B.C. 9.30.1.(2) Panel-type underlay

### As per O.B.C. 9.30.2. Intersection of Built-up Roofs and Walls other

than masonry As per O.B.C. 9.26.4.7. Subflooring As per O.B.C. 9.26.4.

### Wall Sheathing As per O.B.C. 9.23.16.

- Restraint of joist bottoms Roof joists supporting a finished ceiling, other than plywood, OSB or waferboard, shall be restrained from twisting along the bottom by means of furring, blocking, cross bridging or strapping
- conforming to Article 9.23.9.3. Thickness
- Concrete slabs shall be not less than 75mm thick exclusive of concrete topping. Drips beneath window sills
- Except for wall openings located less than 150mm above ground level, where a concealed flashing is not installed beneath window and door sills, such sills shall be provided with an outward slope and a drip located not less than 25mm from the wall surface

### Downspouts

- As per O.B.C. 9.26.18.2.
- Wood strip flooring As per O.B.C. 9.30.3.
- Fire protection for gas, propane and electric As per O.B.C. 9.10.22. Intersection of shingle roofs and walls other
- than masonry As per O.B.C. 9.26.4.5.

Ceramic Tile When ceramic tile is applied to a mortar bed with adhesive, the bed shall be a minimum of 12.5mm thick & reinforced with galvanized diamond mesh lath, applied over polyethylene on subflooring on joists at no more than 400mm o.c. with at least 2 rows cross bridging Ceramic Tile

As per O.B.C. 9.30.6.

- Access to Attics and Crawl Spaces Access hatch minimum 545mmx 588mm to be
- provided to every roof space which is 10m<sup>2</sup> or more in area and more than 600mm in height Access hatch minimum 500mmx 700mm to be
- provided to every crawl space Garage Gasproofing The walls and ceiling of an attached garage shall be constructed and sealed so as to provide an
- effective barrier to exhaust fumes All plumbing and other penetrations through the walls and ceiling shall be caulked Doors between the dwelling and attached garage may not open into a bedroom and shall be

weatherstripped and have a self-closer

#### Alarms and Detectors

- At least one smoke alarm shall be installed on or near the ceiling on each floor and basement level 900mm or more above an adjacent level Smoke alarms shall be interconnected and
- bedroom door and no more than 15m travel distance from any point on a floor A carbon monoxide detector shall be installed adjacent to every sleeping area for dwellings with

fuel burning fireplace or stove, or an attached garage

235mm

located such that one is within 5m of every

- Maximum Rise Minimum Run 210mm
- 1950mm Minimum Head Room Minimum Width Curved stairs shall have a min. run of 150mm at any point and a minimum average run of 200mm Winders which converge to a point in stairs must
- no less than 30° or more than 45° per tread. Sets of winders must be separated by 1200mm along the run of the stair A landing is required at the top of any stair leading to the principal entrance to a dwelling

and other exterior entrances with more than 3 risers

turn through an angle of no more than 90°, with

 Exterior concrete stairs with more than 2 risers require foundations

Minimum Tread

Handrails and Guards A handrail is required for interior stairs containing more than 2 risers and exterior stairs containing more than 3 risers Guards are required around every accessible

surface which is more than 600mm above the

adjacent level and where the adjacent surface Interior and exterior guards min. 900mm high. Exterior guards shall be 1070mm high where height above adjacent surface exceeds 1800mm Guards shall have openings smaller than 100mm

and no member between 140mm and 900mm that will

# facilitate climbing

- Every dwelling requires a kitchen sink, lavatory, water closet, bathtub or shower stall and the installation or availability of laundry facilities A floor drain shall be installed in the basement.
- shall be connected to a sewage ejection pump.

