

CAUTION! Check EDMS for latest revision

TES-ENG-POE Practice of Engineering within TransCanada		Document Type: Specification
Effective Date: 2008/01/11	Revision: 4	Status: Work in Progress
Classification Code: DE-16	Document Owner: Asset Reliability	
Reviewer: Dan King, Asset Reliability		_____ Signature/Date (signed copy on file)
Reviewer: James Baggs, Vice President, Field Operations and Engineering		_____ Signature/Date (signed copy on file)
Reviewer: Steve Schock, Vice President, Project Management		_____ Signature/Date (signed copy on file)
Reviewer: David Montemurro, Vice President, Engineering and Operations Services - USPC		_____ Signature/Date (signed copy on file)
Reviewer: Steve Emond, Vice President, System Design & Commercial Operations		_____ Signature/Date (signed copy on file)

PURPOSE

This document addresses the requirements for the Practice of Engineering within TransCanada Pipelines Limited (TransCanada). The intent of the document is to ensure engineering work is prepared, revised, reviewed and approved in accordance with TransCanada policies and procedures.

SCOPE

This document covers all activities within TransCanada defined as the Practice of Engineering and applies to all such activities that are performed or are to be implemented for all TransCanada facilities.

BRIEF DESCRIPTION OF CHANGE

Updated to reflect the increased scope of work in the U.S. and the increased presence of engineers located in other states and provinces.

CAUTION! Check EDMS for latest revision

TABLE OF CONTENTS

PURPOSE1
SCOPE1
BRIEF DESCRIPTION OF CHANGE.....1
1 PURPOSE3
2 SCOPE.....3
3 DEFINITIONS.....4
4 DESCRIPTIONS.....8
4.1 Policies, Guidelines / Principles8
4.2 Requirements for Stamps and Signatures.....10
4.2.1 Signatures and Stamps for Federally Regulated Systems (See Appendix B).....10
4.2.2 Signatures and Stamps for Non Federally Regulated Entities (See Appendix B).....10
4.3 Professional Practice and Use of Professional Seal or Stamp10
5 REFERENCES AND ADDITIONAL RELEVANT MATERIAL.....11

APPENDIX A: APPROVAL MATRIX FOR ENGINEERING DOCUMENTS12
APPENDIX B: APPROVED DRAWING BORDER SAMPLES15
APPENDIX C: SUPERVISION AND CONTROL.....15

CAUTION! Check EDMS for latest revision

1 PURPOSE

This document addresses the requirements for the Practice of Engineering within TransCanada PipeLines Limited (TransCanada). The intent of the document is to ensure engineering work is prepared, revised, reviewed, and approved consistently and in accordance with TransCanada policies and procedures whether performed internally or externally and in accordance with local rules and regulations. TransCanada holds a Permit to Practice for the Province of Alberta. Some special requirements are required to maintain this permit and are also included in this document.

2 SCOPE

- 2.1 This document covers all activities within TransCanada defined as the Practice of Engineering and applies to all such activities that are performed or are to be implemented for TransCanada's regulated and non-regulated facilities. Work performed internally and externally, though handled differently, is all included in the scope of this document.
- 2.2 The Practice of Engineering within TransCanada shall be, at a minimum:
- a) Consistent and in compliance with the TransCanada Policies, Guidelines / Principles as described in Section 4.
 - b) For non federally regulated engineering work completed in the province of Alberta, where TransCanada holds a Permit to Practice engineering, consistent and in compliance with the latest approved version of the Government of The Province of Alberta, Engineering, Geological and Geophysical Professions (EGGP) Act and Regulations, as well as the APEGGA Code of Ethics, By-Laws and the intent of related published guidelines.
 - c) For federally and non federally regulated facilities, consistent and compliant with the latest approved version of the laws and regulations of the appropriate jurisdiction.
- 2.3 The Practice of Engineering within TransCanada includes all engineering work completed by TransCanada core (permanent) employees.
- 2.4 The Practice of Engineering within TransCanada includes all engineering work completed by an In House Contractor. In all cases when the In House Contractor is the Designer, they shall be the Responsible Engineer (See Section 3 Definitions) and shall sign, (and/or stamp), in accordance with Section 4 and Appendix A, all engineering documents that are produced as a result of their Practice of Engineering.
- 2.5 Although this Practice of Engineering document does not cover specific procedures to be followed by external companies performing engineering work for TransCanada, only companies having comparable standards, procedures and quality assurance processes will be engaged to complete this work. Engineering work prepared by external companies shall be signed and stamped (as required by the applicable jurisdiction) by the responsible Professional Engineer and include the company's Permit to Practice / Certificate of Authorization (as applicable) for the province or state where the engineering work is to be implemented. TransCanada staff will ensure that sufficient controls are in place to ensure that the work done by external companies conforms to this standard. TransCanada staff must implement adequate quality control procedures for external companies.



