A Guide to Shapefile Submissions
RRC Pipeline Permitting & Mapping

When submitting shapefiles to the Pipeline Online Permitting System (POPS), there are specific requirements that need to be met. Use this document as a guide to these requirements. Requirements come from Railroad Commission of Texas (RRC) rule 16 Texas Administrative Code (TAC) §8.1 and 49 Code of Federal Regulations (CFR) Parts 191 – 195.

To read 49 CFR Parts 191 – 195, visit the Code of Federal Regulations website at
https://www.ecfr.gov/current/title-49/subtitle-B/chapter-I/subchapter-D.
To read 16 Texas Administrative Code (TAC) §8.1, visit the Texas Secretary of State website at
https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=16&pt=1&ch=8&rl=1.

Please remember:
- o All numbers must be positive; all characters must be capitalized
- o Must use an RRC-approved coordinate system
- o Shapefiles must contain all 15 required fields
- o Must assign fields with the appropriate data type and character limit
- o Shapefile names cannot include special characters or spaces

Overview
1. Coordinate Systems
2. Required fields, data types and lengths
3. Additional fields, if necessary

1. Coordinate Systems

Shapefiles must use one of two coordinate systems: *NAD 1927 or NAD 1983.* These are geographic coordinate systems (GCS), meaning they use an angular unit of measurement (e.g. degrees). We do not accept shapefiles that are using a projected coordinate system (PCS), meaning they use a linear distance of measurement (e.g. feet).

2. Required fields, data types and character limits

1. P5_NUM   "P-5 Operator Number"
(Data Type: Text, Character Limit: 6)

A six-digit number assigned by the RRC to identify a pipeline operator (not the pipeline owner).

2. T4PERMIT   "T-4 Permit Number"
(Data Type: Text, Character Limit: 5)

A five-digit number assigned by the RRC to identify a T-4 permit number (e.g. 00001—99999).
Only use 5 zeros (00000) for new permits that do not already have a T4 permit number assigned.

3. SYS_NM   **"System Name"**

(Data Type: Text, Character Limit: 40)

A name for a single pipeline system, assigned by the operator. Can be any alphanumeric value; blank values are **NOT** accepted.

4. SUBSYS_NM   **"Subsystem Name"**

(Data Type: Text, Character Limit: 40)

A name for a sub-section of a pipeline system, assigned by the operator. This is a subset of SYS_NM. Can be any alphanumeric value; blank values are **NOT** accepted.

5. PLINE_ID   **"Pipeline ID"**

(Data Type: Text, Character Limit: 20)

An identifier for a pipeline segment, assigned by the operator. This is a subset of SUBSYS_NM. Can be any alphanumeric value. Blank values are acceptable. **May be used to indicate an amendment reason when there are multiple reasons for one T4_AMD code within one system or subsystem.**

6. INTERSTATE   **"Interstate Designation"**

(Data Type: Text, Character Limit: 1)

Identifies if a pipeline segment is interstate (crossing the Texas border, or crossing into Federal waters or terminal) or intrastate (within the Texas border).

Shapefiles with both 'Y' & 'N' values are **NOT** accepted.

Code	Code Description
Y	Interstate pipeline
N	Intrastate pipeline

7. DIAMETER   **"Diameter"**

(Data Type: Float, Precision 5, Scale 2)

Nominal Pipe Size refers to the inside diameter of the pipe; the Outside Diameter refers to the inside diameter of the pipe plus the pipe wall thickness. Always use Outside Diameter unless the diameter is greater than 12 inches, then use Nominal Pipe Size. Zero diameters are **NOT** accepted. Use up to two decimal places.

Nominal Pipe Size	Outside Diameter (inches)
1 "	1.32
1 ¼"	1.66
1 ½"	1.90
2"	2.38
2 ½"	2.88
3"	3.50
3 ½"	4.00
4"	4.50
5"	5.56
6"	6.63
8"	8.63
10"	10.75
12"	12.75

8. COMMODITY1   "Commodity"
(Data Type: Text, Character Limit: 3)

Abbreviation for the primary commodity carried by the pipeline system. There can be multiple commodities in one T-4 Permit, but there cannot be both gas and liquid commodities in the same permit. A pipeline with a diameter greater than 8.63" that transports petroleum from a production facility, is treated as Transmission. Petroleum means crude oil, condensate, natural gasoline, natural gas liquids, and liquefied petroleum gas.