and connected to the sanitary sewer where

gravity drainage is possible. In other cases, it

- An exterior light controlled by an interior switch is required at every entrance A light controlled by a switch is required in every kitchen, bedroom, living room, utility
- room, laundry room, dining room, bathroom, vestibule, hallway, garage and carport. A switched receptacle may be provided instead of a light in bedrooms and living rooms Stairs shall be lighted, and except where serving an unfinished basement shall be controlled by &
- way switch at the head and foot of the stairs Basements require a light for each 30m<sup>2</sup>, controlled by a switch at the head of the stairs Mechanical Ventilation
- A mechanical ventilation system is required with a total capacity at least equal to the sum of: 10.0 L/S each for basement and master bedroom 5.0 L/S for each other room
- A principal dwelling exhaust fan shall be installed and controlled by a centrally located switch identified as such Supplemental exhaust shall be installed so that the total capacity of all kitchen, bathroom and
- other exhausts, less the principal exhaust, is not less than the total required capacity A Heat Recovery Ventilator may be employed in lieu of exhaust to provide ventilation. An HRV is required if any solid fuel burning appliances Supply air intakes shall be located so as to avoid

contamination from exhaust outlets

# Roof & Ceilings as per Structural Design and Structural Notes

 SeeStructural Design for rafter, roof joist and ceiling joist size and spacing requirements

Hip and valley rafter shall be 38mm deeper than

common rafters 38x89 collar ties @ rafter spacing with 19x89 continuous brace at mid span if collar tie exceeds 2400mm in length

# As per O.B.C. 9.26.4.7.

- Fasteners for roofing shall be corrosion resistant. Roofing nails shall penetrate through or at least 12mm into roof sheathing
- least 4 nails for 1000mm wide shingle Eave protection shall extend 900mm up the roof slope from the edge, and at least 300mm from the inside face of the exterior wall, and shall consist of Type M or Type S Roll Roofing laid with minimum 100mm head and end laps cemented together or glass Fibre or Polyester Fibre coated base sheets or self sealing composite membranes consisting of modified bituminous coated material or NO.15 saturated felt lapped and cemented. Eave protection is not required

Every asphalt shingle shall be fastened with at

slope of 1 in 1.5, or where a low slope asphalt shingle application is provided Open valleys shall be flashed with 2 layers of roll roofing, or 1 layer of sheet metal min. 600mm wide

for unheated buildings, for roofs exceeding a

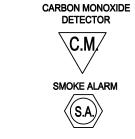
 Flashing shall be provided at the intersection of shingle roofs with exterior walls and chimneys Sheet metal flashing shall consist of not less than 1.73mmsheet lead, 0.33mm galvanized steel, 0.33mmcopper, 0.35mmzinc, or 0.48mm aluminum

# Intersection of Built-up Roofs and Walls other

- Water Resistance As per O.B.C. 9.30.1.(2)
- Panel-type underlay As per O.B.C. 9.30.2. Asphalt shingles on slopes of 1 in 3 or Greater
- As per O.B.C. 9.26.7 Roofing materials
- As per O.B.C. 9.26.2.1.(1)(I) Roof Sheathing As per O.B.C. 9.23.15.

Sheathing membrane material standard

 As per O.B.C. 9.27.3.2. As per O.B.C. 9.26.18.2.



EACH SLEEPING AREA THIN EACH DWELLING UNIT ADJACENT QUIRED CARBON MONOXIDE DETECTO

ALARMS MUST BE LOCATED ON OR NEAR THE CEILING WITHIN 5M OF BEDROOM DOORS. INTERCONNECTED DUE TOSEPARATION BETWEEN UNITS AND EGRESS REQUIREMENTS MAY BE BATTERY OPERATED EXCEPT WHERE SMOKE ALARMS ARE REQUIRED TO BE SMOKE ALARMS AND CARBON MONOXIDE DETECTORS O.B.C. 2012 9.10.19.3.; 9.33.4.2.

MAY BE BATTERY OPERATED OR PLUGGED INTO AN ELECTRICAL OUTLET.

