



**Western Massachusetts  
Electric**

The Northeast Utilities System

NEW ENGLAND  
**EAST**  **WEST  
SOLUTION**

## **EX. 5.1: Typical Cross-Sections and Photo Simulations**



---

Massachusetts Energy Facilities Siting Board Petition for  
The Greater Springfield Reliability Project

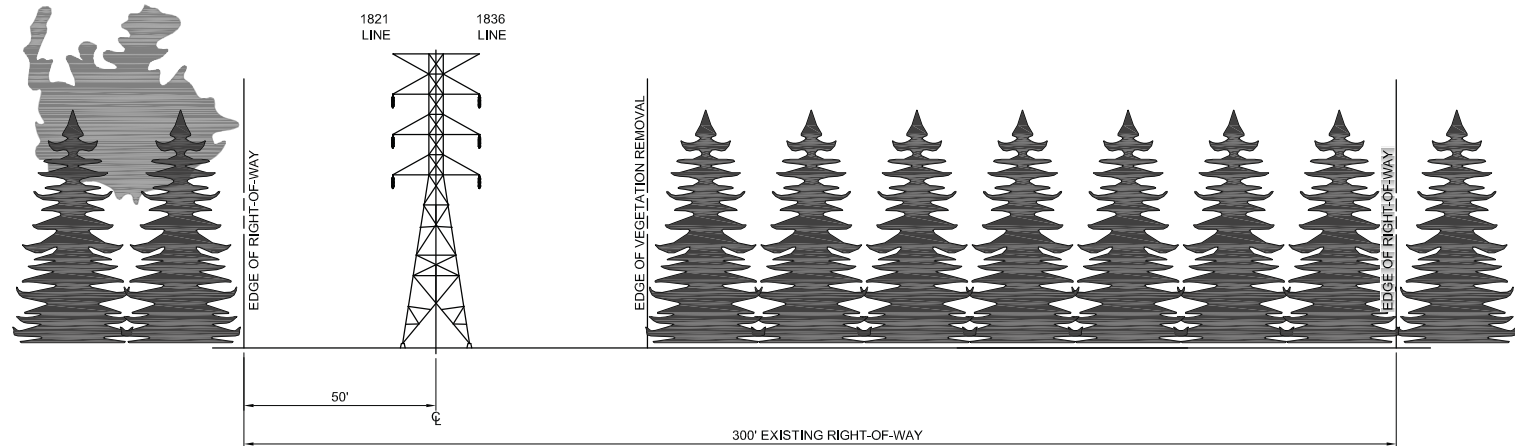
**The Preferred Northern Route in Massachusetts. Cross-Section 1 to 2 are only applicable in Connecticut.**

EXISTING LAYOUT  
 CT/MA BORDER  
 TO  
 EXISTING DEADEND STR. 2249

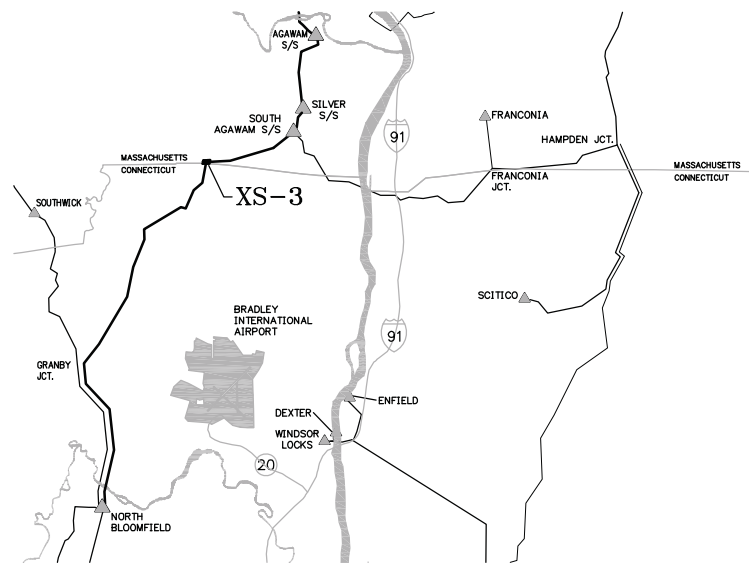
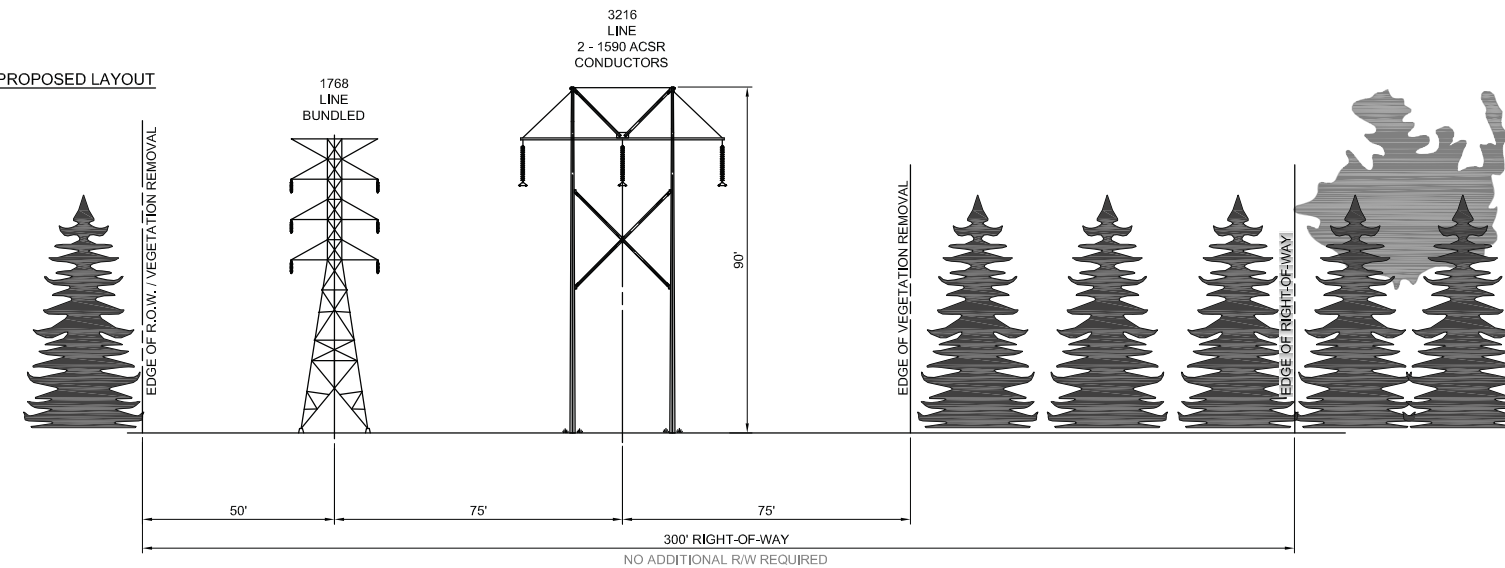
0.2 MILES

EXISTING  
 RIGHT-OF-WAY  
 300'

LOOKING  
 NORTH



PROPOSED LAYOUT



PRELIMINARY -  
 SUBJECT TO CHANGE

NOTES:

1. EXISTING STRUCTURES TO REMAIN.
2. 1821 & 1836 TO BE RECONFIGURED INTO A SINGLE CIRCUIT.
3. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 CT/MA BORDER TO EXISTING DEADEND STR. 2249**

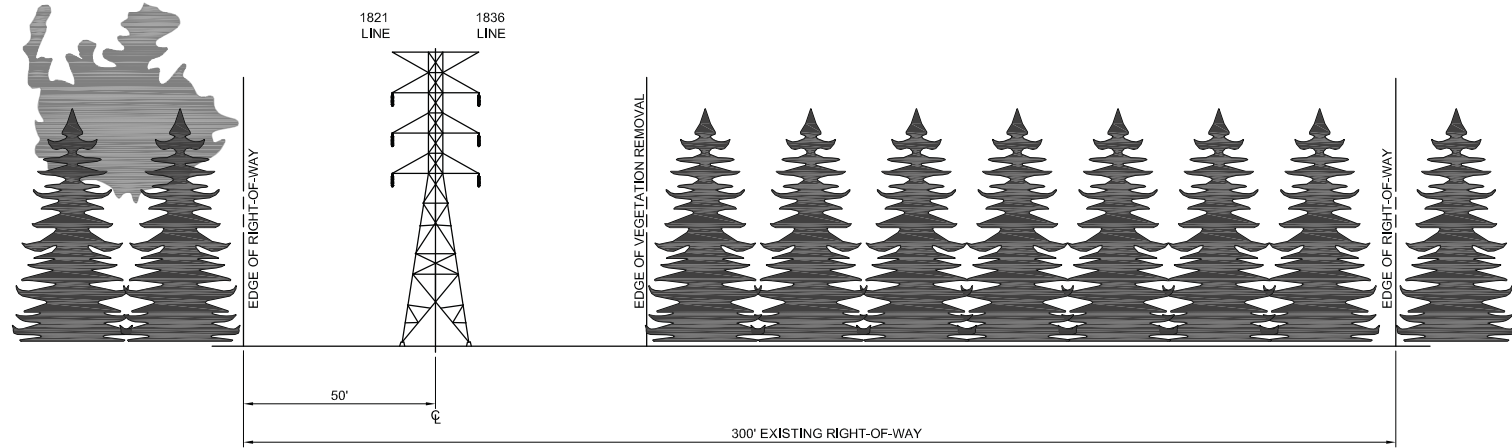
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. <b>XS-3</b>	
P.A. #			

EXISTING LAYOUT  
 EXISTING DEADEND STR. 2249  
 TO  
 EXISTING ANGLE STR. 2252

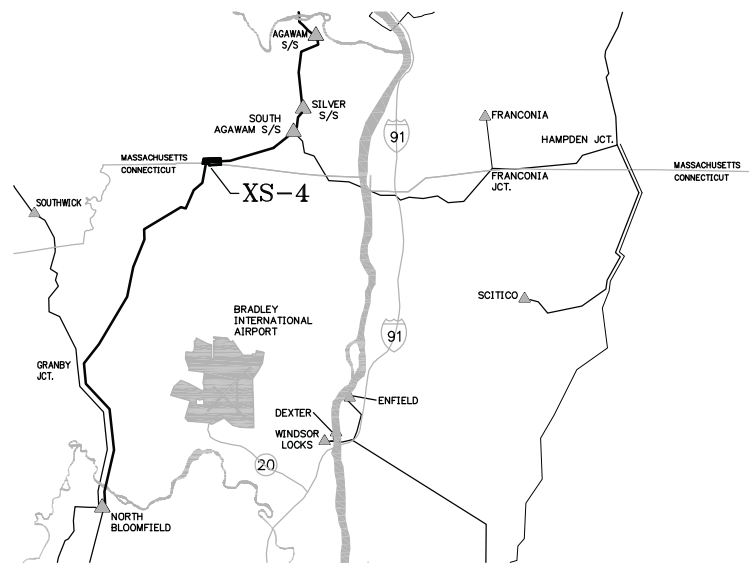
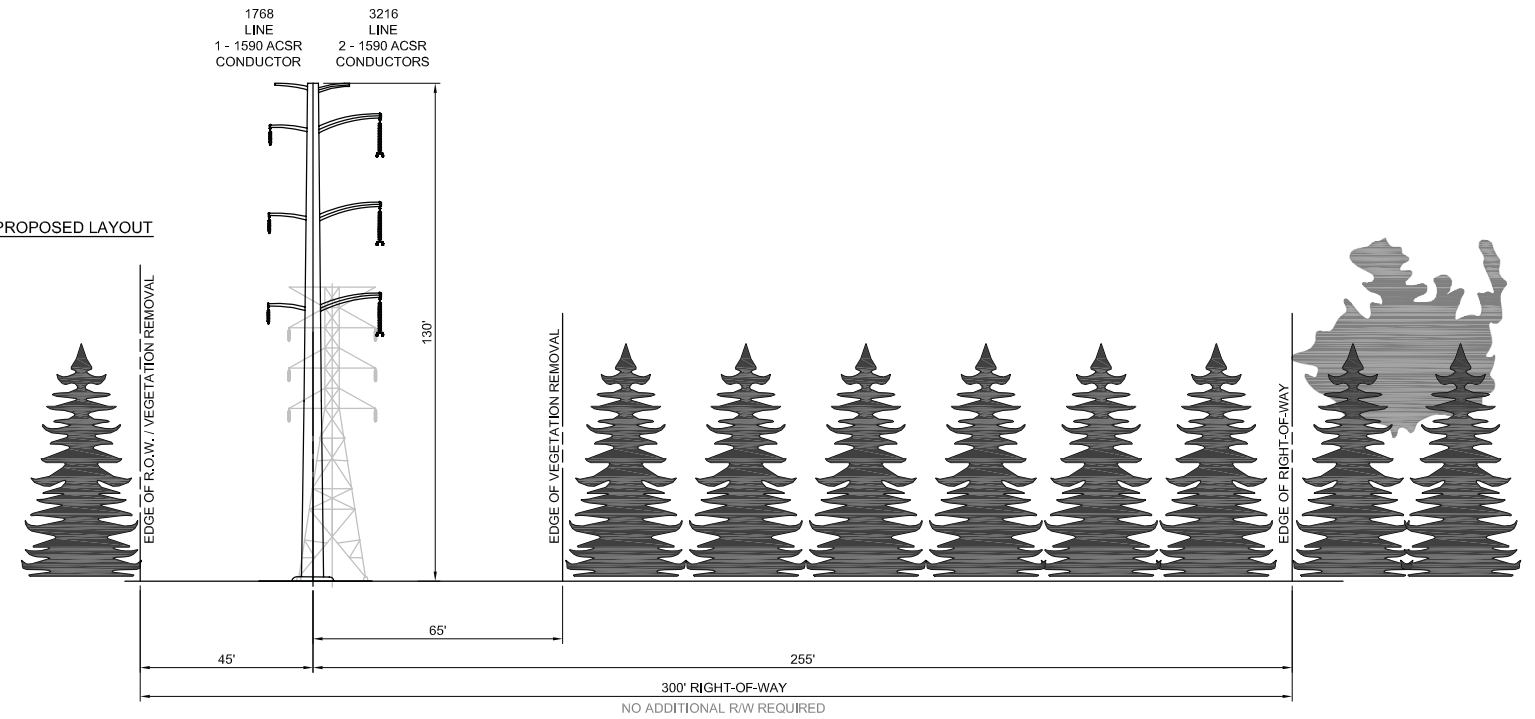
0.3 MILES

EXISTING  
 RIGHT-OF-WAY  
 300'

LOOKING  
 EAST



PROPOSED LAYOUT



PRELIMINARY -  
 SUBJECT TO CHANGE

NOTES:

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 EXISTING DEADEND STR. 2249 TO EXISTING ANGLE STR. 2252**

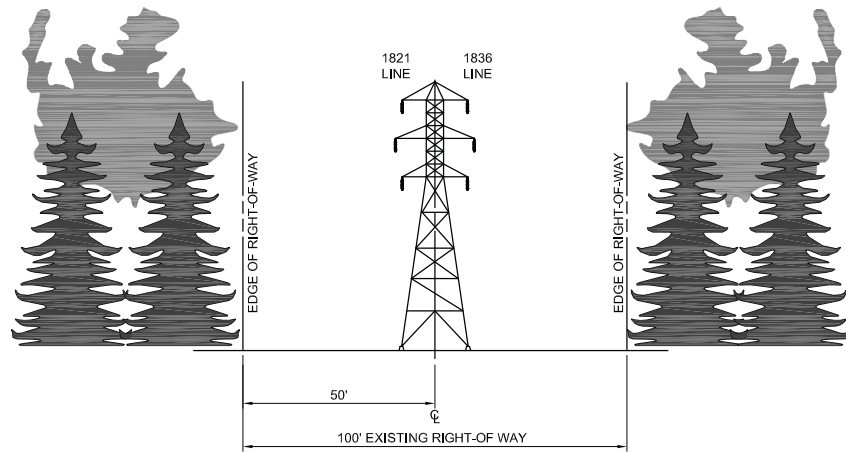
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-4	
P.A. #			

N:\PROJECTS\45700\45700.dwg (08-1) 08-17-2008 15:43 BMM BMM

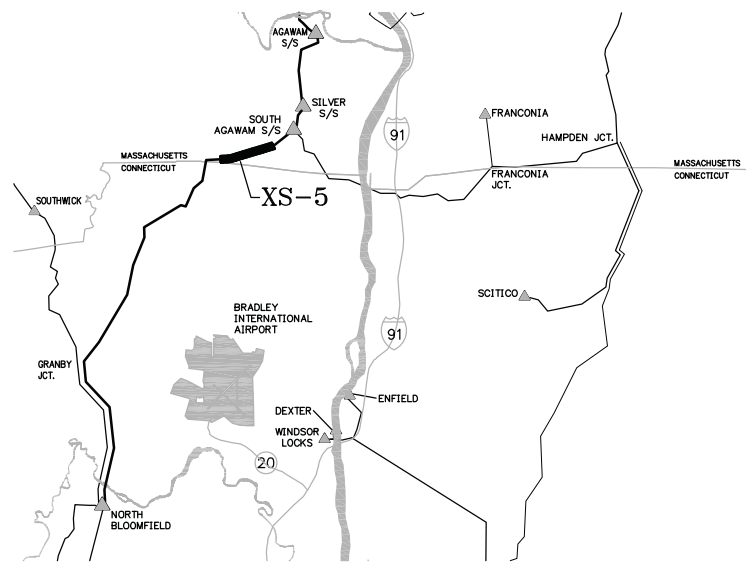
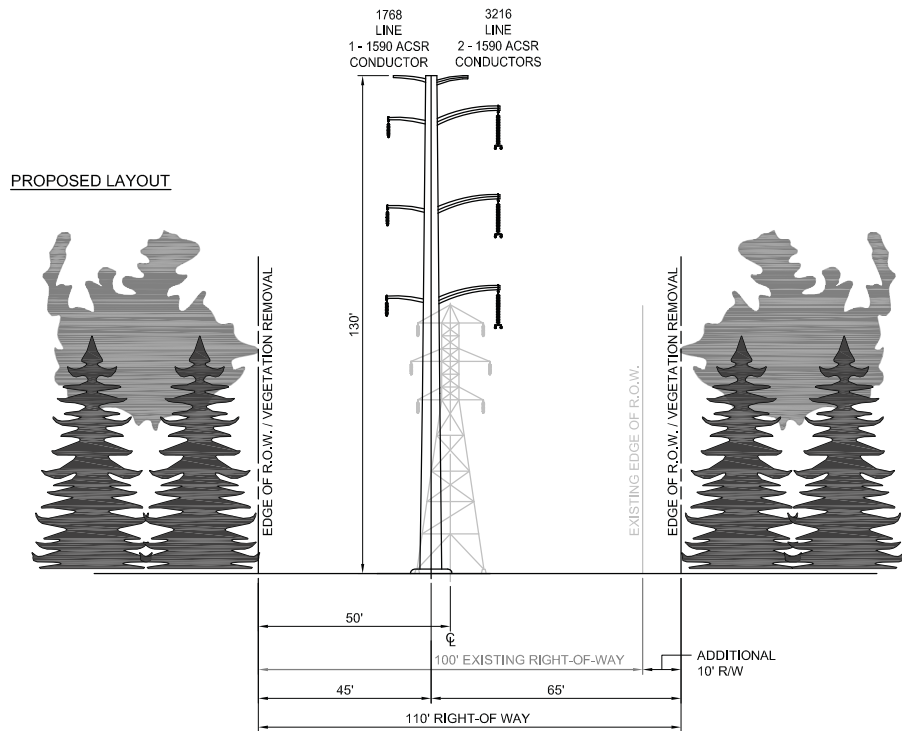


EXISTING LAYOUT  
 EXISTING ANGLE STR. 2252  
 TO  
 EXISTING ANGLE STR. 2267

1.7 MILES  
 EXISTING  
 RIGHT-OF-WAY  
 100' MIN.  
 LOOKING  
 NORTHEAST



PROPOSED LAYOUT



KEY MAP  
 NOT TO SCALE



**NOTES:**

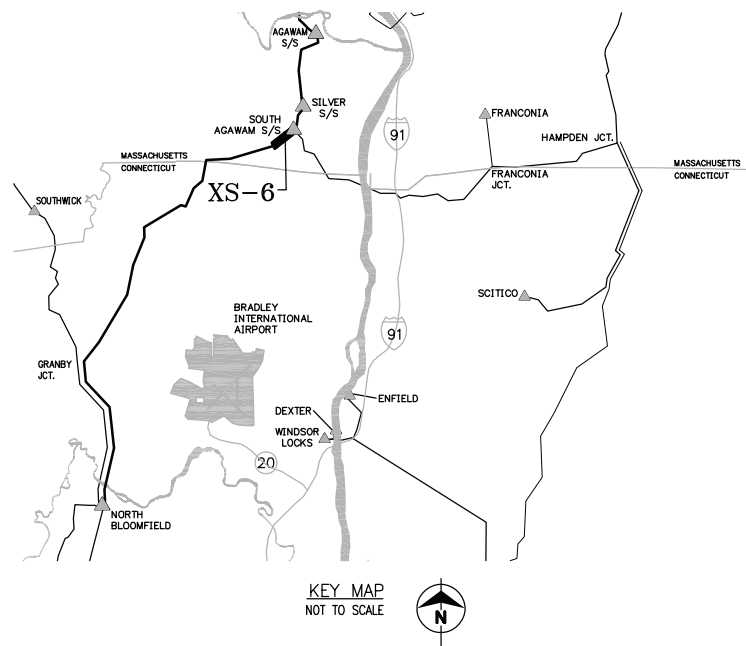
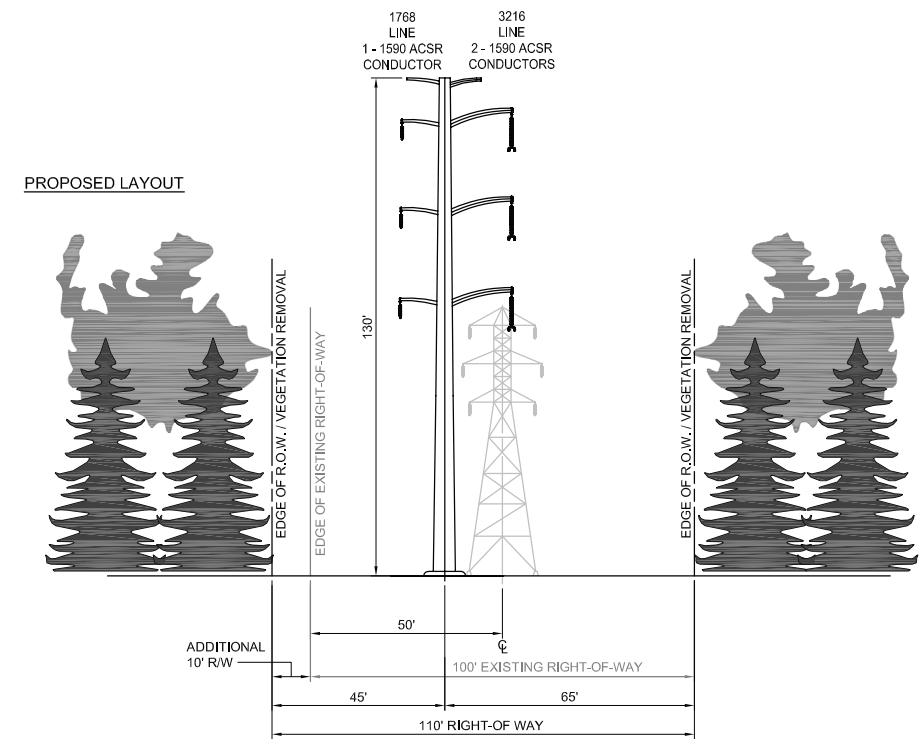
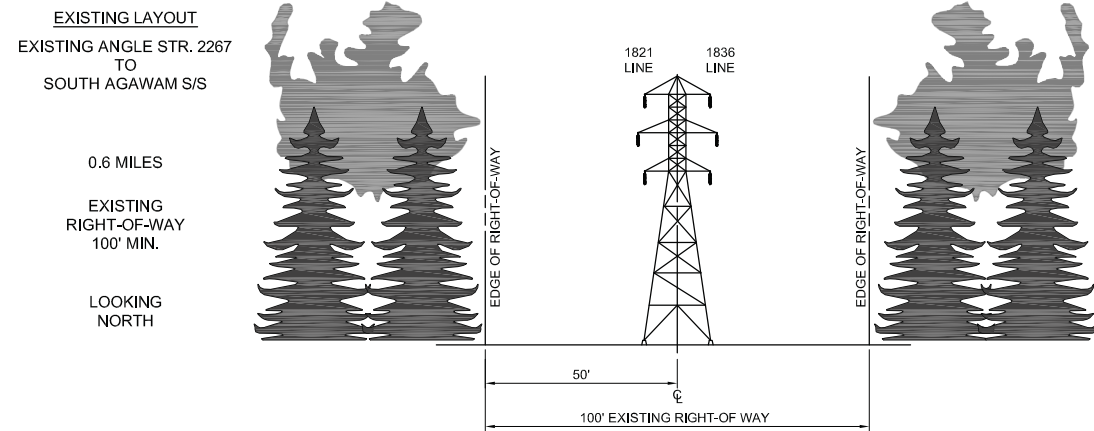
1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

PRELIMINARY -  
 SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 EXISTING ANGLE STR. 2252 TO EXISTING ANGLE STR. 2267**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-5	
P.A. #			