Liquid Commodity Table

Code	Code Description	System Type
AA	Anhydrous Ammonia	Transmission
CO2	Carbon Dioxide	Transmission
CRO	Crude Oil	Transmission
CRL	Crude Oil	Gathering
CFL	Crude Oil	Full Well Stream Gathering
CRA	Crude Oil	Offshore Gathering
HVL	Highly Volatile Liquid	Transmission
PRD	Refined Liquid Product	Transmission

Gas Commodity Table

Code	Code Description	System Type
CO2	Carbon Dioxide	Transmission
NGT	Natural Gas	Transmission
NGG	Natural Gas	Gathering
NGZ	Natural Gas	Offshore Gathering
OGT	Other Gas	Transmission

9. STATUS_CD   "Pipeline Status"
(Data Type: Text, Character Limit: 1)

Identifies status of pipeline segment. Unless the pipeline has been physically removed from the ground, always include abandoned lines in shapefile submissions.

Code	Code Meaning	Code Description
I	In Service	Active and/or Idle lines required to be maintained per 16 TAC §8 and 49 CFR §191-195.
B	Abandoned	Regulated pipelines abandoned in place per 49 CFR 192.727 or 49 195.402(c)(10), or un-regulated pipelines abandoned in place with no intent for future use.

10. TX_REG   "Texas Regulatory Pipeline Status"
(Data Type: Text, Character Limit: 1)

Identifies if a pipeline segment is part of the standard RRC inspection schedule as defined in the table below.

Code	Code Meaning	Code Description
Y	Regulated	Transmission and gathering pipelines that are required by Commission rules to have a valid T-4 permit to operate and are subject to the regulations in 49 CFR Parts 192 and 195, such as natural gas transmission and storage pipelines, natural gas gathering pipelines, hazardous liquids transmission and storage pipelines, and hazardous liquids gathering pipelines.
N	Un-Regulated	Gathering pipelines subject to 16 TAC §8.110 and other gathering & production lines that are required to have a valid T-4 permit to operate but are not subject to the 49 CFR Parts 192 & 195.

Use the two tables below to determine if a permit is Regulated or Un-Regulated.

Determine TX_REG for Liquid Permits

TX_REG = **Y** if any of the following are true:	TX_REG = **N** if any of the following are true:
• COMMODITY1 = CRO, CRA, PRD, AA, CO2 or HVL • COMMODITY1 = CRL or CFL and LOC_DES = N • COMMODITY1 = CRL or CFL and LOC_DES = R and DIAMETER = 6.63" or 8.63" and USA = Y and SMYS >= 20%	• COMMODITY1 = CFL or CRL and LOC_DES = R • INTERSTATE = Y • STATUS_CD = B

Determine TX_REG for Gas Permits

TX_REG = **Y** if any of the following are true:	TX_REG = **N** if any of the following are true:
• COMMODITY1 = NGT, NGZ, OGT • COMMODITY1 = NGG and PL_TYPE = A, B, or C	• COMMODITY1 = NGG and PL_TYPE = R • COMMODITY1 = CO2 • INTERSTATE = Y • STATUS_CD = B

11. SYS_ID   "PIPES System ID Number"
(Data Type: Text, Character Limit: 8)

An eight-digit identification number assigned to pipeline segments that are or were regulated (TX_REG = Y). This number is assigned by the RRC and should be kept as a reference number by the pipeline operator for field inspection purposes. SYS_ID is **r**equired to be filled in for all pipeline segments that have been assigned a System ID in the Pipeline Inspection, Permitting, and Evaluation System (PIPES). Find a list of PIPES System IDs on the RRC website at https://www.rrc.texas.gov/pipeline-safety/reports/ and click the appropriate list, or email the T-4 permit numbers and/or P-5 operator ID numbers you'd like to see System IDs for to POPS@rrc.texas.gov. If a pipeline segment is not regulated and has never had a SYS_ID, enter a value of eight zeroes (00000000). If a pipeline segment is regulated but a System ID has not yet been assigned, enter a value of eight zeroes (00000000), and the RRC will enter the SYS_ID value into TPMS.

12. PLS_SYSNM   "PIPES System Name"
(Data Type: Text, Character Limit: 40)

The name associated with SYS_ID. It is assigned to pipeline segments that are or were regulated (TX_REG = Y). This name should be kept as a reference name by the pipeline operator for field inspection purposes. PLS_SYSNM is required to be filled in for all pipeline segments that have been assigned a System ID number in the Pipeline Inspection, Permitting, and Evaluation System (PIPES). Find a list of PIPES System IDs on the RRC website at https://www.rrc.texas.gov/pipeline-safety/reports/ and click the appropriate list, or email the T-4 permit numbers and/or P-5 operator ID numbers you'd like to see System IDs for to POPS@rrc.texas.gov. If a pipeline segment is not regulated and has never had a PLS_SYSNM, PLS_SYSNM can be left blank. If a pipeline segment is regulated but a System ID has not yet been assigned, PLS_SYSNM can be left blank by the operator, and the RRC will enter the PLS_SYSNM value into TPMS.