9.26.11. BUILT-UP ROOF THE QUANTITIES OF BITUMINOUS MATERIALS USED ON BUILT-UP ROOF SHALL CONFORM TO TABLE 9.26.11.1 O.B.C. ROOF TRUSSE\$ (typ 1)@ 24"o.c. AS PER MANUFACTURE INSULATION AS PER AMENDED REQUIREMENTS OF O.B.C. PART 12 BATT INSULATION R- 50batt 183.42 TOP OF PLATE TOP OF PLATE **CEILING LEVEL CEILING LEVEL** INSULATION AS PER AMENDED REQUIREMENTS OF O.B.C. PART 12 INSULATION MIN.RSI- R22 COMPLIANCE PACKAGE " J ' 180.68 SECOND FLOOR SECOND FLOOR Floor JOISTS as per Structural Design **INSULATION AS PER AMENDED** REQUIREMENTS OF O.B.C. PART 12 INSULATION MIN.RSI- R22 COMPLIANCE PACKAGE " J 177.30 FIRST FLOOR FIRST FLOOR LEVEL Floor JOISTS as per Structural Design INSULATION AS PER AMENDED REQUIREMENTS OF O.B.C. PART 12 **INSULATION MIN.RSI-R12** COMPLIANCE PACKAGE " J " 174.25 174.25 BASEMENT FLOOR BASEMENT FLOOR LEVEL Footings as per Structural Design!

DESIGN

**PAAR Architecture** 

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Firm Name

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DESIGN

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The undersigned has reviewed and takes responsibility for this

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**Qualification Information** 

