



Office of the Auditor General / Bureau du vérificateur général

AUDIT OF A SPECIFIC HOUSE - DRAWINGS

2009

VÉRIFICATION DE PLANS D'UNE MAISON PRÉCISE

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DRAFT & CONFIDENTIAL

EXECUTIVE SUMMARY

Introduction

This audit was conducted as a result of a report to the Fraud and Waste Hotline. This audit was not originally identified in the Audit Plan that was presented to Council.

House models built in Kingston were the reason for disciplinary hearings of the Association of Professional Engineers of Ontario (PEO) in October 2007. These models were also reportedly constructed in the City of Ottawa. The Director of the Building Code Services Branch (BCSB) stated in the news reports that the houses constructed by the developer in Ottawa would have been issued a building permit only after the BCSB would have been satisfied that the houses met the requirements of the Ontario Building Code.

The PEO disciplinary hearing found six specific defects in the engineering review of the house models as built in Kingston. The specific details of the complaint, the disciplinary hearings, and the penalty decisions are presented in the PEO Gazette.

Audit Objectives

Audit Objective No. 1 - Examine the drawings submitted by the developer to the City of Ottawa's Building Code Services Branch.

Audit Objective No. 2 - Determine if the drawings are the same as those submitted to the City of Kingston for identical house models.

Audit Objective No. 3 - Determine whether the drawings are consistent with relevant policies, procedures, legislation and regulations.

Audit Objective No. 4 - Examine the role of the Building Code Services Branch in relation to the specific files.

Audit Scope

The Audit Scope encompassed the building permit and inspection process for houses of the house models subject of the PEO disciplinary hearing, constructed by the developer and reviewed by the engineering company in Ottawa.

Summary of Key Findings

1. Interviews with the Building Code Services Branch management and staff disclosed that the developer offered in the City of Ottawa only one model of the three offered by the developer in Kingston. Consequently, the review addressed only the pertinent house model.

2. The City of Ottawa building permit and inspection file for a house of the subject house model was examined to determine whether the documentation provided to the City of Ottawa meets the Code requirements.
3. The Building Code requirements are summarized in the City's House Submission Record for single-family dwellings, semi-detached dwellings and townhouses. The Plans Examiner concluded that the building permit application contained the required information in the City's House Submission Record for the subject Building Permit Application.
4. Subsequent to review of the information in the application and supporting documents, the Plans Examiner wrote to the applicant requesting additional information. In the request for additional information, the Plans Examiner identified five issues that were similar in scope to those that were raised in the complaint to the PEO. This demonstrates that the Plans Examiner was diligent in the review of the application and submitted documents.
5. The Applicant submitted in a letter a response to the request by the City for additional information. With the letter, the engineering company submitted drawings with the required revisions marked by hand.
6. Our review of the information provided by the engineering company confirmed that the information conforms to the requirements of the Code.
7. Upon review of the PEO Gazette and the Decision and Reasons summarizing the disciplinary hearing, the Building Code Services Branch reviewed the house model drawings submitted to the City by the developer, with particular emphasis on the items noted in the PEO complaint and disciplinary hearing summary. The review confirmed that the drawings submitted for the house model reviewed addressed all the items in the PEO disciplinary hearing.
8. The results of the review by BCSB are summarized on one page of undated handwritten notes. We note that the handwritten notes should have a title (for instance, Review of House Model vs. PEO Disciplinary Hearing), should be dated, and should have the name of the person doing the review. When we requested a copy of the review notes, we found that they were not included with the house file, but were kept separately by the Plans Examiner in a separate file.
9. Review of the overall file for the subject house showed that the documentation in the file was complete, per the requirements of the Policies, Guidelines and Standards Manual and the Building By-law. However, we noted that the HRAI Residential Mechanical Ventilation Record, which BCSB requested of the builder in May 2007, was only provided by the builder to the City on May 25, 2009, four days before the Final Occupancy Permit was issued. The HRAI Residential Mechanical Ventilation Record is on the checklist of items to be submitted during the occupancy inspection, and as such should be provided by the builder on time.

10. The Final Occupancy permit was issued in May 2009.

Recommendations and Management Responses

Recommendation 1

That the City ensure that the review notes by the Plans Examiner be filed with the respective building permit and inspection file, and that the document be titled, dated, and signed (with name printed) by the Plans Examiner. This was not the case in the file we audited.

