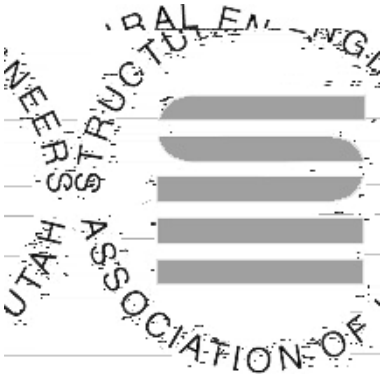
GUIDELINES FOR THE STRUCTURAL ENGINEER OF RECORD FOR THE DESIGN OF BUILDINGS AND SUBMITTAL OF STRUCTURAL PLANS & CALCULATIONS

Prepared by:

The Structural Engineers Association of Utah

Professional Practice and Ethics Committee



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FINAL DRAFT

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PREFACE

Many factors have contributed to the need for a Guideline for the Structural Engineering practice. A few of these factors include the increasing complexity of buildings and the building codes by which to design by, accelerated construction schedules, lack of adequate peer review, lack of standards of practice, and the increasingly competitive fee structures.

The growing trend to accelerate the construction schedule, even overlapping the design phase, has placed additional burden(s) on the Structural Engineer to perform an accurate analysis and design under extreme time restraints. Sometimes the essential work and coordination required to provide a complete and accurate structural design including contract drawings, is abbreviated in order to meet these schedules. To compound the problem, some municipalities do not have the resources to perform an adequate structural plan review to determine whether the design is complete or accurate. Often time's permits are issued solely on the premise that because the submitted calculations and drawings bear an engineer's stamp, the design is adequate. Establishing minimum submittal requirements may serve as a helpful tool for the Structural Engineer and Building Official in preparing and reviewing structural submittals.

Owners/Clients have come to treat the cost of design as a normal line item to be purchased at the lowest cost. In many instances, this has resulted in a reduced or inadequate level of service that falls short of the standard of care required for a well-executed project. A guideline that establishes a minimum scope of services will serve to mitigate this practice.

It is common for the practice of structural engineering to vary from office to office and region to region. **It is important to note that this guideline is not intended to establish legal responsibilities, the "standard of care", or define the quality of performance.** Rather it is intended to facilitate a better understanding of structural engineering services and to help standardize the scope of minimum services that should be provided by the Structural Engineer of Record in the design, contract documentation, and submittal for all public, commercial and private projects.

The development of these guidelines should be viewed as an ongoing process. The size and complexity of the subject precludes a perfect and complete guideline or a fixed approach to the practice of the Structural Engineer of Record. In time it will become a dynamic and useful tool for Structural Engineers, their clients, Peer Reviewers, Building Officials and the General Public.

GUIDELINES FOR THE STRUCTURAL ENGINEER OF RECORD FOR THE DESIGN OF BUILDINGS AND SUBMITTAL OF STRUCTURAL PLANS & CALCULATIONS

1.0 INTRODUCTION

1.1 The requirements for Submittal Documents needed to obtain a building permit are stated in Section 106 of the International Building Code, subject to amendments that may be incorporated by the local permit-issuing authority. However, these regulations do not address the specific requirements as they relate to the Structural Engineer of Record (herein "**SER"**). For this reason, this guideline attempts to organize and define the responsibilities of the SER in submitting the structural design and contract documents.

1.2 As a general requirement, the SER should meet the following level of responsibilities.

1.2.1 Be familiar with the current laws and governing professional requirements necessary to provide Professional Engineering services in the State of Utah.

1.2.2 Be competent in the understanding of the proposed design for which the SER's stamp and signature is affixed.

1.3 It is also important that a structural plan review be performed prior to issuing a building permit on the majority of projects involving structural design. It is required by code! This would include all public and commercial projects, incidental structures, and custom residential projects as defined in the following DEFINITIONS section. A thorough review of the Submittal Documents should be performed by a certified plans examiner and/or by a Licensed Professional Engineer employed or subcontracted by the local municipality

2.0 DEFINITIONS

Terms used in this document are defined as follows. Refer to Chapter 2 of the International Building Code (IBC), for additional definitions.

