

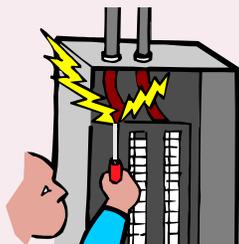


ELECTRIC SERVICES AND UPGRADES

REVISION DATE: NOVEMBER 2015

Electric Services

Electric service upgrades must be coordinated with the City of Republic and Empire Electric. Timing can be crucial for upgrades on existing, occupied homes so it is critical that the electrician contact Empire Electric and the City Inspector in order to coordinate disconnection, inspection, and re-connection. The City Inspector can be reached at 732-3172 and Empire Electric at 800-206-2300.



Many of these requirements are based on the Empire District guides. Visit the Empire District Electric website at www.empiredistrict.com, under the "Customer Service" tab, select "Customer Service Forms" to view the most current Empire District requirements for electrical services either under the "Commercial" tab or the "Residential" tab or the "Standby Generators and Net Metering Requirements 2011".

All residential services will be grounded with a minimum $\frac{5}{8}$ " diameter by 8-foot ground rod, completely driven into the ground and within two feet of the structure and ufer grounding if available.

Electric service upgrades that include the installation of a new service panel shall update interior devices to include GFCI protection for kitchen and bathroom receptacles, AFCI protection for all bedroom branch circuits and interconnected smoke detectors in all bedrooms and adjoining areas.

Overhead Services:

An intersystem bonding termination bar shall be installed to facilitate the connection of other utility's ground to the common ground. The location of this device shall be located directly below and within 3-inches of the meter socket. Recommended devices are EriTech (Erico) catalog number IBTB or Arlington catalog number GB5 (see figure 1 and figure 2).

The center of the electric meter must be between 4 and 6 feet above finished grade. Where the exterior wall is other than concrete or masonry, blocking shall be added behind meter base to provide a solid mounting surface.

100-amp services require a minimum mast size of $1\frac{1}{4}$ " galvanized rigid steel conduit.

200-amp services require a minimum mast size of 2" galvanized rigid steel conduit.

Provide a point of attachment within 24" of the weather head capable of withstanding a continuous force of 200lbs. in the direction of the service drop.

Mast must be strapped at a maximum of 12" from the meter base and eave penetration, and a maximum of every 30".

A minimum of 24 inches of service entrance conductor is required for the drip loop.

Refer to figures 8 and 12 for overhead service details.

48" maximum from service mast to eave.

Use only approved combination meter sockets (refer to table on page 3).



Figure 1 EriTech Catalog Number IBTB

Figure 2: Arlington Catalog Number GB5

Minimum Clearances of Service Drop Cables

Above roads, streets, alleys, parking lots, and commercial and industrial driveways subject to truck traffic	18 feet
Above residential driveways	16 feet
Above space accessible to pedestrians only	12 feet
Above or below roofs or balconies accessible to pedestrians	11 feet
Above or below roofs or projections not accessible to pedestrians	8 feet
Horizontal to any structure	5 feet
Horizontal from directly below any conductor to edge of swimming pool	10 feet

2012 IRC Table E3603.1—Service Conductor and Grounding Sizing

CONDUCTOR TYPES AND SIZES-THHN, THHW, THW, THWN, USE, RHH, RHW, XHHW, RHW-2, THW-2, THWN-2, XHHW-2, SE, USE-2 (Parallel sets of 1/0 and larger conductors are permitted in either a single raceway or in separate raceways)		SERVICE OR FEEDER RATING (AMPERES)	MINIMUM GROUNDING ELECTRODE CONDUCTOR SIZE ^a	
Copper (AWG)	Aluminum & copper-clad aluminum (AWG)	Maximum Load (amps)	Copper (AWG)	Aluminum (AWG)
4	2	100	8 ^b	6 ^c
3	1	110	8 ^b	6 ^c
2	1/0	125	8 ^b	6 ^c
1	2/0	150	6 ^c	4
1/0	3/0	175	6 ^c	4
2/0	4/0 or two sets of 1/0	200	4 ^d	2 ^d
3/0	250mcm or two sets of 2/0	225	4 ^d	2 ^d
4/0 or two sets of 2/0	300 mcm or two sets of 3/0	250	2 ^d	1/0 ^d
250 mcm or two sets of 2/0	350 mcm or two sets of 4/0	300	2 ^d	1/0 ^d
350 mcm or two sets of 3/0	500 mcm or two sets of 250 mcm	350	2 ^d	1/0 ^d
400 mcm or two sets of 4/0	600 mcm or two sets of 300 mcm	400	1/0 ^d	3/0 ^d

- a. Where protected by a ferrous metal raceway, grounding electrode conductors shall be electrically bonded to the ferrous metal raceway at both ends.
- b. An 8 AWG grounding electrode conductor shall be protected with rigid metal conduit, intermediate metal conduit, rigid polyvinyl chloride (Type PVC) nonmetallic conduit, rigid thermosetting resin (Type RTRC) nonmetallic conduit, electrical metallic tubing or cable armor.