Management Response

Management agrees with the recommendation.

In compliance with the City's Records Management Policy, the personal notes kept by the Plans Examiner were deemed transitory in nature and were not an *official business record*.

The supplementary review of the specific model was undertaken at the request of the Chief Building Official to confirm that the plans and specifications were in compliance with the Ontario Building Code, with specific reference to outstanding documentation as noted in the Professional Engineers of Ontario disciplinary hearing summary. The notes were kept for future reference only and did not document any obligation or responsibility and were, therefore, not considered an official business record. Notwithstanding, the documentation has been formalized and filed in the permit file.

Recommendation 2

That the City ensure that the documentation requested of the builder be submitted on time to permit the Inspector to review the documentation. In this case, the HRV balancing report was not provided by the builder until two years after BCSB requested it.

Management Response

Management agrees with the recommendation.

A review of the audited file confirmed that the required documentation was submitted within the prescribed timeline in accordance with the Building Code Services (BCS) branch Policies, Guidelines and Standards.

Specifically, the Building Official flagged to the permit holder, at the time of the Partial Occupancy inspection, the requirement to submit the report with the expectation it would be submitted prior to the issuance of the Final Occupancy Permit. There was no expectation to receive the report immediately following the issuance of the Partial Occupancy report. This is in recognition that the 'HRV balancing' report [known as the HRAI Residential Mechanical Ventilation

Record] documents the *as-built* condition of a system that is commissioned only at the final stages of construction.

It is important to note that in the majority of Partial Occupancy inspections performed for single dwelling units where an HRV is installed and balanced per the HRAI design summary, a copy of the HRAI Residential Mechanical Ventilation Record is provided to the Building Official by the builder even though this documentation is not required for partial occupancy. In this instance, the HRAI Residential Mechanical Ventilation Record was requested by the Building Official and was received prior to the issuance of the Final Occupancy permit in accordance with branch Policies, Standards and Guidelines.

Thus, there will be instances where documentation, to be produced as a prerequisite to the issuance of the Final Occupancy Permit, is submitted some time after the Partial Occupancy Permit is issued.

Conclusion

The audit revealed that the revised house model drawings submitted to the City of Ottawa by the engineering company addressed the concerns expressed in the PEO Complaint, and that the BCSB also reacted correctly to the news of the PEO decision by reviewing the submission by the engineering company. The file documentation was complete, but some of the information was not provided at the required time.

Acknowledgement

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management and staff.

RÉSUMÉ

Introduction

La tenue de cette vérification a fait suite à un signalement effectué par le biais de la Ligne directe de fraude et d'abus; à l'origine, elle n'était pas prévue dans le Plan de vérification présenté au Conseil municipal.

Certains modèles de maisons construites à Kingston ont entraîné des audiences disciplinaires de l'Ordre des ingénieurs de l'Ontario (PEO) en octobre 2007. On a également dit que des maisons répondant à ces modèles avaient été construites dans la Ville d'Ottawa. La directrice des Services du Code du bâtiment a déclaré à la presse que le permis de construire relatif à la construction de ces maisons à Ottawa par le promoteur n'aurait été délivré qu'une fois que les Services du Code du bâtiment se seraient assurés que lesdites maisons satisfaisaient aux exigences du Code du bâtiment de l'Ontario.

L'audience disciplinaire du PEO a mis en lumière six irrégularités précises dans l'examen technique des modèles de maisons ayant été construites à Kingston. La *Gazette* du PEO présente les renseignements détaillés sur la plainte, les audiences disciplinaires et les décisions relatives à la sanction imposée.

Objectifs de la vérification

Objectif de vérification n° 1 – Examiner les plans que le promoteur a soumis aux Services du Code du bâtiment de la Ville d'Ottawa.

Objectif de vérification n° 2 – Établir si les plans sont les mêmes que ceux soumis à la Ville de Kingston pour des modèles de maison identiques.

Objectif de vérification n° 3 – Établir si les plans sont conformes aux politiques, aux procédures, aux lois et aux règlements applicables.

Objectif de vérification n° 4 – Examiner le rôle joué par les Services du Code du bâtiment dans ces dossiers.