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

PRELIMINARY -  
SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
EXISTING ANGLE STR. 2267 TO SOUTH AGAWAM S/S**

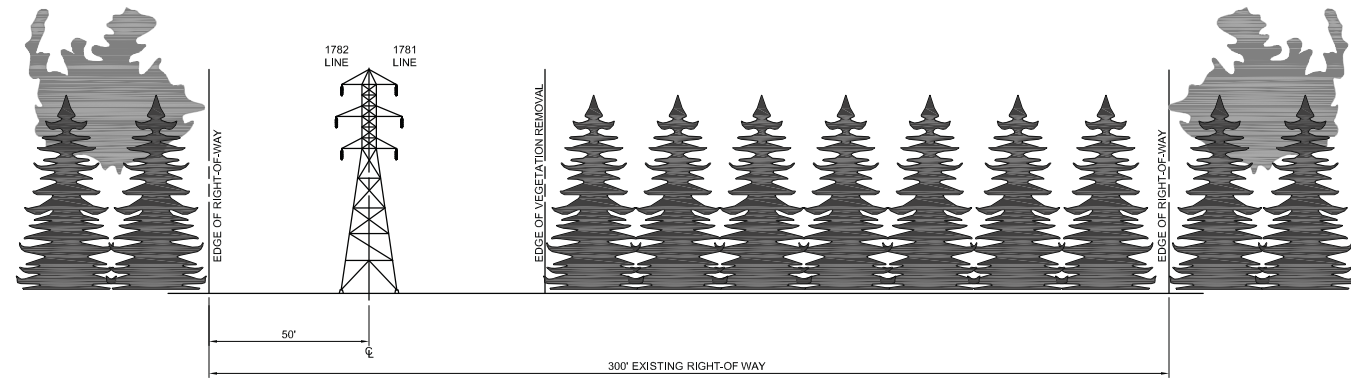
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-6	
P.A. #			

EXISTING LAYOUT  
SOUTH AGAWAM S/S  
TO  
SILVER S/S

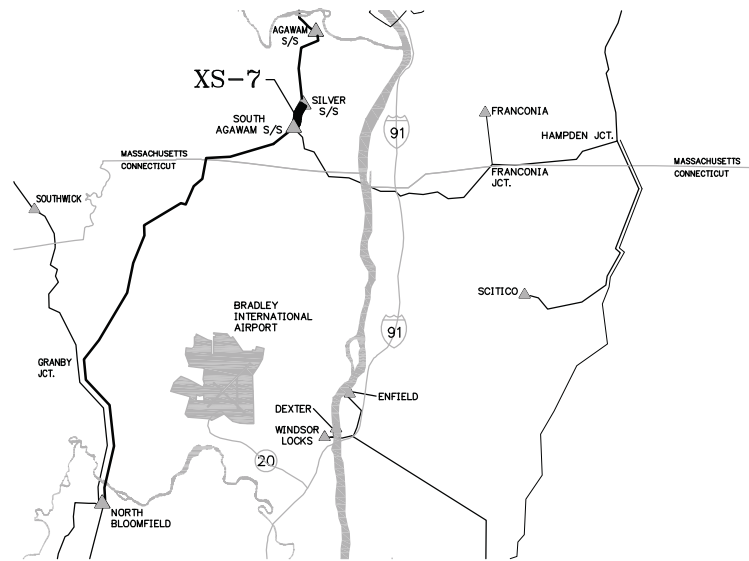
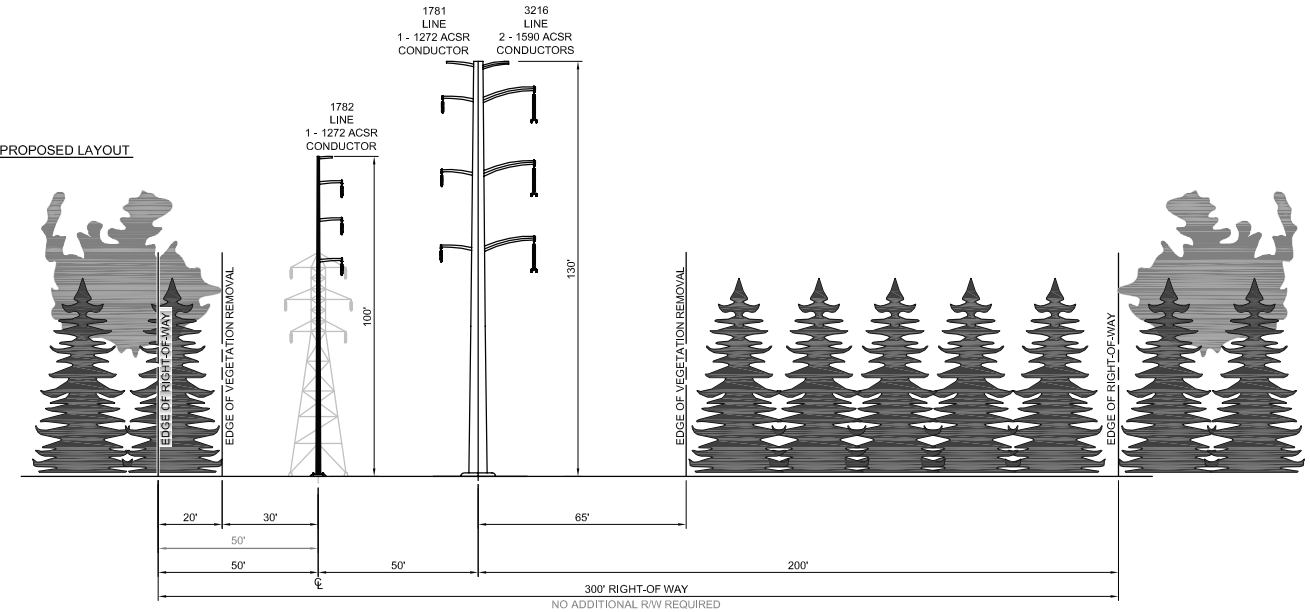
0.9 MILES

EXISTING  
RIGHT-OF-WAY  
300'

LOOKING  
NORTH



PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE



NOTES:

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

PRELIMINARY -  
SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
SOUTH AGAWAM S/S TO SILVER S/S**

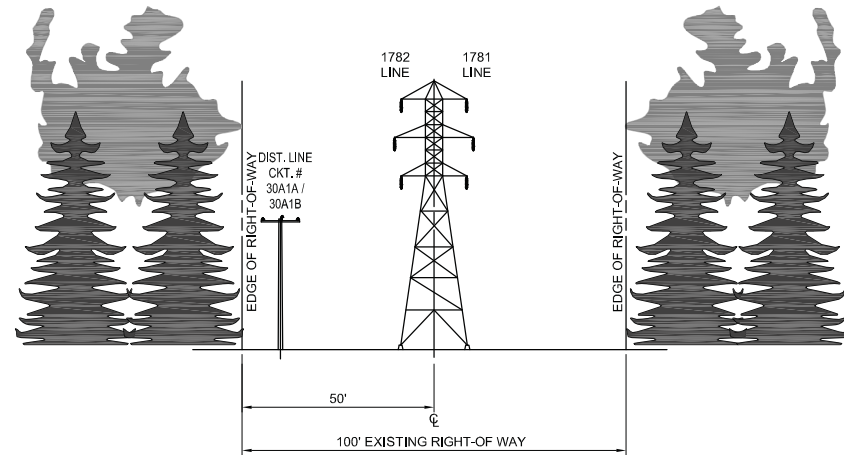
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-7	
P.A. #			

EXISTING LAYOUT  
SILVER S/S  
TO  
EXISTING STR 2286  
(0.5 MILES NORTH OF SILVER S/S)

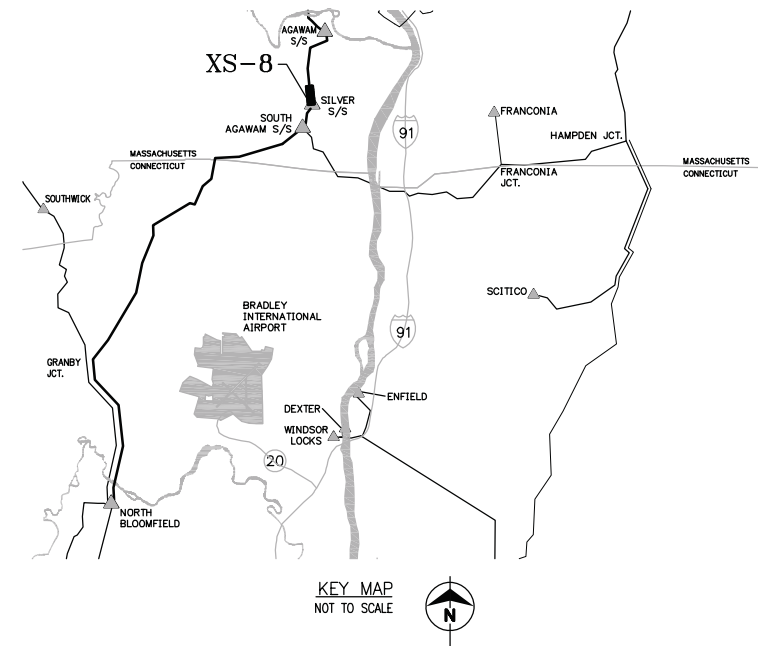
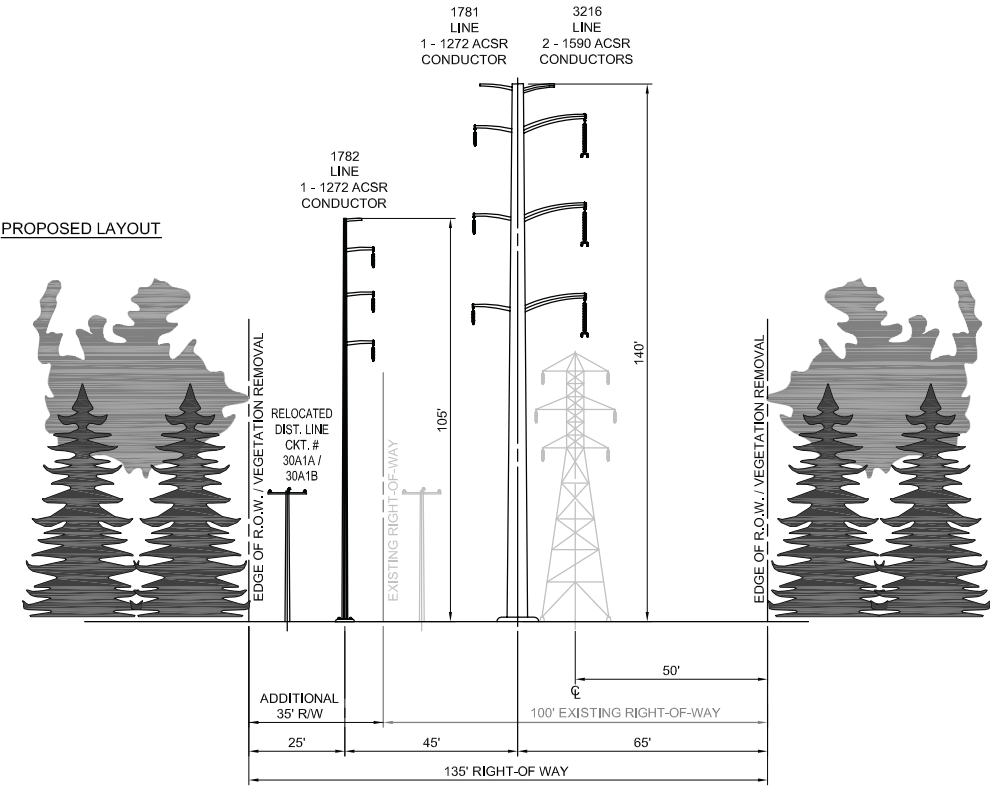
0.5 MILES

EXISTING  
RIGHT-OF-WAY  
100'

LOOKING  
NORTH



PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE



PRELIMINARY -  
SUBJECT TO CHANGE



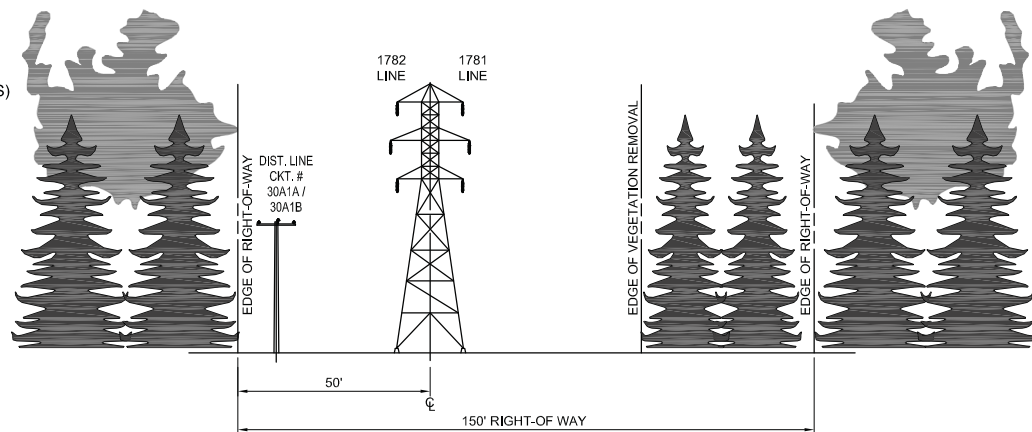
TITLE  
GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
SILVER S/S TO EXISTING STR. 2286

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-8	
P.A. #			

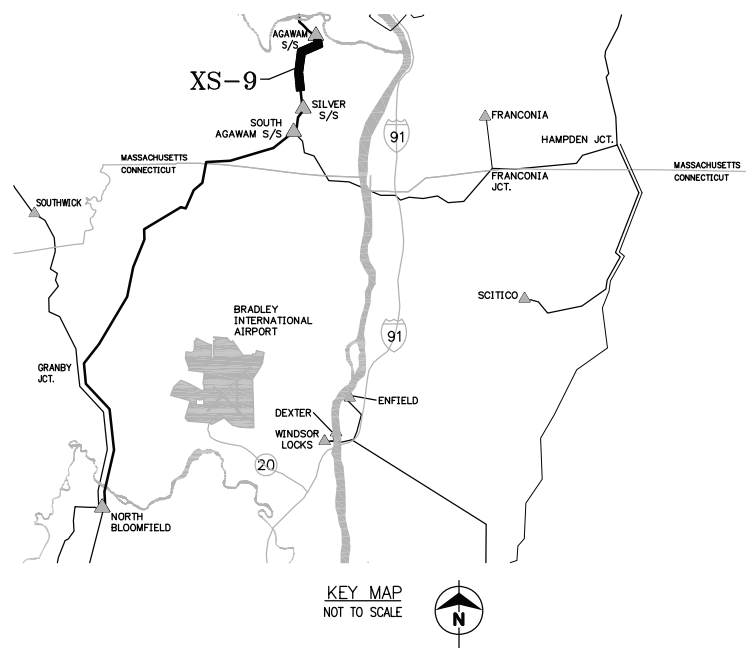
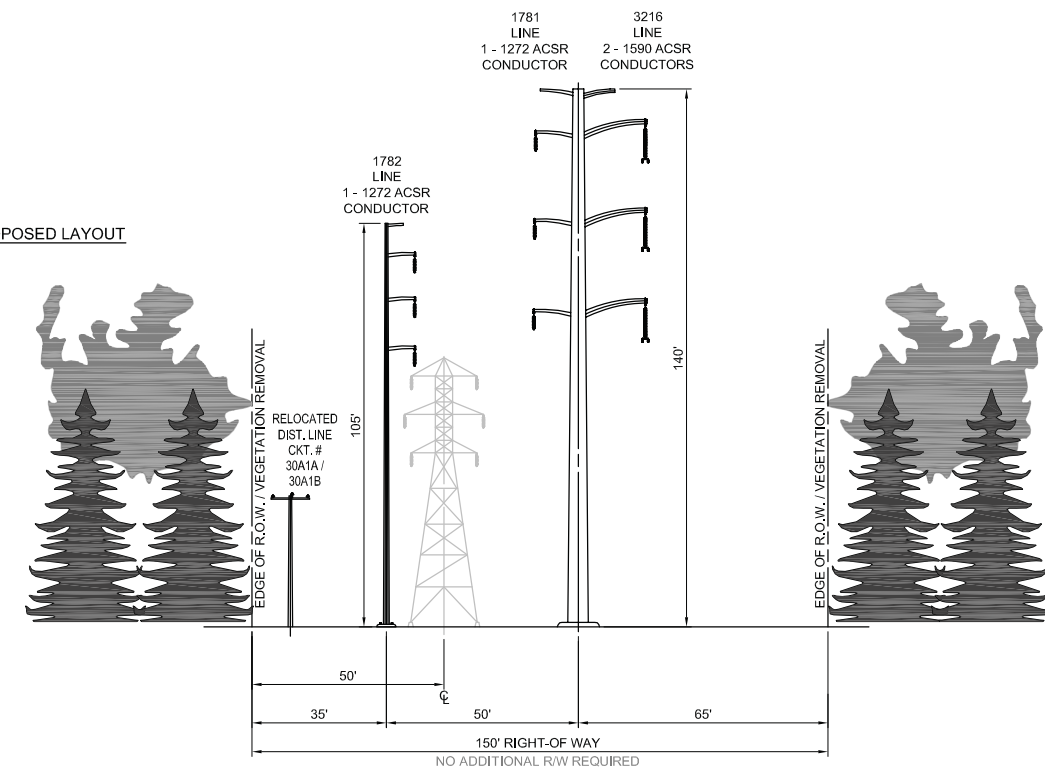
NOTES:

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR
2. DISTRIBUTION LINE BEGINS AT SILVER S/S AND CONTINUES NORTH FOR APPROXIMATELY 0.9 MILES.
3. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. STRUCTURE HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.
4. DISTRIBUTION LINES MAY NEED TO BE RELOCATED TO THE EDGE OF RW TO ENSURE CLEARANCE TO TRANSMISSION CONDUCTORS.

**EXISTING LAYOUT**  
 EXISTING STR. 2286  
 (0.5 MILES NORTH OF SILVER S/S)  
 TO  
 AGAWAM S/S  
 1.9 MILES  
 EXISTING  
 RIGHT-OF-WAY  
 150'  
 LOOKING  
 NORTH



**PROPOSED LAYOUT**



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR.
2. DISTRIBUTION LINE BEGINS 1.5 MILES SOUTH OF AGAWAM S/S AND CONTINUES SOUTH FOR 0.9 MILES
3. DISTRIBUTION LINES MAY NEED TO BE RELOCATED TO THE EDGE OF RW TO ENSURE CLEARANCE TO TRANSMISSION CONDUCTORS.
4. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. STRUCTURE HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
 SUBJECT TO CHANGE**



**TITLE** GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 EXISTING STR. 2286 TO AGAWAM S/S

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-9	
P.A. #			



Greater Springfield Reliability Project  
Agawam Substation to Piper Substation in the Town of Agawam  
Transmission Rights-of-Way  
Typical Cross Section XS-10

The existing line structures will be removed and new 345/115-kV vertical composite monopole and 115-kV single circuit monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking northwest from Maple Street, north of Agawam Substation.

Proposed electric transmission line structures looking northwest from Maple Street, north of Agawam Substation.

*NOTE: See Drawing XS-10 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

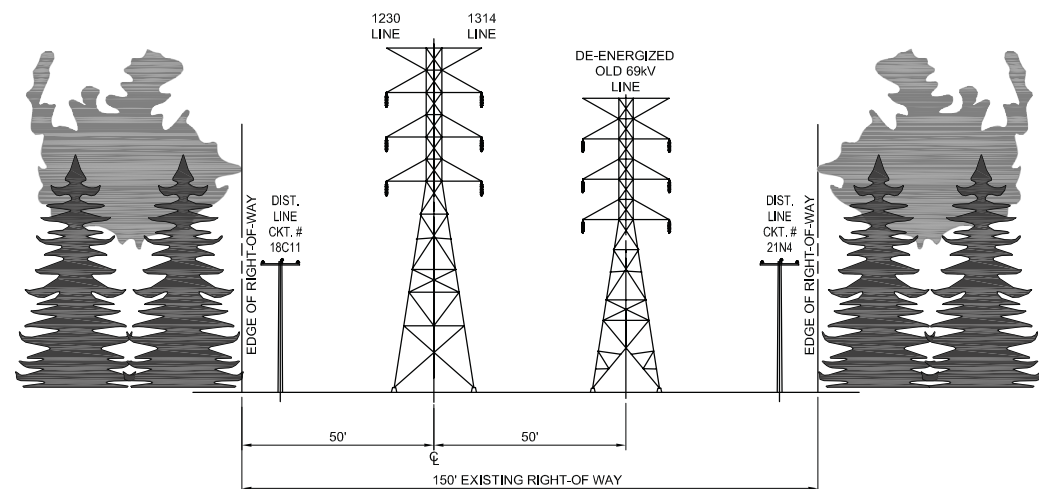
**EXISTING LAYOUT**

AGAWAM S/S  
TO  
PIPER S/S

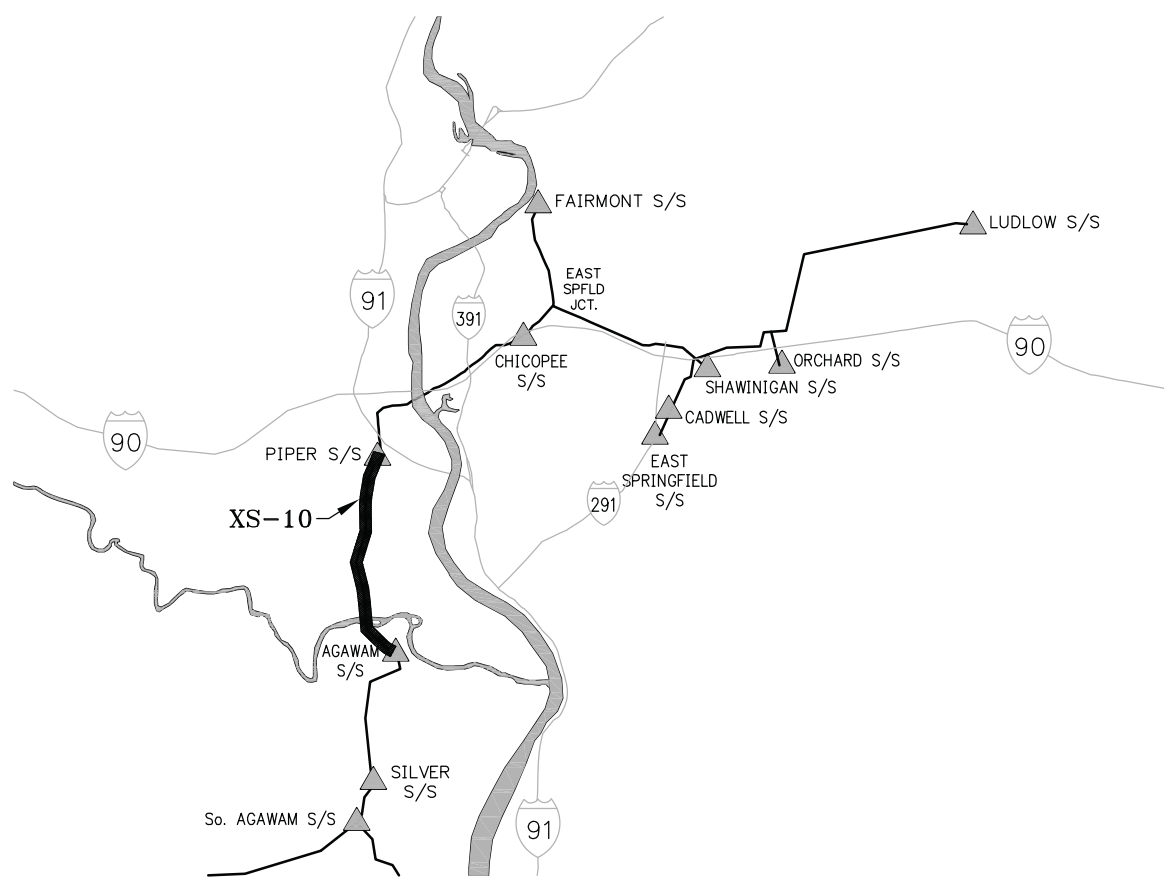
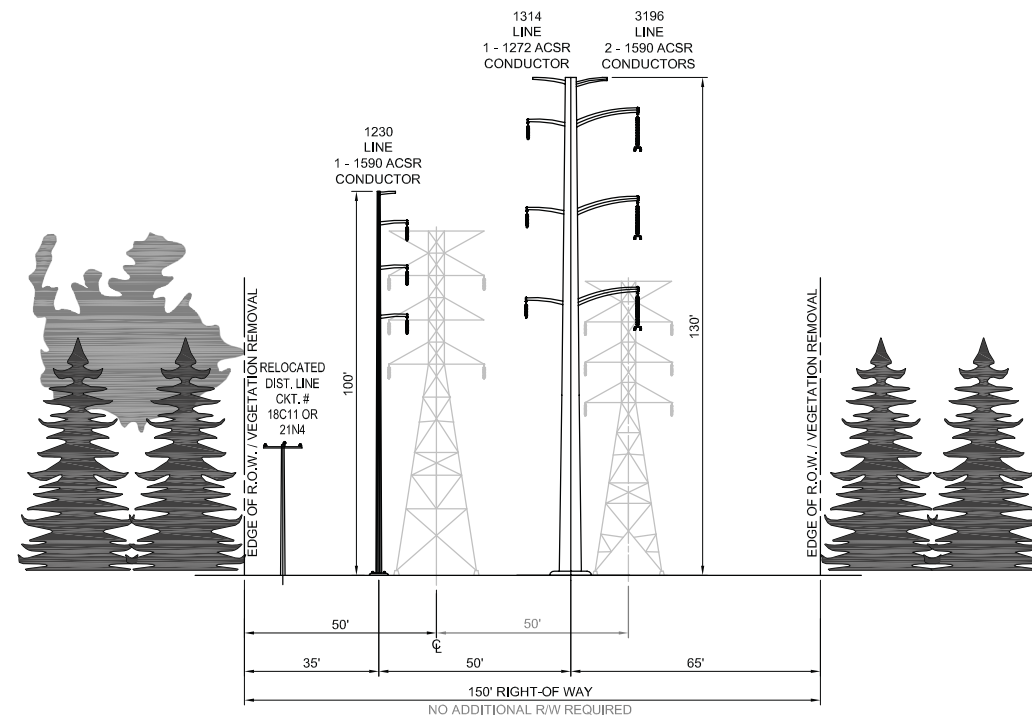
3.6 MILES

EXISTING  
RIGHT-OF-WAY  
150'


LOOKING  
NORTH



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDORS.
2. OLD 69kV LINE LEAVES R/W 0.6 MILES NORTH OF AGAWAM S/S AND RETURNS 125' SOUTH OF PIPER S/S.
3. DISTRIBUTION BEGINS 600' NORTHWEST OF AGAWAM S/S AND CONTINUES NORTH FOR 0.6 MILES ON THE WEST SIDE OF THE R/W. ADDITIONAL DISTRIBUTION BEGINS 0.5 MILES SOUTH OF PIPER S/S ON THE EAST SIDE OF THE R/W AND CONTINUES THROUGH PIPER S/S.
4. DISTRIBUTION LINES MAY NEED TO BE RELOCATED TO THE EDGE OF R/W TO ENSURE CLEARANCE TO TRANSMISSION CONDUCTORS.
5. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
AGAWAM S/S TO PIPER S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-10	
P.A. #			



Greater Springfield Reliability Project  
Agawam Substation to Piper Substation in the Town of West Springfield  
Transmission Rights-of-Way  
Typical Cross Section XS-10

The existing line structures will be removed and new 345/115-kV vertical composite monopole and 115-kV single circuit monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking north from High School Drive, north of Amostown Road and west of West Springfield High School.