Completed Documents. Final design calculations and specifications documenting all aspects of the primary building structure. Construction drawings that are considered ready for construction with the exception of minor coordination items.

Construction Drawings. Graphical and pictorial documents describing the design and characteristics of the elements necessary for construction of the Primary Building Structure.

Construction Documents. All construction drawings, calculations and specifications sealed by the SER, issued for construction purposes and approved for a building permit.

Custom Residential Project. A project of a size and complexity that the Primary Building Structure does not comply with the provisions set forth in Section 2308 of the International Building Code for Conventional Light-Frame Construction. or the International Residential Code.

Deferred Submittals. Portions of the design that are not submitted at the time of application and submittal for permit but are submitted to the Building Official within a specific period. Refer to IBC, Section 106.3.4.2. This would include but not be limited to components such as; pre-engineered trusses, pre-cast walls and framing members, and in some cases post-tensioned concrete components.

DOPL. Utah Department of Commerce, Division of Occupational and Professional Licensing.

IBC. International Building Code published by the International Code Council.

NCEES. National Council of Examiners for Engineering and Surveying.

Non-Structural Component. A less significant architectural, mechanical, electrical, or special purpose part of the building that, by its size, or standardized manufacturing and installation methods, possesses the internal structural capability to perform its function and utilizes its own support or connection to the primary building structure.

Permit Submittal Documents. All construction drawings, specifications, and calculations that are considered complete as defined herein, and have been prepared and sealed by the SER for the purpose of obtaining a building permit.

Pre-Engineered Building System. An integrated structural system comprised of all or most of the essential primary structural components necessary for a complete primary structural system engineered and documented by the supplier's Specialty Engineer.

Primary Building Structure. The completed combination of structural elements that serve to support the Building's self weight, the applicable live load, and the environmental loads such as wind and seismic loading. Curtain wall members, interior non-load bearing walls, or exterior facades, to name a few items, are not part of Primary Building Structure.

Primary Lateral-Force-Resisting System. The part of the Primary Building Structure that has been considered in the design to provide the required resistance to seismic and wind forces as prescribed within the applicable codes.

Primary Structural Component. Essential parts of the Primary Building Structure which may or may not be fabricated at the construction site, but when installed, becomes an integral part of the overall Primary Building Structure.

Professional Engineer. A reference to an licensed engineer in general, that is duly licensed as defined by the State of Utah's Licensing Act and Department of Professional Licensing. Who may or may not have the specialized knowledge, training and experience relating to analyzing and designing force-resisting systems for buildings and other structures.

Secondary Structural Component. A structurally significant part of the building that is supported by the primary structure, but does not contribute to the overall strength or stability of the Primary Building Structure. Such a component must have internal structural integrity to perform its function and must have its interactions with, and its attachments to the primary structure analyzed and designed to assure its proper integration within the total structure.

Structural Engineer. A duly licensed Professional Engineer as defined by the State of Utah Licensing Act and Department of Professional Licensing. Who has the specialized knowledge, training and experience relating to analyzing and designing force-resisting systems for buildings and other structures.

Structural Engineer of Record (SER). A Professional Engineer who is in responsible charge of the design of the Primary Building Structure and is identified as such to the appropriate jurisdiction. The SER prepares and supervises the preparation of the Structural Contract Documents and is a duly licensed Professional Engineer as defined by the State of Utah Licensing Act and DOPL. Who has the specialized knowledge, training and experience relating to analyzing and designing force-resisting systems for buildings and other structures.

Specialty Engineer. A professional engineer who is qualified to seal plans and design calculations for Pre-Engineered structural components or systems.

3.0 GENERAL SUBMITTAL REQUIREMENTS

3.1 Permit Submittal Documents shall be submitted with the SER's seal, signature, and date affixed to the cover sheet of the calculations and on each structural drawing. Computer generated signatures should not be used. Refer to Section 6.0 for more information on signing and stamping plans and calculations.