Portée de la vérification

La portée de la vérification englobe le permis de construire et le processus d'inspection des maisons fondées sur les modèles de maisons visés par l'audience disciplinaire du PEO, qui ont été construites par le promoteur et inspectées ensuite par une société d'ingénieurs-conseils d'Ottawa.

Sommaire des principales constatations

1. Des entrevues réalisées auprès des membres de la direction et du personnel des Services du Code du bâtiment ont révélé que le promoteur avait présenté à la Ville d'Ottawa un seul des trois modèles offerts par le promoteur de Kingston. Par conséquent, l'examen ne visait que le modèle de maison pertinent.

2. On a procédé à un examen du dossier du permis de construire et d'inspection de la Ville d'Ottawa pour une maison construite à partir du modèle visé en vue de vérifier si la documentation fournie à la Ville d'Ottawa satisfaisait aux exigences du Code.
3. Un résumé des exigences du Code du bâtiment se trouve dans la Demande de construction domiciliaire de la Ville pour les maisons unifamiliales, les habitations jumelées et les maisons en rangée. L'examineur de plans a conclu que la demande de permis de construire visée contenait tous les renseignements exigés dans la Demande de construction domiciliaire d'Ottawa.
4. Après avoir examiné les renseignements fournis dans la demande et les documents d'appui, l'examineur de plans a envoyé une demande écrite au requérant en vue d'obtenir des renseignements additionnels. Dans cette demande, l'examineur de plans a relevé cinq problèmes semblables dans leur portée à ceux soulevés dans la plainte présentée au PEO, preuve que son examen de la demande et des documents soumis était rigoureux.
5. Le requérant a répondu par lettre à la demande de renseignements additionnels de la Ville. Dans ladite lettre, la société d'ingénieurs-conseils avait soumis des plans portant les révisions exigées inscrites à la main.
6. Notre examen des renseignements fournis par la société d'ingénieurs-conseils a confirmé que ceux-ci étaient conformes aux exigences du Code.
7. Après que les membres des Services du Code du bâtiment ont consulté la *Gazette* du PEO et lu la décision et les raisons résumant l'audience disciplinaire, ils ont examiné de nouveau les plans du modèle de maison soumis à la Ville par le promoteur en portant une attention particulière aux éléments mentionnés dans la plainte adressée au PEO et le résumé de l'audience disciplinaire. L'examen a confirmé que les plans soumis pour le modèle de maison révisé portaient des corrections pour tous les éléments visés par l'audience disciplinaire du PEO.
8. Les résultats de l'examen des Services du Code du bâtiment sont résumés en une page de notes manuscrites ne portant pas de date. Nous soulignons que les notes manuscrites devraient porter un titre (p. ex. Examen du modèle de maison à la lumière de l'audience disciplinaire du PEO), être datées et indiquer le nom de la personne ayant procédé à l'examen. Lorsque nous avons demandé une copie des notes d'examen, nous avons découvert qu'elles n'étaient pas insérées dans le dossier de la maison mais bien conservées dans un dossier distinct détenu par l'examineur de plans.
9. L'examen du dossier complet de la maison visée a montré que la documentation y était complète, conformément aux exigences mentionnées dans le manuel sur les politiques, les directives et les normes de même que dans le *Règlement municipal sur le bâtiment*. Nous avons toutefois remarqué que le dossier sur la ventilation mécanique des habitations de l'ICCCR demandé au constructeur en

mai 2007 n'avait été fourni que le 25 mai 2009, quatre jours avant la délivrance du permis d'occupation finale. Comme le dossier sur la ventilation mécanique des habitations de l'ICCCR est sur la liste de vérification des éléments à soumettre durant l'inspection à des fins d'occupation, le constructeur devrait le fournir dans les délais prescrits.

10. Le permis d'occupation finale a été délivré en mai 2009.

Recommandations et réponses de la direction

Recommandation 1

Que la Ville s'assure que les notes d'examen rédigées par l'examineur de plans soient conservées avec le permis de construire et le dossier d'inspection visés, et que le document porte un titre, soit daté et signé (avec le nom en caractères d'imprimerie) par l'examineur de plans. Ce n'était pas le cas dans le dossier que nous avons vérifié.