Proposed electric transmission line structures, looking north from High School Drive, north of Amostown Road and west of West Springfield High School. *Note, the existing 69-kV lattice lines diverge from the main corridor. Those structures will remain in place as shown in the photo background.*

*NOTE: See Drawing XS-10 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*



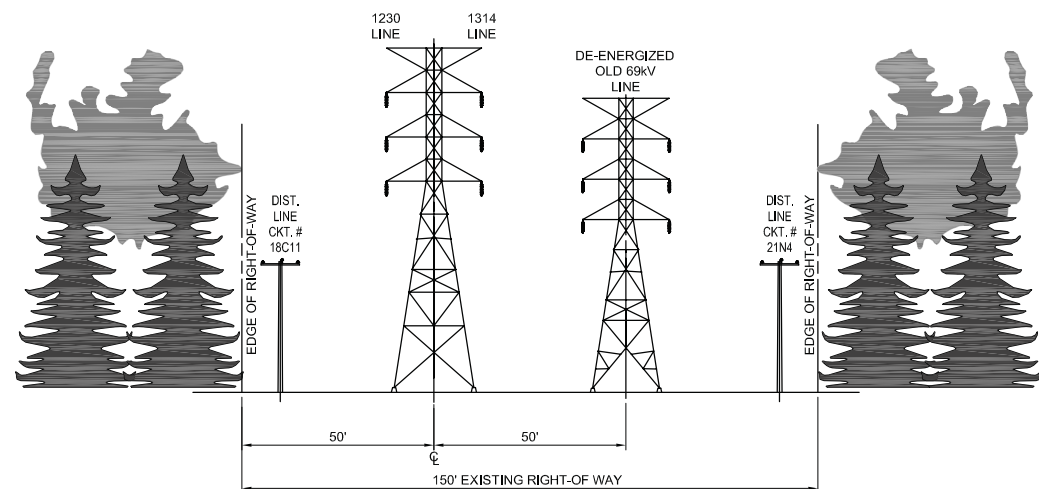
**EXISTING LAYOUT**

AGAWAM S/S  
TO  
PIPER S/S

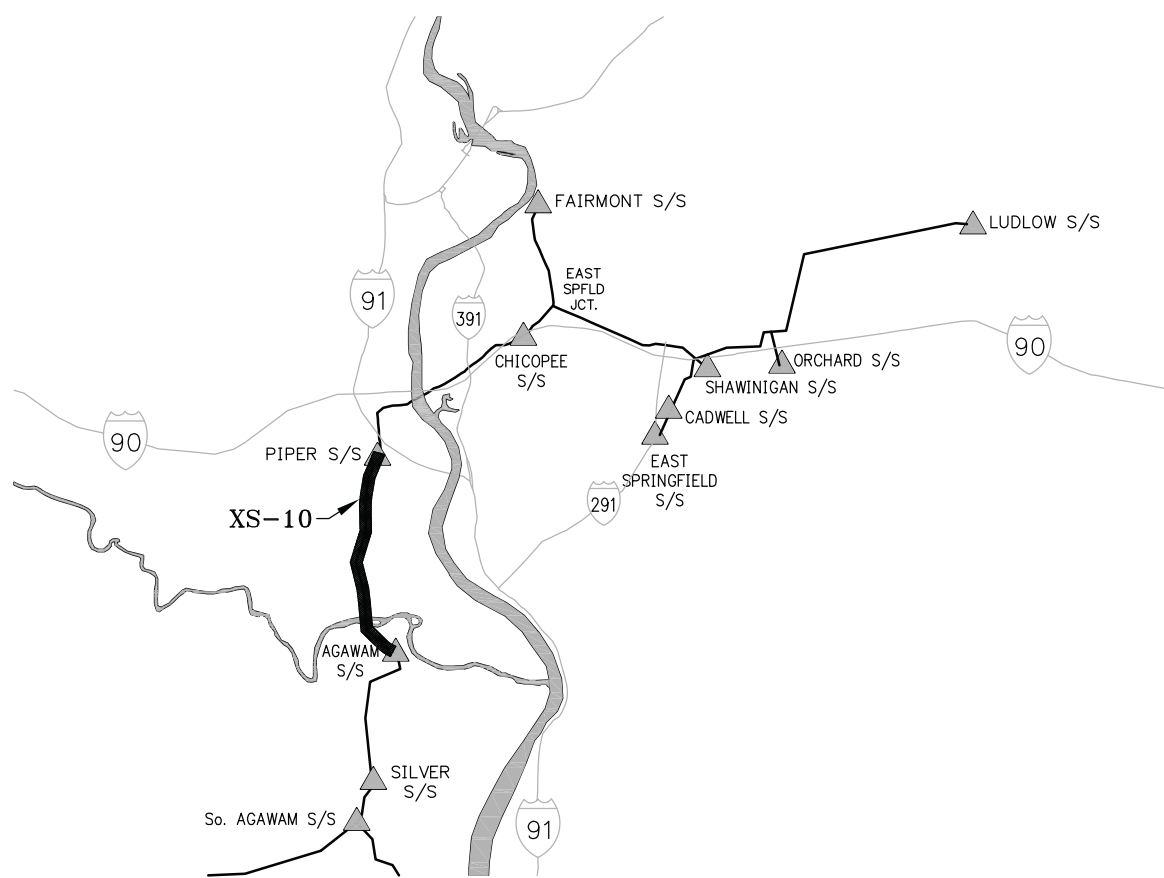
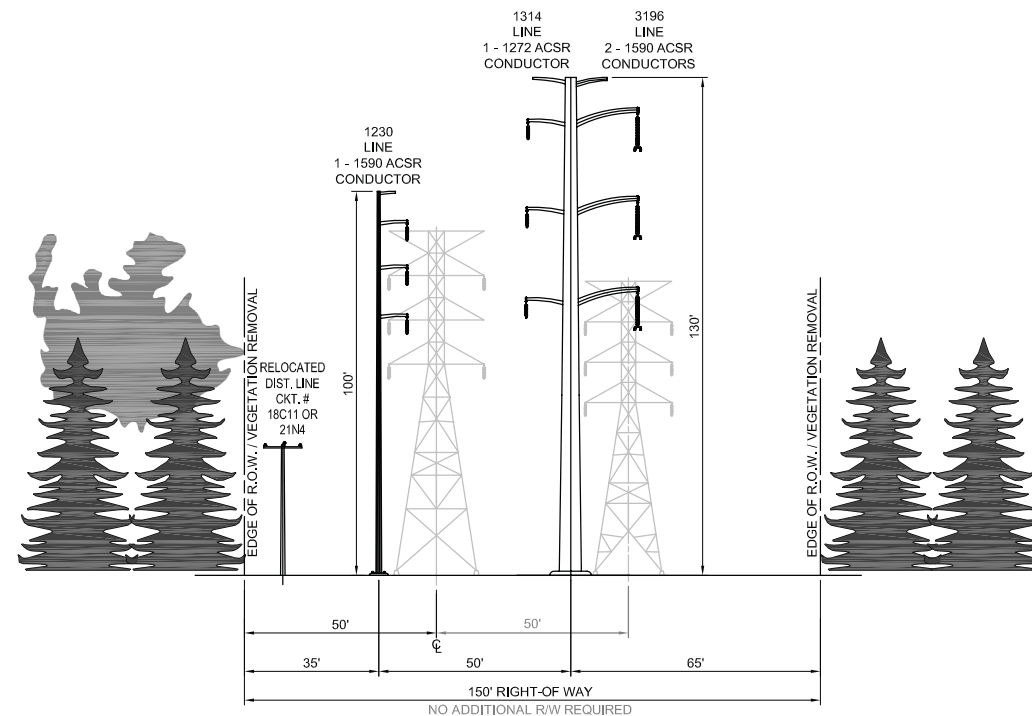
3.6 MILES

EXISTING  
RIGHT-OF-WAY  
150'


LOOKING  
NORTH



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDORS.
2. OLD 69kV LINE LEAVES R/W 0.6 MILES NORTH OF AGAWAM S/S AND RETURNS 125' SOUTH OF PIPER S/S.
3. DISTRIBUTION BEGINS 600' NORTHWEST OF AGAWAM S/S AND CONTINUES NORTH FOR 0.6 MILES ON THE WEST SIDE OF THE R/W. ADDITIONAL DISTRIBUTION BEGINS 0.5 MILES SOUTH OF PIPER S/S ON THE EAST SIDE OF THE R/W AND CONTINUES THROUGH PIPER S/S.
4. DISTRIBUTION LINES MAY NEED TO BE RELOCATED TO THE EDGE OF R/W TO ENSURE CLEARANCE TO TRANSMISSION CONDUCTORS.
5. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
AGAWAM S/S TO PIPER S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-10	
P.A. #			

Greater Springfield Reliability Project  
Piper Substation to Chicopee Substation in the Town of Chicopee  
Transmission Rights-of-Way  
Typical Cross Section XS-11

The existing line structures will be removed and new 345/115-kV vertical composite monopole and 115-kV single circuit monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking east from Wayfield Avenue, northeast of Piper Substation

(Simulation of the Proposed Transmission Right-of-Way Configuration)



Proposed electric transmission line structures looking north from Wayfield Avenue, northeast of Piper Substation.

*NOTE: See Drawing XS-11 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*



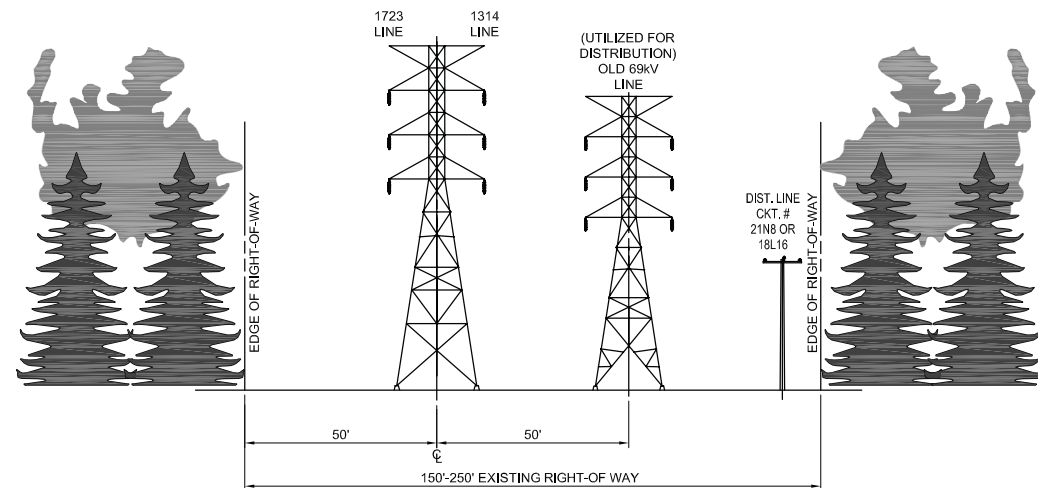
**EXISTING LAYOUT**

PIPER S/S  
TO  
CHICOPEE S/S

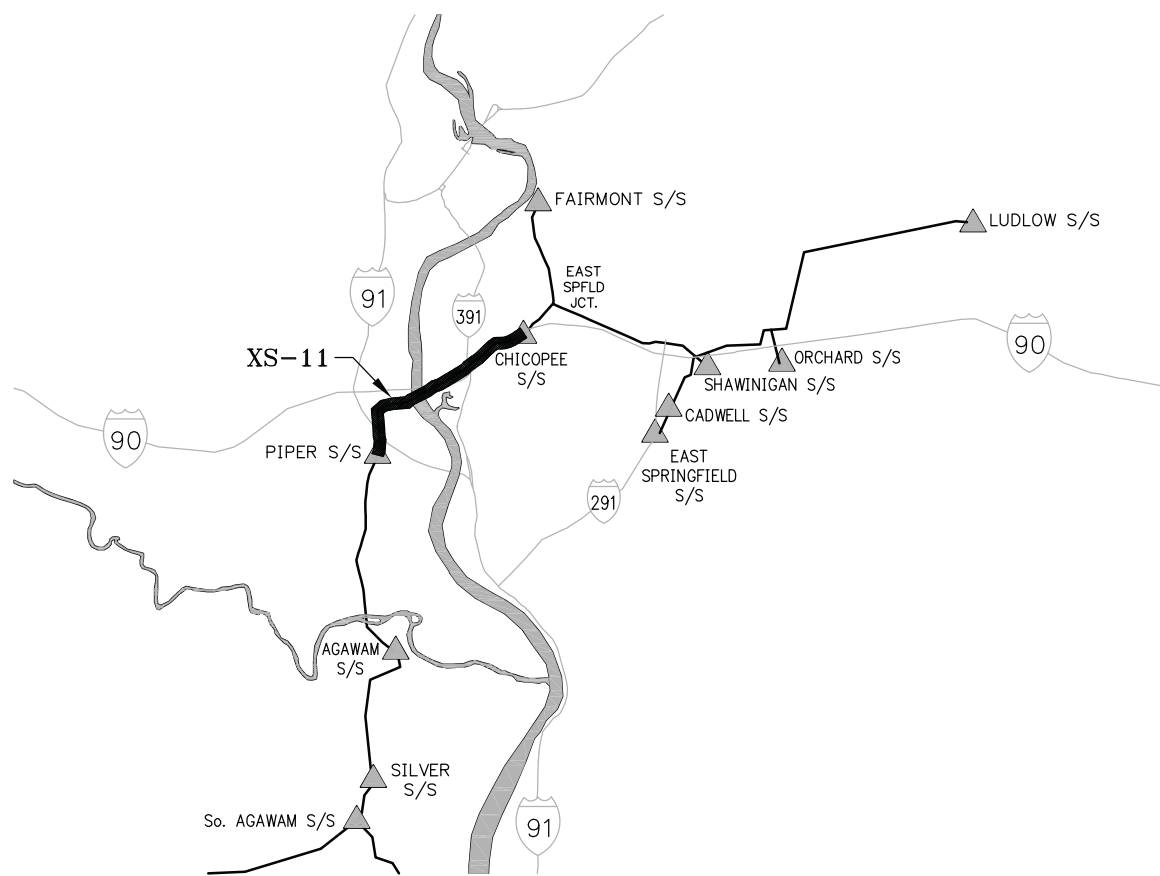
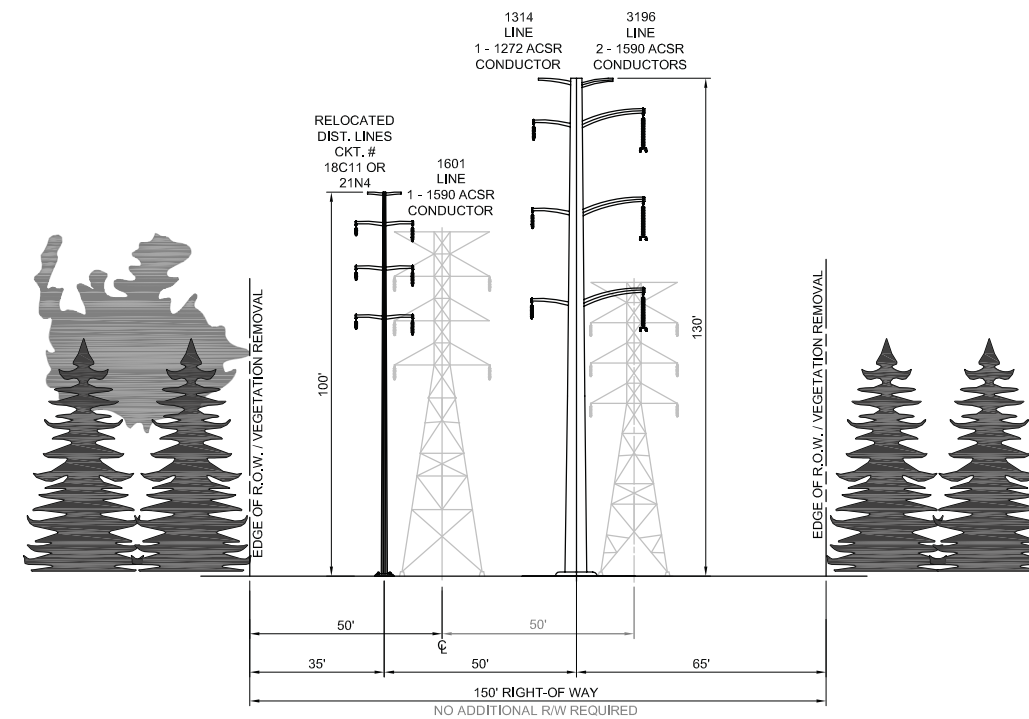
3.5 MILES

EXISTING  
RIGHT-OF-WAY  
150'-250'

LOOKING  
NORTH



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDORS.
2. A 0.3 MILE SECTION, 0.3 MILES SOUTHWEST OF CHICOPEE S/S HAS 250' WIDE EXISTING R/W. THE REMAINDER OF THE R/W IS 150' WIDE.
3. OLD 69kV LINE LEAVES R/W 0.8 MILES SOUTHWEST OF CHICOPEE S/S.
4. DISTRIBUTION LINE EXISTS FOR FIRST 0.3 MILES, THEN BEGINS AGAIN 1.9 MILES NORTHEAST OF PIPER S/S AND CONTINUES TO CHICOPEE S/S.
5. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
PIPER S/S TO CHICOPEE S/S**

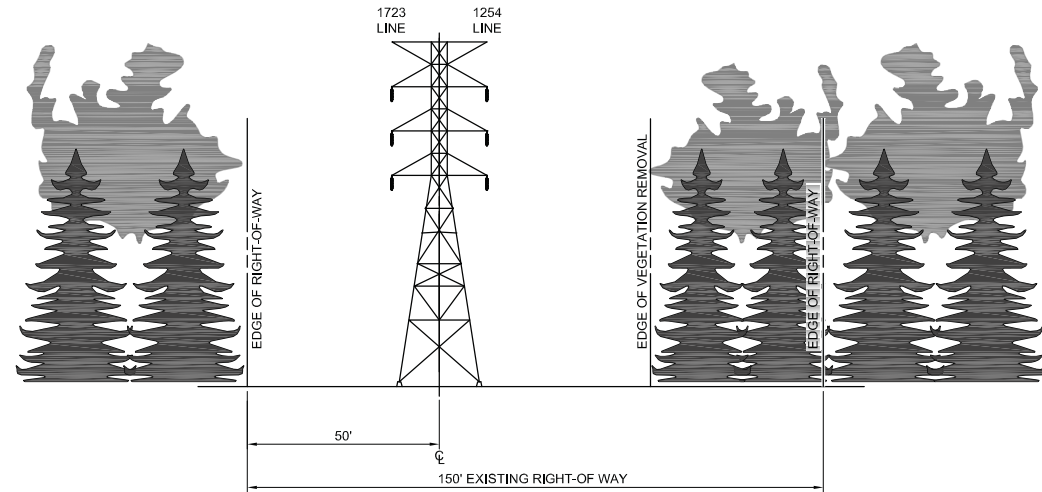
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-11	
P.A. #			

**EXISTING LAYOUT**  
CHICOPEE S/S  
TO  
EAST SPRINGFIELD JCT.

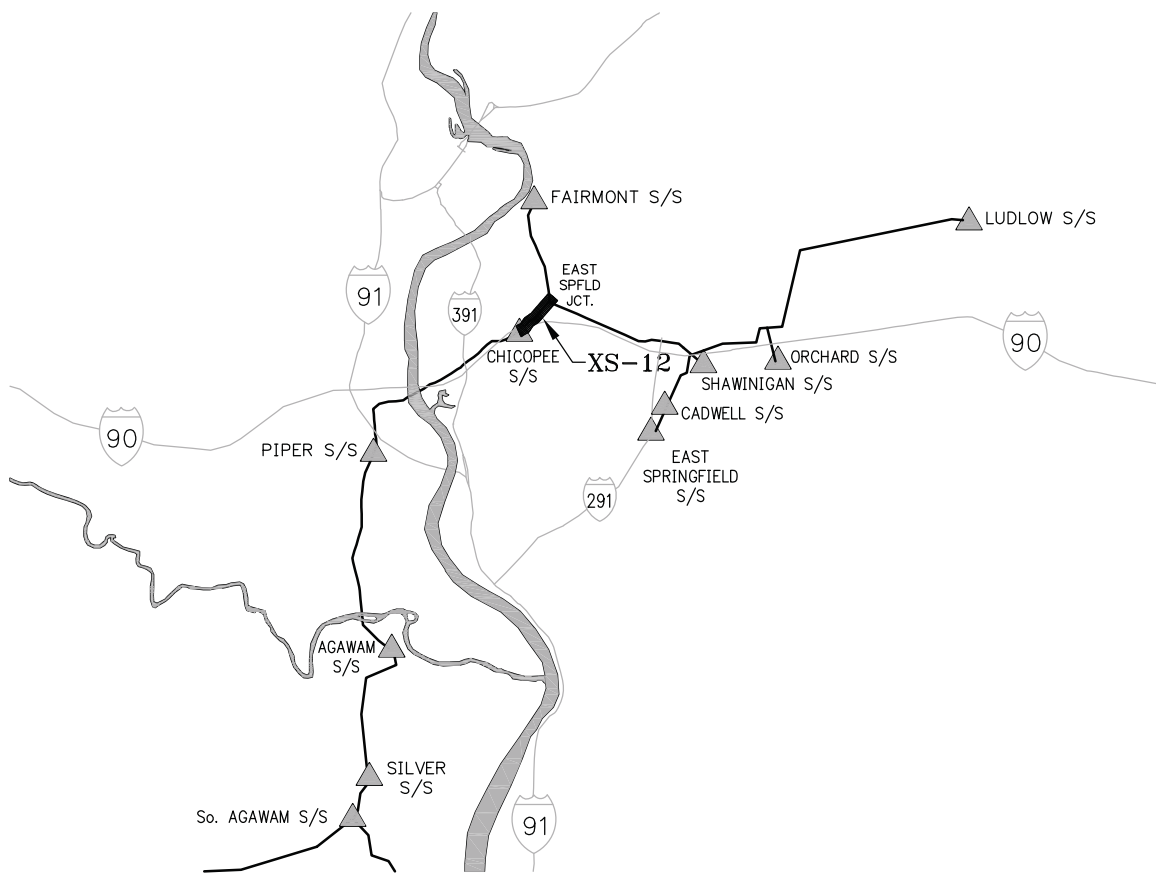
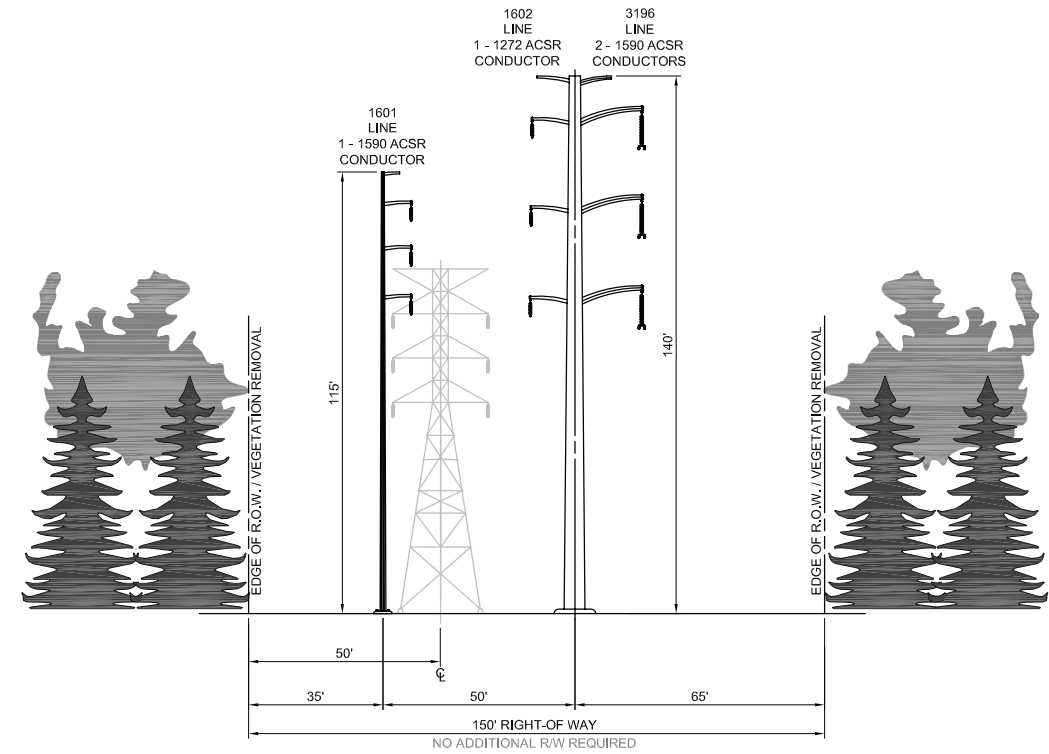
0.7 MILES

EXISTING  
RIGHT-OF-WAY  
150'

LOOKING  
NORTH



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**NOTES:**

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDORS.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
CHICOPEE S/S TO EAST SPRINGFIELD JCT**

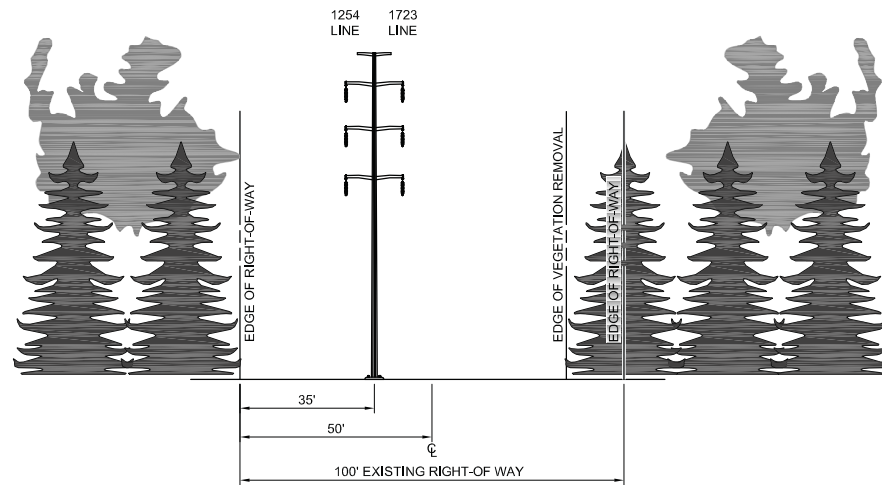
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-12	
P.A. #			

EXISTING LAYOUT  
 EAST SPRINGFIELD JCT.  
 TO  
 EXISTING STR 49091  
 (1.5 MILES EAST OF EAST SPRINGFIELD JCT.)