CAUTION! Check EDMS for latest revision

- 2.6 Nothing in this Practice of Engineering document is intended to prevent a qualified person, such as an Engineering Technologist, from assisting in the performance of any professional service or work of the kind described in the definition of Practice of Engineering if a Responsible Engineer directly supervises and assumes full responsibility for the service or work.
- 2.7 Nothing in this Practice of Engineering document is intended to overrule or place less stringent requirements than those required by the appropriate rules and regulation for that jurisdiction. In all cases the Responsible Engineer shall be accountable for ensuring that they are complying with the applicable rules and regulations for the location in which the work is to be implemented when they sign and date Engineering Documents.
- 2.8 This Practice of Engineering document includes the general process procedures for design and engineering document preparation, revision, checking, and approval. Specific detailed process area procedures required to complete each of the general process steps are not included.
- 2.9 This Practice of Engineering document does not include specific quality assurance procedures with respect to preparation, revision, review and approval of engineering documents. Those procedures are included in the Quality Management Systems documents. (Section 5, Ref. 8)

3 DEFINITIONS

Accountabilities and responsibilities are identified in Appendix A – Approval Matrix for Engineering Documents for the preparation, revision, review and approval of Engineering Documents. Samples of completed title blocks for approved drawings are indicated in Appendix B – Approved Drawing Border Samples.

The terms used in this document are as follows:

- Act* Act, laws or regulations governing the practice of engineering in the respective provincial or state jurisdiction in which the work is being performed.
- Active Controller* Person or persons designated to act on behalf of TransCanada to manage the scope of work performed by Contractors for facilities maintenance and construction in conformance with company Health, Safety and Environmental policies, standards, and procedures and in compliance with TransCanada and legislative requirements. Active control covers work by pre-approved contractors and does not involve contract management. Responsible for ensuring as-built mark-ups reflect final construction changes.
- As-Built Drawing* Drawings produced by or for TransCanada from information provided by TransCanada's Construction Manager, Contractor and TransCanada's construction surveyor, recording changes during construction. Record Drawings are a subset of the As-Built Drawings. These drawings contain Engineering Revisions (see definition below).