Réponse de la direction

La direction est d'accord avec la recommandation.

Conformément à la Politique de gestion des documents de la Ville, les notes personnelles conservées par l'examineur de plans étaient jugées de nature transitoire et ne constituaient pas un *document d'affaires officiel*.

L'examen additionnel du modèle précisé, fut entrepris à la demande du chef du service du bâtiment, afin de confirmer la conformité des plans et des spécifications avec le Code du bâtiment de l'Ontario, qui comportaient une référence précise quant à la documentation en souffrance qui avait été mentionnée dans le résumé de l'audience disciplinaire de l'Ordre des ingénieurs de l'Ontario. Les notes ont été conservées aux fins de consultation ultérieure seulement et, comme elles ne faisaient l'objet d'aucune obligation ou responsabilité, elles n'étaient pas considérées comme un document d'affaires officiel. La documentation a néanmoins été officialisée et consignée au dossier relatif au permis.

Recommandation 2

Que la Ville s'assure que la documentation demandée au constructeur lui soit remise dans les délais prescrits afin de permettre à l'inspecteur de l'examiner. Dans le cas qui nous occupe, le constructeur aura mis deux ans avant de fournir le dernier rapport sur l'équilibrage thermique demandé par les Services du Code du bâtiment.

Réponse de la direction

La direction est d'accord avec la recommandation.

Un examen du dossier vérifié a permis de confirmer que la documentation exigée avait été soumise dans les délais prescrits, conformément aux politiques, aux directives et aux normes des Services du Code du bâtiment.

Plus particulièrement, au moment de l'inspection aux fins d'occupation partielle, l'agent du bâtiment a rappelé au détenteur du permis qu'il avait l'obligation de présenter le rapport afin que la Ville le reçoive avant la délivrance du permis d'occupation finale. On ne s'attendait pas à ce que le rapport soit remis tout de suite après la présentation du rapport relatif à l'occupation partielle. Ceci tient compte du fait que le rapport sur l'équilibrage thermique [connu comme étant le rapport sur la ventilation mécanique des habitations de l'ICCCR] documente la condition d'un système à l'état définitif qui n'est mis en service qu'aux étapes finales de la construction.

Il importe de remarquer que dans la majorité des inspections aux fins d'occupation partielle réalisées pour les unités d'habitation unifamiliale où est installé un ventilateur-récupérateur de chaleur équilibré conformément au sommaire du plan de l'ICCCR, le constructeur remet une copie du dossier de ventilation mécanique des habitations de l'ICCCR à l'agent du bâtiment même si cette documentation n'est pas exigée pour l'occupation partielle. Dans le cas qui nous occupe, l'agent du bâtiment a demandé le dossier de ventilation mécanique des habitations de l'ICCCR et l'a reçu avant la délivrance du permis d'occupation finale, conformément aux politiques, aux directives et aux normes des Services du Code du bâtiment.

Par conséquent, dans certains cas, la documentation à fournir en tant que condition préalable à la délivrance du permis d'occupation finale est présentée un certain temps après la délivrance du permis d'occupation partielle.

Conclusion

La vérification a révélé que les plans de modèle de maison que la société d'ingénieurs-conseils a soumis à la Ville d'Ottawa comportaient les corrections relatives aux préoccupations soulevées par la plainte présentée au PEO et que les Services du Code du bâtiment avaient bien réagi à la nouvelle concernant la décision du PEO en examinant de nouveau les plans soumis par la société d'ingénieurs-conseils. Le dossier contenait toute la documentation exigée, mais certains renseignements n'ont pas été fournis dans les délais prescrits.

Remerciements

Nous tenons à remercier la direction et le personnel pour l'aide et la collaboration qu'ils ont apportées à l'équipe de vérification.

1 INTRODUCTION

1.1 *Audit*

This audit was conducted as a result of a report to the Fraud and Waste Hotline. The report provided information regarding the outcome of a disciplinary hearing by the Association of Professional Engineers of Ontario (PEO) which affected three engineers and an engineering company doing business in Ottawa. This audit was not originally identified in the 2008 Audit Plan that was presented to Council.