3.2 Only Permit Submittal Documents, which are complete as defined in the definitions, shall be stamped and submitted for approval. Submitting partially complete "placeholder" sets is poor practice and is considered illegal under some state laws. Incomplete drawings should not be submitted.

3.3 A completed set of calculations shall accompany "Footing & Foundation Permit" submittals. Significant changes and additions made to the Footing & Foundation package that were not documented in the calculations, if noted in subsequent package submittals, should require additional plan check review.

3.4 When Pre-Engineered Building Systems are included in the project, the complete structural calculations and drawings for the system shall be submitted with the project documents and must bear the seal of the Specialty Engineer, registered in the State of Utah.

3.5 Deferred Submittals shall be clearly defined on the Permit Submittal Documents.

3.6 Structural calculations, drawings and specifications shall be submitted. A Geotechnical Report should also be submitted when applicable. The number of sets required for submittal shall be determined by the local Building Jurisdiction.

4.0 MINIMUM STRUCTURAL DESIGN CALCULATION REQUIREMENTS

In order to adequately review and define the technical aspects of the design for the Primary Building Structure for compliance to Building Codes and other local requirements, the following minimum calculation documentation should be submitted.

4.1 Design Criteria.

4.1.1 The calculations submitted shall clearly document on a Criteria Summary Sheet the information noted below. Documentation shall also be submitted that show how the design loads were established.

4.1.1.1 The current Building Code used in the design.
4.1.1.2 Itemized dead & live loads used in the gravity design.
4.1.1.3 Snow loading criteria including terrain and exposure category, importance factor, design ground snow load and snow drifting loads.
4.1.1.4 Seismic design criteria including importance factor, site class, seismic use group, design category, response modification coefficient.
4.1.1.5 Wind loading criteria including minimum wind design speed, exposure category, and importance factors.
4.1.1.6 Special Loading(s) (where applicable).
4.1.1.7 Reference to the Geotechnical Report and values used in design.

4.1.2 Materials (wood, steel, concrete, masonry, etc.), grade of materials and allowable stresses of materials used in (bending, shear, compression, etc.) should be noted in the calculations, notes, and specifications.
4.1.3 Load combinations used in design for each material should be documented.

4.2 Gravity Design. The following key items shall be included.

4.2.1 Design of all Primary Structural Components. This design should document the location, tributary area, span, loading and controlling condition for each member designed.

4.2.2 Calculations of the Primary Structural Components should be keyed to the plans for reference.
4.2.3 Calculations should note the final member size used and as shown on plans, including the support condition.
4.2.4 Calculations for design of the connections between the Primary Structural Components unless specifically noted as a Deferred Submittal.

4.3 Lateral Design. The following key items shall be included.

4.3.1 Factors used in determining base shear must be documented in addition to the required seismic design criteria required in section 4.1.1.4 .
4.3.2 Factors used in determining overall wind load should be indicated as required in section 4.1.1.5.
4.3.3 Comparison between wind load vs. seismic load for controlling design of the Primary and Secondary Structural Components.
4.3.4 Clearly defined type of Lateral Force Resisting System used and which Primary Structural Components are part of the system.
4.3.5 Computer analysis and design results should be submitted with an input model or sketch showing geometry, loading, boundary conditions, etc.
4.3.6 Design of Primary Structural Components relating to the Lateral Force Resisting System. These components would include but are not limited to, diaphragms, collectors, drag struts, out-of-plane anchorage, and connection design.
4.3.7 Design of Secondary Structural Components unless specifically noted as a Deferred Submittal.

4.4 Footing & Foundation Design. The following key items shall be included.

4.4.1 Clearly documented loading conditions and locations for reference.
4.4.2 Design of the primary footing and foundation components.
4.4.3 Design of Secondary Structural Components required at the interface between foundation and structure above. (These components would include base plates, anchor bolts, and embed plates).
4.4.4 Effects of lateral loading including uplift, overturning and shear transfer to soil must be included.
4.4.5 The requirements for engineered compacted fill or other specific placement criteria should be noted in the calculations and on the plans.
4.4.6 A Geotechnical Investigation and Report is strongly recommended for all public and commercial projects. A soils investigation is often times required per Section 1802 of the IBC.
4.4.7 Field verification of “assumed” bearing pressure may be acceptable depending on the size and complexity of the project and approval of the local Building Department. However, the field report should be submitted to the Building Department and approved prior to the continuation of work (similar to a deferred submittal).