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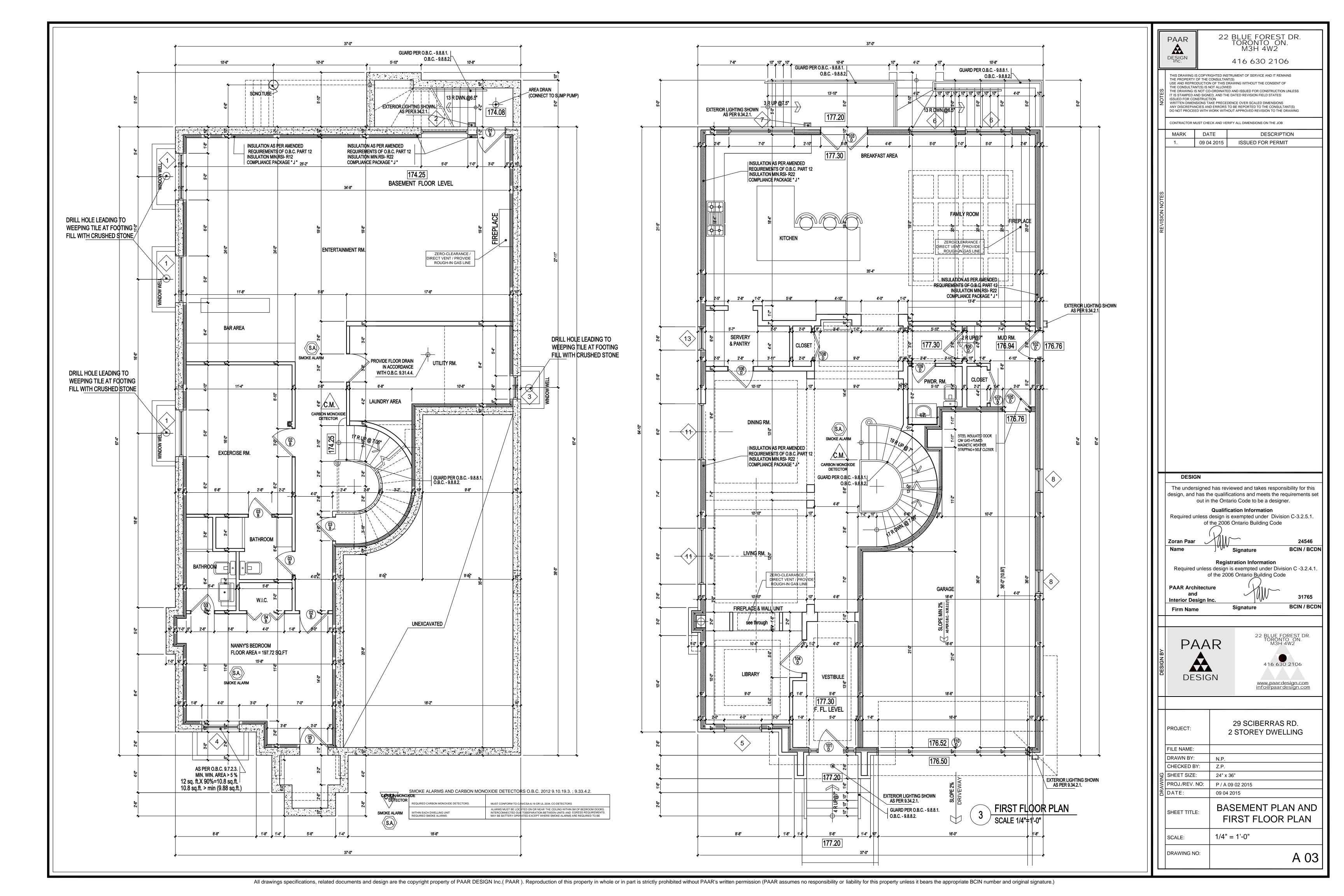
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