At a disciplinary hearing of the Association of Professional Engineers of Ontario held in October 2007, three professional engineers (the engineers) and the firm (the engineering company) were found guilty of professional misconduct for their actions with respect to the review of drawings for houses to be constructed by a developer (the developer) in the City of Kingston. In August 2008 the PEO published the Decision and Reasons in the Gazette, a publication of PEO.

In July 2008, news reports stated that the engineering company was responsible for review of drawings for houses reportedly constructed by the developer in the City of Ottawa. According to the news information, the houses constructed in Ottawa had building permits issued by the Building Code Services Branch (BCSB) of the City. The Director of the BCSB stated in the news reports that the houses constructed by the developer in Ottawa would have been issued a building permit only after the BCSB would have been satisfied that the houses met the requirements of the Ontario Building Code.

The Office of the Auditor General decided to examine the house drawings reviewed and stamped by the engineers to determine (a) whether the house models built in Ottawa are the same as the ones reviewed by the engineering company in Kingston, and (b) whether the house drawings reviewed by the engineering company for construction in Ottawa meet the requirements of required standards, regulations and policies.

1.2 **BACKGROUND**

The background information for this audit is summarized below.

1.2.1 **Gazette, Professional Engineers Ontario, July/August 2008**

The Gazette is the publication of the Association of Professional Engineers of Ontario used to publish legal issues, including summaries of disciplinary hearings. The July/August 2008 issue of The Gazette presents a summary of the disciplinary hearings held by Professional Engineers Ontario in relation to the house designs submitted to the City of Kingston with the building permit applications.

In summary, the disciplinary hearing found the following defects in the submissions by the Engineers:

- a) Location of girder trusses not provided, so the effect of concentrated loads cannot be accounted for in the design of supporting elements.
- b) No details were shown for special brick lintels required for two windows on one of the elevations.
- c) Framing of the stair opening was unclear on ground and second floor levels; indicated framing results in potentially dangerously low bending resistance to applied bending moments.
- d) Supporting steel beams in garage shown at different elevations, but no detail was provided.
- e) Steel beam over the garage was supported on two tele-posts at each end; no detail was shown for this unusual condition.
- f) Supporting masonry veneer on the front elevation was supported on the wood beam in the garage area.

The specific details of the complaint, the disciplinary hearings, and the penalty decisions are presented in the July/August 2008 issue of the PEO Gazette.

1.2.2 News articles

News articles published in Kingston and in Ottawa, on the Internet and in newspapers, regarding the hearings and their outcome were reviewed. The news articles relating to the City of Ottawa indicate that the Director of the City of Ottawa's Building Code Services Branch stated that the BCSB works with the applicant, architect, engineer and designer to resolve deficiencies; if there are problems they must be corrected before the City will issue a building permit.

1.2.3 House Models

During the interviews it was determined that only one of the three house models that were the subject of the PEO disciplinary hearing is actually marketed and constructed by the developer in the City of Ottawa.

2 AUDIT OBJECTIVES

Following a review of the background information available from the City, the scope of the audit was synthesized in the audit objectives. The criteria attached to each audit objective explains the scope of the review.

Audit Objective No. 1 - Examine the drawings submitted by the developer to the City of Ottawa's Building Code Services Branch.

Criteria:

- Examine range of models available from the developer for the City of Ottawa.
- Confirm whether the models offered are the same as those for Kingston.

Audit Objective No. 2 – Determine if the drawings are the same as those submitted to the City of Kingston for identical house models.

Criteria:

- Examine the house models constructed in Ottawa and compare them to the City of Kingston’s drawings.

Audit Objective No. 3 – Determine whether the drawings are consistent with relevant policies, procedures, legislation, and regulations.

Criteria:

- Verify that the structural design meets the requirements of Part 4 of the Code.
- Review the application documentation and determine if it meets the requirements of the Building By-law and Policies, Guidelines and Standards.

Audit Objective No. 4 – Examine the role of the Building Code Services Branch in relation to the specific files.

Criteria:

- Examine the review of the application by the BCSB
- Examine and evaluate the information submitted by the engineering company in response to the requests by BCSB for additional information.

3 AUDIT SCOPE

The audit scope encompassed the building permit and inspection process for houses of the house models subject of the PEO disciplinary hearing, constructed by the developer and reviewed by the engineering company in Ottawa.