CAUTION! Check EDMS for latest revision

- Construction Manager* An individual responsible for management of the project construction. Responsible for ensuring that adequate technical inspection is carried out and construction conforms to drawings and specifications. Responsible for obtaining approval, as required, from the Responsible Engineer/RPT when initiating Engineering Revisions. Responsible for ensuring as-built mark-ups reflect final construction changes.
- Data Sheets* An information sheet which specifies design parameters, operating conditions and other data required to enable the supplier to provide a product or service which meets the conditions intended. Does not include Purchase Orders when such information is included on the Purchase Order and that information has been derived from an Engineering Document.
- Design Discipline Checker* A Professional Engineer or Engineering Technologist responsible for performing an independent check on the portions of the design that relate to the Design Discipline Checker's technical training and area of expertise. Responsible for ensuring that the design conforms to applicable codes, TransCanada's guiding principles, design standards and standard designs and incorporates due diligence and Health, Safety, Environment and Risk requirements, as applicable. Design discipline checks shall not be conducted by the Designer.
- Designer* A qualified individual who prepared the design. Responsible for reviewing and accepting responsibility for use of appropriate standards and / or standard designs, and for preparing engineering designs, bills of materials, specifications, reports and other Engineering Documents.
- Design Notes* Documentation of the calculations, governing codes, standards and/or procedures used to calculate the design parameters which fulfill the requirements of a particular design or part of a design. Design Notes may include formal or informal written notes or addendum on assumptions, philosophies, references and decisions which contribute to the final design and form part of the overall calculations. Design Notes are intended to document details and particulars essential to the design process and end product.
- Design Standards* Internal engineering documents that provide the rationale and guidelines for repetitive engineering work. Specific documents include philosophies, directives, procedures, specifications, standard drawing lists, data sheets and drawings. These documents also define the applicability of industry standards, codes, acts and regulations.
- Drafter* An individual (internal or external) who prepared drawings, drawing revisions (which include Engineering Revisions), As-Built Drawings and Record Drawings in accordance with the Design Notes, the sketches provided by the Designer, the as-built information or the record information.



CAUTION! Check EDMS for latest revision

<i>Drafter Checker /Drafting Coordinator</i>	An individual responsible for performing checks on the portions of the engineering drawings that relate only to the Drafter Checker's technical training and area of expertise. Responsible to review drawings for dimensional accuracy and conformance to TransCanada drafting standards. The requirements for an independent drafting check shall be determined by the specific process area. Drafting coordinators also act as the liaison between the drafter and the engineer or Project Manager.
<i>Engineering Document</i>	Letters and / or instructions, designs, drawings, studies, reports, manuals, specifications and / or data sheets, technical agreements, standard design addendum, produced as a result of the Practice of Engineering. Refer to the various types of Engineering Documents identified in Appendix A – Approval Matrix for Engineering Documents.
<i>Engineering Revision</i>	A modification or addition to an existing physical asset or approved design for such an asset where the change impacts the sizing or selection of materials or components and/or affects the safety/design of the system or sub-systems forming the asset. These changes would normally require a change to the engineering drawings, specifications, or other Engineering Documents. The documentation and control process for engineering revisions constitutes part of the management of change process.
<i>Engineering Technologist</i>	A person who: a) has received an engineering technology diploma or equivalent training, b) who engages in the Practice of Engineering, c) prepares engineering designs for which a Responsible Engineer accepts responsibility, d) whose engineering practice is subject to such supervision and controls as the Responsible Engineer considers appropriate in the circumstances e) may be registered in a local Engineering Technologists association.
<i>Final Drawings</i>	Final Drawings for the purposes of this document and the approval matrix are as follows: a) IFC – issued for construction b) IFB – issued for bid or standard drawings that are intended for use in fabrication / construction c) Any subsequent drawings after release of the above drawings
<i>In House Contract Engineer</i>	A Professional Engineer or otherwise qualified person who is not a TransCanada core (permanent) employee and is engaged in the Practice of Engineering under TransCanada's Permit to Practice or who is engaged in the Practice of Engineering for TransCanada, when the engineering work is completed "in house".
<i>Issue for Bid (IFB) Document</i>	An Engineering Document issued for tender. Should be signed, (stamped), and dated by the Responsible Engineer/RPT only if considered "final" and/or will be used for construction.
<i>Issue for Construction (IFC) Document</i>	An Engineering Document issued for construction. Should be signed, (stamped), and dated by the Responsible Engineer/RPT.