5.0 MINIMUM STRUCTURAL DRAWING REQUIREMENTS

No matter how detailed and accurate the calculations and computer analysis is, if the information is not shown or described adequately on the Construction Drawings, it will generally not be built by the contractor. At a minimum, construction of the missing components will be left to the interpretation of the contractor and the building inspector. The following minimum structural drawing requirements must be submitted to help eliminate this problem.

5.1 Structural Notes. The following information should be identified on the documents.

5.1.1 Loading and other basic design criteria, refer to section 4.1.1.
5.1.2 Material allowable stresses, refer to section 4.1.2.
5.1.3 Quality Assurance Plan documenting special inspection requirements.
5.1.4 Deferred Submittal information.
5.1.5 Other structural requirements as they pertain to the primary building structure.

5.2 Structural Plans. As a minimum the Construction Drawings should indicate the following information.

5.2.1 Structural layout of the overall foundation system, floor framing plans, and roof framing plan. Providing a grid system with grid dimensions is encouraged to facilitate reference to the plans.
5.2.2 The foundation plan should include applicable footing schedule, pier schedule, or other applicable schedules along with designation on the plans referenced back to the schedules.
5.2.3 The foundation plan and/or footing schedule shall document the criteria used in design such as the bearing pressure and engineered fill requirements.
5.2.4 Size and location of all structural framing components for the Primary Building Structure must be shown for each direction and at all levels of structure.
5.2.5 Indicate location of each lateral force resisting component such as, but not limited to, lateral bracing, shear walls, moment frames.
5.2.5 Sufficient detail cuts, references to schedules, and specific information identifying the Primary Structural Components.

5.3 Dimensioning on Plans.

5.3.1 Dimensioning of structural drawings is one of the most important elements in the preparation of complete and adequate construction documents. The structural drawings should include dimensions that allow

Refer to CASE Document 962 D, "A Guideline Addressing Coordination and Completeness of Structural Construction Documents", prepared by the Council of American Structural Engineers, CASE National Guidelines Committee, for recommendations regarding dimensions.

5.3.2 The following is a list of minimum elements required for proper structural dimensioning, as noted in the above referenced document:

- Overall building dimensions.
- Gridline & column spacing.
- Location of all primary structural elements with respect to gridlines or columns.
- Structural floor and roof elevations.
- Relevant footing and foundation elevations.
- Edge of slab location.
- Structural wall and foundation thicknesses.

5.3.3 The responsibility for dimensioning of the building typically rests with the prime professional (Architect), however, all dimensions shown on the structural drawings must be coordinated.

5.3.4 All dimension strings shown on the structural drawings should be checked against the architectural drawings.

5.4 Structural Detailing.

5.4.1 Primary Structural Component connections required to transfer gravity load from roof to floor to foundation must be detailed. These connections would include but are not limited to, joist to beam or wall, beam-to-beam, beam to column, and column to foundation.

5.4.2 Details must be shown for ALL lateral load resisting connections. These types of connections are; diaphragm shear transfer, out of plane anchorage, bracing connections, moment frame connections, and force transfer to foundations.

5.4.3 Structural schedules should also be included and referenced when applicable.

5.4.4 Structural detailing of Secondary Structural Components such as parapets, fascias, and canopies must be included in the structural drawings or be onin

6.0 STAMPING & SIGNING PLANS and CALCULATIONS

6.1 Requirements pursuant to Professional Licensing Act Rule R156-22-601,701, Unprofessional Conduct and Seal Requirements.

6.1.1 It is unprofessional conduct to sign and submit incomplete plans to a building official for the purpose of obtaining a building permit.

6.1.2 All work must have been prepared under the direct supervision of the Engineer who is stamping and signing the work.

