4-Party Turnkey Drafting Guidelines

SaskPower and SaskEnergy

Design, Construction, As-Built

4-Party Turnkey for Residential Subdivisions in Saskatoon and Regina area

Revision: 1
Last Updated: 2013-01-31

Revision History:

Revision	Date	Notes
0.0	2013-01-09	Initial draft submitted to SaskPower for review
0.1	2013-01-10	Initial draft submitted to SaskEnergy for review
0.2	2013-01-17	Revised submitted to SaskEnergy for review
1.0	2013-01-31	For submission on external website

Table of Contents

1 Summary

The drafting guideline outlines the requirements and standards for producing an AutoCAD drawing for the 4-party turnkey program. There are typically two designs: a natural gas design for SaskEnergy and a power design for SaskPower. The gas design includes one drawing, which is the gas layout drawing. The power design includes an easement drawing, electrical layout (plan view) drawing, electrical schematic drawing, and a street light drawing (where applicable).

The following files accompany this drafting guideline:

Filename	**Description**
4-Party Turnkey Drafting Guidelines R1.docx	A word document outlining how the template should be used as it applies to the turnkey program
SaskPower and SaskEnergy Turnkey Template R1 ANNOTATED EXAMPLE.dwf	A DWF annotating the example drawing and highlighting examples and how to use the standard
SaskPower and SaskEnergy Turnkey Template R1 EXAMPLE.dwg	The DWG example file from the Creeks 4
SaskPower and SaskEnergy Turnkey Template R1.dwg Turnkey-Pensettings.ctb	A blank DWG template for future projects Pensettings file for the template and example

2 Types of Drawings

2.1 Easements

The easement drawing identifies the locations of new easements required to place the electrical facilities. This drawing needs to be approved by the developer and submitted to a legal surveyor to create a registered survey plan. The legal survey plan is then processed by SaskPower lands departments for registration of the easements.

2.2 Electrical Layout

The electrical layout drawing shows the physical location of the SaskPower facilities. It shows the transformer locations, pedestal locations, and the trench centerline. This drawing does not show any electrical connection details. It does not show conductor types or quantities. The drawing is based on real-world size and placement. This drawing is used for the Issue-For-Review process with SaskPower; it is used by the survey crew for staking; the construction crews use it to place the facilities; and it is returned with as-built data to SaskPower.

2.3 Electrical Schematic

The electrical schematic shows the electrical connection details, the conductor types, normal open points, and electrical configuration. The electrical schematic is not-to-scale and does not need to represent the exact physical location or orientation of facilities. This drawing is used for the Issue-For-Review process with SaskPower; the construction crews use it to place the facilities; and it is returned with as-built data to SaskPower.

2.4 Street Lighting

The street light drawing shows the location of street lights, luminaire templates, lighting levels, electrical cables and the sizes of conductors feeding the street lights. This drawing is a real-world representation with real-world placement of facilities. This drawing is used for the Issue-For-Review process with SaskPower; it is used by the survey crew for staking; the construction crews use it to place the facilities; and it is returned with as-built data to SaskPower.

2.5 Natural Gas Layout

The gas layout is a geographic representation of the gas pipe, fittings, materials, and service stub locations. This drawing is used for the Issue-For-Review process with SaskEnergy; it is used by the survey crew for staking; the construction crews use it to place the facilities; SaskEnergy uses the drawing for interim work and it is returned with as-built data to SaskEnergy.

3 Drawing files & filenames

The AutoCAD file shall follow the following filename specifications:

- The filename syntax shall be: *[Service Provider Project Identifier]-SE[SaskEnergy Work Request Number]-R[SE Revision Number]-SP[SaskPower Work Order Number]-R[SP Revision Number]*
- For example: *SK-00001-SE123456-RC-SP7890123-RA.dwg*
- If a SaskEnergy only drawing is contained, the SaskPower Work Order Number may be omitted. The vice-versa is true from a SaskPower only drawing. For example: *SK-00001-SP7890123-RB.dwg*
- Add "*_ASB*" suffix for as-built drawings. For example: *SK-00001-SP7890123-RC_ASB.dwg*
- The revision number must match the revision numbers shown on the drawing.

Revision Numbers:

- The revision number starts a 0. Revisions thereafter are noted by letter starting with A, B, C, etc. Each revision must be documented on the title block of the drawings. The Easement drawing, SaskPower layout, SaskPower schematic, and Street Light drawings must be incremented in uniform.
- The revision number shall be incremented for each IFR submission. It also must be incremented for the IFC stamp.