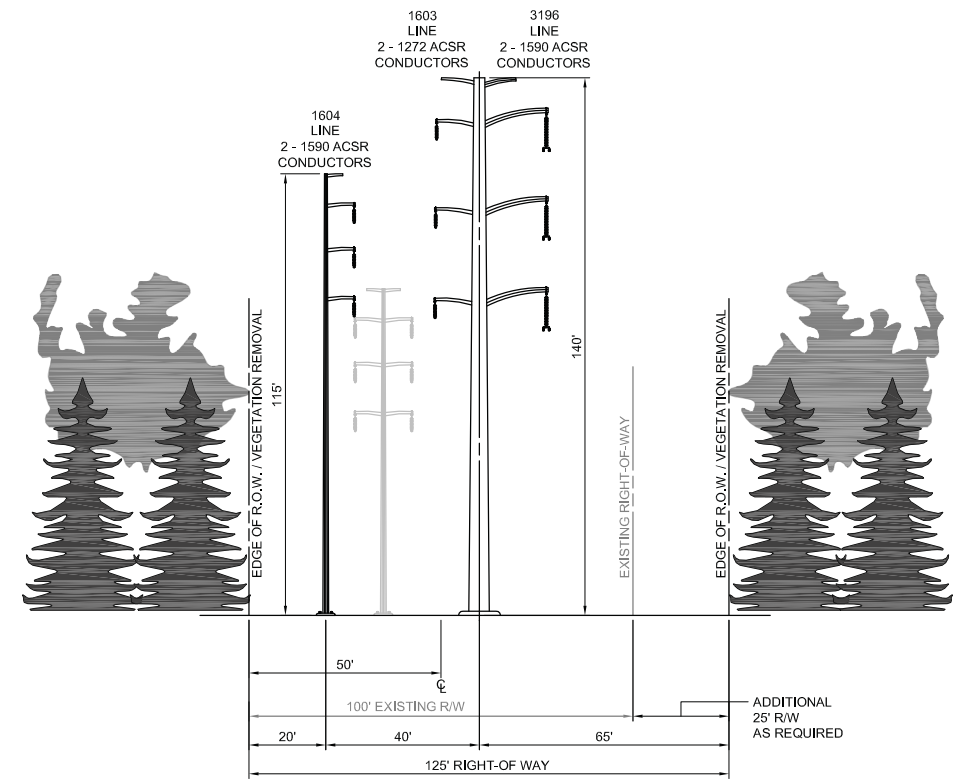
1.5 MILES

EXISTING  
 RIGHT-OF-WAY  
 100'

LOOKING  
 EAST



PROPOSED LAYOUT



NOTES:

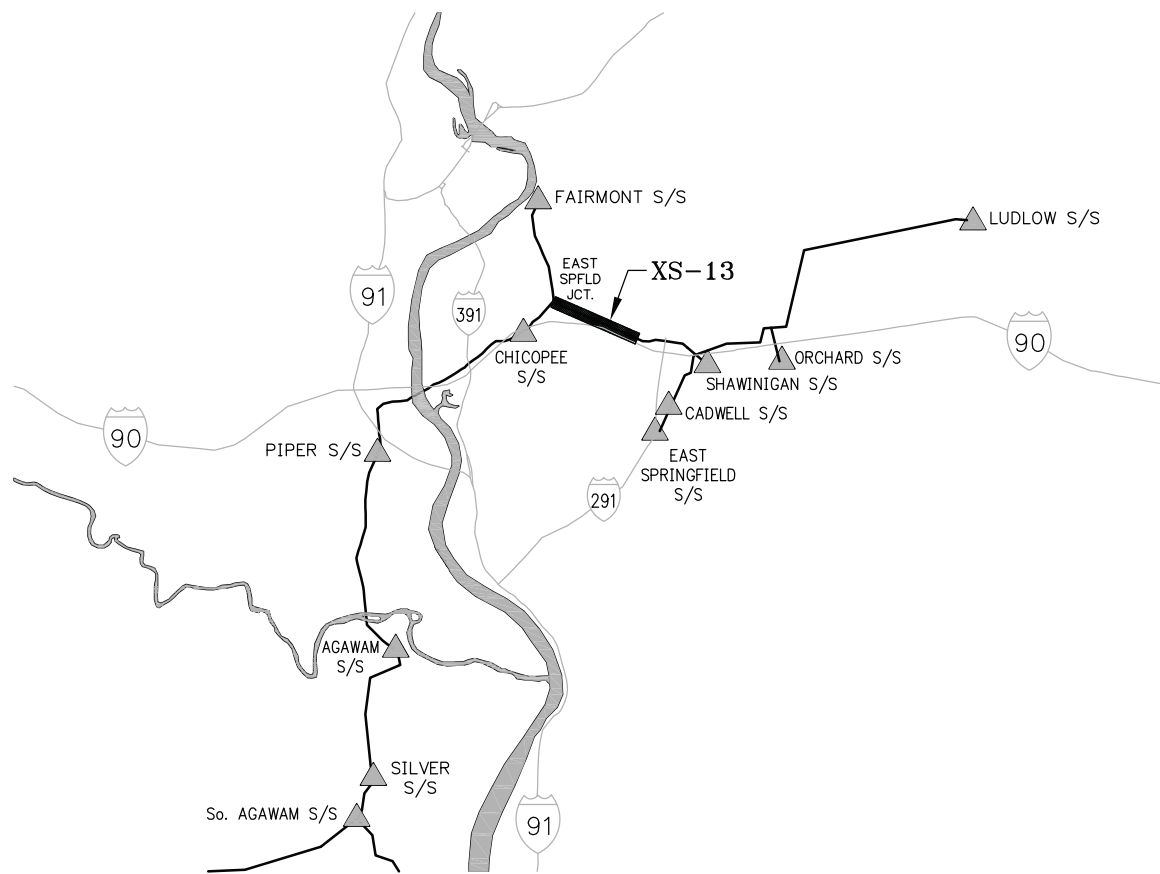
1. REMOVE EXISTING STEEL POLE STRUCTURES.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

PRELIMINARY -  
 SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 EAST SPRINGFIELD JCT. TO EXISTING STR 49091**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. <b>XS-13</b>	
P.A. #			

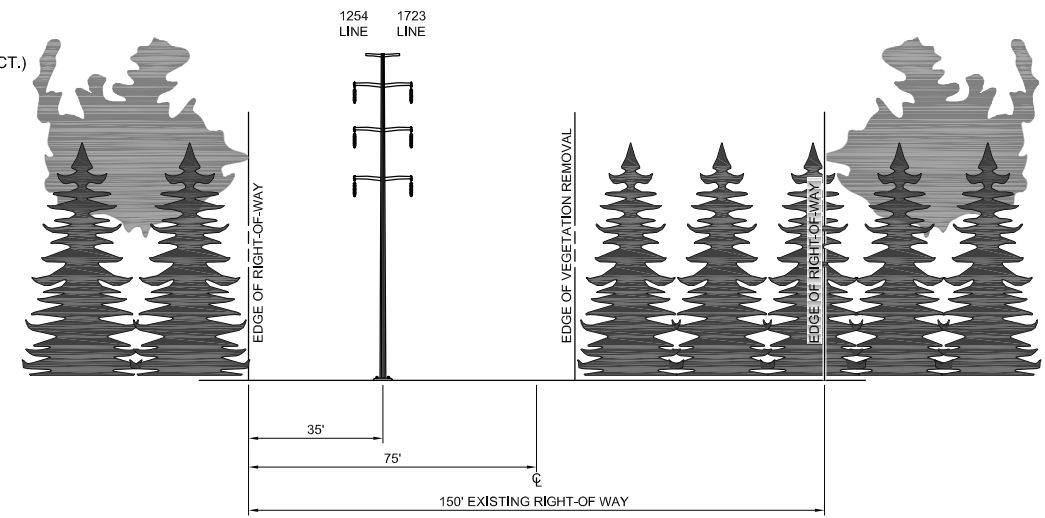


KEY MAP  
 NOT TO SCALE

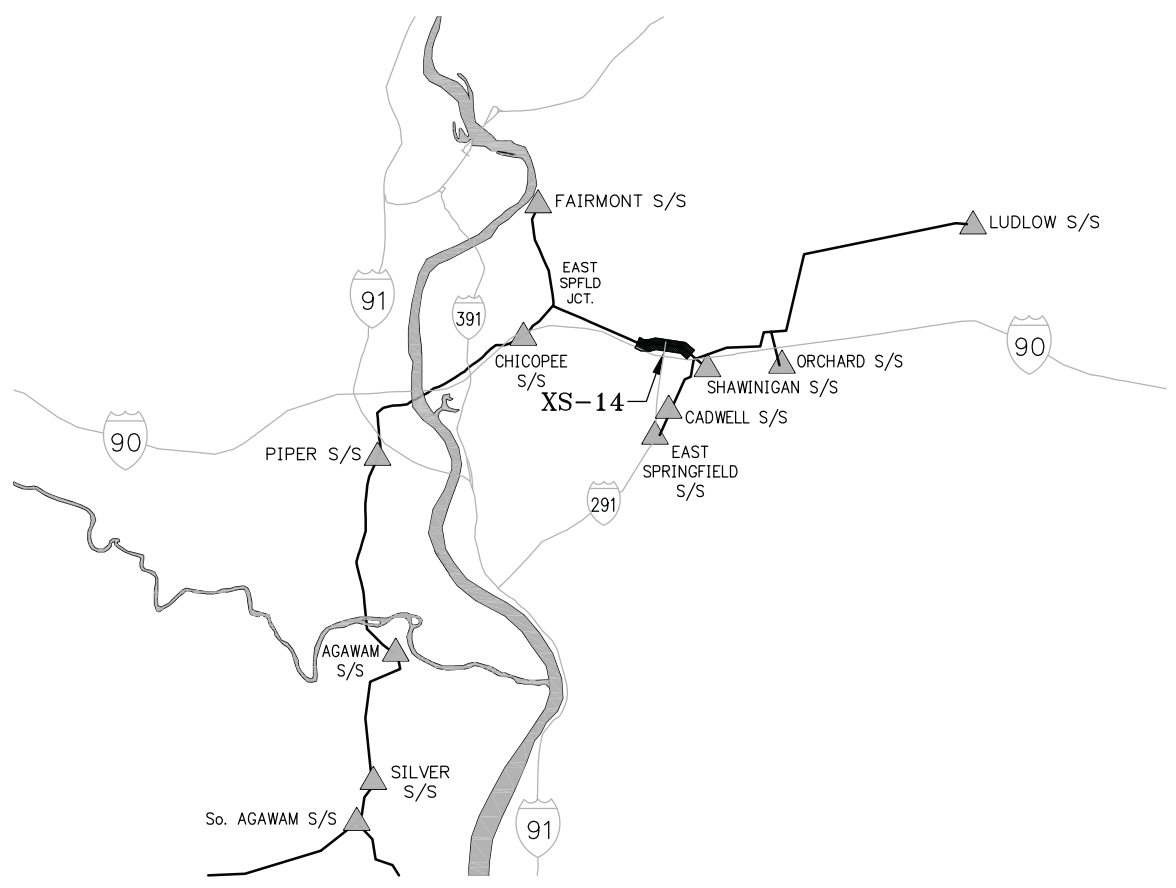
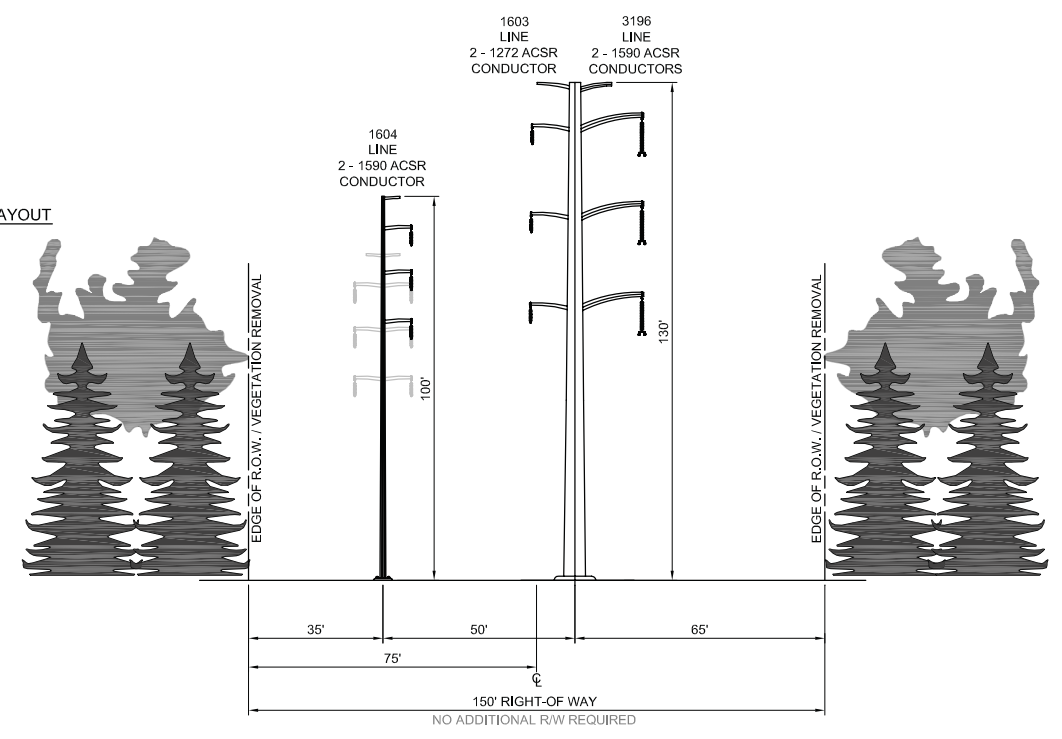


EXISTING LAYOUT  
 EXISTING STR 49091  
 (1.5 MILES EAST OF EAST SPRINGFIELD JCT.)  
 TO  
 EXIT 6 JCT.

1.0 MILES  
 EXISTING  
 RIGHT-OF-WAY  
 150'  
 LOOKING  
 EAST



PROPOSED LAYOUT



KEY MAP  
 NOT TO SCALE

- NOTES:
1. REMOVE EXISTING STEEL POLE STRUCTURES.
  2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

PRELIMINARY -  
 SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 EXISTING STR 49091 TO EXIT 6 JCT.**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-14	
P.A. #			

N:\PROJECTS\45700\45700.dwg (Dwg) Section Drawings\SPRSPR-APP-1.dwg (08-10) 08-17-2008 10:09 AM BMM

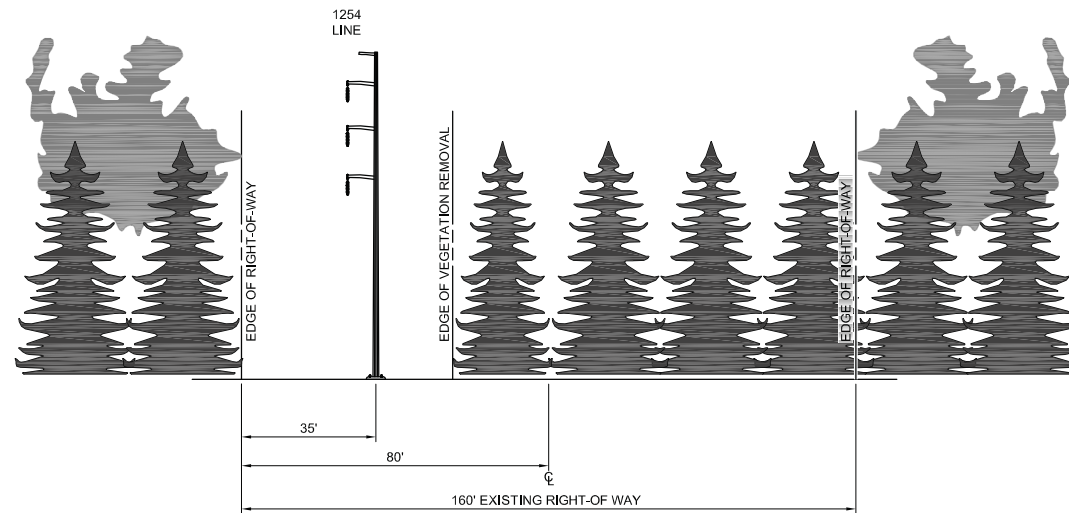
**EXISTING LAYOUT**

EXIT 6 JCT.  
TO  
SHAWINIGAN S/S

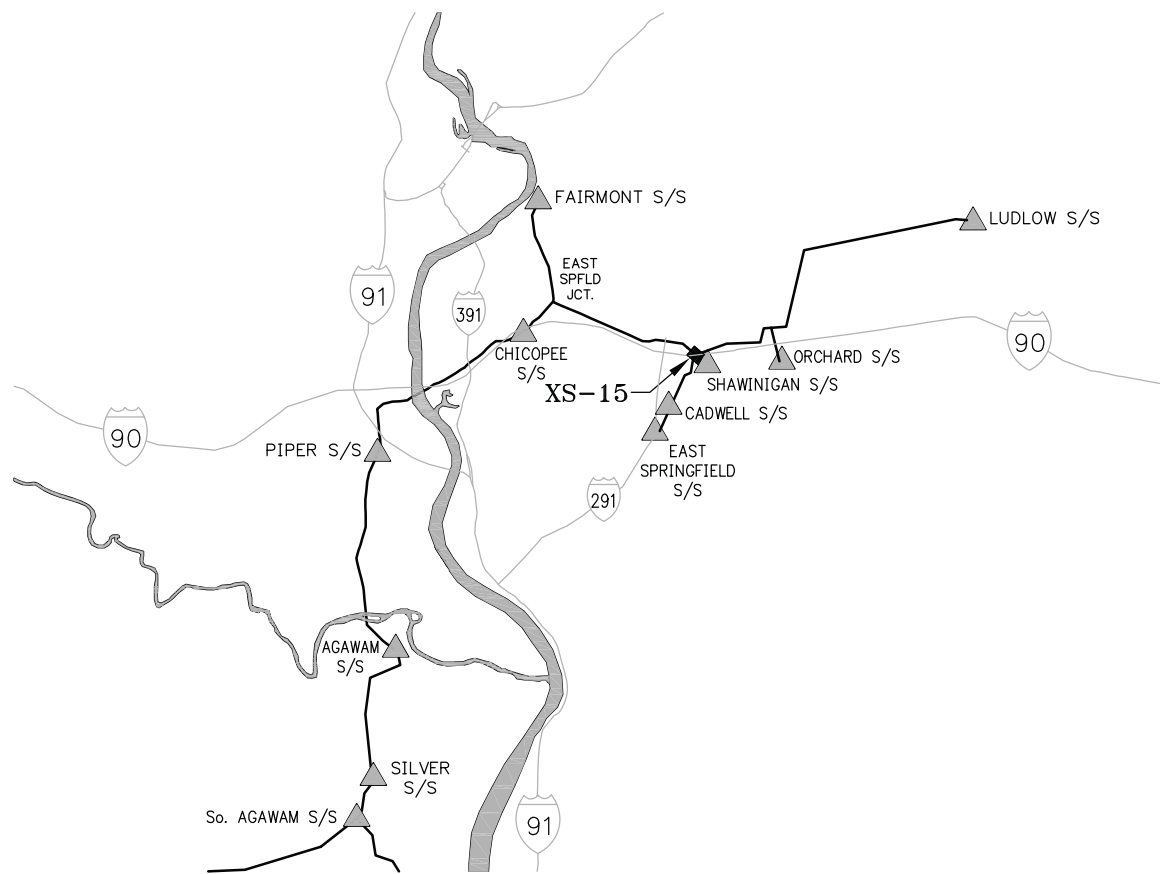
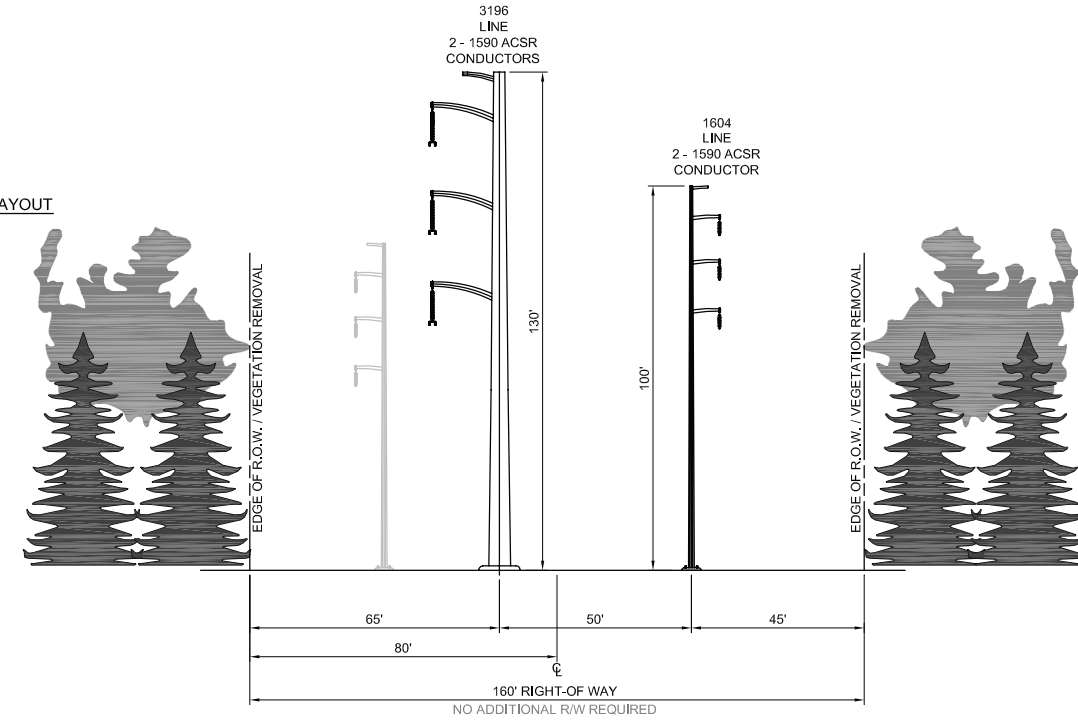
0.3 MILES

EXISTING  
RIGHT-OF-WAY  
160'

LOOKING  
EAST



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**NOTES:**

1. 345kV CROSSES TO NORTH SIDE OF CORRIDOR.
2. REMOVE EXISTING STEEL POLE STRUCTURES.
3. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
EXIT 6 JCT. TO SHAWINIGAN S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-15	
P.A. #			

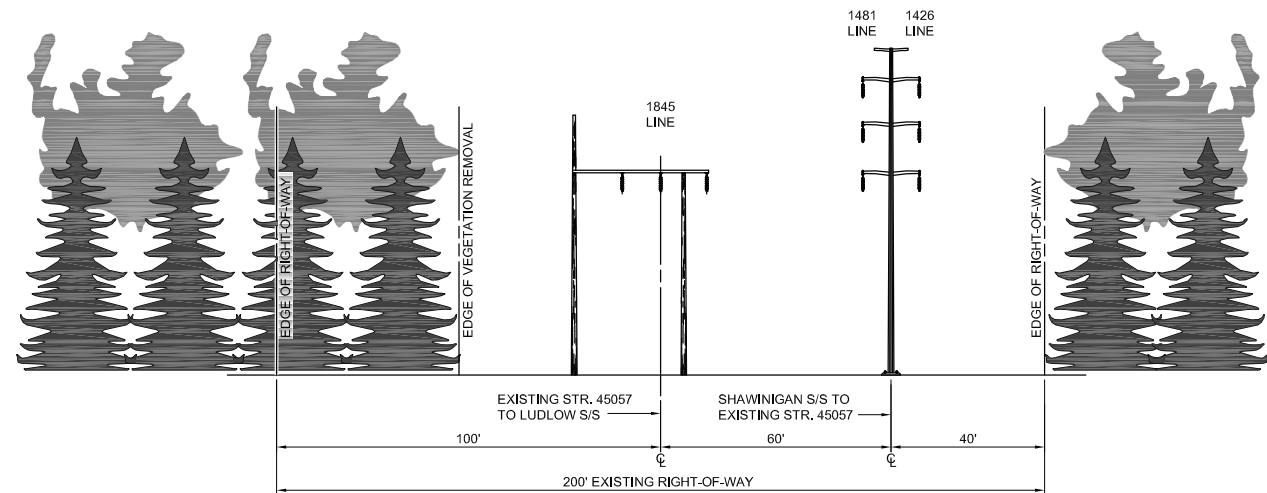
**EXISTING LAYOUT**

SHAWINIGAN S/S TO ORCHARD JCT.