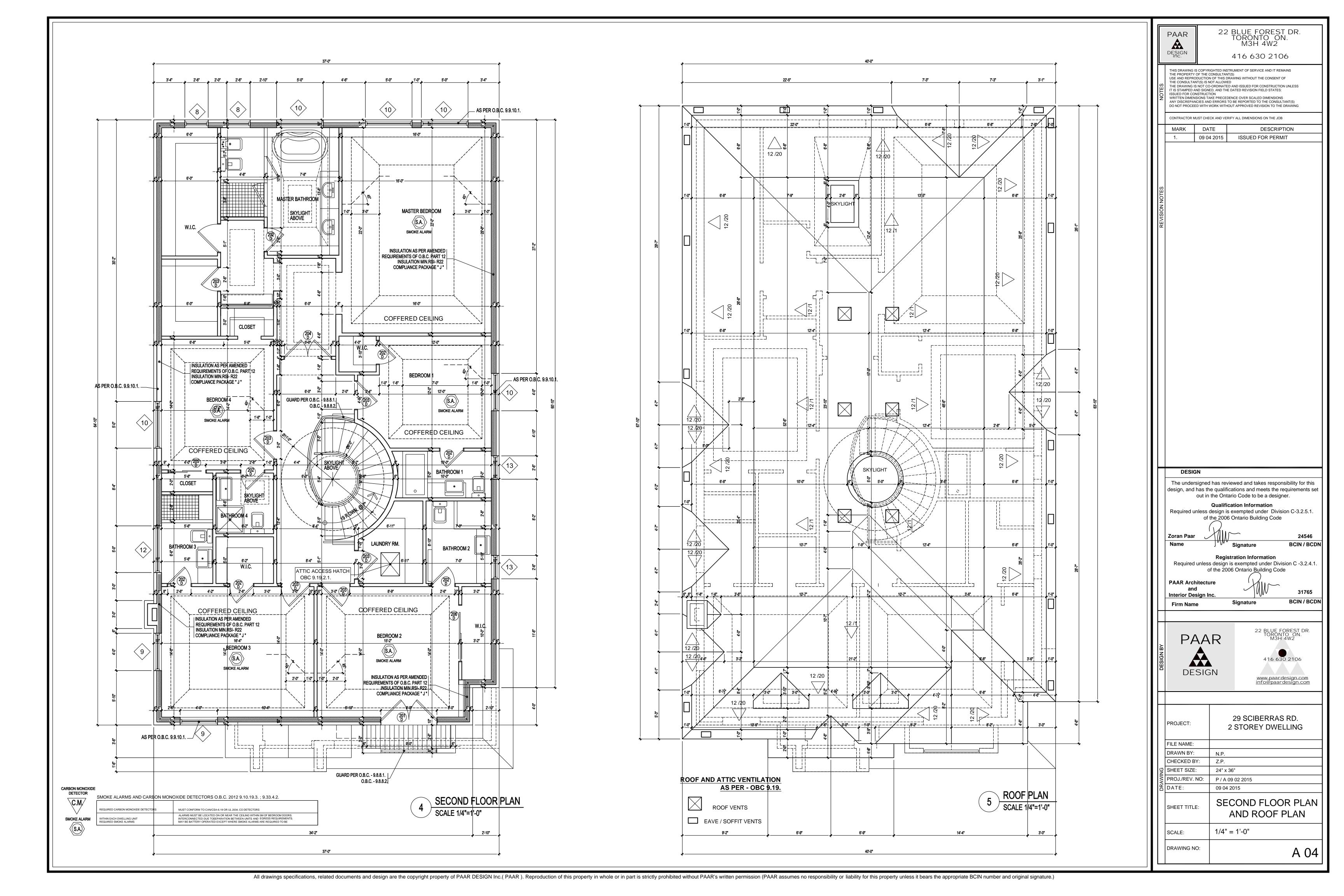
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