- c. Where not protected, 6 AWG grounding electrode conductor shall closely follow a structural surface for physical protection. The supports shall be spaced not more than 24 inches on center and shall be within 12 inches of any enclosure or termination.
- d. Where the sole grounding electrode system is a ground rod or pipe as covered in Section E3608.2, the grounding electrode conductor shall not be required to be larger than 6 AWG copper or 4 AWG aluminum. Where the sole grounding electrode system is the footing steel as covered in Section E3608.1.2, the grounding electrode conductor shall not be required to be larger than 4 AWG copper conductor.

Under Ground Services:

Use only approved combination meter sockets (refer to table below).

Minimum of 200-amp meter base, even with a 100-amp service.

Meter and service lateral conductors provided by Empire Electric.

Center of electric meter must be between 4 and 6 feet above finished grade. If the electric meter is above six feet at the time of inspection due to final grade not being established, Empire District Electric will not set the meter until grade has been established bringing the meter location into compliance.

Meter base, conduit, and ground wire will be securely fastened to the structure. Where the exterior wall is other than concrete or masonry, blocking shall be added behind meter base to provide a solid mounting surface.

A minimum of 2" galvanized rigid steel (100-amp & 200-amp) or electrical grade schedule 80 PVC shall be used for the service lateral conduit. Plumbing pipe is not acceptable.

Primary lines are installed by Empire Electric

400-amp services require 3" conduit.

Consult NEC Table 300-5 for minimum cover requirements.

Conduit ends must be equipped with the proper bushing to protect service conductors

An intersystem bonding termination bar shall be installed to facilitate the connection of other utility's ground to the common ground. The location of this device shall be located directly below and within 2-inches the meter socket. Recommended devices are EriTech (Erico) catalog number IBTB or Arlington catalog number GB5 (see figures 1 and 2).

Approved Combination Meter Sockets					
Service Size	Milbank	Cutler Hammer	Square D	Durham	Midwest Electrical
100 Amp	U5169*	MB816B200BTS*	RC816F100CH	1009663*	M181CB1*
200 Amp	U5169	MB816B200BTS	RC816F200CH	1009663	M282CB1

Refer to figures 22, 23, 25 and 28 for underground service installation details.