CAUTION! Check EDMS for latest revision

<i>Manager / Discipline Leader</i>	An individual responsible for ensuring the engineering work processes conform with TransCanada practices, procedures, engineering standards, due diligence and Health, Safety, Environment and Risk requirements. Also accountable for ensuring that personnel carrying out those processes are qualified to do so for the location where the work is to be implemented.
<i>Permit Holder (Alberta)</i>	A corporation, partnership or other entity that holds a Permit to Practice pursuant to the Alberta Act. (Section 5, Ref. 6, Appendix A)
<i>Permit Number</i>	TransCanada's assigned number under the Alberta Engineering, Geological and Geophysical Professions Act. TransCanada's defined scope of engineering under this permit is: the prepare designs, specifications and plans, conduct evaluation and make recommendations for the construction, inspection, maintenance and operation of natural gas transmission and power generation facilities. When placed on Engineering documents shall appear as "APEGGA P07100" and shall be applied whenever an Alberta Professional Member's stamp is applied
<i>Permit to Practice</i>	The authority to engage in the Practice of Engineering as represented by a permit certificate issued by the local state or provincial authority. This is only relevant in certain jurisdictions such as Alberta.
<i>Practice of Engineering Professional Engineer</i>	Engineering work as defined in this document. For the Practice of Engineering where the work is performed or when Engineering Documents are required to be stamped, signed and dated for: Alberta: An individual who holds a certificate of registration to engage in the Practice of Engineering under the Act. (Section 5, Ref. 5, Act, Section 1(r)). Other Provinces and States: As defined in the appropriate jurisdiction's act or regulations
<i>Project Manager</i>	An individual accountable for overall management of the project scope, cost, quality and schedule. Responsible for ensuring that the combination of approved documents comprising the total project reflects the scope. Responsible for ensuring that file copies of Engineering Documents are maintained as required.
<i>Project Scoping Documents</i>	A document developed by the project team which defines the scope of work, operating philosophy and design parameters for a project. Scoping documents include Design Concept Manuals (DCM), Design Basis Memorandums (DBM) and Front End Engineering Design (FEED).
<i>Project Team</i>	The individuals assigned to a project. The team will involve all required personnel including, but not limited to, design, procurement, construction, risk management, land and community.



CAUTION! Check EDMS for latest revision

- Record Drawing* As-Built/Construction drawings produced by TransCanada that record engineering changes during construction. These drawings are considered to be documents that a professional member created to record design changes for which he or she is accepting responsibility and have to be reviewed and approved accordingly.
- Responsible Member* For practice in Alberta, the Responsible Engineer authorized in the Permit to Practice (Professional Engineer) to assume accountability for TransCanada's permit held in accordance with the Alberta Act. The Responsible Member is accountable for quality control procedures to reasonably preclude errors or omissions in the technical content, resulting in a complete and accurate Engineering Document. Outside of Alberta, Responsible Members have the same accountability, but are not registered with APEGGA.
- Responsible Engineer* The Responsible Engineer is the Professional Engineer, or person otherwise qualified by code or regulation to perform engineering tasks, professionally and legally accountable for quality control procedures to reasonably preclude errors or omissions in the technical content, resulting in a complete and accurate Engineering Document.
- Specifications* A TransCanada Engineering Document which describes the technical requirements of a product or service, and may include the minimum requirements for design, manufacture, qualification, inspection and testing of an end product. Specifications can be site specific or a company standard that has pre approval by TransCanada as it pertains to this Practice.
- Standard Design* A pre-engineered design of a component, assembly or system that requires completion of site specific work and confirmation that the standard design and scope applies, prior to use in a project. Includes approved, signed, (and stamped) Engineering Documents. These documents do not have to be resigned when they are reused.
- Standard Design Addendum* A project/site specific modification to a Standard Design.

4 DESCRIPTIONS

4.1 Policies, Guidelines / Principles

- 4.1.1 A Manager / Discipline Leader shall be responsible for ensuring the engineering work processes conform to TransCanada practices, procedures, engineering standards, due diligence, health, safety, environment and risk requirements. They are accountable for ensuring that personnel carrying out those processes are competent and qualified to do so for the location where the work is to be implemented.
- 4.1.2 The Designer shall undertake only work that they are competent to perform by virtue of training and experience.
- 4.1.3 All "final" engineering work shall be reviewed by a Design Discipline Checker, in accordance with Appendix A – Approval Matrix for Engineering Documents. This independent check shall be conducted on the portions of the design that relate to the Design Discipline Checker's technical

CAUTION! Check EDMS for latest revision

training and area of expertise and shall be conducted for accuracy, technical content and to ensure project specific and TransCanada requirements are met.