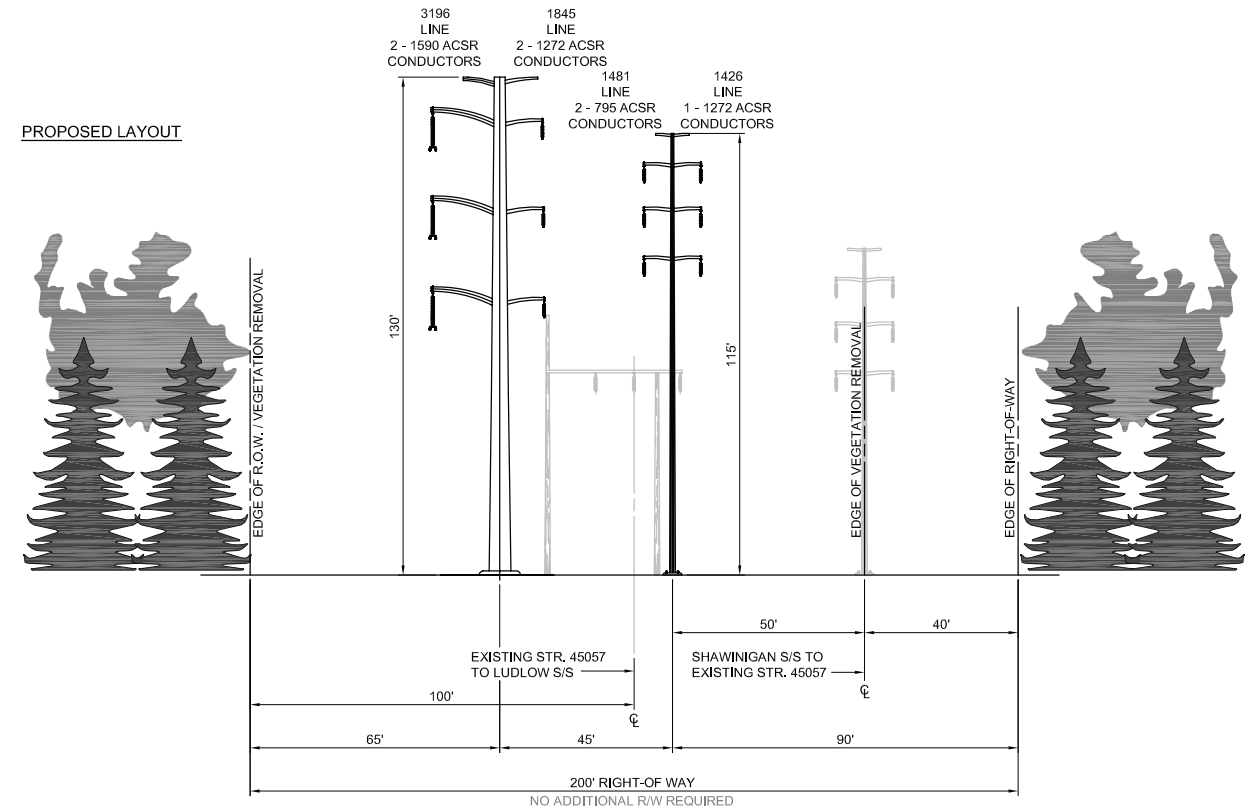
1.4 MILES

EXISTING RIGHT-OF-WAY 200'

LOOKING EAST



**PROPOSED LAYOUT**



**NOTES:**

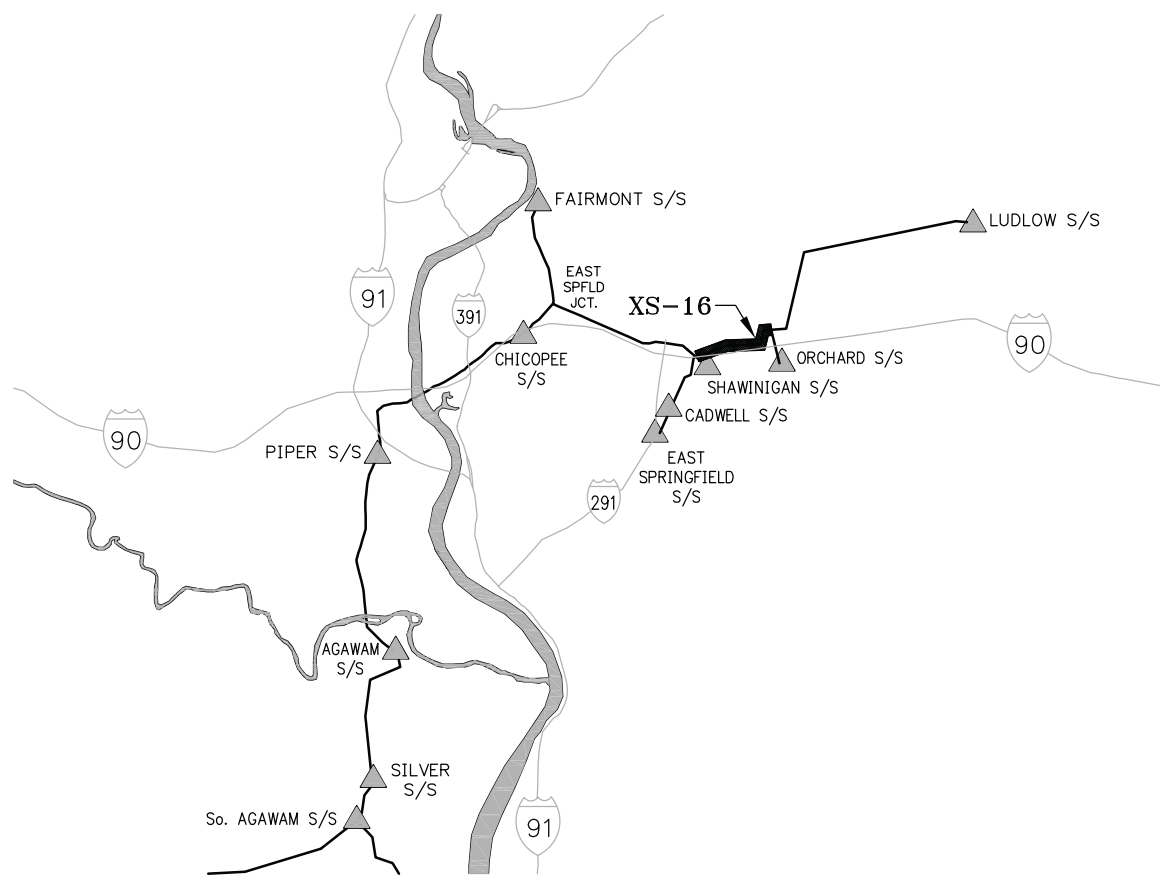
1. REMOVE EXISTING WOOD H-STRUCTURE AND STEEL POLE STRUCTURES IN CORRIDOR.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY - SUBJECT TO CHANGE**



**TITLE** GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
SHAWINIGAN S/S TO ORCHARD JCT.

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-16	
P.A. #			



KEY MAP  
NOT TO SCALE





Greater Springfield Reliability Project  
Orchard Junction to Ludlow Substation in the Town of Ludlow  
Transmission Rights-of-Way  
Typical Cross Section XS-17

The existing line structures will be removed and a line of new 345/115-kV composite vertical monopole structures and a line of 115-kV double circuit vertical monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)

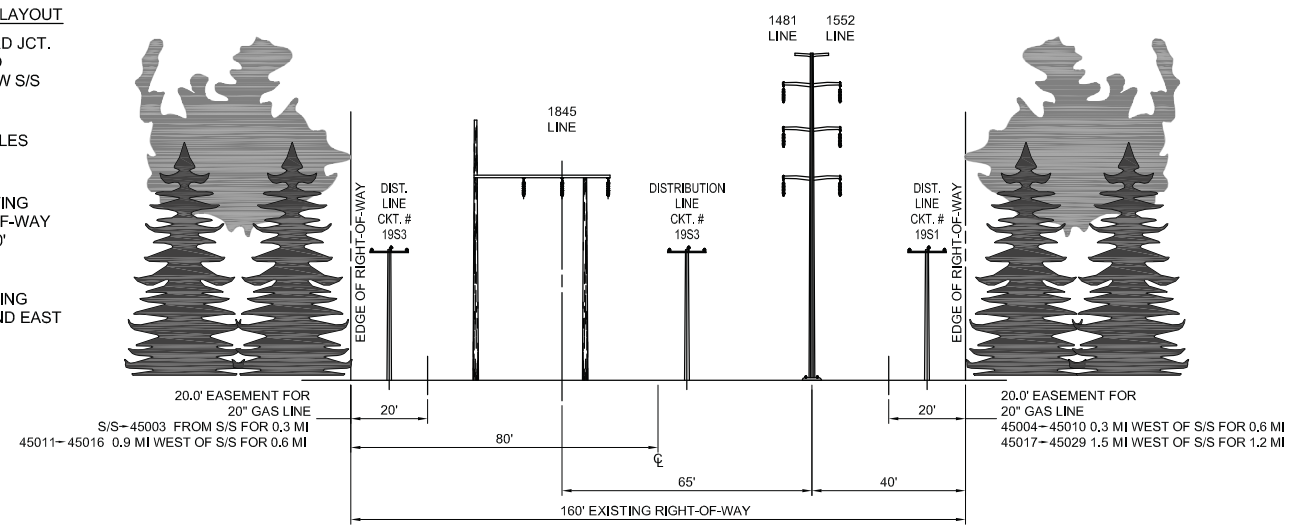


Existing electric transmission line structures looking east from Booth Street, west of Ludlow Substation.

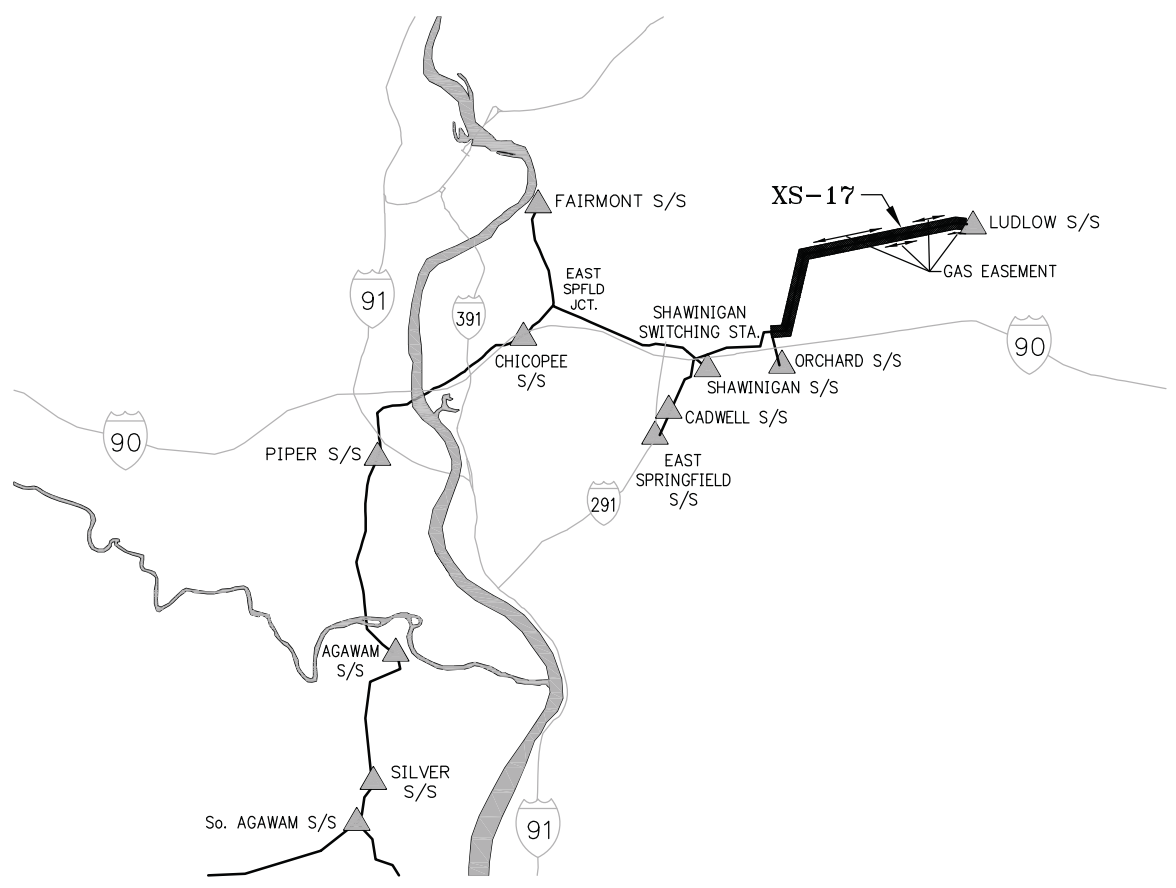
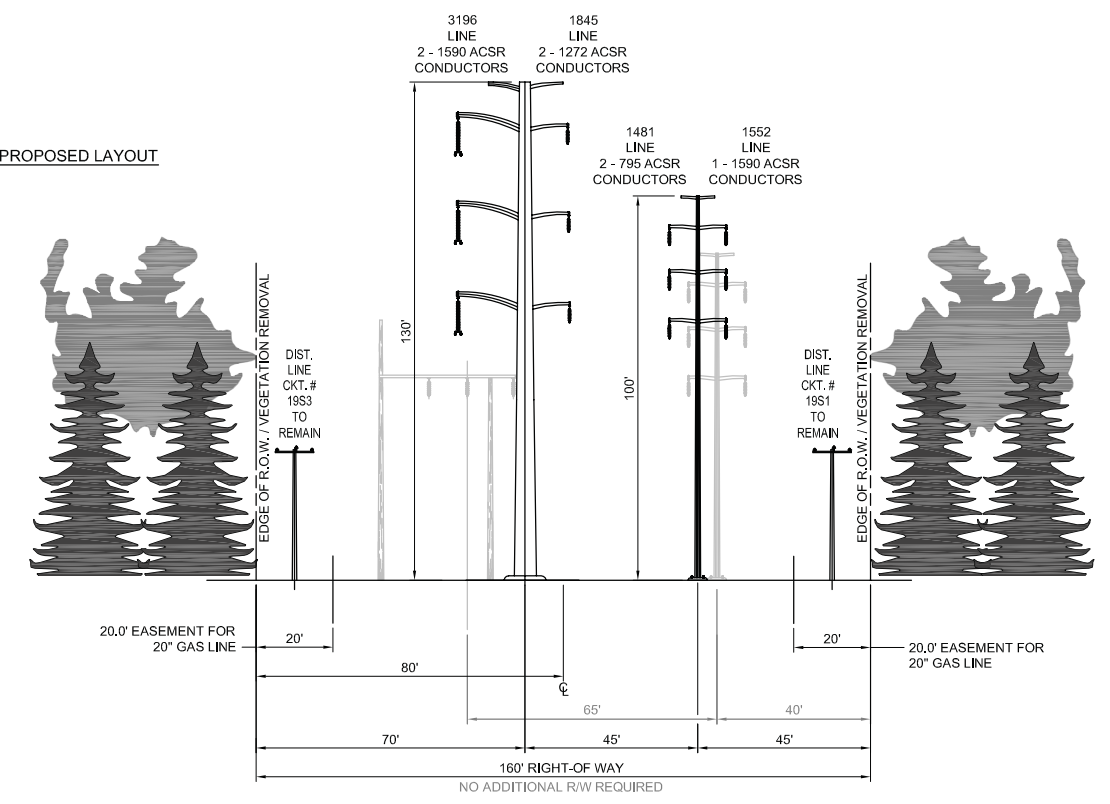
Proposed electric transmission line structures looking east from Booth Street, west of Ludlow Substation.

*NOTE: See Drawing XS-17 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

**EXISTING LAYOUT**  
 ORCHARD JCT.  
 TO  
 LUDLOW S/S  
 4.8 MILES  
 EXISTING  
 RIGHT-OF-WAY  
 160'  
 LOOKING  
 NORTH AND EAST



**PROPOSED LAYOUT**



KEY MAP  
 NOT TO SCALE

- NOTES:**
1. REMOVE EXISTING WOOD H-STRUCTURES, DOUBLE CIRCUIT STEEL POLE STRUCTURES.
  2. A 0.2 MILE SECTION, 1.7 MILES EAST OF ORCHARD JUNCTION HAS 210' OF EXISTING R/W. THE REMAINDER OF THE R/W IS 160' WIDE
  3. FINAL 0.6 MILES OF R/W CONTAINS DISTRIBUTION LINES. DISTRIBUTION STARTS BETWEEN EXISTING STRUCTURES AND MOVES TO THE SOUTH SIDE OF R/W FOR FINAL 0.3 MILES. ADDITIONAL DISTRIBUTION LINE CONTINUE ON THE NORTH SIDE OF R/W FOR FINAL 0.3 MILES.
  4. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
 SUBJECT TO CHANGE**



**TITLE** GREATER SPRINGFIELD RELIABILITY PROJECT  
 PROPOSED CROSS SECTIONS  
 ORCHARD JCT. TO LUDLOW S/S

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/17/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-17	
P.A. #			

N:\PROJECTS\45700\Drawings\Sheet\Drawings\XS-17\98-17-2008 16110 16110 16110



Greater Springfield Reliability Project  
East Springfield Junction to Fairmont Substation in the Town of Chicopee  
Transmission Rights-of-Way  
Typical Cross Section XS-18

The existing line structures will be removed and one set of new 115-kV double circuit monopole structures and two sets of new 115-kV single circuit monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)

(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission structures looking north from Woodcrest Drive, north of East Springfield Junction.

Proposed electric transmission structures looking north from Woodcrest Drive, north of East Springfield Junction.

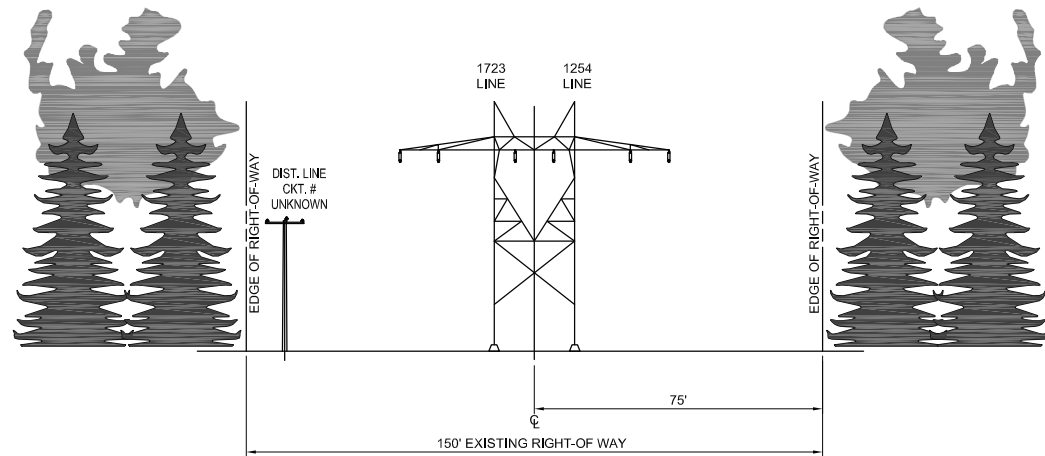
*NOTE: See Drawing XS-18 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

**EXISTING LAYOUT**  
EAST SPRINGFIELD JCT.  
TO  
FAIRMONT S/S

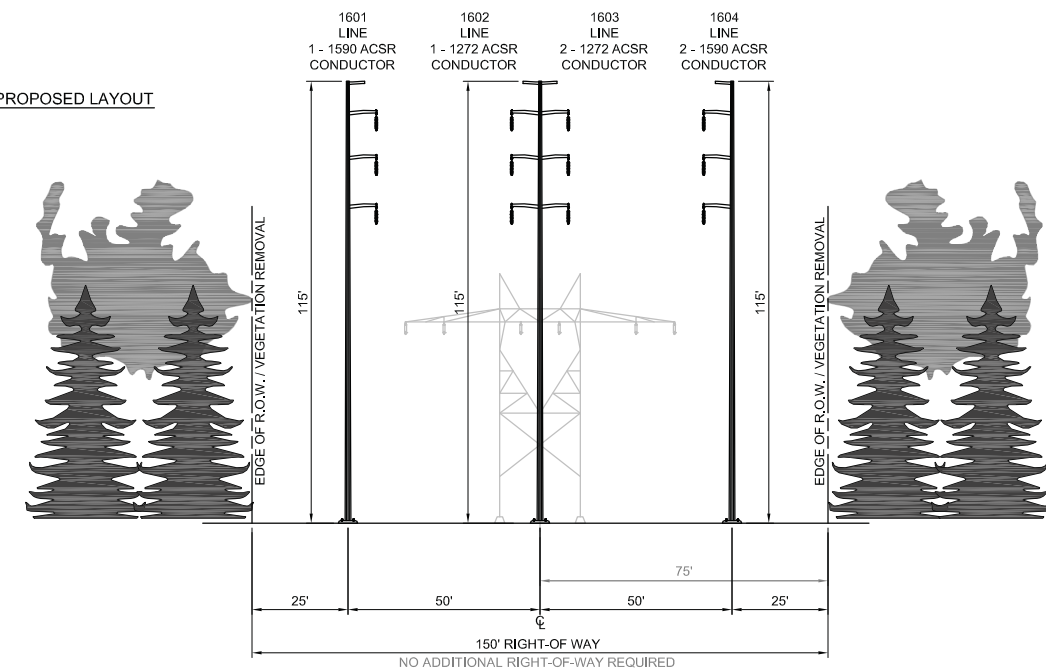
1.7 MILES

EXISTING  
RIGHT-OF-WAY  
150'

LOOKING  
NORTH



**PROPOSED LAYOUT**



**NOTES:**

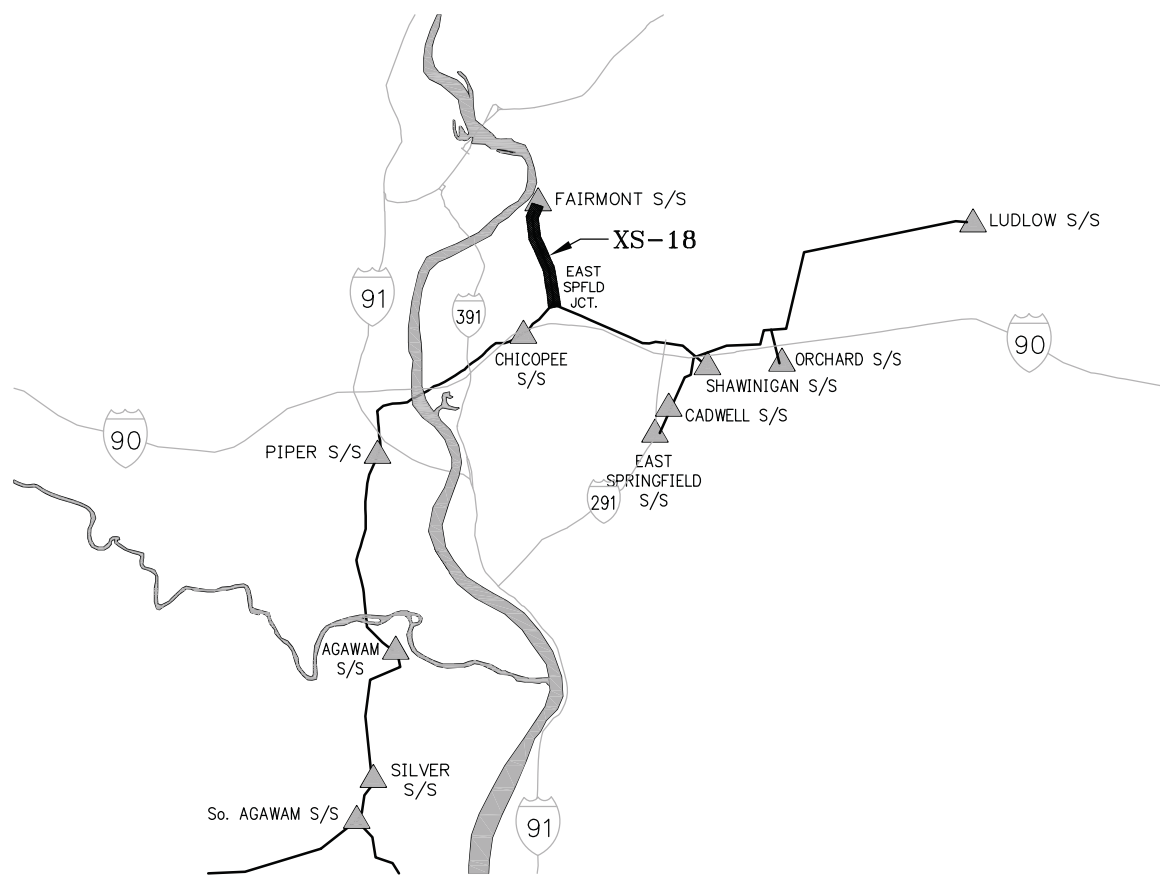
1. REMOVE EXISTING LATTICE STRUCTURES AND EXISTING OVERHEAD DISTRIBUTION LINES IN CORRIDOR.
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
EAST SPRINGFIELD JCT. TO FAIRMONT S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. <b>XS-18</b>	
P.A. #			



KEY MAP  
NOT TO SCALE



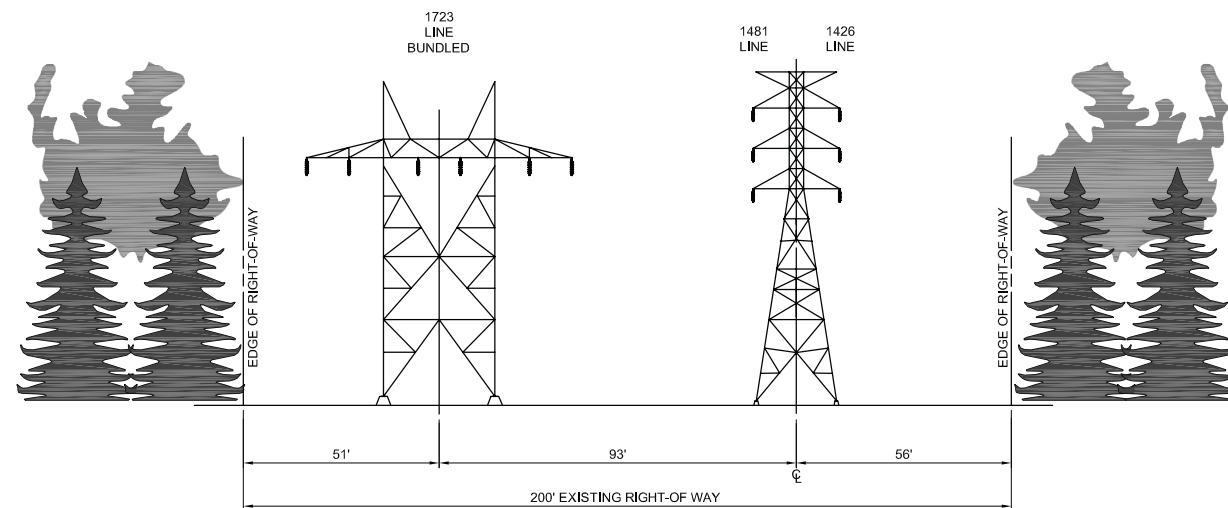


EXISTING LAYOUT  
CADWELL S/S  
TO  
SHAWINIGAN S/S / EXIT 6 JCT.