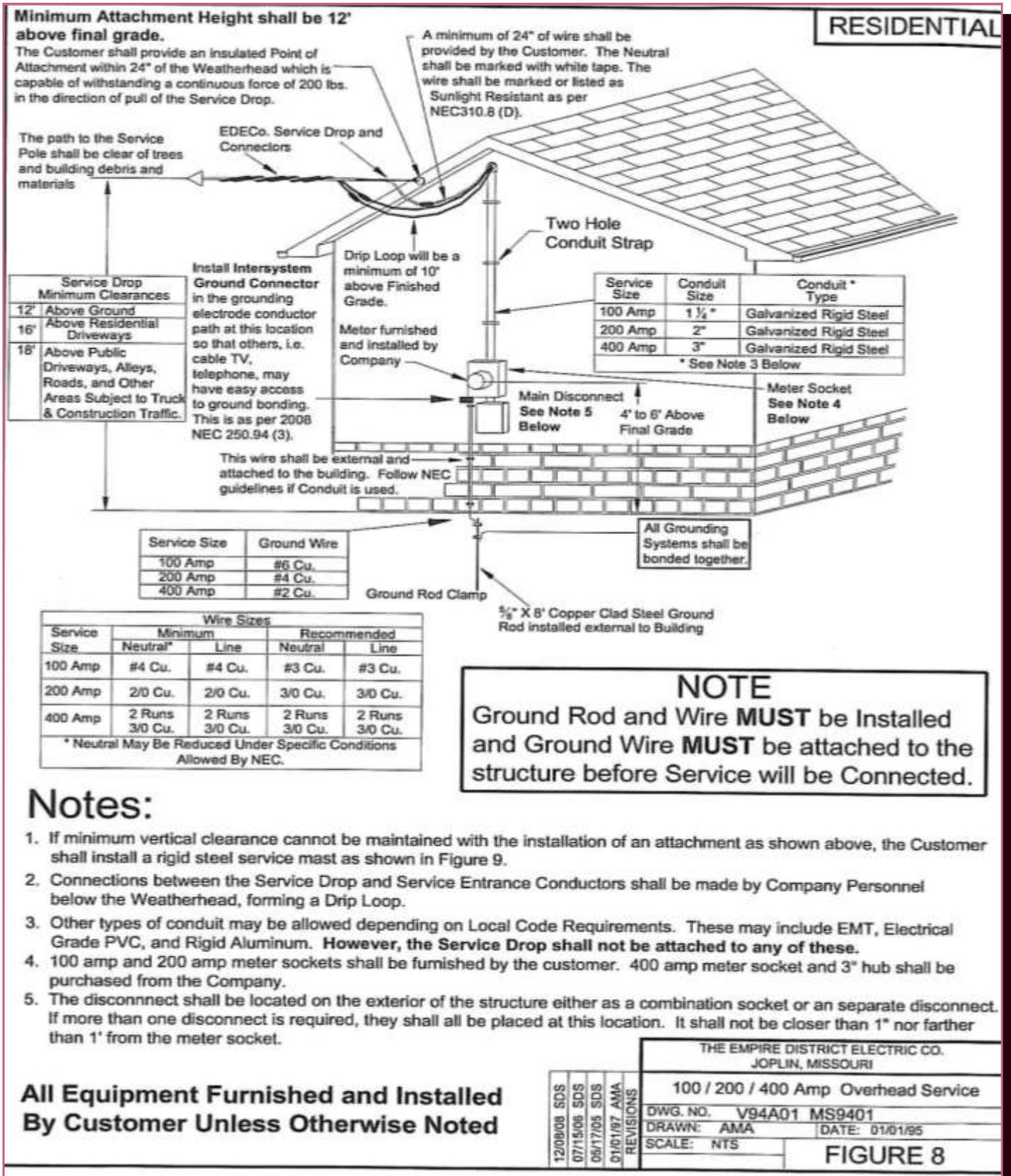
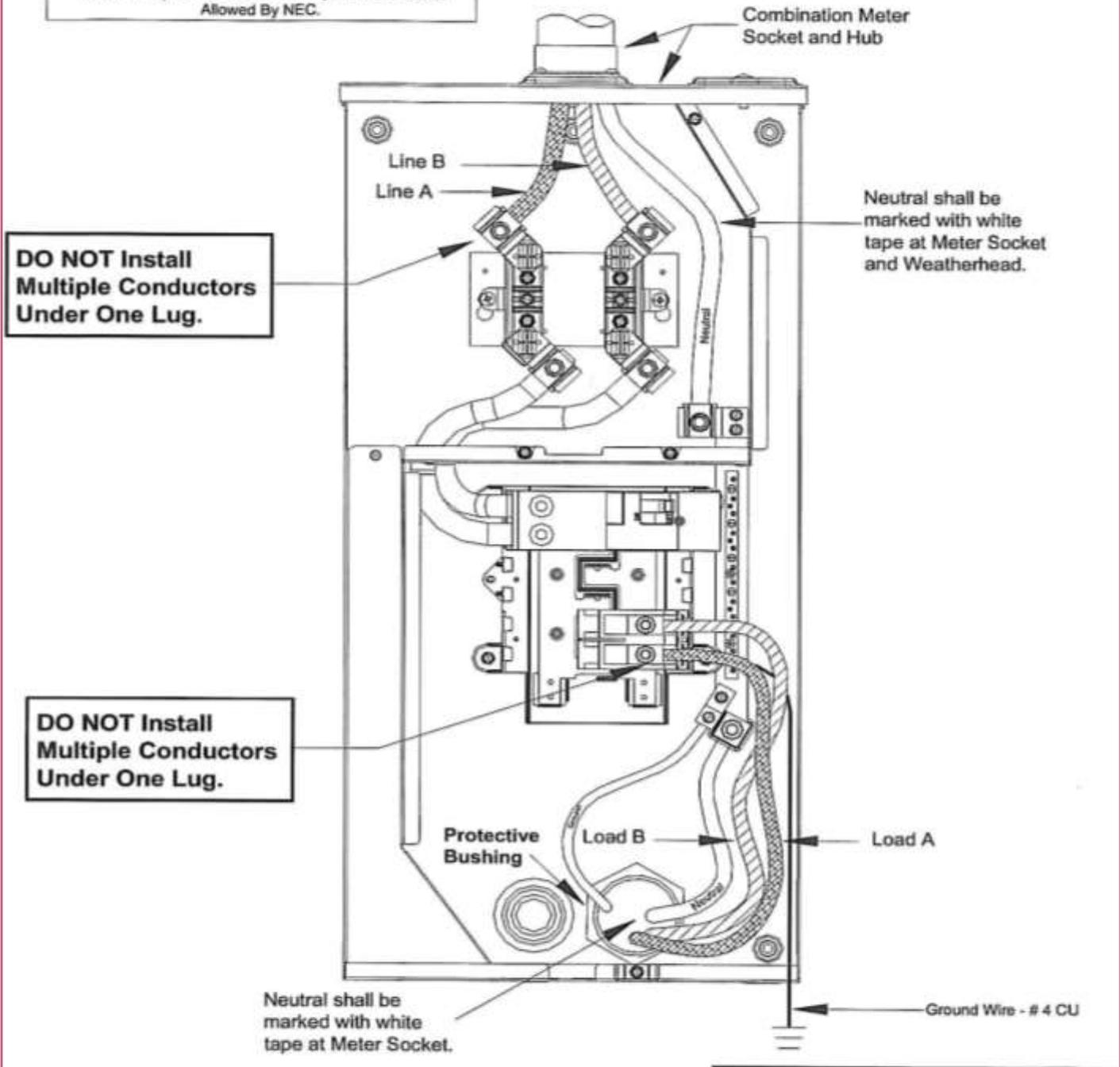


Figure 8: 100/200/400 Amp Overhead Service

RESIDENTIAL

Service Size	Wire Sizes		Recommended	
	Neutral*	Line	Neutral	Line
200 Amp	2/0 Cu.	2/0 Cu.	3/0 Cu.	3/0 Cu.