The audit comprised the following tasks:

- Review legislative framework.
- Review background data.
- Review project files.
- Conduct interviews with individuals involved in the review and approval of building permits for residences based on the house model.

The audit began by reviewing the legislative framework for the project, to confirm the requirements that should have been followed. Collection and review of the background information were undertaken in light of the audit objectives and criteria. The results of the audit are findings as to whether the interests of the City, including exposure to risk, were adequately considered and protected.

3.1 Legislative Framework

This review is largely governed by the Building Code Act, 1992, Statutes of Ontario 1992, Chapter 23, as amended to 2006, and the requirements of the Ontario Building Code, Ontario Regulation 389/05, made under the Building Code Act.

3.2 Interviews

Interviews were held with City staff involved in the various components of the projects to review the same and to obtain copies of documentation and other background data where available.

3.3 Background Data

Background data available from the City was collected and reviewed. This included the house model drawings, building permit file, and building inspection reports related to the house model, the Policies, Guidelines and Standards (also known as the Inspection Guidelines Binder), and the Building By-law.

3.4 Correspondence

The correspondence file maintained by the City for the building permit and inspections for the relevant house model was reviewed in detail.

3.5 Documents Examined

The files maintained by the City for the building permits and inspections for the relevant house models were reviewed in detail.

4 FINDINGS

The analysis consisted of evaluating the background information, the results of the interviews, the drawings and the information contained in the files, the records of building permit submissions and building inspections, all in light of the audit objectives. The findings are discussed in the following sub-sections.

4.1 Files Reviewed

Interviews with the Building Code Services Branch management and staff disclosed that the developer offered in the City of Ottawa only one model of the three offered by the developer in Kingston. Consequently, the review addressed only the pertinent house model, including two alternatives related to the front elevation of the houses.

This information was confirmed by accessing the developer's website for their Ottawa developments. From that information it was concluded that the subject house model is no longer offered by the developer in Ottawa.

4.2 Original Permit Submission

We examined the building permit file for one house constructed by the developer and reviewed by the engineering company.

The developer submitted to following information:

- Building Permit Application Form
- Declaration regarding New Home Warranty
- Plot Plan
- Building Plan, Schedule 1
- Engineered Plan and Schedule 1, for foot print of house
- Engineered truss layout
- Mechanical design summary
- Payment

The application for a Permit to Construct or Demolish (under sub-section 8.1.1 of the Building Code Act) requires submission of the following documents:

- Completed Application for a Permit to Construct or Demolish
- Documents establishing compliance with applicable law, per Article 1.4.1.3 of Division A of the Ontario Building Code
- Schedule 1: Designer Information for each individual who reviews or is responsible for design activities
- Schedule 2: Sewage System Installer Information, where applicable
- Plans and specifications for the proposed construction in accordance with the by-law.

With reference to the above requirements, Article 1.4.1.3 of Division A of the Code does not contain any law specific to the application in this case.

The Building By-law 2005 in Schedule C requires that the following plans and specifications information be submitted with the Building Permit Application:

- All drawings to be drawn on durable material, drawn to scale, and fully dimensioned
- Property lines and lot area
- Location of all existing and proposed buildings including setbacks to property lines, parking spaces, distance to other buildings, and other features in relation to property boundaries
- Overall dimensions of all buildings
- Summary of permitted and proposed zoning provisions
- Location of easements and rights-of-way

- Existing and proposed grade elevations at all lot corners, midpoints, points of grade change, driveways and drainage structures
- Proposed finished floor, top of foundation and underside of footing elevations
- Slope and surface direction runoff, culvert conditions
- Basement floor plan including foundation information and use of space
- Floor plan of every upper level showing use of all spaces
- Floor plan of every upper level showing structural framing above
- Roof truss layout
- Proprietary floor system layout, if applicable
- Location of all plumbing fixtures
- Location of all solid fuel burning appliances, if applicable
- Location of smoke alarms and carbon monoxide detectors
- Area of exposed building face. Area and percentage of unprotected openings. Required limiting distance
- Exterior finishes
- Window/door type, locations and sizes including height of sills above floor
- Roof slope and finish
- Exterior stairs, landings, guards and handrails
- Floor to floor and floor to ceiling heights
- Footing and foundation wall details including height of grade above basement floor
- Specifications of all floor, wall and roof assemblies
- Shoring and underpinning details, if applicable
- Stairs, landings, guards and handrails
- Typical wall section
- Wall and floor fire separation details, if applicable
- Typical roof details
- Guard details including connection detail
- Building materials and specifications of all wall, floor and roof assemblies
- Mechanical Ventilation Design Summary
- Footing design for sensitive soils, if applicable