13. QUALITY_CD   "Data Quality"
(Data Type: Text, Character Limit: 1)

Operator's estimate of the positional accuracy of the submitted pipeline segment.

Code	Code Description
E	Excellent: within 50 feet
V	Very Good: 51 –300 feet
G	Good: 301 –500 feet
P	Poor: 501 –1000 feet
U	Unknown

14. LOC_DES   "Location Designation"
(Data Type: Text, Character Limit: 1)

Determines the class location of the pipeline. Class location is defined differently for liquid and gas permits. Liquid permits designate an area as either rural (R) or non-rural (N), while gas permits designate an area as class 1, 2, 3 or 4. For abandoned lines where class location is unknown, use a value of R for liquid lines, or a value of 1 for gas lines.

To determine class location for a gas permit, it is important to understand a "class location unit". A class location unit is defined as "an onshore area that extends 220 yards (200 meters) on either side of the centerline of any continuous 1- mile (1.6 kilometers) length of pipeline." To see Class Location Definitions for gas permits, view 49 CFR Part 192.5 (linked at the top of this document).

Determine LOC_DES for Liquid Permits:

Code	Code Description
R	Rural
N	Non-rural

Determine LOC_DES for Gas Permits:

Code	Code Description
1	An offshore area OR any class location unit that has 10 or fewer buildings intended for human occupancy.
2	Any class location unit that has more than 10 but fewer than 46 buildings intended for human occupancy.
3	Any class location unit that has 46 or more buildings intended for human occupancy; OR an area where the pipeline lies within 100 yards of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days and weeks need not be consecutive.)
4	Any class location unit where buildings with four or more stories above ground are prevalent

15. T4_AMD   **"T-4 Amendment Code"**

(Data Type: Text, Character Limit: 2)

Specifies which pipeline segments in the shapefile are being amended and the type of amendment. Indicate these codes in the *Form C-LTR POPS Cover Letter* and the *Overview Map* to create a connection between them and the shapefile. The *Form C-LTR POPS Cover Letter* and *Sample Overview Maps* are available on our website at: https://www.rrc.texas.gov/pipeline-safety/permitting-and-mapping/.

Code	Code Meaning	Code Description
NC	No Change	Existing pipeline segments that are not being modified
NP	New Permit	Only for new permits; do not use if a T-4 Permit Number has already been assigned
PA	Pipeline Addition	Pipeline segment added to an existing permit
BP	Abandon in Place	Regulated pipelines abandoned in place per 49 CFR §192.727/195.59, or un-regulated pipelines abandoned in place with no intent for future use.
MP	Merge Permit	Merge entire permit into an existing permit, same operator
PT	Partial Transfer	Transfer part of a permit into an existing or new permit, different operator
TM	Transfer Merge	Full permit transfer + merge permit. Acquire full permit(s) from different operator, then merge that permit(s) into an existing permit, same operator
DP	Delete Pipeline	Pipeline segment deleted from permit for one of the following reasons: removed from ground, never built, exempted from 49 CFR Part 191 – 195 and therefore should not be permitted with the RRC (e.g. in-plant piping, Coast Guard jurisdiction). If deleting pipeline, provide the reasoning in the cover letter and assure that STATUS_CD = B and TX_REG = N.
OM	Other Modification	Use if none of the above codes are suitable (i.e. pipeline segments that have attribute and/or geometry updates)

3. Additional fields, if necessary

Two additional fields are required if lines meet the criteria listed below.
1.   USA
   •   Required if COMMODITY1 = CRL or CFL and DIAMETER is between 6.63" and 8.63"
2.   SMYS
   •   Required if COMMODITY1 = CRL or CFL and DIAMETER is between 6.63" and 8.63"
   •   Required if COMMODITY1 = NGG

Six additional fields are required if COMMODITY1 = NGG.
3.   PL_MAT_MTL
4.   MAOP_PSIG
5.   AREA_2A
6.   AREA_2B
7.   AREA_2C
8.   PL_TYPE

1. USA

"Unusually Sensitive Area"

(Data Type: Text, Character Limit: 1)

Designates when a segment is within quarter mile of an unusually sensitive area. If a pipeline does not meet the minimum reportable criteria listed above, this field can be left blank.