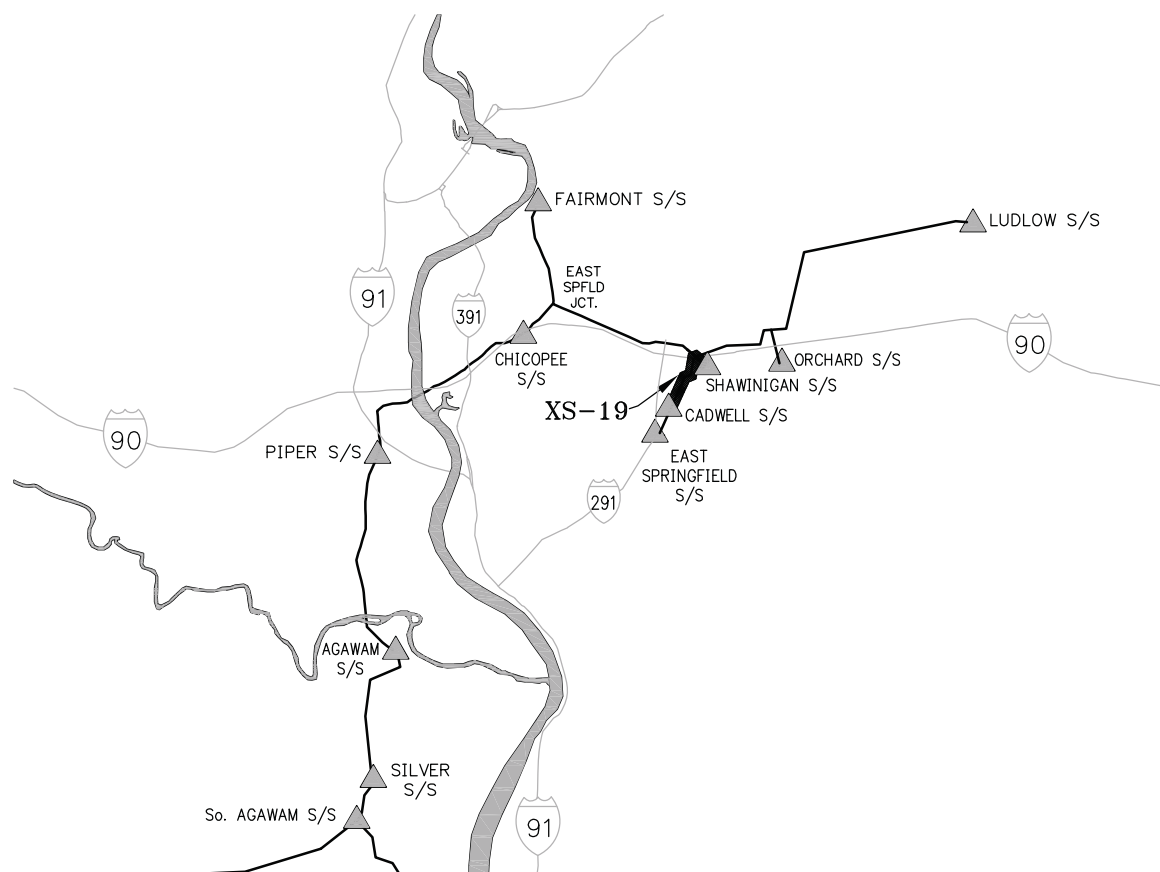
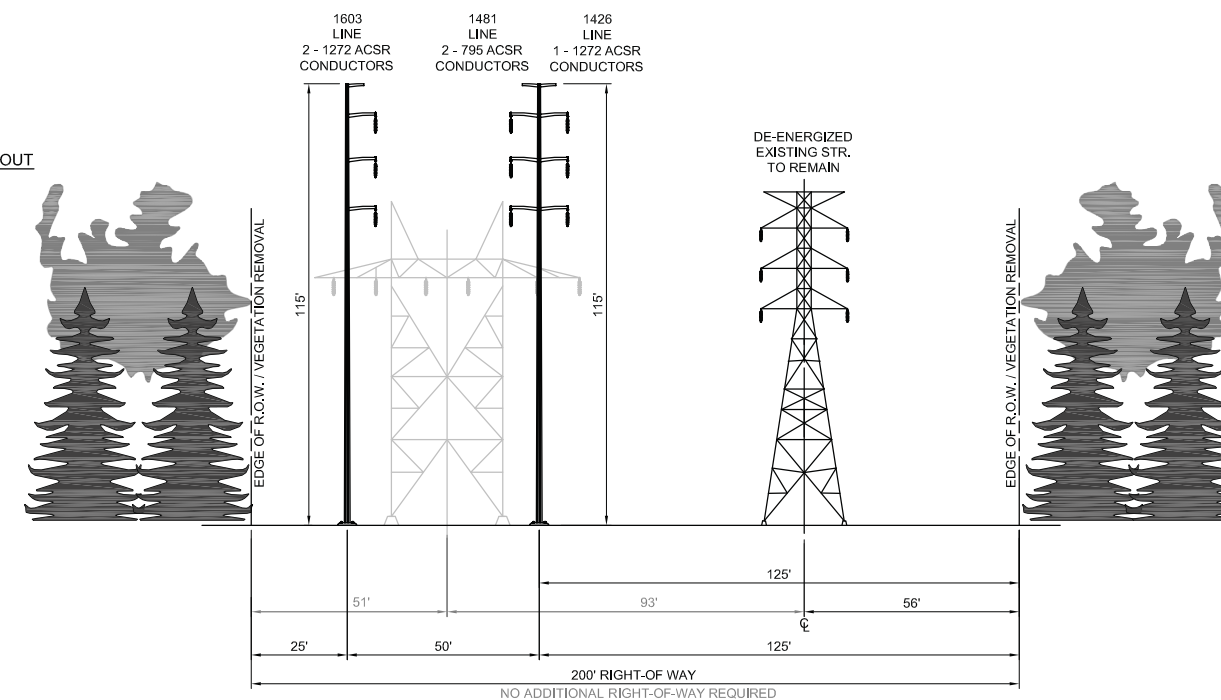
0.9 / 0.8 MILES

EXISTING  
RIGHT-OF-WAY  
200'

LOOKING  
NORTH



PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE



PRELIMINARY -  
SUBJECT TO CHANGE



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
CADWELL S/S TO SHAWINIGAN S/S / EXIT 6 JCT.**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. <b>XS-19</b>	
P.A. #			

NOTES:

1. REMOVE EXISTING LATTICE STRUCTURES IN CORRIDOR
2. STRUCTURE HEIGHTS WERE DETERMINED FROM TYPICAL EXPECTED SPANS. TOWER HEIGHTS ARE SUBJECT TO CHANGE WITH THE COMPLETION OF FINAL DESIGN.
3. EXISTING 1481/1426 LATTICE STRUCTURE TO BE DE-ENERGIZED AND REMAIN IN PLACE.

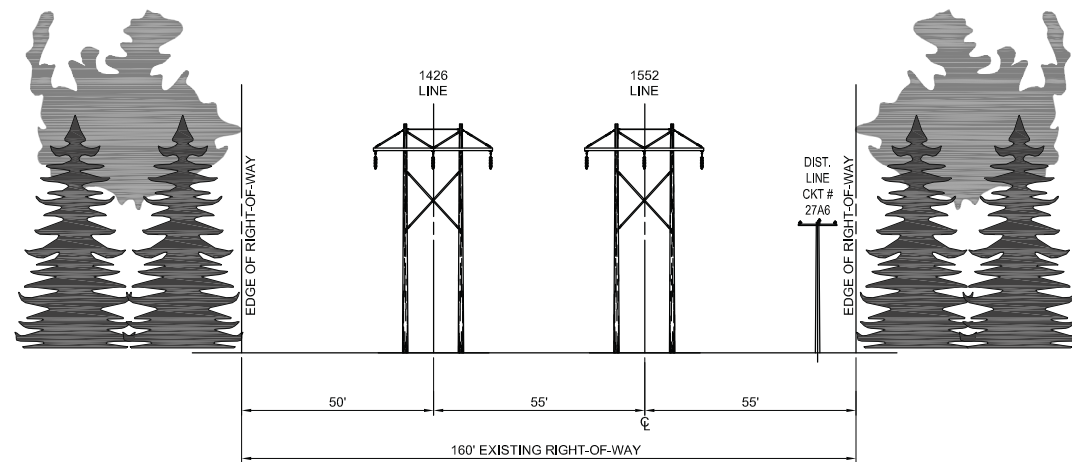
**EXISTING LAYOUT**

ORCHARD S/S  
TO  
ORCHARD JCT.

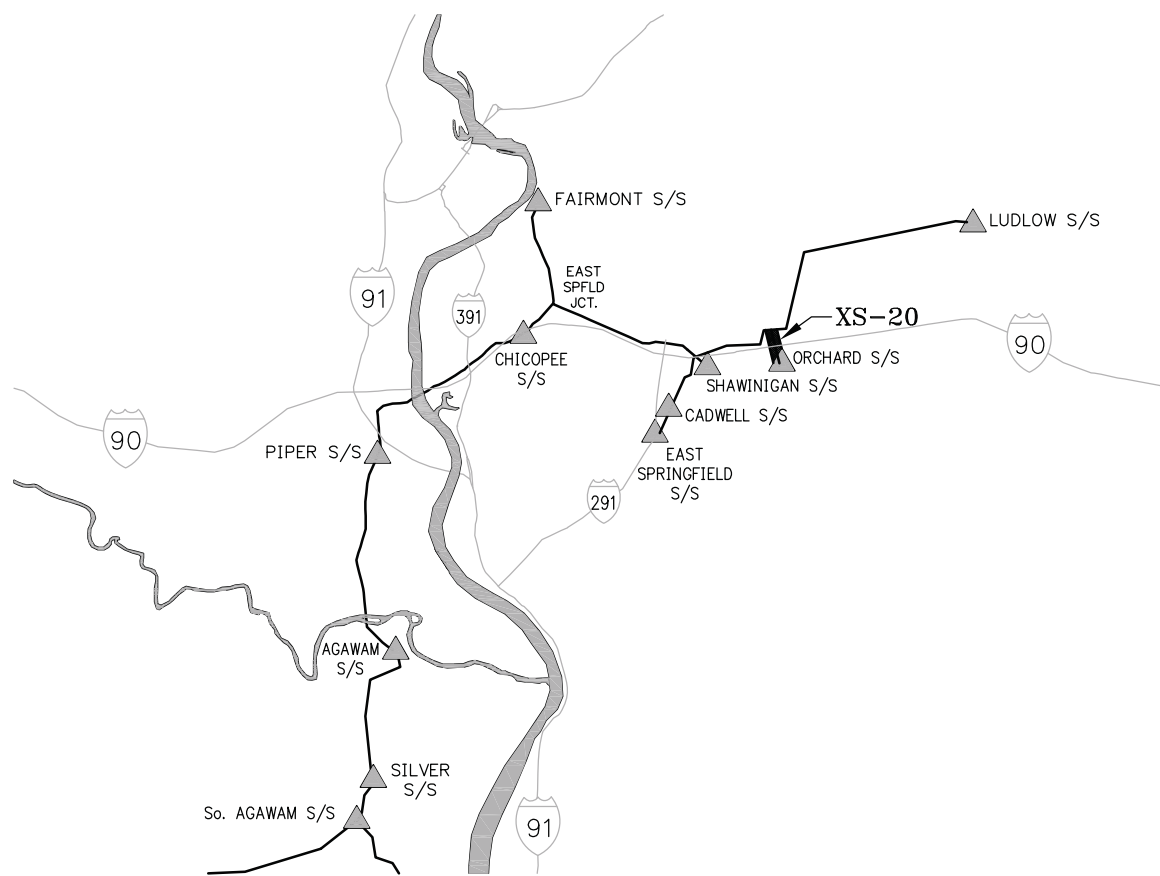
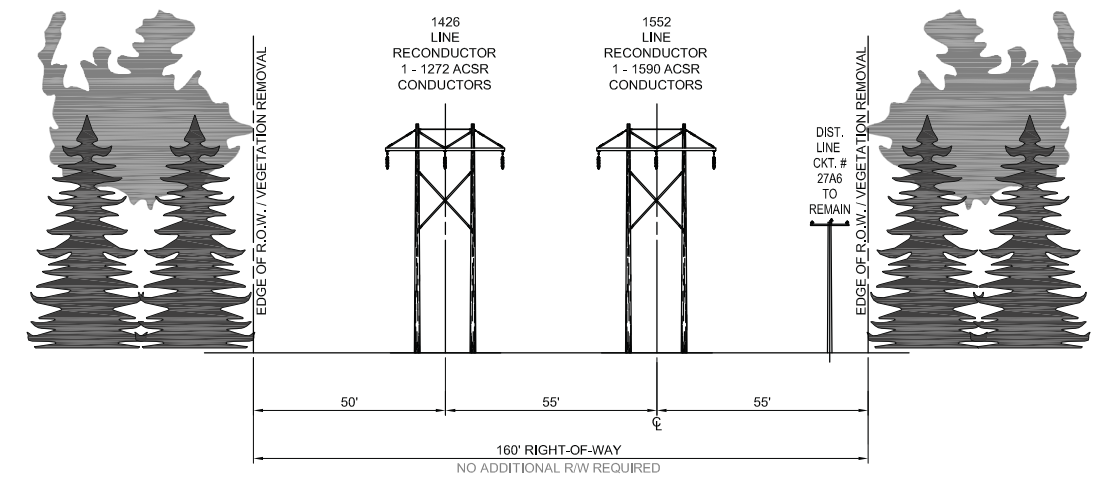
0.7 MILES

EXISTING  
RIGHT-OF-WAY  
160' MIN.

LOOKING  
NORTH



**PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE **GREATER SPRINGFIELD RELIABILITY PROJECT  
PROPOSED CROSS SECTIONS  
ORCHARD S/S TO ORCHARD JCT.**

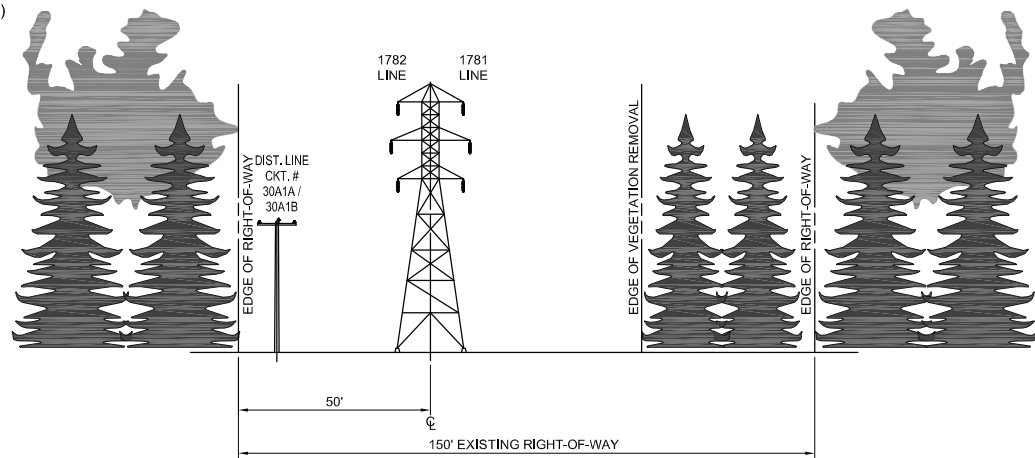
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-20	
P.A. #			

**NOTES:**

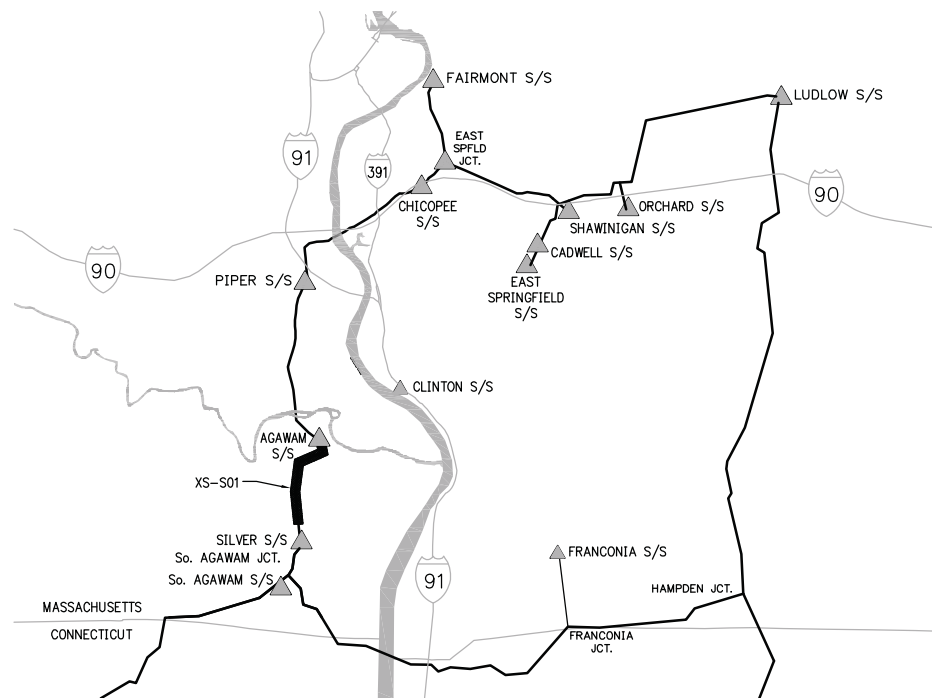
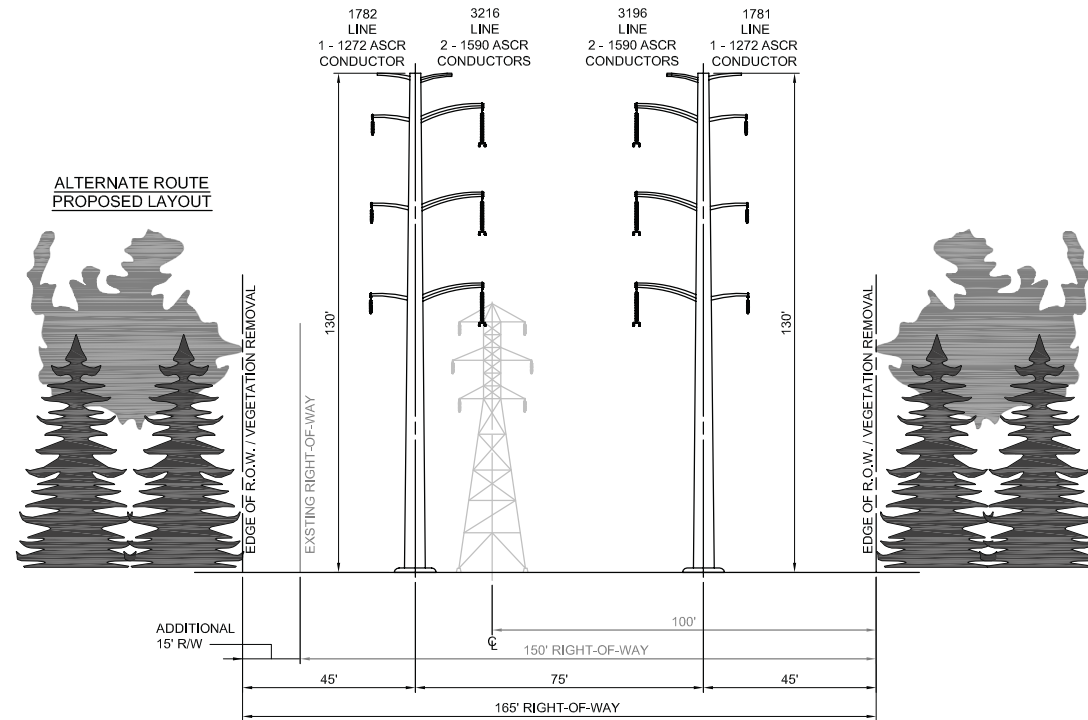
1. RECONDUCTOR EXISTING WOOD H-STRUCTURES IN CORRIDOR.
2. DISTRIBUTION BEGINS AT ORCHARD S/S AND CONTINUES NORTH FOR 0.2 MILES.
3. DISTRIBUTION LINES MAY NEED TO BE RELOCATED TO THE EDGE OF RW TO ENSURE CLEARANCE TO TRANSMISSION CONDUCTORS.

**Noticed-Alternative Southern Route in Massachusetts. Cross-Sections XS-S05 and XS-S07 are applicable only in Connecticut.**

**EXISTING LAYOUT**  
 EXISTING STR 2286  
 (0.5 MILES NORTH OF SILVER S/S)  
 TO  
 AGAWAM S/S  
  
 1.9 MILES  
 EXISTING  
 RIGHT-OF-WAY  
 150'  
 LOOKING  
 NORTH



**ALTERNATE ROUTE  
 PROPOSED LAYOUT**



KEY MAP  
 NOT TO SCALE

PRELIMINARY -  
 SUBJECT TO CHANGE



TITLE  
 GREATER SPRINGFIELD RELIABILITY PROJECT  
 ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
 EXISTING STR. 2286 TO AGAWAM S/S

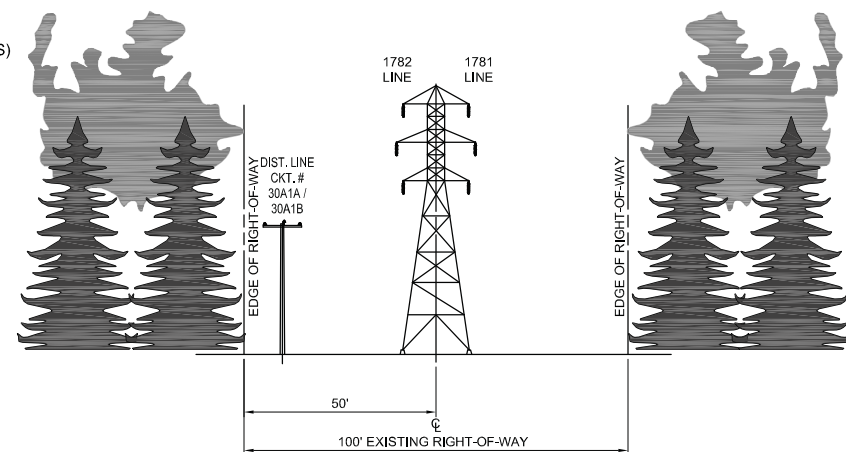
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 10/13/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S01	
P.A. #			

R:\MS200\45700\0401\Drawn Section Drawing\02P - Franconia, CT.dwg (05-20) 10-13-2008 13:50 BMM BMM

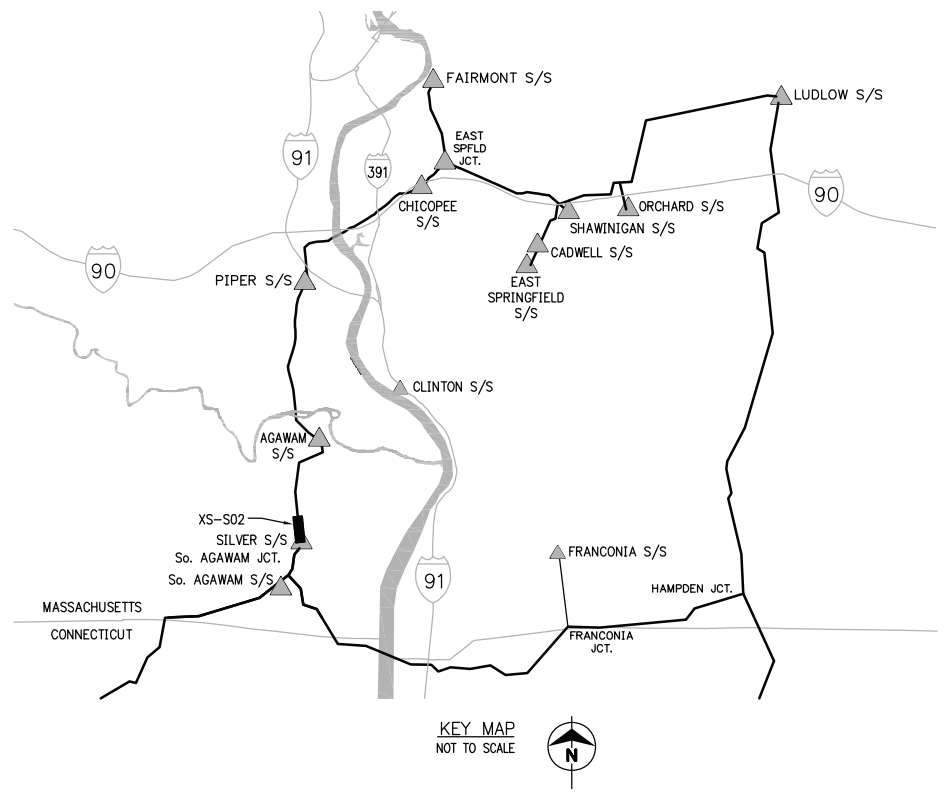
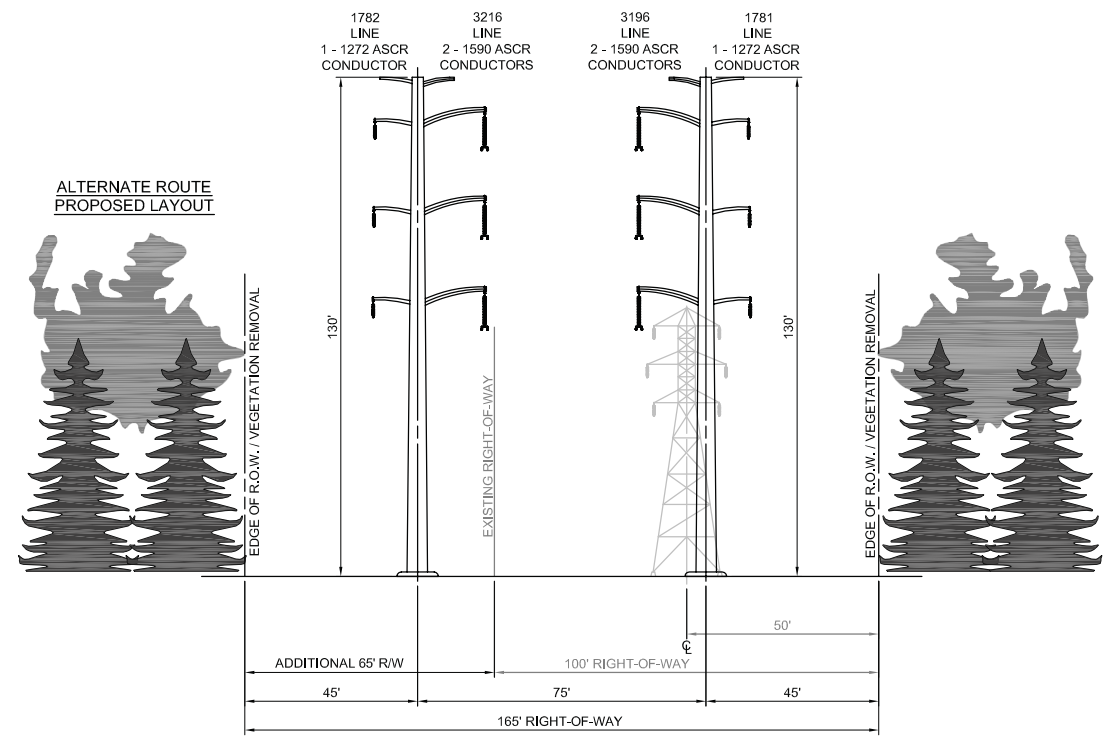