The above requirements are summarized in the City's House Submission Record for single-family dwellings, semi-detached dwellings and townhouses. The Plans Examiner concluded that the building permit application contained the required information in the City's House Submission Record for the subject Building Permit

Application. The Plans Examiner marked the form as “Application Deemed Complete”. Our review of the file confirmed that the submission was complete.

Subsequent to review of the information in the application and supporting documents, the Plans Examiner wrote to the applicant requesting additional information, namely:

1. Clarification regarding the size of the header at the basement stairs.
2. Clarification regarding the double joist header at the second floor stair opening.
3. Clarification regarding a detail provided for the living room window.
4. Provide minimum soil bearing capacity.
5. Clarify framing at expanded closet.

The applicant submitted in response to the request for additional information by the City a letter indicating as follows (quoted from the response letter by the engineering company to the City):

1. Header is 2-2x10. It does not extend to W200x27. At the second floor, header will be supported by (sic) kitchen load bearing wall and does not extend to the 4-2x8 beam and needs as a regular practice double studs at the end of header. At the basement header has to be supported by 4x4 post on 20”x20”x10” concrete pad. At the top of left side wall 2-2x10 joist is required which is supported by the same 4x4 post.
2. Yes this detail has to be addressed to the bedroom window.
3. Minimum soil bearing capacity is 75 kPa.
4. 3-2x8 is required to support bedroom #2 wall. Actually there is no structural requirement for the flush 2-2x10 but it is located to make the main joist as typical as possible. On the first floor, it transfers point load to the 2-2x8 front door lintel which is adequate to carry this load.

With the letter containing the response noted above, the engineering company submitted drawings with the revisions marked by hand. The following revised drawings were submitted:

Revised Drawings	Comments
Brick Arch Support for Bedroom 2 Window	The engineering company revised the title by hand to indicate that the drawing applies to the bedroom 2 window, and not to the living room.

Revised Drawings	Comments
Steel Beam Supporting Brick Veneer	Details based on using tele-posts for columns.
Steel Beam Supporting Brick Veneer	Details based on using hollow structural sections (HSS) for columns.
Roof Layout	Elevation A.
Roof Layout	Elevation B.
Foundation Plan	Shows the location of the basement stairs framing, 4x4 column and concrete pad. Shows the minimum bearing pressure.
First Floor Plan	Shows location of the posts required to support the girder trusses, framing for stairs to second floor, and the location of the steel beam at the garage door and the supporting steel beam.
Second Floor Plan	Shows the location of the girder trusses and framing supports.
Cross-section of House	Shows corrected frost protection depth.

4.3 Actions by Building Code Services Branch

Upon review of the PEO Gazette and the Decision and Reasons summarizing the disciplinary hearing, the Building Code Services Branch reviewed the house model drawings submitted to the City by the developer, with particular emphasis on the items noted in the PEO complaint and disciplinary hearing summary, as listed in Sub-section 1.2.1.

The results of the review by BCSB are summarized on one page of undated handwritten notes. The notes state as follows:

- a. Girder truss noted w/posts
- b. Special brick lintels submitted
- c. Stairs detail noted
- d. Steel beam supporting brick noted & detailed
- e. Detailed
- f. Brick on steel beam @ garage door

We note that the handwritten notes should have a title (for instance, Review of House Model vs. PEO Disciplinary Hearing), should be dated, and should have the name of the person doing the review. When we requested a copy of the review notes, we found that they were not included with the house file, but were kept separately by the Plans Examiner in a separate file.

Recommendation 1

That the City ensure that the review notes by the Plans Examiner be filed with the respective building permit and inspection file, and that the document be titled, dated, and signed (with name printed) by the Plans Examiner. This was not the case in the file we audited.

Management Response

Management agrees with the recommendation.

In compliance with the City's Records Management Policy, the personal notes kept by the Plans Examiner were deemed transitory in nature and were not an *official business record*.