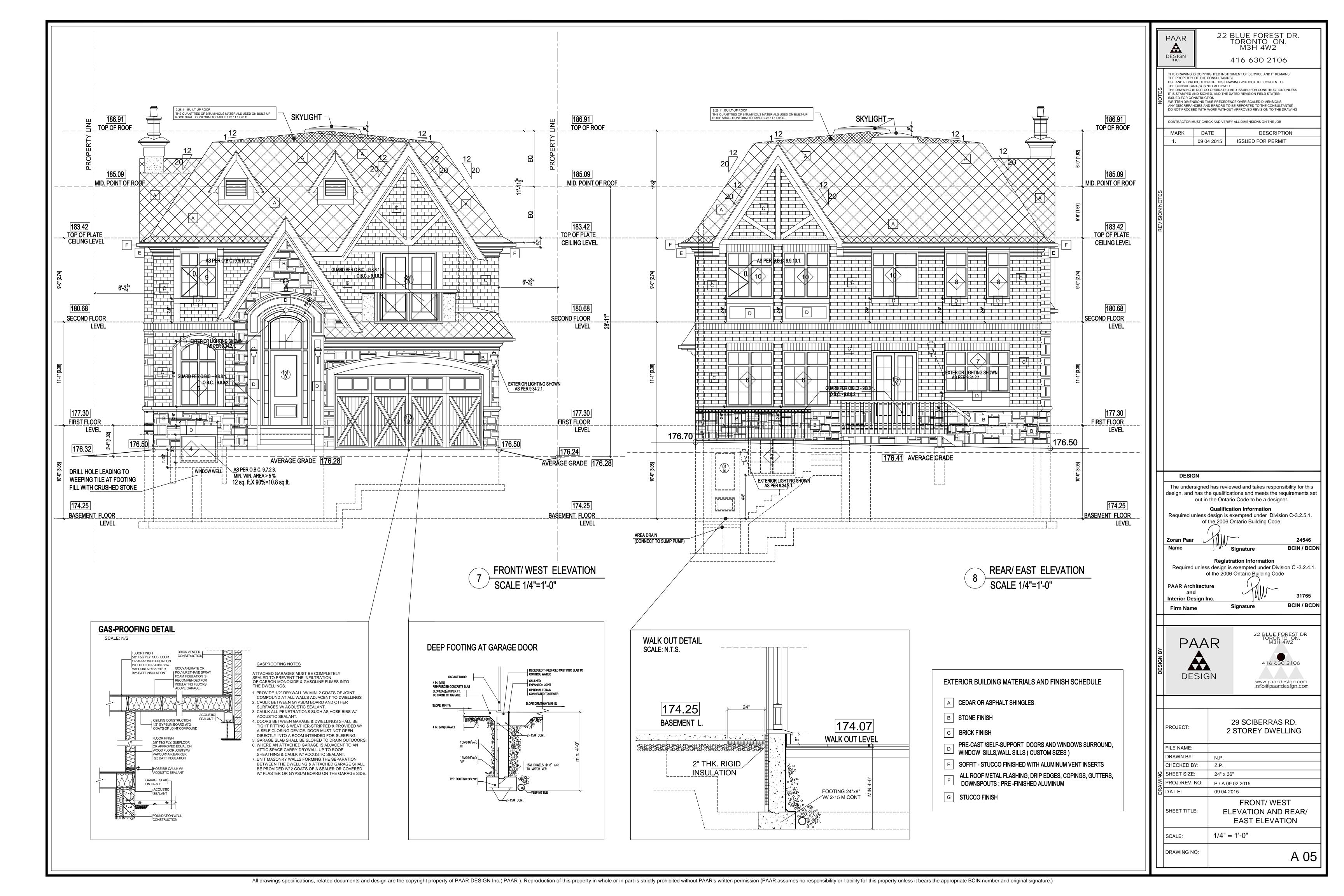
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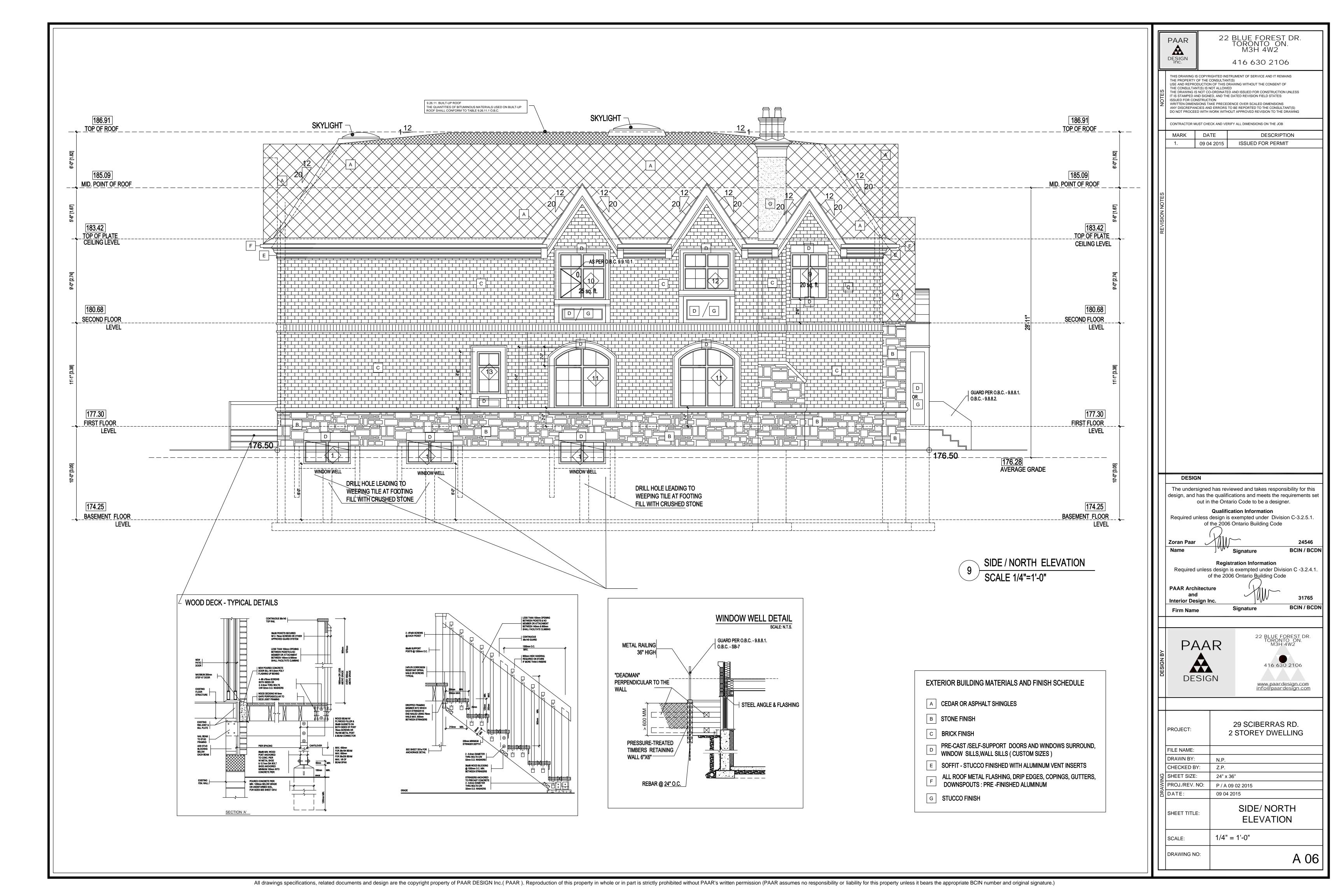