- 4.1.4 The Project Manager shall organize or lead an interdisciplinary check (IDC), as applicable, for the “final” engineering work prepared by all relevant engineering disciplines.
- 4.1.5 All Engineering Documents that are complete and ready for use must be signed, (stamped) and dated in accordance with Section 4.2 (Requirements for Stamps and Signatures) and Appendix A – Approval Matrix for Engineering Documents.
- 4.1.6 The Responsible Engineer shall be accountable for and accept professional responsibility for the work as indicated by the signing and dating of the Engineering Documents. Signing and dating a document as the Responsible Engineer without stamping shall be considered equivalent to the Responsible Engineer applying their stamp, signing and dating. In the case of work prepared by others, the Responsible Engineer shall ensure supervision and control of the Designer is adequate such that they can accept professional responsibility for the work.
- 4.1.7 The Responsible Engineer shall only accept professional responsibility for portions of the work that relate to their technical training and area of expertise with respect to the location where the work is to be implemented. The Responsible Engineer may be registered in any province or state. However, for work on non federally regulated systems or facilities, the Responsible Engineer shall be registered with the appropriate engineering body.
- 4.1.8 The Responsible Member shall be accountable for quality control procedures and ensure that quality is managed by implementing the TransCanada’s Professional Practice Management Plan (PPMP) and the requirements of this document. The quality control procedures shall be such as to reasonably preclude errors or omissions in the technical content, resulting in a complete and accurate Engineering Document. For work in Alberta, the Responsible Member shall be a Professional Engineer authorized in TransCanada’s Permit to Practice to assume accountability for the permit.
- 4.1.9 Quality assurance shall be documented on the "final" engineering work through sign-off as identified by the accountabilities and responsibilities in Appendix A – Approval Matrix for Engineering Documents.
- 4.1.10 Approval of As-Built Drawings indicates the Engineering Revisions documented during construction meet the applicable design requirements.
- 4.1.11 Approval of Record Drawings indicates that all information relating to Engineering Revisions provided by a third party not under the approvers direction, supervision or control, has been accurately recorded on the drawings. Prior to approval the approver shall establish that a third party Professional Engineer is taking professional responsibility for Engineering Revisions recorded on the drawing.

CAUTION! Check EDMS for latest revision

4.2 Requirements for Stamps and Signatures

4.2.1 Signatures and Stamps for Federally Regulated Systems (See Appendix B)

- a) The Drafter, Drafting Checker, Designer and Design Discipline Checker initial in the appropriate locations on the Engineering Document.
- b) The Responsible Engineer must sign with a full signature; indicate their professional designation and date. **Stamping of documents is not required.** Such authentication indicates that professional responsibility is being taken for the document and shall be considered equivalent to the Responsible Engineer applying their stamp, signing and dating.
- c) The Project Manager initials in the appropriate location on the Engineering Document.

Notes:

- 1) Many of TransCanada's facilities are federally regulated and therefore specific provincial and state **engineering stamps are not required.** However, all work will be governed by management systems as defined in this document, including qualifying elements. The signing and dating by the Responsible Engineer indicates that professional responsibility is being taken for the document and shall be considered equivalent to the Responsible Engineer applying their stamp, signing and dating. The engineer may apply their stamp should they so desire.
- 2) Some Engineering Documents for the federally regulated pipeline systems may require stamps to obtain permits or approvals from provincial jurisdictions (traditionally for development, building and drainage type permits). The Responsible Engineer, a provincially or state registered Engineer or Technologist licensed to complete this type of work, shall apply the relevant provincial or state engineering stamp, sign and date and take professional responsibility for the document in accordance with the provincial Act, Regulations, By-Laws and the intent of any related published guidelines for that province or state.