* Neutral May Be Reduced Under Specific Conditions Allowed By NEC.



All Equipment Furnished and Installed By Customer Unless Otherwise Noted

00716 016 505 REVISIONS	THE EMPIRE DISTRICT ELECTRIC CO. JOPLIN, MISSOURI	
	200 Amp Combination Meter Socket	
	DWG. NO. V06A02 MS0602	DATE: 11/10/06
	DRAWN: AMA	SCALE: NTS

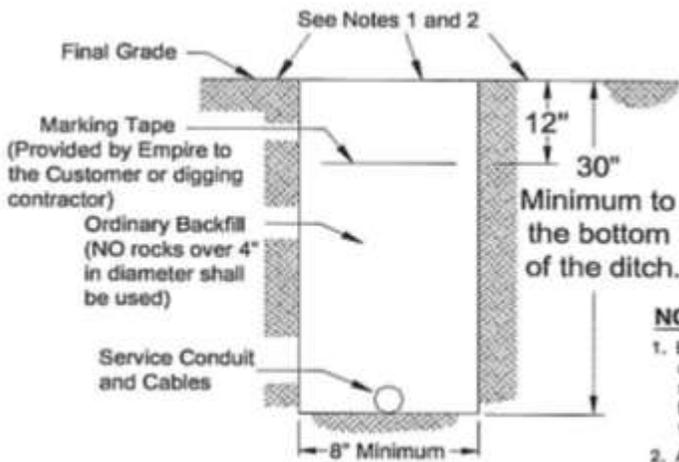
FIGURE 12

Figure 12: 200 Amp Combination Meter Socket, Overhead Service

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**Caution !
Contact all Utilities
before digging**

Ditch Profile

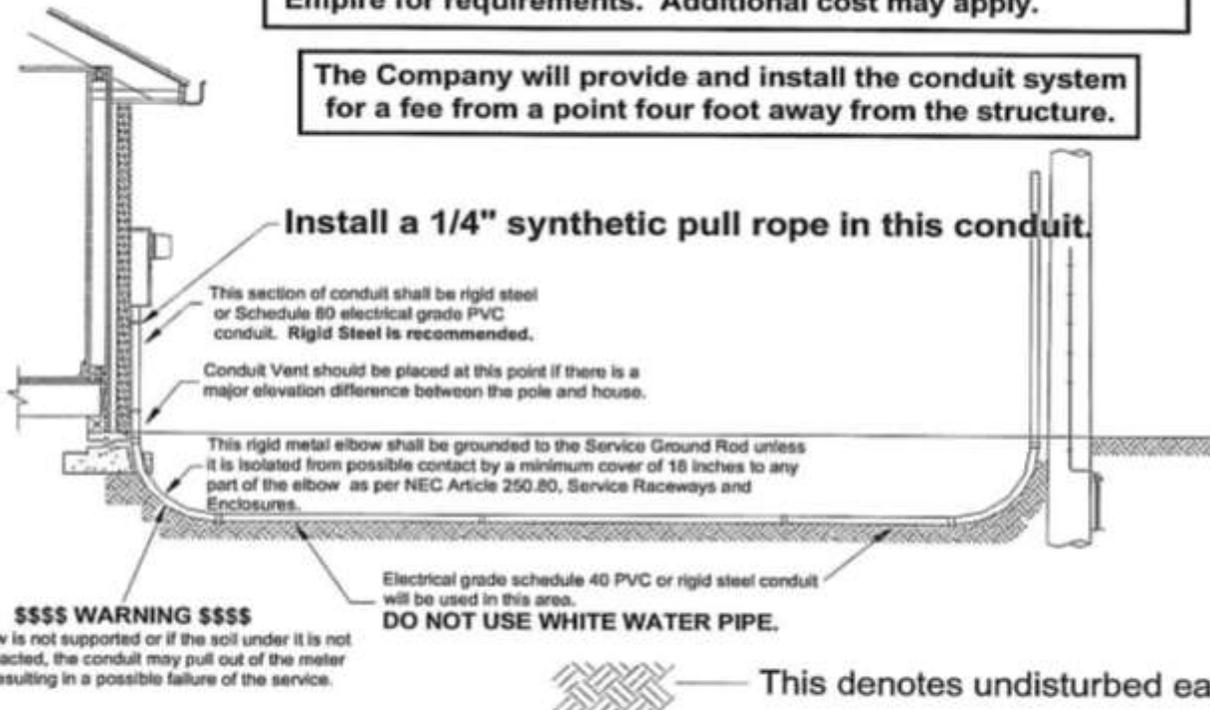


NOTES:

1. Backfill shall be compacted with the wheels of the excavation equipment or by other suitable means prior to final backfilling. The top of the backfilled trench shall be approximately level with the surrounding grade. Excess soil shall be hauled away. Final backfilling and cleanup shall not be done during adverse weather conditions.
2. An area on each side of the trench will be disturbed by the trenching, backfilling and cleanup operations. The area shall be leveled with the surrounding grade and cleanup, and it is the responsibility of the property owner to replant it with grass and to do any future landscaping that might be needed.

Service is provided as line of sight from Meter Socket location to service source. If the service route differs from this due to obstructions or terrain or is longer than 100 feet, contact Empire for requirements. Additional cost may apply.

The Company will provide and install the conduit system for a fee from a point four foot away from the structure.



\$\$\$\$ WARNING \$\$\$\$

If this elbow is not supported or if the soil under it is not well compacted, the conduit may pull out of the meter socket resulting in a possible failure of the service.

If the Customer digs the ditch, a Ditch Inspection is REQUIRED. Contact the Company to schedule an inspection.

04-01-09	SDS
05-17-05	SDS
REVISIONS	

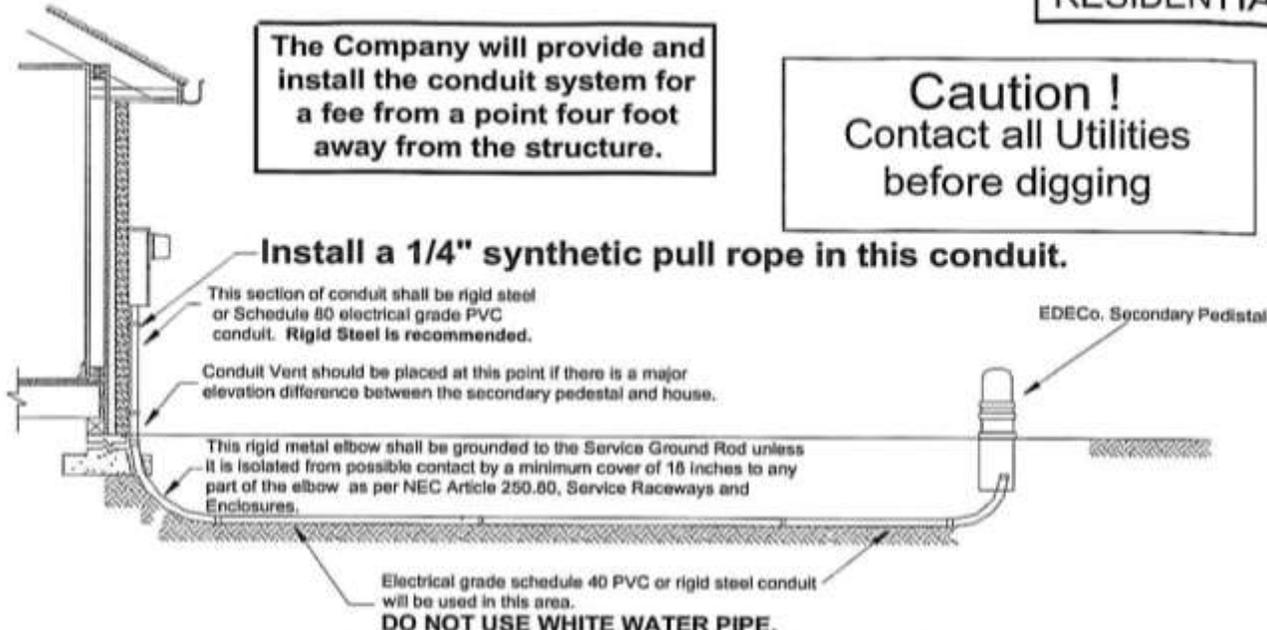
THE EMPIRE DISTRICT ELECTRIC CO. JOPLIN, MISSOURI	
Underground Service Detail	
DWG. NO. V94A04 MS9404	
DRAWN: SDS	DATE: 06/06/03
SCALE: NTS	FIGURE 22