6.1.3 Each original set of final plans, specifications, drawings, calculations, etc, must as a minimum, be sealed, with original signature and date placed on the cover or title sheet.

6.1.3 A seal may be wet stamp, embossed, or electronically produced.

6.1.4 The use of copies of original set of plans, specifications, drawings, calculations, etc., which contain the original seal, original signature and date are permitted, if the seal, signature and date are clearly recognizable.

6.2 Requirements noted in the NCEES Model Law Rule 240.20.c., Seal on Documents.

6.2.1 These requirements are very similar to the Professional Licensing Act Rules with some minor revisions and additions.

6.2.2 In addition to requiring stamping final documents. Working drawings or unfinished documents are not required to have a seal and signature if they contain a statement to the effect, *Preliminary, Not For Construction, Recording Purposes, or Implementation.*

6.2.3 Computer-generated seals not signed with a digital signature may be used on final original drawings provided a handwritten signature and date is placed across or next to the generated seal.

6.2.4 Drawings or documents that do not require certification may be transmitted electronically, but shall have the generated seal removed before transmitting.

6.2.5 Drawings or documents that are signed using a digital signature must have an authentification process attached to or logically associated with the electronic document. The digital signature must be:

a. Unique to the person using it.
b. Capable of verification.
c. Under sole control of the person using it.
d. Linked to a document in such a manner that the electronic signature is invalidated if any data in the document is changed.

SEAU's Recommended Practice.

6.3.1 All Licensing Act Rules must be followed to comply with state law.

6.3.2 All documents leaving an Engineer's office or control are considered final documents and should be stamped, signed, and dated unless the documents are clearly identified as ***Preliminary, Not For Construction***.

6.3.3 Substantially complete drawings and calculations that are submitted for building department plan review but are not final, should be stamped, signed, and dated and clearly identified ***For Permit Review Only, Not For Construction.***

6.3.4 Submittal documents that have been reviewed, corrections and other revisions have been made, and have been accepted for permit should be stamped, signed, and dated as ***Final Construction Documents***.

6.3.5 Seals or stamps may be computer-generated or ink stamped. Only final drawings or plan check drawings should bear a seal.

6.3.6 Drawings or documents that do not require certification may be transmitted electronically provided the seal has been removed before transmitting.

6.3.7 **Computer generated signatures and dates are not permitted**. All final documents must bear original "wet" signature and date.

6.3.8 Plans: Each sheet within a set of final drawings that represent the separate structural discipline, must bear an original stamp, signature, and date. Drawing cover sheets may also be stamped and signed provided a notation is added clearly indicating the discipline for which the Professional Engineer is responsible for.

6.3.9 Calculations: The front page of each set of calculations must bear an original stamp, signature, and date.

6.3.10 Technical Reports: Any document which represents a professional opinion and/or addresses technical aspects of a project, shall be stamped, signed, and dated.

7.0 CONCLUSION

At the time of organization, one of SEAU's goals was to *"**Promote high standards of Structural Engineering in the best interests of clients, community, public and profession**"*. The preceding guideline has been prepared with that goal in mind. It is in the best interest of the engineering community to provide the service a client is expecting and needs. Professional Engineers have an obligation to protect the life & welfare of the public. SEAU feels the preceding guideline outlines services that are required to fulfill that obligation. Many engineers provide services well above and beyond these recommendations.

Beyond protecting the public welfare, quality construction documents are in everyone's best interest. They speed construction, provide the basis for a quality competitive bid, reduce risk for owners & clients, and generally foster better business for everyone involved. Not providing services outlined may place unnecessary risk on the engineer, owner, & design team and in addition may be the basis for a complaint against an engineer's license.

The information in this guideline was developed to create a better understanding of the scope of minimum services that should be provided by the Engineer of Record in the design, documentation, and submittal for all projects. **It is important to note that this guideline is not intended to establish legal responsibilities, the "standard of care", or define the quality of performance.**

This guideline only attempts to address structural design and submittal of construction documents. There has been no attempt to address: studies, consulting services, construction services, or any of a host of other services provided by Professional Engineers. However, it is SEAU's opinion that typically these services are required to provide complete construction documents.