**EXISTING LAYOUT**  
SILVER S/S  
TO  
EXISTING STR 2286  
(0.5 MILES NORTH OF SILVER S/S)

0.5 MILES  
EXISTING  
RIGHT-OF-WAY  
100'  
LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



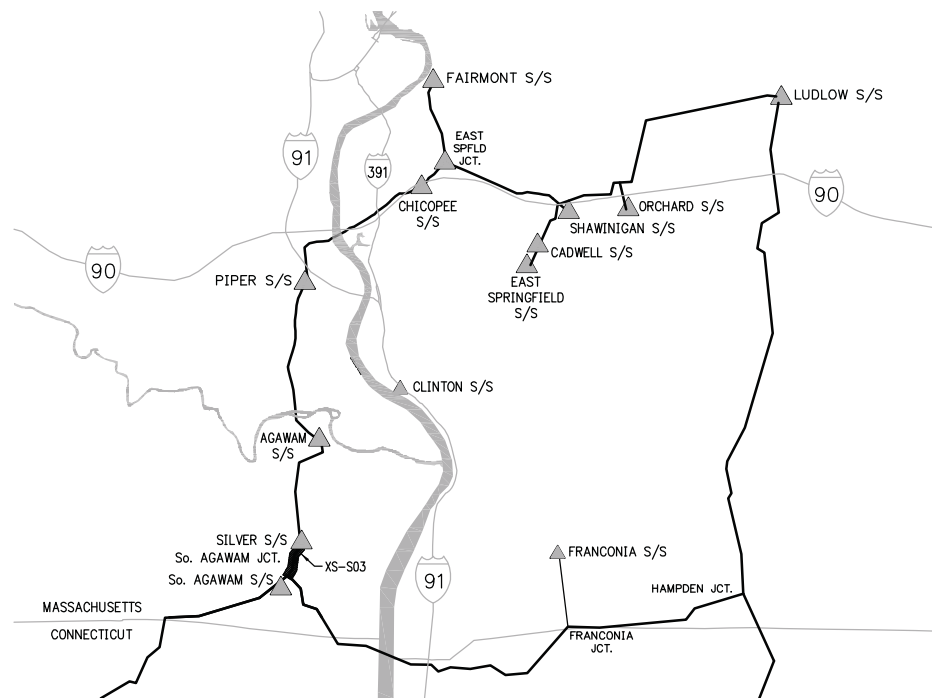
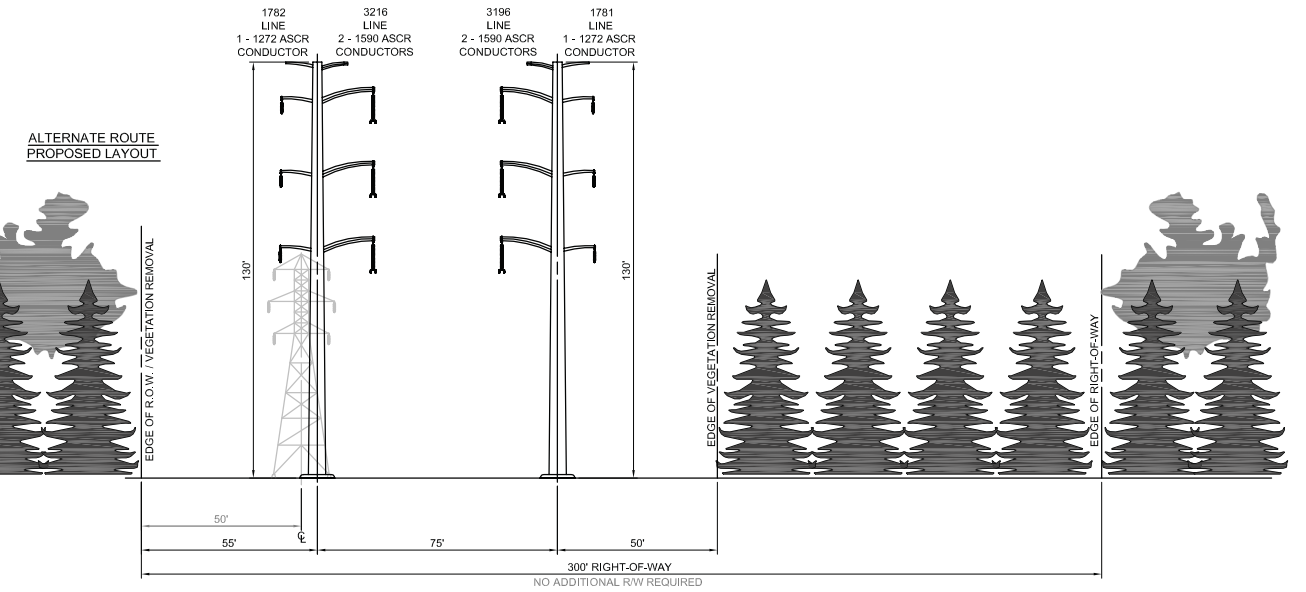
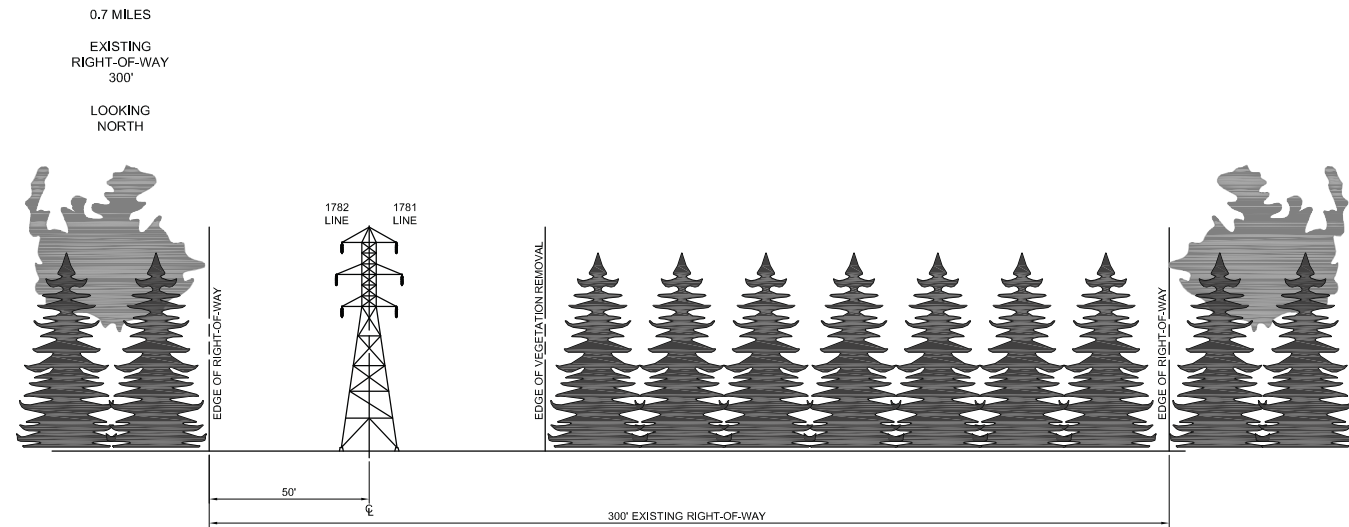
**PRELIMINARY -  
SUBJECT TO CHANGE**



<b>TITLE</b> GREATER SPRINGFIELD RELIABILITY PROJECT ALTERNATE ROUTE PROPOSED CROSS SECTIONS SILVER S/S TO EXISTING STR. 2286			
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 10/13/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S02	
P.A. #			

R:\MS20\45700\040\Drawings\Sheet\Drawings\XS-S02.dwg (S-202) 10-13-2008 14:04 BMM

**EXISTING LAYOUT**  
SOUTH AGAWAM JCT.  
TO  
SILVER S/S



**KEY MAP**  
NOT TO SCALE

**PRELIMINARY -  
SUBJECT TO CHANGE**



<b>TITLE</b> GREATER SPRINGFIELD RELIABILITY PROJECT ALTERNATE ROUTE PROPOSED CROSS SECTIONS SOUTH AGAWAM JCT. TO SILVER S/S			
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S03	
P.A. #			

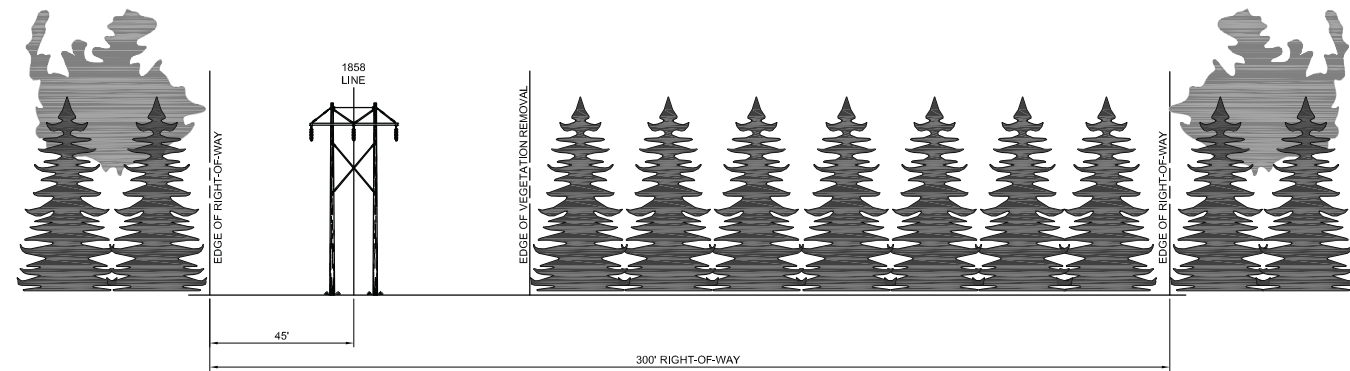
R:\NESC0\45700\045700\Drawings\CDP\3-Rev\CDP-3-Rev\CDP-3-Rev.dwg (25-03) 09-15-2008 15:08 MAM BMM

EXISTING LAYOUT  
SOUTH AGAWAM JCT.  
TO  
CT/MA BORDER

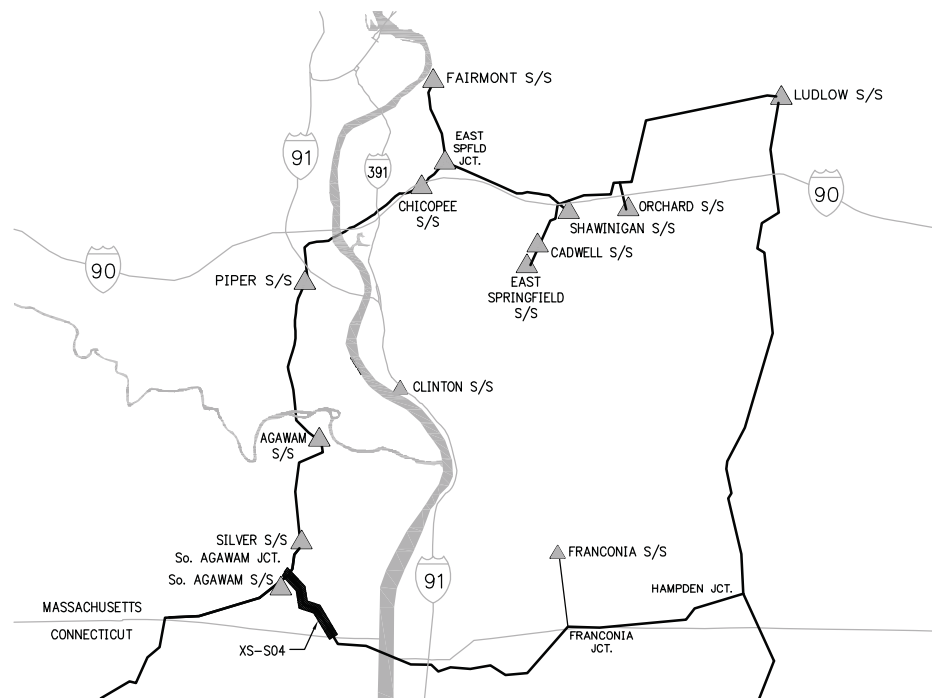
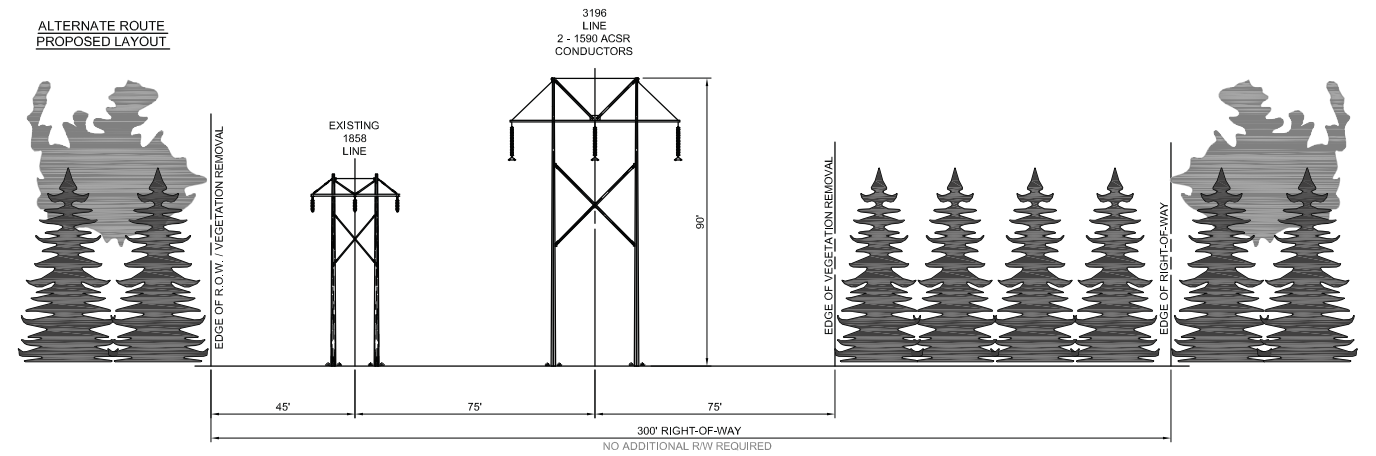
1.8 MILES

EXISTING  
RIGHT-OF-WAY  
300'

LOOKING  
EAST & SOUTH



ALTERNATE ROUTE  
PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE



PRELIMINARY -  
SUBJECT TO CHANGE



TITLE  
GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
SOUTH AGAWAM JCT. TO CT/MA BORDER

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S04	
P.A. #			





Greater Springfield Reliability Project  
MA/CT Border/Franconia Junction to Hampden Junction in the Town of East Longmeadow  
Transmission Rights-of-Way  
Typical Cross Section XS-S08

The existing structures will remain and new 345-kV horizontal structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



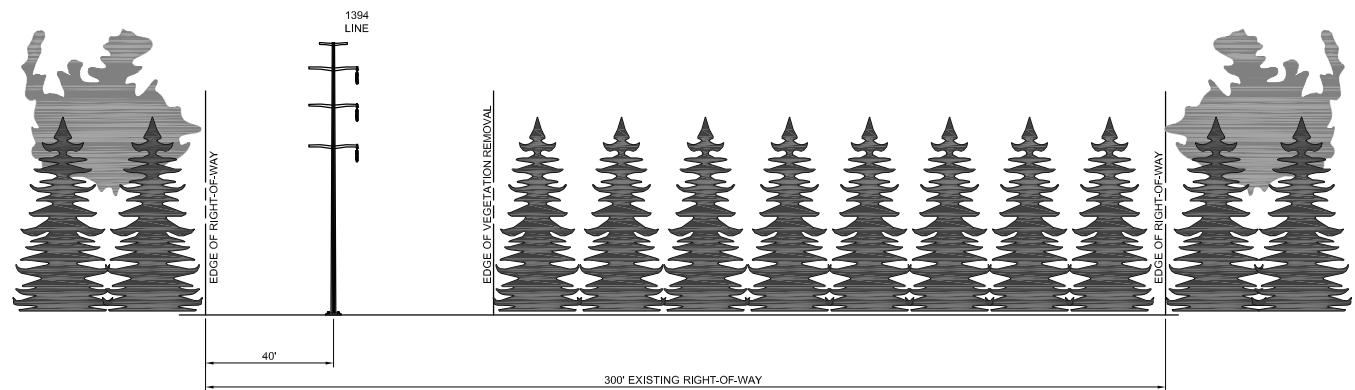
Existing electric transmission line structures looking south from Country Club Drive, west of Hampden Junction.

Proposed electric transmission line structures looking south from Country Club Drive, west of Hampden Junction.

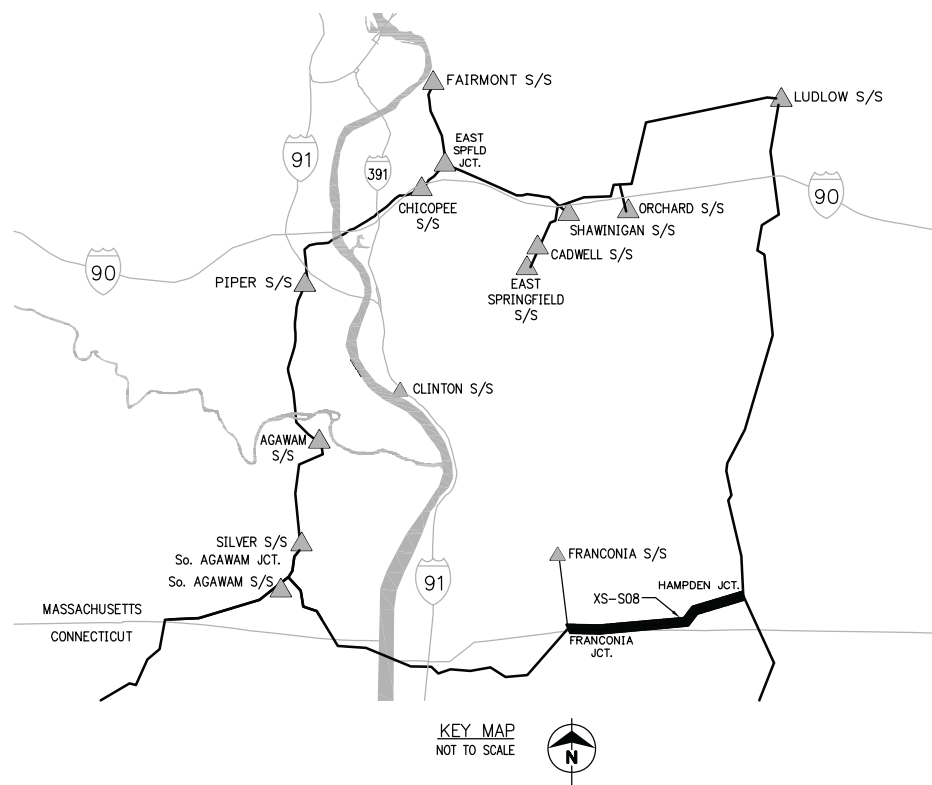
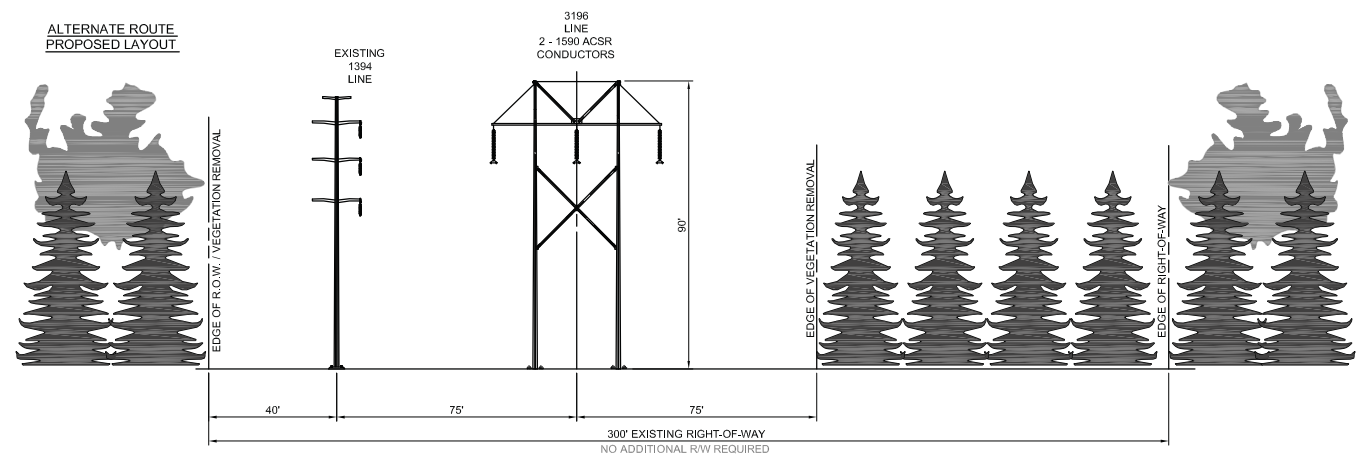
*NOTE: See Drawing XS-S08 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

**EXISTING LAYOUT**  
MA/CT BORDER/  
FRANCONIA JCT.  
TO  
HAMPDEN JCT.

4.0 MILES  
EXISTING  
RIGHT-OF-WAY  
300'  
LOOKING  
EAST



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



**PRELIMINARY -  
SUBJECT TO CHANGE**



**TITLE**  
GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
MA/CT BORDER/Franconia Jct. TO Hampden Jct.

BY	J. LIGHTNER	CHKD	P.M. WILLIAMS	APP		APP	
DATE	9/15/08	DATE		DATE		DATE	
SCALE	NONE	MICROFILM DATE		DWG. NO. XS-S08			
P.A. #							



Greater Springfield Reliability Project  
Hampden Junction to Ludlow Substation in the Town of Ludlow  
Transmission Rights-of-Way  
Typical Cross Section XS-S09

The existing line structures will remain and new 345-kV vertical monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking southwest from Chapin Street, south of Ludlow Substation.

Proposed electric transmission line structures looking southwest from Chapin Street, south of Ludlow Substation.

*NOTE: See Drawing XS-S09 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*





Greater Springfield Reliability Project  
Hampden Junction to Ludlow Substation in the Town of Wilbraham  
Transmission Rights-of-Way  
Typical Cross Section XS-S09

The existing line structures will remain and new 345-kV vertical monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking northwest from Manchonis Road, South of Ludlow Substation.

Proposed electric transmission line structures looking northwest from Manchonis Road, South of Ludlow Substation.