Figure 22: Underground Service Detail

RESIDENTIAL

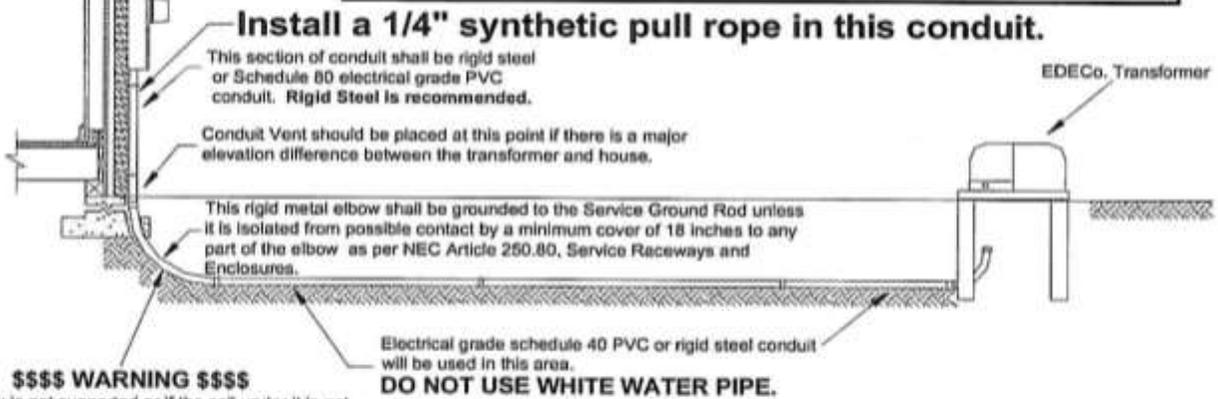
The Company will provide and install the conduit system for a fee from a point four foot away from the structure.

Caution !
Contact all Utilities before digging



Service is provided as line of sight from Meter Socket location to service source. If the service route differs from this due to obstructions or terrain or is longer than 100 feet, contact Empire for requirements. Additional cost may apply.

The Company will provide and install the conduit system for a fee from a point four foot away from the structure.



\$\$\$\$ WARNING \$\$\$\$
If this elbow is not supported or if the soil under it is not well compacted, the conduit may pull out of the meter socket resulting in a possible failure of the service.

 This denotes undisturbed earth.

If the Customer digs the ditch, a Ditch Inspection is REQUIRED. Contact the Company to schedule an inspection.

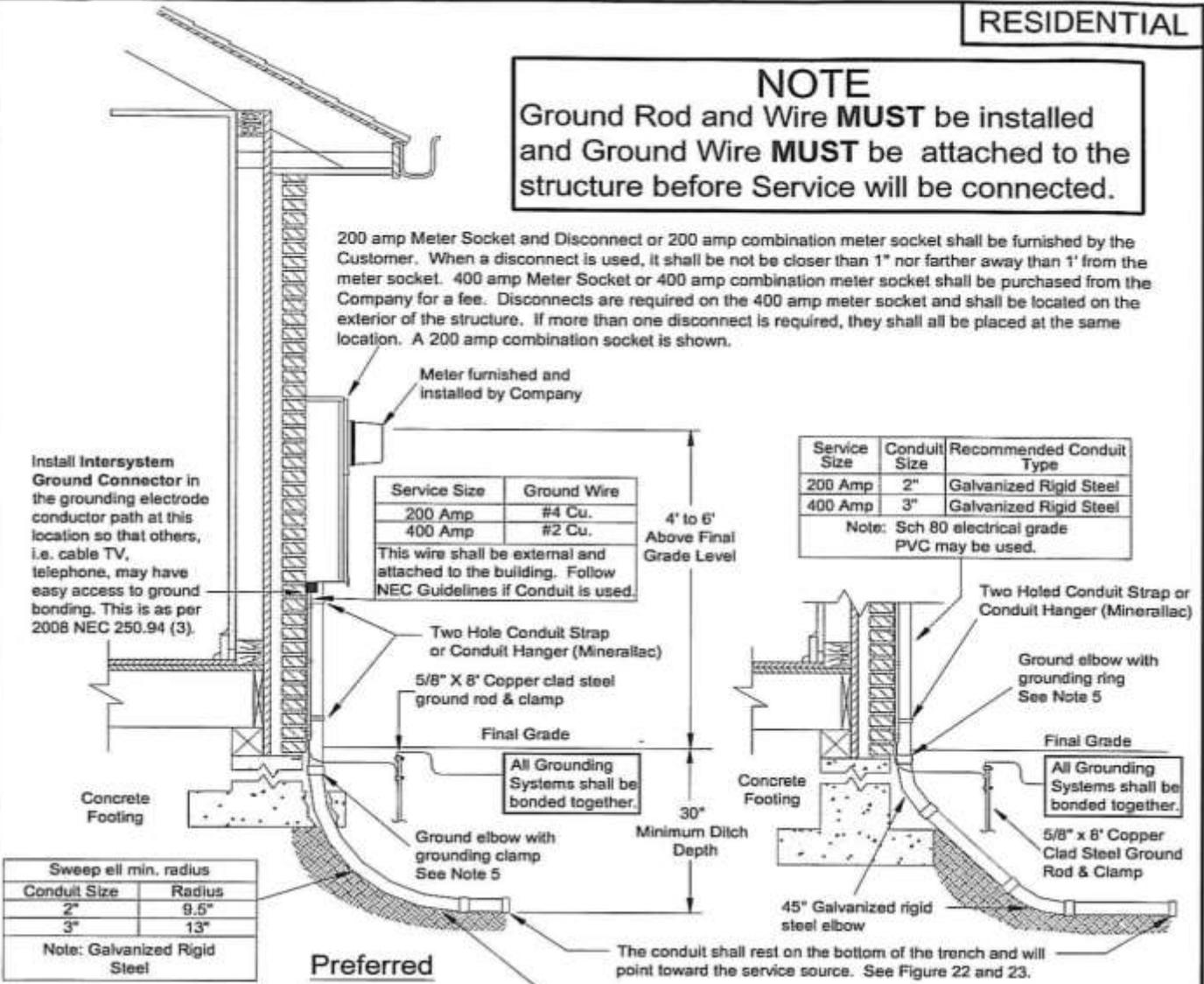
04-01-09 SDS REVISIONS	THE EMPIRE DISTRICT ELECTRIC CO. JOPLIN, MISSOURI	
	Underground Service Detail (Continued)	
	DWG. NO. V06A10 MS0610	DATE: 07/15/06
	DRAWN: SDS	SCALE: NTS
FIGURE 23		