APPENDIX A

COMMENTARY & RECOMMENDATIONS ON SUBSTANDARD PRACTICE

A1.0 HOW SUBSTANDARD PRACTICE AFFECTS THE ENGINEERING PROFESSION.

It is common knowledge that substandard structural design practices pose a life safety threat to the public. If errors and/or omissions go undetected during the permit review process or during construction, the results may be catastrophic. Tragic failures highlighted in past news have had a detrimental affect on the public's perception of Structural Engineering as a profession.

Often times, the Structural Design on a project may be treated as a normal line item to be purchased at the lowest cost. In many instances the Professional Engineer that performs a reduced or substandard service is awarded the project because of a much lower fee proposal. The typical owner/client has no knowledge of the standard level of Structural Engineering Service necessary to protect his investment and the Public's safety. His only criteria for selection is a low fee. This trend creates increasingly difficult circumstances for the engineering firm that provides the necessary level of service. Without any enforcement of minimum standards it is very difficult to convey to the owner/client that "you get what you pay for".

Problems arising from substandard practice often lead to financial loss to the owner and fuel the growing litigious climate, and in turn affect the insurance industry. The cost of professional liability insurance continues to rise due to this trend. Often times the increased cost of doing business only affects the engineering firm that provides the necessary level of service. This is because the Professional Engineer that performs substandard service rarely carries liability insurance.

A2.0 EXAMPLES OF SUBSTANDARD PRACTICE.

A2.1 The following examples are provided to better facilitate an understanding of how substandard practice affects the profession and public.

A2.2 **Example:** ***Failure to provide complete Permit Submittal Documents***.

Description:

The Engineer submits construction documents to the local building jurisdiction that are incomplete but the documents are accepted and logged in for review. Upon review it is found that there are many primary structural components that have not been designed, shown on the plans, nor

detailed. In haste to resubmit, Engineer resubmits the documents addressing only a portion of the missing components. The re-submittal is processed; again comments are made with regard to the items not addressed. Re-issuing of numerous submittals takes place until the structural design has been adequately addressed.

Result:

1. Violation of Professional Conduct, Licensing Act Rule R156-22-601 (1) b.
2. Loss of time in the construction schedule.
3. Added expense to the municipality due to the extra time spent on numerous re-checks and undue stress placed on the Building Official and Plan Reviewer to approve the plans and obtain a permit.
4. Potential for errors and omissions in the design due to the piecemeal way that the documents were submitted.

Solution:

1. Develop the proper tools to identify and reject incomplete submittals at the time of submittal.
2. Prepare a brief checklist for easy reference.

A2.3 **Example:** ***Sealing and signing contract documents for a design that the Professional Engineer does not have the appropriate knowledge, training, nor expertise.***

Description:

An Engineer is currently working as a mechanical design engineer for the aerospace industry. As a moonlighting project the Engineer is retained to provide the structural design on a small commercial project. The Architect prepares the plans and sections and the Engineer prepares the structural calculations and redlines the plans. The design is submitted for permit review using incorrect snow load and wind load criteria. Seismic design has not even been addressed.

Result:

1. Violation of Professional Conduct, Licensing Act Rule R156-22-601 (4), reference to NCEES Model Law 240.15.
2. If no structural plan check review is performed and a permit is issued. The risk of structural failure may exist and the potential for injury or loss of life is increased.

3. If structural plan check is performed. The same delays in construction and the potential for errors will occur similar to the previous example.

Solution:

1. Policy should require structural plan reviews on all projects in order to police this type of practice.
2. A complaint should be filed requesting an investigation of the engineer for practicing outside his or her area of expertise. Often times this will at least result in DOPL sending a letter of concern to the individual.

A2.4 **Example:** ***Failure of the Professional Engineer to excercise responsible charge in supervision of an employees' work product.***

Description:

A small Structural Engineering firm is overwhelmed with work load. As a result the Principal of the firm, the only Licensed Professional Engineer, allows a project to be submitted without a proper review of the employee's design. The submittal documents were stamped and signed in haste. Due to the employee's lack of experience, many errors and omissions exist within the design and drawings.