4 Basic Drawing Information

4.1 Drawing sizes

All drawings are D-size drawings (864 × 559 mm). Drawings are to be in metric metres.

4.2 Drawing Plot Scales

The follow table is a list of acceptable drawing scales.

1:1000
1:750
1:500
1:250
N.T.S. (Not to Scale)*

- NTS is applicable for details only

4.3 Land base information

The source of the land base shall be indicated on the drawing. If the land base is preliminary, the drawing must indicate this in the model space. It also must indicate the land base revision number.

Plan number should show up on the drawing for areas that are registered with ISC.

The base information should be in one block. All the objects within that block should be on one layer.

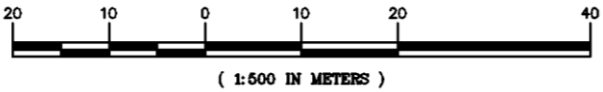
4.4 Model space

The model space shall be set to NAD83-Extended Zone 13N coordinates. A circle shall encompass any drawing elements marked as N.T.S. or not projected in the geospatial location.

The layer states manager is recommended for working in the model space.

4.5 General Blocks

Block Figure	Description	Notes
	North Arrow	Must be included on all drawings

	Sask 1st Call	Must be included on all drawings
	Scale bar	To be included on all drawings

4.6 General Layers

Layer Name	Description	Properties
CROWNS BASE FABRIC	Existing (excluding proposed) subdivision roads, road names, curb, gutter, sidewalk, legal lot lines	
CROWNS PROPOSED FABRIC	Proposed subdivision roads, road names, curb, gutter, sidewalk, legal lot lines	
CROWNS MATCHLINE	For plan view drawing than span multiple sheets	
CROWNS VIEWPORT	To place viewports in the layout view	Does not print

5 Plotting and Plot Files

The template uses on plot style table (pen assignments) call Turnkey-Pensettings.ctb.

Note: DWF files should accompany all drawings when being submitted to the utilities.

6 General As-built Information

All as-built layers, filenames, and layouts must be suffixed with "_ASB".

Note that field notes (refer to Appendix in section 0) must be included to accompany the AutoCAD as-built submissions.

A staker's copy must be provided to the staker. They will then pass a copy to the crews to markup for construction field notes.

Tie-in location details must be shown on the as-built drawings.

7 Easements

Plot Scale: 1:1000 or 1:750

7.1 Layers

Table 1: AutoCAD Layers for Easement Drawing

Layer Name	Description	Properties
EASEMENT 4P	4-party easements	
EASEMENT 3P	3-party easements (i.e. SaskPower, SaskTel, and cable)	
EASEMENT SE	SaskEnergy only easement	
EASEMENT SP	SaskPower only easement	
EASEMENT AUX	Other easements	

8 Electrical Layout

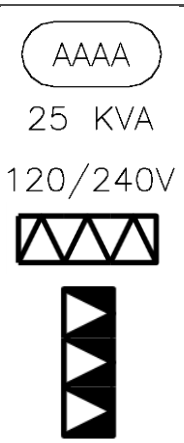
Plot Scale: 1:500 or 1:250

8.1 Layers

Layer Name	Description	Properties
SP TRENCH LAYOUT	Polylines showing the center of the trench	
SP LAYOUT NOTES	Text, annotations, dimensions	
SP 3-PARTY PED	3-party pedestals	
4-PARTY SERVICE	4-party service stub boxes	
SP STR POLE	Overhead poles, dips, and guy anchors	
SP 1P TRANS PAD	Single phase padmount transfomers	

8.2 Blocks

Block Figure	Description	Notes
	Single phase transformer with switch	Single phase or three phase pad-mount transformer.
	3-party joint-use pedestal	The shaded side of the pedestal block is to face the direction of the source. For SaskPower, SaskTel, and Shaw or Access Communications.
	Secondary stub box	Placed in the corner of each lot according to standard B-14-59

	Transformer block detail	Shows the transformer number, size, and secondary voltage.
	3 Phase padmount switch cubicle	(not geospatially defined)
	Three phase transformer with switch	(not geospatially defined)

8.3 Transformer numbers

Transformer numbers should be “AAAA”, “BBBB”, etc. for the initial submission to SaskPower. In the IFR return, the SaskPower representative will then provide a real transformer number such as 1234.

9 Electrical Schematic

Plot Scale: Not-to-scale (N.T.S.)

9.1 Layers

Layer Name	Description	Properties
SP 1PH PRI 1AL	Single phase primary #1 Aluminum cable	
SP 500MCM SEC	Secondary 500MCM aluminum	
SP SCMTC NOTES	Notes, text, annotations	
SP 1P TRANS PAD	Single phase padmount transformer	

9.2 Blocks

Refer to Electrical Layout Blocks (Section 8.2).