Figure 23: Underground Service Detail (continued)

RESIDENTIAL

NOTE
Ground Rod and Wire **MUST** be installed and Ground Wire **MUST** be attached to the structure before Service will be connected.

200 amp Meter Socket and Disconnect or 200 amp combination meter socket shall be furnished by the Customer. When a disconnect is used, it shall be not be closer than 1' nor farther away than 1' from the meter socket. 400 amp Meter Socket or 400 amp combination meter socket shall be purchased from the Company for a fee. Disconnects are required on the 400 amp meter socket and shall be located on the exterior of the structure. If more than one disconnect is required, they shall all be placed at the same location. A 200 amp combination socket is shown.



Service Size	Ground Wire
200 Amp	#4 Cu.
400 Amp	#2 Cu.

This wire shall be external and attached to the building. Follow NEC Guidelines if Conduit is used.

Service Size	Conduit Size	Recommended Conduit Type
200 Amp	2"	Galvanized Rigid Steel
400 Amp	3"	Galvanized Rigid Steel

Note: Sch 80 electrical grade PVC may be used.

Conduit Size	Sweep ell min. radius
2"	9.5"
3"	13"

Note: Galvanized Rigid Steel

Caution!
Contact all Utilities before digging

\$\$\$\$ WARNING \$\$\$\$
If this elbow is not supported or if the soil under it is not well compacted, the conduit may pull out of the meter socket resulting in a possible failure of the service.

Alternate

This denotes undisturbed earth.

- Notes:
1. If a conduit reducer is used, it must be located immediately below the Meter Socket.
 2. Line of Sight installation is required. See Definitions.
 3. A conduit vent may be needed depending on the service arrangement and terrain.
 4. If the service route is longer than 100 feet, contact Empire for conduit requirements.
 5. A metal elbow that is installed in an underground installation of rigid nonmetallic conduit and is isolated from possible contact by a minimum cover of 18 inches to any part of the elbow shall not be required to be grounded as per NEC Article 250.80, Service Raceways and Enclosures.

All Equipment Furnished & Installed By Customer Unless Otherwise Noted.