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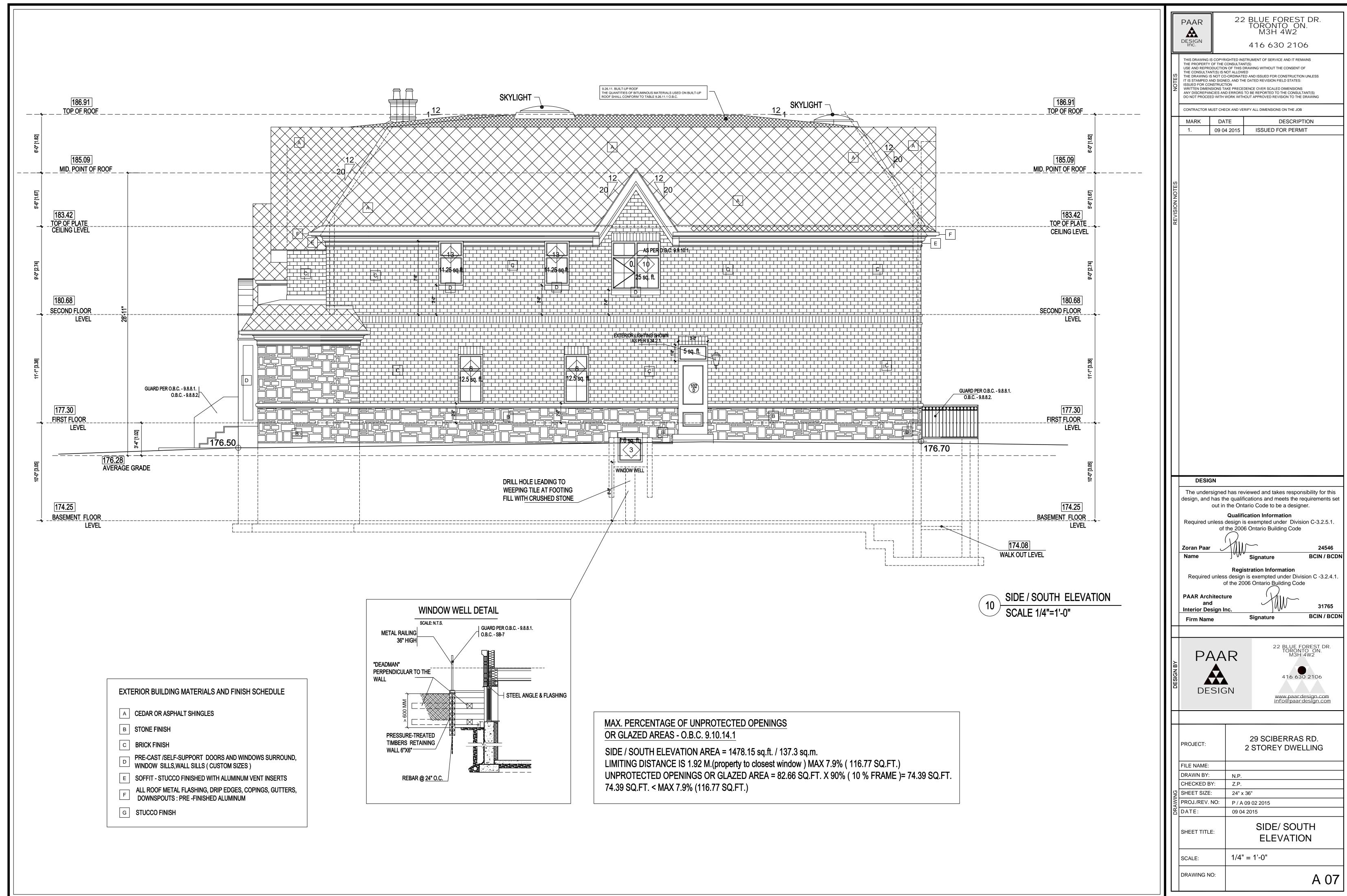
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