10 Street Lighting

Plot Scale: 1:500 or 1:250

10.1 Layers

Layer Name	Description	Properties
SL	Street light cable	
SL LUMINAIRE	Street light luminaire blocks	
SL TEXT	Annotations, text, offsets	
SL HEAD	Street light luminaire head	
SL FUTURE	Future street light locations (i.e.	

	future phases, not proposed)

10.2 Blocks

Block Figure	Description	Notes
	Street light luminaire 150W	
	Street light luminaire 250W	

Refer to SaskPower standard A-02 for additional symbols. Also refer to Electrical Layout Blocks (Section 8.2 in this guideline).

11 Natural Gas Layout

Plot Scales: 1:1000, 1:500, or 1:250

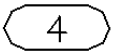
On the gas layout, the polyline must be geo-spatially correct to the centerline location of the gas pipe. If there is a change in pipe size (i.e. a reducer), the polyline must be broken at the correct spatial location in the line. Fittings are to be placed near to exact location (i.e. exaggerate the location of fittings; Show reducer fitting only when there is an actual reducer (i.e. not only when the pipe changes size). Refer to Appendix in Section 10 for SaskEnergy as-built requirements.

11.1 Layers

Layer Name	Description	Properties
SE Notes	Text, annotations, offsets	
SE EXISTING	Existing SaskEnergy facilities	
SE PROPOSED	Proposed SaskEnergy facilities	
SE SERVICES	Proposed SaskEnergy services to each lot	
SE FITTINGS	Proposed fittings (i.e. tee's, elbows, reducers, etc.)	

11.2 Blocks

Block Figure	Description	Notes
	Transition	
	Tee	Type to be specified
	Elbow	
	Reducer	

	Denotes orientation of gas alignment relative to shared parties
	Material codes
	Short stop (x)
	45’ ELBOW

12 Appendix A: Complete List of SaskEnergy fittings and symbols

DRAFTING STANDARDS
URBAN SYMBOLS

May 10, 2012
w:\drafting\masterlists\Documents_AutoCAD\UrbanSymbolLegend.dwg

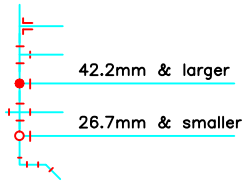
* – must always label

SYMBOLS	TEXT USED
VALVE–/Make–Nordstrom, Rockwell, Wallworth /Type–Plug–unless otherwise stated –Other types –Gate Valve –Curb Valve –Dresser Valve–also known as DE Valve	VALVE * GATE VALVE * CURB VALVE * DRES VALVE
STOPPER FITTING–/Make–Williamson–unless otherwise stated –Also known as EXT. STR. FTG., LINE STR. FTG. –Other types – Make (Mueller) ☒ –Old Manual Symbol –Lateral Stopper Fitting (LAT. STR. FTG.) –Dead End Stopper Fitting (DE STR FTG) (Mueller Split Tee)	STR FTG * MUELLER STR FTG * MUELLER STR FTG
DRESSER COUPLING–Important to dimension location of – LEAKS!! –Also refered to as Dresser Sleeve or just Sleeve –was also used to clamp steel & PE together at times	* DRES CPLG
CASING–Usually found under railway tracks	CASING
REDUCER–also known as SWEDGE	RED
CULVERT– rarely used	CULV
CAP–also known as BULL PLUG, assumed coupling included –do not assume CAP falls on property line, dimension from nearest junction or use chainage to show location	CAP
JUNCTION–two lines connected, but unsure of method	JUNC
INTERSECTION–two lines cross, but unsure if they are –connected or method (ie. cross tee, saddles)	INT
INSULATED FITTINGS–for cathodic protection purposes. – two types – Flanged end Insulation fitting –Old Manual Symbol for FLG INSUL FTG –Old Digital Symbol – Non–Flanged Insulation fitting	* FLG INSUL FTG INSUL FTG
TRANSITION FITTING– proper fitting to connect steel & plastic pipe	TRANS
TYPES OF CONNECTIONS	
SADDLE–welded to existing pipe to extend serv./Lateral Tap–Same	SAD /or/ * LAT TAP
IN LINE TEE–used during original installation	TEE
THREE WAY TEE–used to extend service – (Mueller Split Tee)	3 WAY TEE
CROSS TEE–lines are connected with cross fitting	CROSS TEE
CROSSING–lines are not connected, curve indicates line on top	X'ING
SERVICE TEE – includes tapping tees, clamp–on tees & ST to PE tee (15.9mm & 26.7mm)	SERV TEE
ELBOW–90° or 45° fitting	ELL