4.2.2 Signatures and Stamps for Non Federally Regulated Entities (See Appendix B)

- a) The Drafter, Drafting Checker, Designer and Design Discipline Checker initial in the appropriate locations on the Engineering Document.
- b) The Responsible Engineer must apply their stamp, sign with a full signature and date. Registration in the appropriate jurisdiction and **stamping of documents is required.**
- c) The Project Manager initials in the appropriate location on the Engineering Document.

Notes:

- 1) In jurisdictions where it is necessary to obtain a Permit to Practice (or equivalent) in order to carry out engineering work on state or provincially regulated facilities, the Permit number or stamp must appear in proximity to the professional members stamp depending on the requirements of the specific jurisdiction. Note, for Alberta a permit stamp is not required, only the permit number.

4.3 Professional Practice and Use of Professional Seal or Stamp

- 4.3.1 Where Engineering Documents are required to be stamped as indicated above, the Responsible Engineer shall be accountable for ensuring that they are complying with the Acts, Regulations

CAUTION! Check EDMS for latest revision

and By-Laws for the province or state where the engineering work is performed and/or is to be applied/implemented when they apply their stamp, sign and date Engineering Documents.

4.3.2 Limitations on the accuracy of preliminary Engineering Documents may exist; therefore those documents should not be signed (and stamped). Instead, preliminary Engineering Documents should be marked "Preliminary - Not for Construction". Issue for Bid (IFB) documents should be signed, (stamped), and dated only if they are considered complete and/or will be used for construction.

4.3.3 All signatures (and stamps) shall be manually applied to engineering documents.

5 REFERENCES AND ADDITIONAL RELEVANT MATERIAL

The Practice of Engineering shall comply with the current edition of the following as well as other relevant documents (as applicable):

1. TransCanada Workplace Policies – Code of Business Ethics
2. TransCanada Engineering Professional Practice Management Plan (PPMP)
3. The Engineering, Geological and Geophysical Professions Act, Regulations and By-Laws (APEGGA)
4. Professional Standards for Authenticating Professional Documents (APEGGA)
5. Professional Practice - A Guideline (APEGGA)
6. Environmental Practice - A Guideline (APEGGA)
7. Guideline for the Use of Computer Software Tools by Professional Engineers and the Development of Computer Software Affecting Public Safety or Welfare (Association of Professional Engineers Ontario)
8. TransCanada internal Quality Management System documents.



CAUTION! Check EDMS for latest revision

APPENDIX A: APPROVAL MATRIX FOR ENGINEERING DOCUMENTS

Engineering Document	Drafter	Drafting Checker	Designer	Design Discipline Checker	Construction Manager	Project Manager	Responsible Engineer
Engineering Design Standards			R	R			A
Standard Designs			R	R			A
Project Scoping Documents Note 7			R	R		A	Note 7
Final Drawings (Standard Designs or Site Specific) Note 8	R	R	R	R		R*	A
Project Specifications Note 9			R	R		R*	A
Project Data Sheets Note 10			R	R			A Notes 1,2
Design Notes / Calculations Note 11			R	R			N/A Note 3
Studies, Reports and Manuals Note 12			R	R		R*	A
Engineering Revisions Note 13	R	R	R	R	R**	R*	A
As-Built Drawings Note 14	R	R			R**		A Note 5
Record Drawings	R	R				R	A Note 6
Direction Note 15				R			A
TOPS/Procedures Note 16				R			A
Control Software Note 4							A
Engineering Software (Creation) Note 17			R				A

A = Accountable Individual who is ultimately accountable for the task. Full signature and date is required as well as a stamp if required in Section 4.2.

R = Responsible Individual(s) who performs the task and initials the Engineering Document.

R* = Responsible Individual(s) who ensures the combination of documents reflects the scope and verifies this by initialing the Engineering Document. Not required for Standard Designs.

R** = Responsible Individual(s) who ensures that changes during construction including Engineering Revisions are accurately recorded and verifies this by initialing the redline marked up prints.