The supplementary review of the specific model was undertaken at the request of the Chief Building Official to confirm that the plans and specifications were in compliance with the Ontario Building Code, with specific reference to outstanding documentation as noted in the Professional Engineers of Ontario disciplinary hearing summary. The notes were kept for future reference only and did not document any obligation or responsibility and were, therefore, not considered an *official business record*. Notwithstanding, the documentation will be formalized and filed in the permit file. This action will be undertaken immediately.

For clarification to the reader, the following table summarizes the items in the PEO disciplinary hearing that affected the subject house model, with the notes by BCSB and our observations.

PEO Complaint Item	BCSB Note	Audit Observations
a. Location of girder trusses not provided, so the effect of concentrated loads cannot be accounted for in the design of supporting elements	Girder truss noted w/posts	Drawing showing location of girder trusses submitted.
b. No details were shown for special brick lintels required for two windows on one of the elevations.	Special brick lintels submitted	Drawing showing window lintel submitted.
c. Framing of the stair opening was unclear on ground and second floor levels; indicated framing results in potentially dangerously low bending resistance to applied bending moments.	Stairs detail noted	Framing of stairs shown on standard plan (pages 3 and 4) submitted. Note that the standard plan shows the framing handwritten on the plan.
d. Supporting steel beams in garage shown at different elevations, but no detail was provided.	Steel beam supporting brick noted & detailed	Drawing showing the details of the connection of the two steel beams submitted.
e. Steel beam over the garage was supported on two tele-posts at each end; no detail was shown for this unusual condition.	Detailed	Drawing showing the details of the connection of the tele-post to the steel beams submitted.
f. Supporting masonry veneer on the front elevation was supported on the wood beam in the garage area.	Brick on steel beam @ garage door	Drawing showing the detail for the support of the brick over the garage was submitted.

With respect to the information provided, we noted that no details of the reinforcement for the concrete pad (20"x20"x10") were provided. However, upon further examination it was concluded that the concrete pad can be constructed unreinforced.

4.4 Other Comments

Review of the overall file for the subject house showed that the documentation in the file was complete, per the requirements of the Policies, Guidelines and Standards Manual and the Building By-law.

However, we noted that the HRV balancing report (also known as the HRAI Residential Mechanical Ventilation Record) was submitted two years after it was requested by BCSB. The HRV balancing report was requested by the Inspector on May 31, 2007, at the time that he was completing the inspection for Partial Occupancy, and it should have been submitted by the builder shortly thereafter. The Inspector requested the report again on May 11, 2009. It was only provided by the builder to the City on May 25, 2009, four days before the Final Occupancy Permit was issued. The HRAI Residential Mechanical Ventilation Record is on the checklist of items to be submitted during the occupancy inspection, and as such should be provided by the builder on time.

Recommendation 2

That the City ensure that the documentation requested of the builder be submitted on time to permit the Inspector to review the documentation. In this case, the HRV balancing report was not provided by the builder until two years after BCSB requested it.

Management Response

Management agrees with the recommendation.

A review of the audited file confirmed that the required documentation was submitted within the prescribed timeline in accordance with the Building Code Services (BCS) branch Policies, Guidelines and Standards.

The BCS branch Policies, Guidelines and Standards require Building Officials to review the HRAI - Mechanical Ventilation Design Summary at the mechanical rough-in stage of construction. There is no requirement for the submission of the HRAI Residential Mechanical Ventilation Record at this early stage of completed construction. The requirement for the submission of the HRAI Residential Mechanical Ventilation Record is prior to the issuance of the Final Occupancy Permit. This is in recognition that the Record documents the as-built condition of a system that is commissioned only at the final stages of construction. The HRAI Mechanical Ventilation Record is not the same document as the HRAI Mechanical Ventilation Design Summary.

5 CONCLUSION

The audit revealed that the revised house model drawings submitted to the City of Ottawa by the engineering company addressed the concerns expressed in the PEO Complaint, and that the BCSB also reacted correctly to the news of the PEO decision by reviewing the submission by the engineering company. The file documentation was complete, but some of the information was not provided at the required time.

6 ACKNOWLEDGEMENT

We wish to express our appreciation for the cooperation and assistance afforded the audit team by management and staff