* – must always label

SYMBOLS	TEXT USED
HYDRANT–Water hydrant, used to dimension to when no other dimension is given	HYD
ELECTRIC PEDESTAL – used to dimension to when no other dimension exists, found in apartment complexes	PED
MANHOLE–Secondary tie–in point used to dimension to when no other dimension is given	M.H.
SIDEWALK–Secondary tie–in point used to dimension to when no other dimension is given	n/a
SUPPORT CLAMP–An emergency repair clamp (Adam's clamp) – rarely used	CLAMP
BUILDING–to show services in open areas, ie. parks, rural customers within urban limits, shopping mall areas This symbol is used in conjunction with text to identify building	BLDG
FIP–(Found Iron Pin) –dimension to these whenever given on asbuilt	FIP
REGULATOR STATION– To mark the location of where pressure changes occur at the above ground station	Labeled by Plotplan drawing #

STEEL CONNECTION FITTINGS



PLASTIC CONNECTION FITTINGS

NOTES
–42.2mm (1 1/4") services always shown, anything less only shown under unusual circumstances. ie. line must run in main street to reach service, or service site is on large parcel of land. Example–school sites, recreation sites, apt. complexes.
–STR. FTG.'s–important to show offsets but most are dimensioned from sidewalks or curbs, therefore use sidewalk symbol & dimension
–If possible, show info. such as CAP & PL, on one line of text
–Insulator fittings to have an additional symbol for ease of locating on overall maps.
–place Work Request #'s or file reference #'s along pipe line in which it applies. ie. (38567) or (546–9016)

13 Appendix B: SaskEnergy As-Built requirements

AS-BUILT OF MAIN INSTALLATIONS (URBAN)

The Sketch

1. Record North direction on diagram. (Preferably to top of page)

2. As-built drawings must be tied into the following using offsets or chainage:
   a) Legal Ties (Mandatory Information)
      - Found Iron Pins (FIP)
      - Property Lines
      - Special Monuments

   b) SaskEnergy Facilities (Preferred choice over Structural Ties)
      - Existing Gas line mains

   c) Structural Ties (Additional Information)
      - Manholes
      - Catch Basins
      - Fire Hydrants
      - Water Valves
      - Buildings
      - Curbs
      - Fences
      - Poles
      - Electrical & Telephone Pedestals

3. Indicate station chainages at all fittings and deflections (along with deflection angles).

4. Indicate chainage and depths of both lines when crossing another buried facility (ie. Cables) and also if the line is in close proximity to a structure (ie. Manhole, Electrical Pedestal, pole)

5. Tie-in end of main to nearest property line. Required information for future ***urban*** extensions.

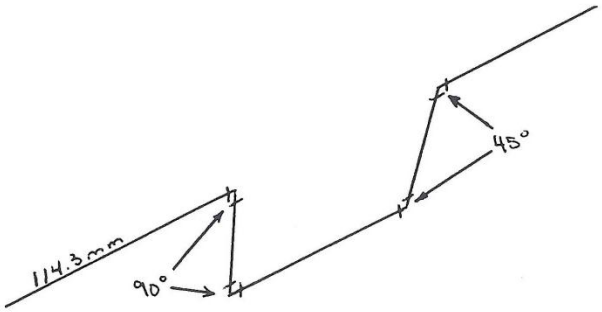
6. Indicate operating pressure of gas line. (ie. MP, IP).
   See ***PRESSURE CLASSIFICATION*** Chart

7. If as-built of existing line is incorrect, indicate correction on new as-built and note to that effect.

8. Check completed as-built to see that the measurements agree with the registered plan.

9. Provide as-builts of any valves or insulating insulators on “Valve History” and “Insulation Fitting History” cards and attach to main line as-built sketches. Sample ‘Valve History Card’ illustrated later.

10. Provide schematic sketches on all non-standard pipe settings (include depth dimensions).



11. If service pipe is greater than 1 1/4in, it must be shown on the as-built drawings. Otherwise, service pipe is not shown, but information is provided in the service card.

12. Marker ball locations must be shown on the drawing.

13. Depth of cover of the gas pipe must be indicated on the drawing.

14. Service cards must accompany field notes for each individual service stub.

15. Tie information must be provided similar to the services. Depth of cover and dimensions must be shown for tie-in locations.

16. If profiles are required, they must be included with the as-builts.