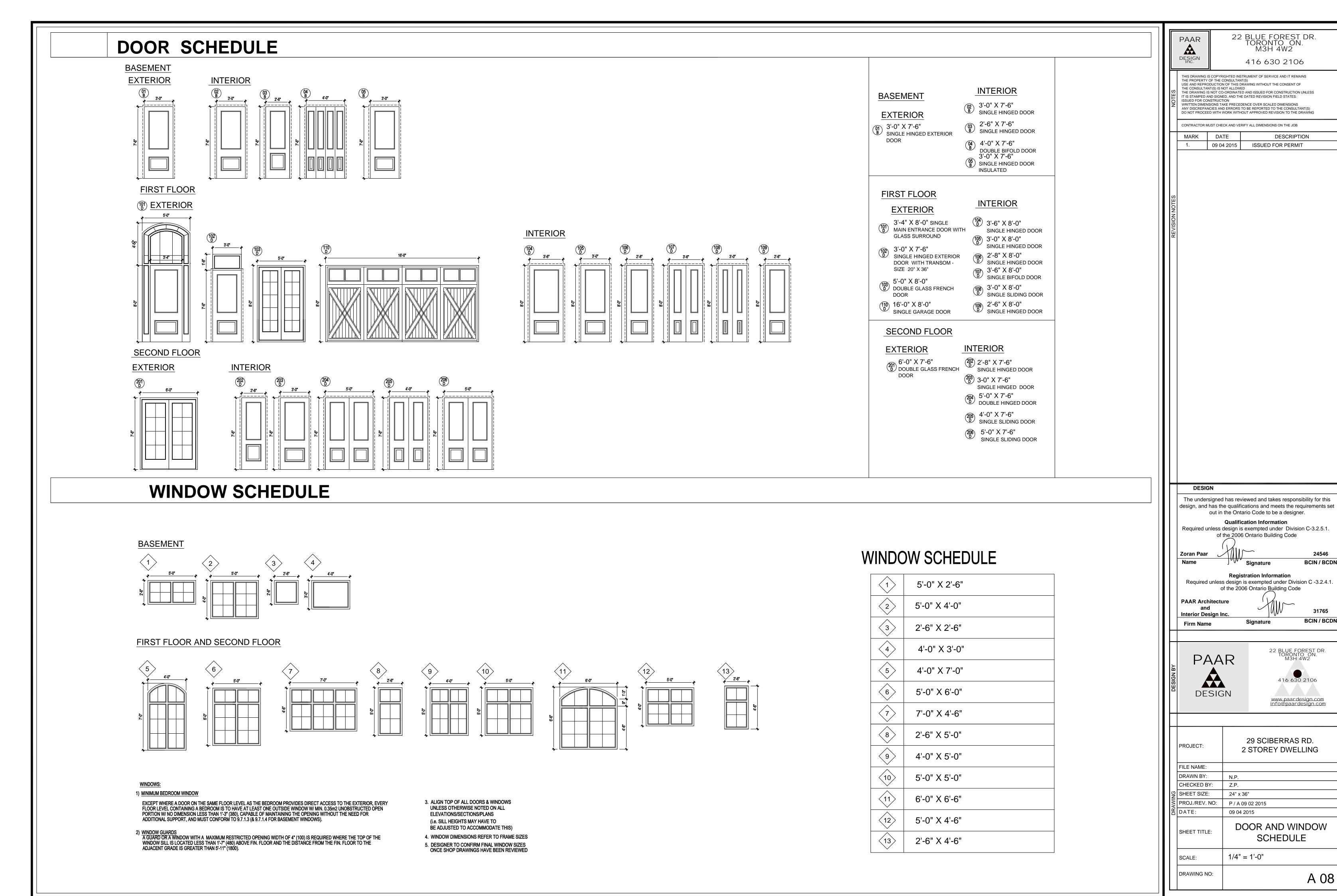












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