Code	Code Description
Y	Segment is within a quarter mile of an unusually sensitive area
N	Segment is NOT within a quarter mile of an unusually sensitive area

2. SMYS

"Percentage of the Specified Minimum Yield Strength"

(Data Type: Float, Precision 5, Scale 2)

The percentage of the specified minimum yield strength. This percentage is represented as a whole number with up to two decimal places. If an NGG pipeline is abandoned, non-metallic, or the SMYS is unknown, the default value of 0 is appropriate. If a CRL or CFL pipeline with a DIAMETER of 6.63" or 8.63" is abandoned, enter a value of 1. For pipelines that are not active NGG, or active CRL or CFL with a DIAMETER of 6.63" or 8.63", but are included in permits with pipelines that are, the default value of 0 is appropriate. (*See helpful logic below)

Use the following equation to calculate percent SMYS:

Percent SMYS = PMAOP/P * 100
- PMAOP = MAOP of the pipeline
- P = (2 * S * t)/D
- P = Pressure
- S = Yield Strength, may be written 52000 or X-52
- t = Wall thickness, may be written .375" or 3/8"
- D = Outside diameter (OD), may be written like 8.625" or 8 5/8"

3. PL_MAT_MTL

"Pipeline Material"

(Data Type: Text, Character Limit: 1)

Based on type of material used to manufacture pipe. Categorized as metallic, and non-metallic pipes. For pipelines that are not active NGG but are included in permits with pipelines that are, this field can be left blank.

Code	Code Description
Y	Metallic
N	Non-Metallic

4. MAOP_PSIG

"Maximum Allowable Operating Pressure"

(Data Type: Double, Precision 8, Scale 2)

Maximum Allowable Operating Pressure (MAOP). Defined as the maximum pressure at which a pipeline or segment of a pipeline may be operated. MAOP must be determined based on the requirements of 49 CFR 192.619. Enter data as a number in psig (pounds per square inch gauge) unit. Must be a value of 1 to 999,999.99. For pipelines that are not active NGG but are included in permits with pipelines that are, the default value of 0 is appropriate. (*See helpful logic below)

*Helpful logic for SMYS and MAOP_PSIG:
- If COMMODITY1 = NGG and STATUS_CD = I and PL_MAT_MTL = N, then SMYS = 0 and MAOP_PSIG ≥ 1 and ≤ 999,999.99.
- If COMMODITY1 = NGG and STATUS_CD = I and PL_MAT_MTL = Y, then SMYS ≥ 0 and ≤ 100 and MAOP_PSIG ≥ 1 and ≤ 999,999.99.
- If COMMODITY1 = NGG and STATUS_CD = B, then SMYS = 0 and MAOP_PSIG = 0.
- If COMMODITY1 = CRL or CFL and DIAMETER = 6.63" or 8.63" and STATUS_CD = I, then SMYS ≥ 1 and ≤ 100.
- If COMMODITY1 = CRL or CFL and DIAMETER = 6.63" or 8.63" and STATUS_CD = B, then SMYS = 1.
- If COMMODITY1 = CRL or CFL and DIAMETER < 6.63" or > 8.63", then SMYS = 0.
- If COMMODITY1 ≠ NGG or CRL or CFL but included in a permit with those, then SMYS = 0 and MAOP_PSIG = 0.

5. AREA_2A   **"Type B gas gathering line in Area 2(a)"**
(Data Type: Text, Character Limit: 1)

Defined as Type B gas gathering pipeline in Area 2, determined by method (a), i.e., in a Class 2 location, as described under 49CFR 192.8 (c). If a pipeline segment is Y for AREA_2A, then AREA_2B and AREA_2C must be N. For pipelines that are not active NGG but are included in permits with pipelines that are, this field can be left blank.

Code	Code Description
Y	Pipeline is Type B gathering in Area 2, as determined by method (a)
N	Pipeline is Type B gathering in Area 2, as determined by method (b) or (c), OR Pipeline is Type B gathering in Area 1, OR Pipeline is not a Type B gathering

6. AREA_2B   **"Type B gas gathering line in Area 2(b)"**
(Data Type: Text, Character Limit:1)

Defined as Type B gas gathering pipeline in Area 2, determined by method (b), i.e., an area extending 150 feet (45.7 m) on each side of the centerline of any continuous 1 mile (1.6 km) of pipeline and including more than 10 but fewer than 46 dwellings, as described under 49CFR 192.8 (c). If a pipeline segment is Y for AREA_2B, then AREA_2A and AREA_2C must be N. For pipelines that are not active NGG but are included in permits with pipelines that are, this field can be left blank.