Result:

1. Violation of Professional Conduct, Licensing Act Rule R156-22-601 (2) & (3).
2. All of the results listed in the previous examples are possible.

Solution:

1. All engineering firms should develop a quality control program as well as provide the proper mentoring of its employees.
2. Policy should require structural plan reviews on all projects in order to police these problems.
3. If this type of practice occurs often with a particular firm. A complaint should be filed requesting an investigation into the individual's practice.

A3.0 RECOMMENDATIONS FOR BUILDING OFFICALS & PLAN REVIEWERS

A3.1 First establish an open dialogue with the design professional submitting. This should occur when questions arise in the review of submitted plans.

A3.2 Provide a copy of a checklist to the Professional Engineer who appears to be submitting incomplete documents. Make note of which items in the design or drawings are deficient. A brief checklist can be developed within the department or by a professional organization such as ICC or SEAU.

A3.3 If subjective issues arise during the document review process, a request for a second opinion from another Structural Engineer may be helpful. Having an independent review can resolve conflicts in a timely manner.

A3.4 The State of Utah's Professional Engineers & Professional Land surveyors Licensing Act Rule defines unprofessional conduct to include: "(1) Submitting an incomplete final plan, specification, report or set of construction plans to: (b) to a building official for the purpose of obtaining a building permit." Building Officials have the responsibility of reporting unprofessional conduct to the Department of Professional Licensing.

A4.0 RECOMMENDATIONS FOR FELLOW LICENSEE'S

A4.1 In the interest of public welfare, the engineering profession in general, must police and help enforce the minimum standard of practice that is required and the rules of professional conduct. A first step is to try and work within the system such as having an open dialogue with the other Professional Engineers and addressing problems often encountered when performing peer reviews, plan checks, etc.

A4.2 NCEES Model Rules for Professional Conduct requires that a licensee, as obligation to society, provide information and assistance to the DOPL when having knowledge of another design professional's possible violation of the rules of professional conduct. In other words, is it considered professional misconduct NOT to report on another design professional that is in violation of the rules of conduct. This would include: repeatedly submitting incomplete or substandard documents, providing services beyond their expertise, or being grossly negligent in performing their work.

A4.3 Structural Engineers should also alert the local Building Official when observing a potential problem on a project or with a project under construction, even when an individual is not directly involved with the project.

A5.0 RESOURCES

A5.1 The Department of Professional Licensing is an excellent resource for checking on license status, disciplinary action, and for filing a complaint. Filing a brief complaint on suspect practice can easily be done through DOPL's website, www.dopl.utah.gov

A5.2 The Structural Engineers Association of Utah (SEAU) is another excellent resource in reporting problems and pursuing action. The organization is committed to maintaining public safety and upholding the minimum standard of practice for the profession. Currently SEAU has a "professional practices and ethics review committee" that serves as a facilitator in dealing with substandard practice. To contact SEAU see their website, www.seau.org

APPENDIX B

"TOP TWELVE" STRUCTURAL REVIEW COMMENTS

Signs of Substandard Practice

1. **Engineering calculations submitted using the incorrect code cycle.**
2. **Engineer has failed to stamp, sign and date drawings and calculations.**
3. **Lateral design of structure has not been addressed or is incomplete.**
4. **Engineer did not consider all snow loading on the roof; i.e. sliding snow, wind drift, doubled eave loads and impact.**
5. **Calculations do not address all primary structural elements shown on plans.**
6. **Primary structural elements are missing on structural plans.**
7. **Lack of connection and attachment detailing.**
8. **Structural layout is inconsistent with Architectural drawings.**
9. **Both vertical and lateral load paths are not clearly defined on the structural drawings.**
10. **Incorrect design, attachment and anchorage of structural elements supporting masonry or concrete.**
11. **Inconsistent or incorrect use of load combinations in design.**
12. **Structural drawings, design, or portions thereof, have been stamped by Architect.**