DATE	BY	REVISIONS
04-01-09	SDS	
07-15-06	SDS	
05-17-05	SDS	
01-01-97	AMA	

THE EMPIRE DISTRICT ELECTRIC CO.
JOPLIN, MISSOURI

200/400 Amp
Underground Service

DWG NO. V94AD3 MS9403

DRAWN: AMA DATE: 01/01/95

SCALE: NTS

FIGURE 25

Figure 25: 200/400 Amp, Single Phase Underground Service

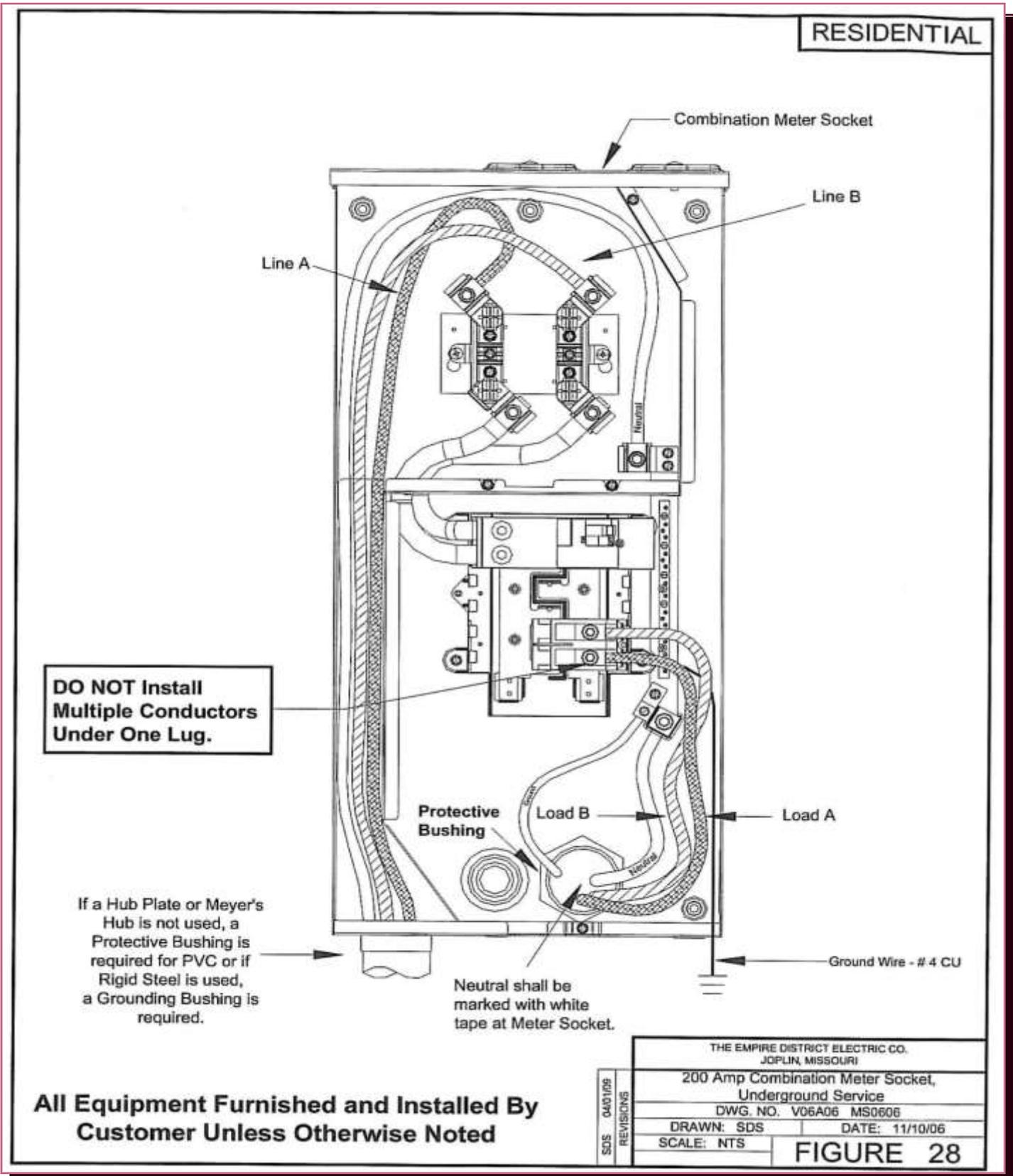


Figure 28: 200 Amp Combination Meter Socket, Underground Service

The City of Republic is located in Greene County in the southwest corner of the State of Missouri approximately ten miles from the City of Springfield, forty-five miles from Branson, and within a two-hour drive to the states of Oklahoma, Kansas, and Arkansas.

Republic began its existence in 1871 and soon thrived due in large part to the Frisco Railroad, which ran through town. Early accounts of the City indicate the existence of grain elevators within the City, a blacksmith shop and livery stable, as well as a tomato factory and cheese factory. A flourmill was built in 1890 and soon became the largest in the Middle West and carried the slogan "The World is our Field." It is unknown how the City achieved the name "Republic" but it is believed the first postmaster may have named the town. During 1904 and 1905, iron ore was mined and shipped from Republic's limekiln located south of town. Due to the fertile, gentle rolling land of this area, Republic became known as one of the major fruit producers in the Midwest, producing apples, peaches, grapes, strawberries, and tomatoes. As was common in southwest Missouri, many early citizens worked as strawberry pickers and shipped the fruit by railcar every season.

The City of Republic is fortunate to have a broad economic base. The City has several retail shops, grocery stores, factories, etc. Republic is a great place for locating a business due to the strong residential base, which provides a large pool of qualified, available work force. Republic is a pleasant place to work without the difficulties of traffic jams and limited parking. The City has no earnings tax and has ample quality office and retail space available. The City's close proximity to Springfield makes it desirable for many.

The City of Republic has an excellent school system that believes all students should be able to manage change, become lifelong learners, and participate in the democratic process. The City has been fortunate enough to strive toward a progressive future while at the same time keeping some of its traditional characteristics. While the City has seen extensive growth over the last few years, city officials are anticipating a steady, continued increase in its development.

Primary Business Address
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Republic, MO 65738-1473
Across from City Hall

Phone: 417-732-3150
Fax: 417-732-3199
E-mail: wzajac@republicmo.com



Planning and Development Department