Code	Code Description
Y	Pipeline is Type B gathering in Area 2, as determined by method (b)
N	Pipeline is Type B gathering in Area 2, as determined by method (a) or (c), OR Pipeline is Type B gathering in Area 1, OR Pipeline is not a Type B gathering

7. AREA_2C   **"Type B gas gathering line in Area 2(c)"**
(Data Type: Text, Character Limit:1)

Defined as Type B gas gathering pipeline in Area 2, determined by method (c), i.e., in an area extending 150 feet (45.7 m) on each side of the centerline of any continuous 1000 feet (305 m) of pipeline and including 5 or more dwellings, as described under 49CFR 192.8 (c). If a pipeline segment is Y for AREA_2C, then AREA_2A and AREA_2B must be N. For pipelines that are not active NGG but are included in permits with pipelines that are, this field can be left blank.

Code	Code Description
Y	Pipeline is Type B gathering in Area 2, as determined by method (c)
N	Pipeline is Type B gathering in Area 2 as determined by method (b) or (a), OR Pipeline is Type B gathering in Area 1, OR Pipeline is not a Type B gathering

8. PL_TYPE   **"Pipeline Type"**
(Data Type: Text, Character Limit: 1)

Applicable to onshore gas gathering lines as defined under 49 CFR Part 192.8 (c).
For pipelines that are not active NGG but are included in permits with pipelines
that are, this field can be left blank. See next page for table...

Type	Feature	Area	Additional Safety buffer
A	—Metallic and the MAOP produces a hoop stress of 20 percent or more of SMYS. —If the stress level is unknown, an operator must determine the stress level according to the applicable provisions in subpart C of this part. —Non-metallic and the MAOP is more than 125 psig (862 kPa).	Class 2, 3, or 4 location (see § 192.5).	None.
B	—Metallic and the MAOP produces a hoop stress of less than 20 percent of SMYS. If the stress level is unknown, an operator must determine the stress level according to the applicable provisions in subpart C of this part —Non-metallic and the MAOP is 125 psig (862 kPa) or less	*Area 1*. Class 3, or 4 location *Area 2*. An area within a Class 2 location the operator determines by using any of the following three methods: (a) A Class 2 location; (b) An area extending 150 feet (45.7 m) on each side of the centerline of any continuous 1 mile (1.6 km) of pipeline and including more than 10 but fewer than 46 dwellings; or (c) An area extending 150 feet (45.7 m) on each side of the centerline of any continuous 1000 feet (305 m) of pipeline and including 5 or more dwellings.	If the gathering pipeline is in Area 2(b) or 2(c), the additional lengths of line extend upstream and downstream from the area to a point where the line is at least 150 feet (45.7 m) from the nearest dwelling in the area. However, if a cluster of dwellings in Area 2(b) or 2(c) qualifies a pipeline as Type B, the Type B classification ends 150 feet (45.7 m) from the nearest dwelling in the cluster.
C	Outside diameter greater than or equal to 8.625 inches and any of the following: —Metallic and the MAOP produces a hoop stress of 20 percent or more of SMYS; —If the stress level is unknown, segment is metallic and the MAOP is more than 125 psig (862 kPa); or —Non-metallic and the MAOP is more than 125 psig (862 kPa).	Class 1 location	None
R	—All other onshore gathering lines	Class 1 and Class 2 locations	None.

Version History

2024.12.12 – Added a note on page 1 that shapefile names cannot include special characters or spaces; updated STATUS_CD, SYS_ID, PLS_SYSNM, and SMYS attribute descriptions for clarity; added helpful logic for SMYS and MAOP_PSIG attributes; returned to former "regulated/un-regulated" language for TX_REG attribute to align with industry standards; updated BP-Abandon In Place T4_AMD attribute description for clarity; retired the FC and PM T4_AMD codes (use OM instead of FC to update COMMODITY1, and use DP/PA to move lines between permits within a P-5 instead of PM); retired the NFG-Natural gas full well stream gathering COMMODITY1 code (natural gas production lines in class locations 2, 3, and 4 must have NGG code with PL_TYPE); minor formatting and language updates.

2024.7.11 – Began version history; minor formatting and language updates; updated attribute descriptions to clarify acceptable values for COMMODITY1, SMYS, PL_MAT_MTL, MAOP_PSIG, AREA_2A, AREA_2B, AREA_2C, and PL_TYPE; adjusted language from "regulated/un-regulated" to "inspected/not inspected" (see TX_REG attribute description).