CAUTION! Check EDMS for latest revision

APPROVAL MATRIX FOR ENGINEERING DOCUMENTS NOTES:

1. Data Sheets that do not involve the Practice of Engineering are not signed (or stamped) as the responsibility for design and manufacturing of the final engineering product resides with others. Data Sheets involving the Practice of Engineering to specify the final product are to be signed (and stamped) to ensure the design parameters indicated in the data align with the calculations prepared or reviewed by the Responsible Engineer to specify the final product.
2. When multiple Data Sheets are packaged together, a cover sheet may be signed (and Permit Number applied). Individual Data Sheets do not require signing (or the Permit Number applied).
3. Design Notes are not required to be stamped. Instead, Design Notes are an input into the final design contained in the Engineering Documents which are to be signed (and stamped).
4. Includes control software development or major revisions to existing control software. Major revisions can be defined as changes that significantly alter the existing design. The management of changes shall adhere to the principles and procedures laid out in the "Guidelines for Software Management" document in use throughout Engineering and the Regions. The professional's stamp/signature shall be affixed to a copy of the revision log sheet as detailed in the above document. A copy of the software should be attached to the copy of the revision log sheet and stored for future reference. Quality assurance is achieved via testing / commissioning. NTD: The US TOP may require update to meet this requirement.
5. Designer's initial, Responsible Engineer's signature (and stamp) and permit number (or stamp as applicable) are not required for an As-Built Drawing if there are no Engineering Revisions to the preceding drawing that was signed (stamped) and dated for construction purposes. If an As-Built Drawing contains Engineering Revisions it may be considered a Record Drawing.
6. A TransCanada Responsible Engineer's signature (stamp) and permit number (or stamp as applicable) should be applied to a Record Drawing and the project manager must initial the drawing as per Section 4.1.11.
7. Project Scoping documents that require approval, signature and possible stamp by the Professional Person are those that incorporate engineering calculations or other information based on engineering knowledge, skill or judgment in which the public takes a trust. Examples may include some Design Concept Manuals or Design Basis Memorandum depending on their complexity.
8. All Final Drawings are a record of engineering work and will be approved as per the approval matrix.
9. Specifications will follow the requirements of the approval matrix if the development of the specification requires the application of scientific principles to develop new or revised requirements for equipment, materials or processes. A specification to replace a piece of equipment with a "like kind" replacement is not an engineering specification and does not need to follow the requirements of the approval matrix.
10. Data Sheets that document engineering decisions, calculations, or other information based on engineering knowledge, skill or judgment in which the public takes a trust shall follow the approval requirements shown in the approval matrix.



CAUTION! Check EDMS for latest revision

11. Design Notes that include assumptions that form the basis of a design shall follow the requirements of the approval. Any original design calculations will also follow the requirements of the approval matrix.
12. Engineering Studies, Reports and Manuals shall follow the approval requirements of the approval matrix only if they document engineering aspects as defined elsewhere in the matrix.
13. Engineering revisions shall follow the requirements of the approval matrix if the revision impacts the safety of the construction activities, or will be placed into service before approval of the As-Built Drawing.
14. As Built Drawings document the final state of the facility and as such shall be approved as per the approval matrix. Only those drawings documenting engineering aspects of a project need to be as-built for this purpose; however drawings that facilitate maintenance may also be as-built.
15. When direction is given to other people that involves aspects of engineering as described elsewhere in the approval matrix, a description of the direction should be generated, approved as per the matrix requirements and properly archived.
16. TOPS and procedures that contain aspects of engineering as described elsewhere in the approval matrix shall be reviewed and approved as per the matrix requirements. TOPS that contain engineering content are specifically identified.
17. The creation or modification of Engineering Software shall be reviewed and approved as per the matrix requirements. Engineering Software is a tool that automates engineering calculations or analysis for routine use. Routine use of the software is not usually considered and engineering function but is still subject to suitable quality assurance requirements.