*NOTE: See Drawing XS-S09 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

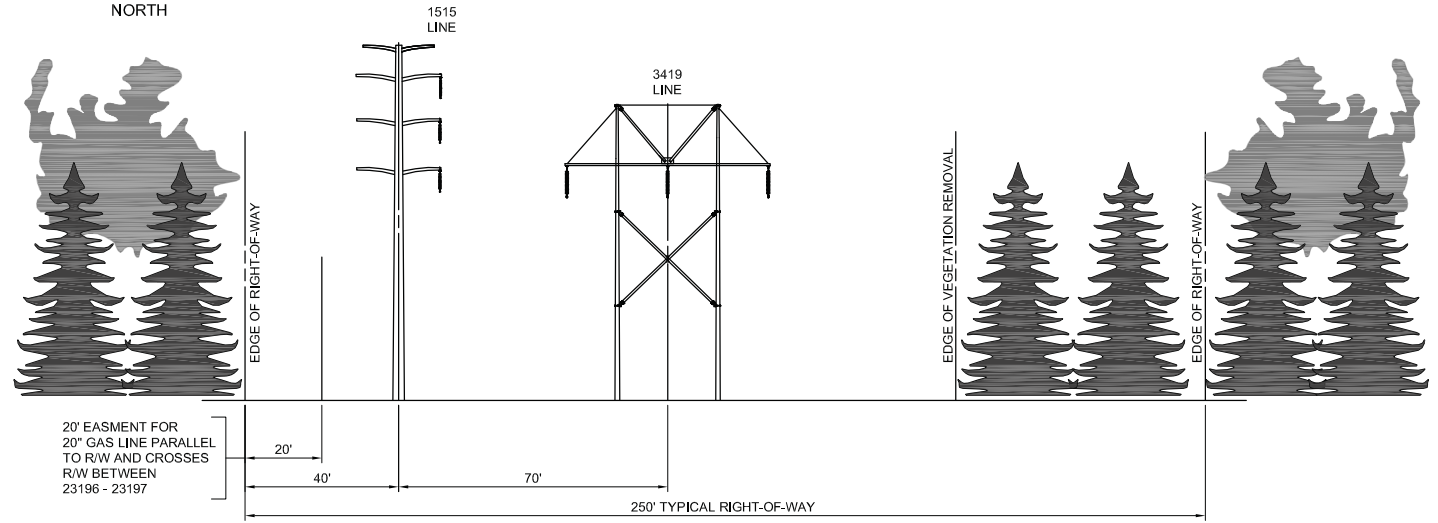
**EXISTING LAYOUT**

HAMPDEN JCT.  
TO  
LUDLOW S/S

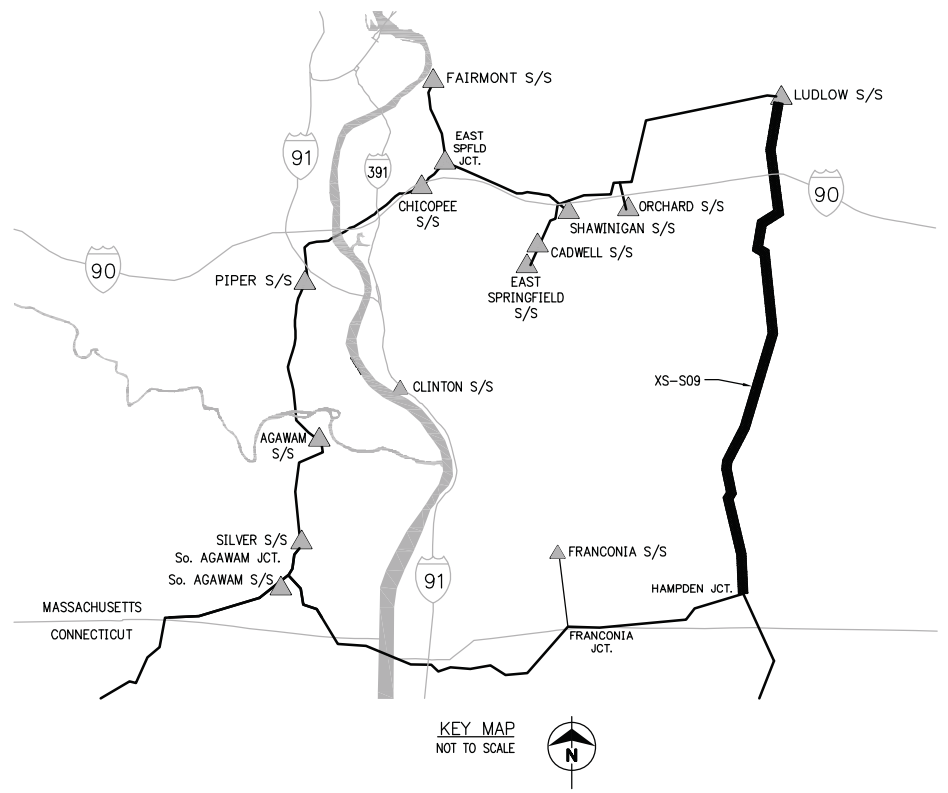
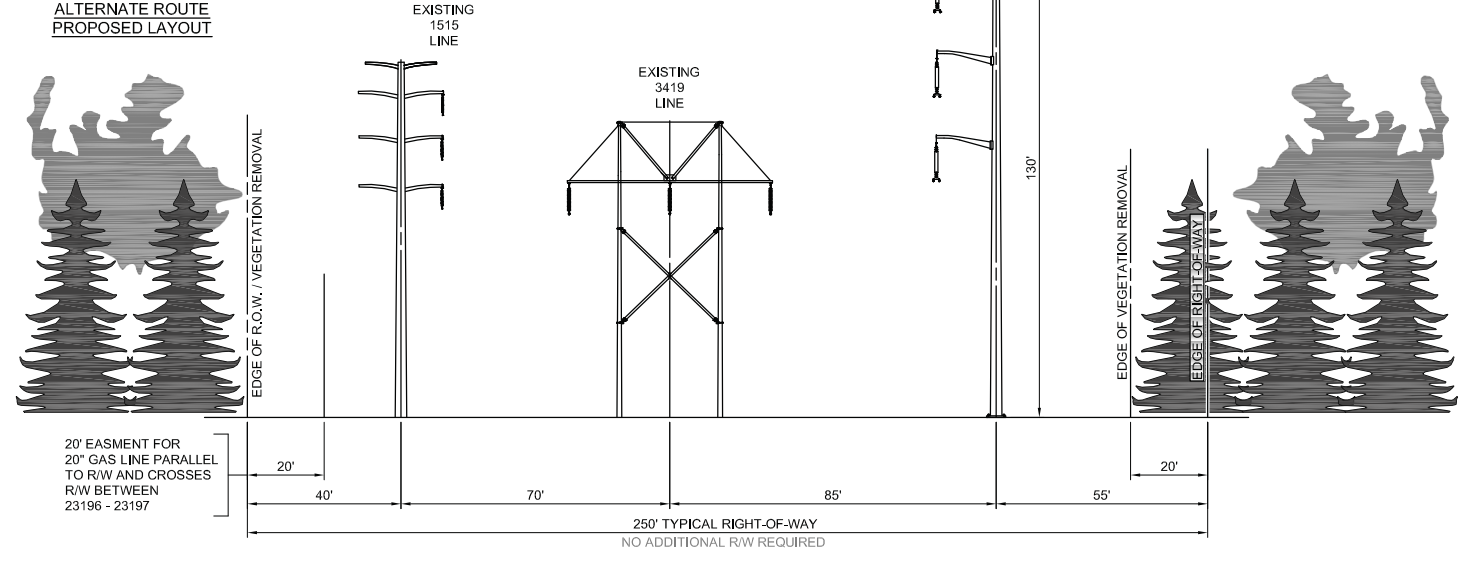
10.8 MILES

EXISTING  
RIGHT-OF-WAY  
250'

LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
HAMPDEN JCT. TO LUDLOW S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S09	
P.A. #			

R:\NCS09\45700\0401\Drawn Section Drawing\CS-09 (S-09) 08-15-2008 10:10 AM BMM



Greater Springfield Reliability Project  
Hampden Junction to Ludlow Substation in the Town of Hampden  
Transmission Rights-of-Way  
Typical Cross Section XS-S09

The existing line structures will remain and new 345-kV vertical monopole structures would be installed.

(Existing Transmission Right-of-Way Configuration)



(Simulation of the Proposed Transmission Right-of-Way Configuration)



Existing electric transmission line structures looking north from East Longmeadow Street, north of Hampden Junction.

Proposed electric transmission line structures looking north from East Longmeadow Street, north of Hampden Junction.

*NOTE: See Drawing XS-S09 for a representation of the typical transmission structures, typical heights of the structures, and ROW width for this cross section.*

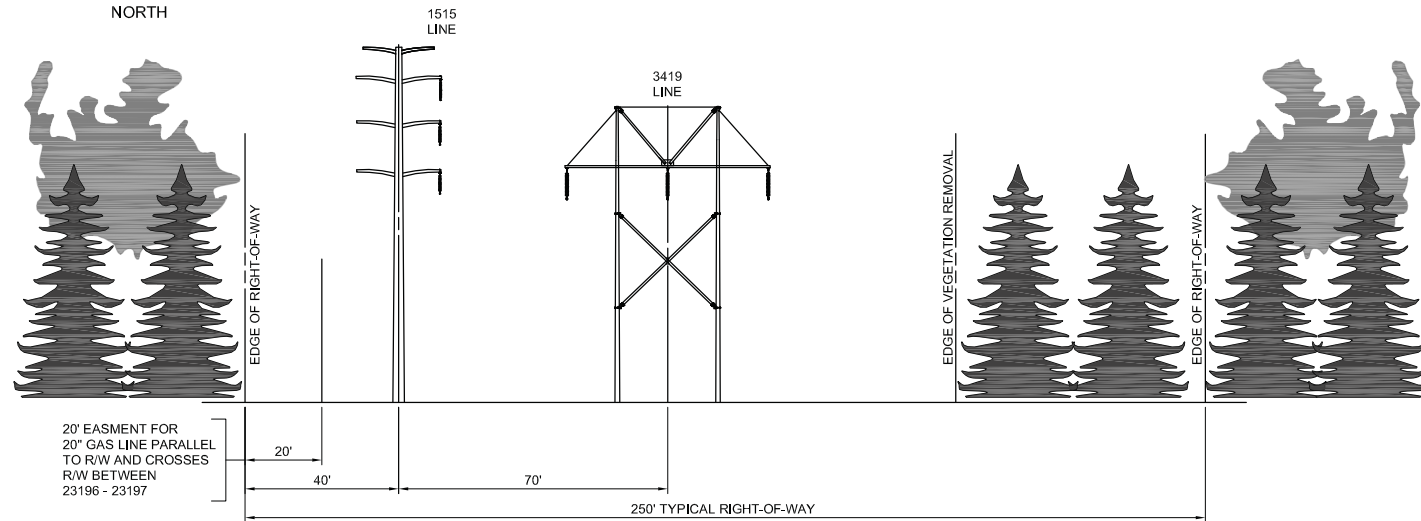
**EXISTING LAYOUT**

HAMPDEN JCT.  
TO  
LUDLOW S/S

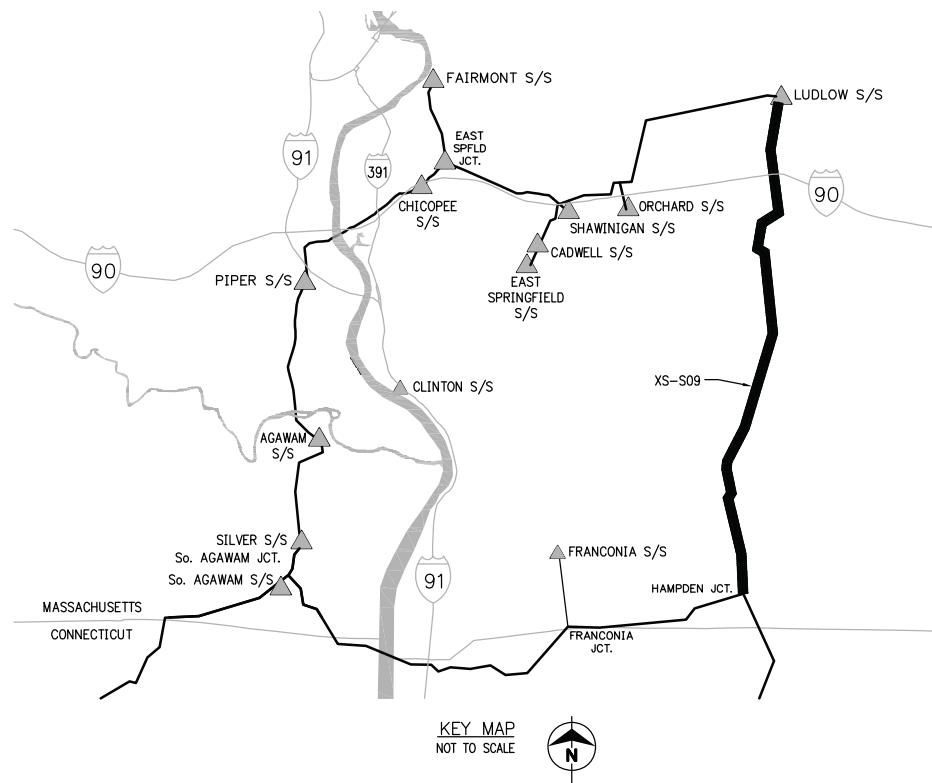
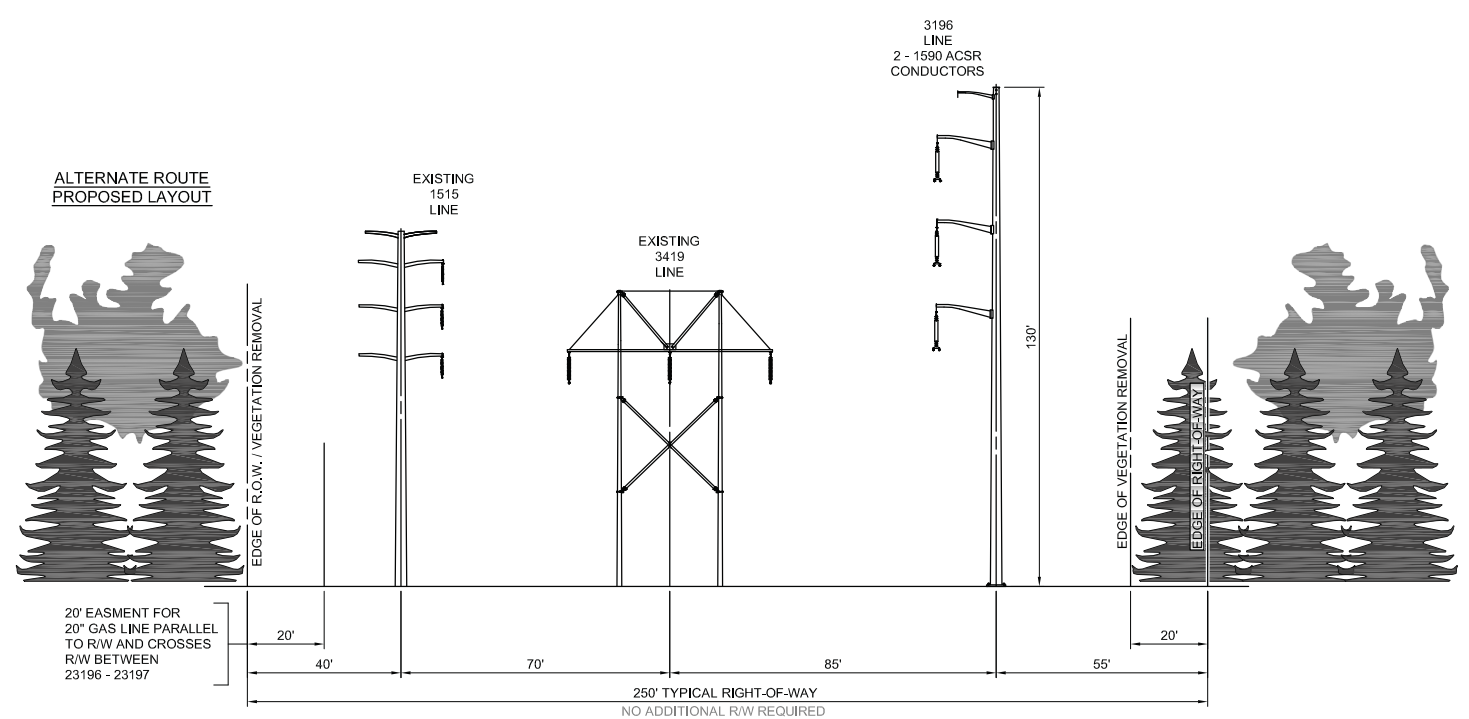
10.8 MILES

EXISTING  
RIGHT-OF-WAY  
250'

LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
HAMPDEN JCT. TO LUDLOW S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S09	
P.A. #			

N:\MS20\45700\04\01\02\01\Drawings\Sheet\Drawings\Sheet - Final\XS-S09.dwg (15-SEP-08) 08:15:2008 15:10 AM BMAD





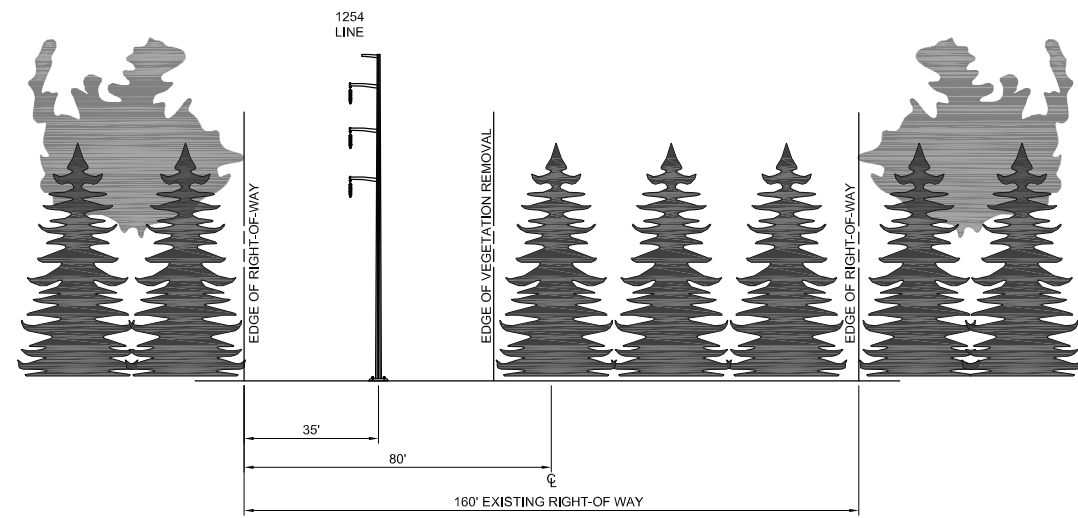


**EXISTING LAYOUT**  
 EXIT 6 JCT.  
 TO  
 SHAWINIGAN S/S

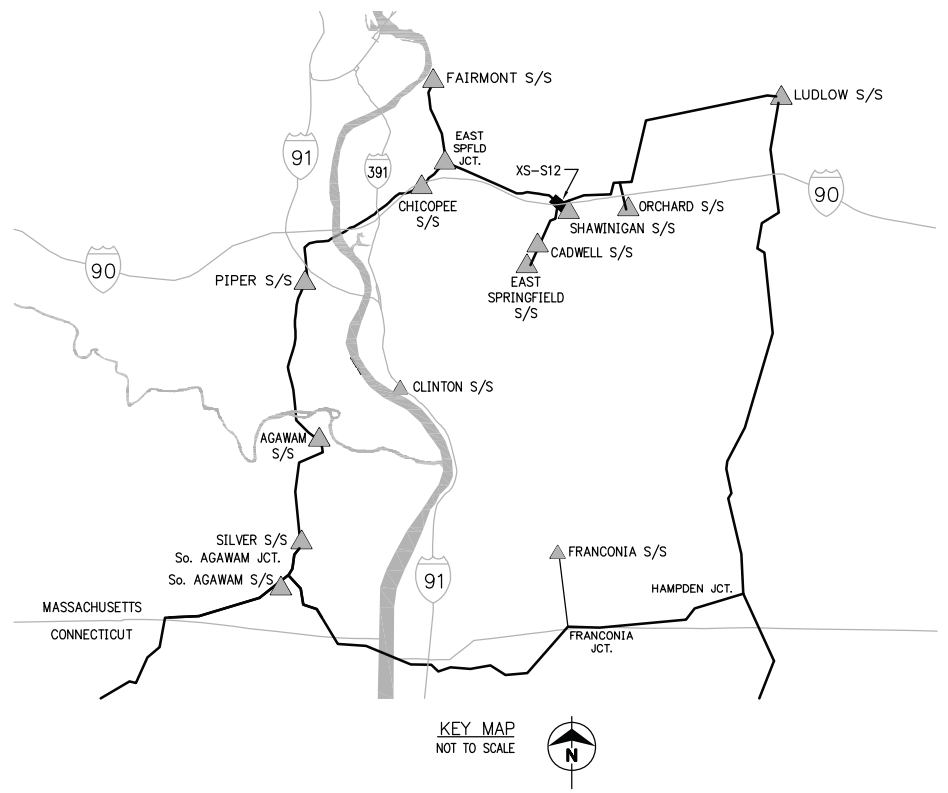
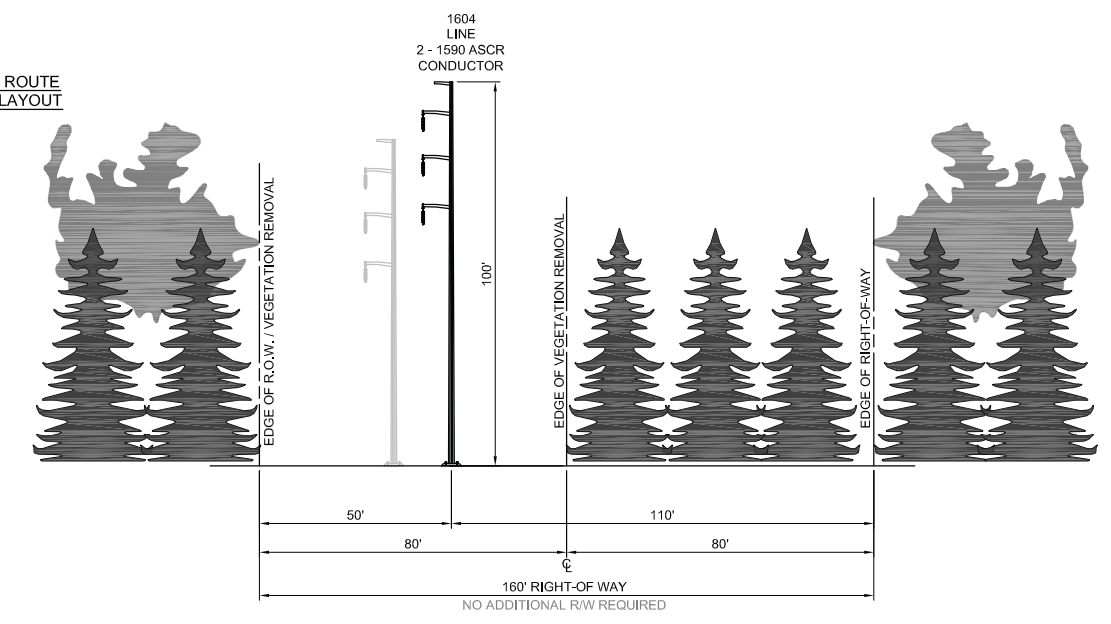
0.3 MILES

EXISTING  
 RIGHT-OF-WAY  
 160'

LOOKING  
 EAST



**ALTERNATE ROUTE  
 PROPOSED LAYOUT**



PRELIMINARY -  
 SUBJECT TO CHANGE



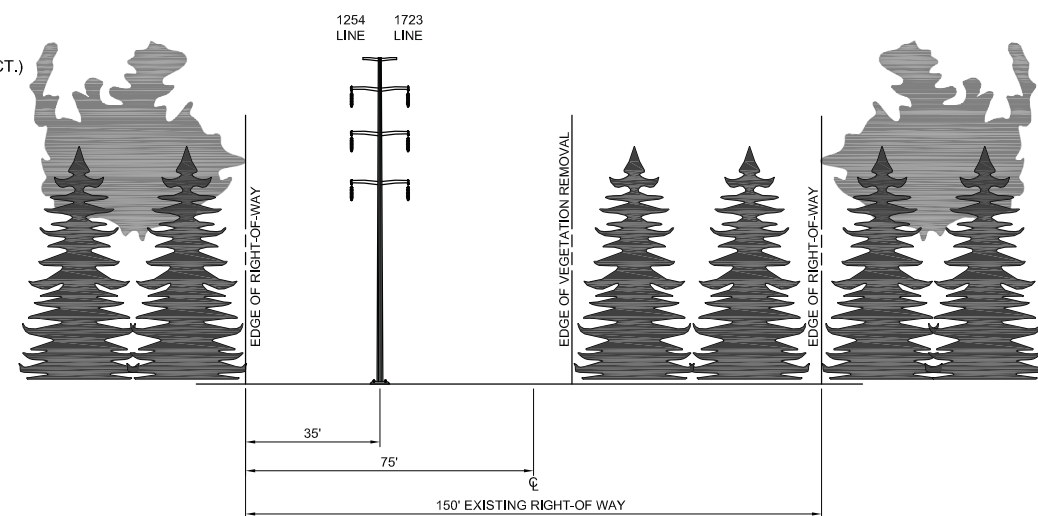
TITLE <b>GREATER SPRINGFIELD RELIABILITY PROJECT      ALTERNATE ROUTE PROPOSED CROSS SECTIONS      EXIT 6 JCT. TO SHAWINIGAN S/S</b>			
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S12	
P.A. #			

**EXISTING LAYOUT**  
EXISTING STR 49091  
(1.5 MILES EAST OF EAST SPRINGFIELD JCT.)  
TO  
EXIT 6 JCT.

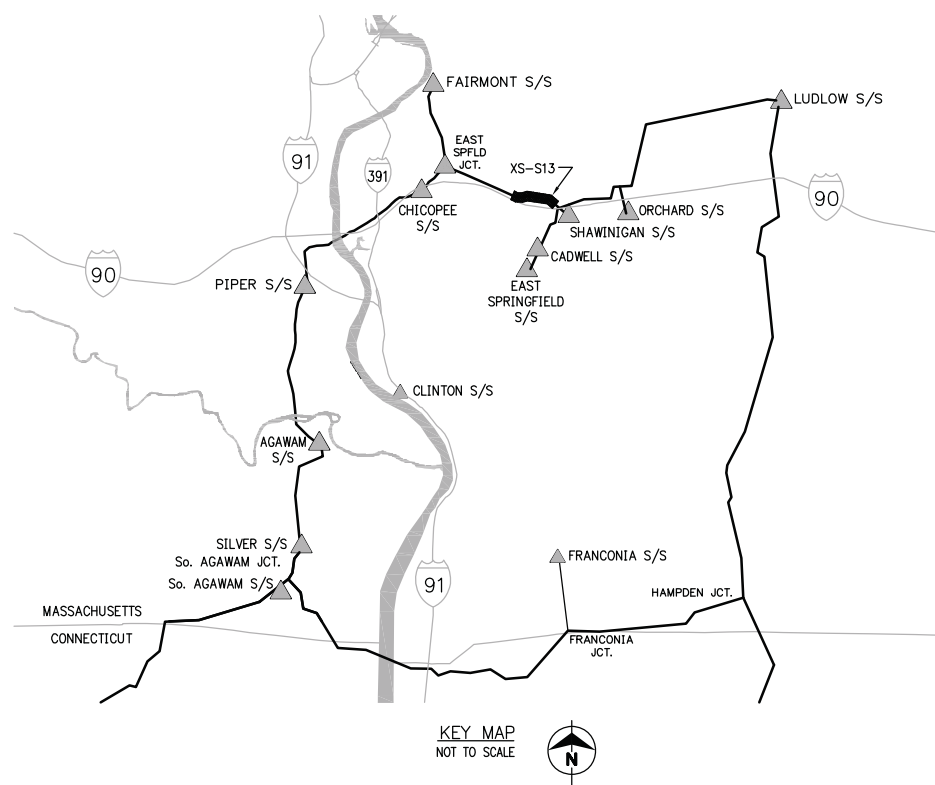
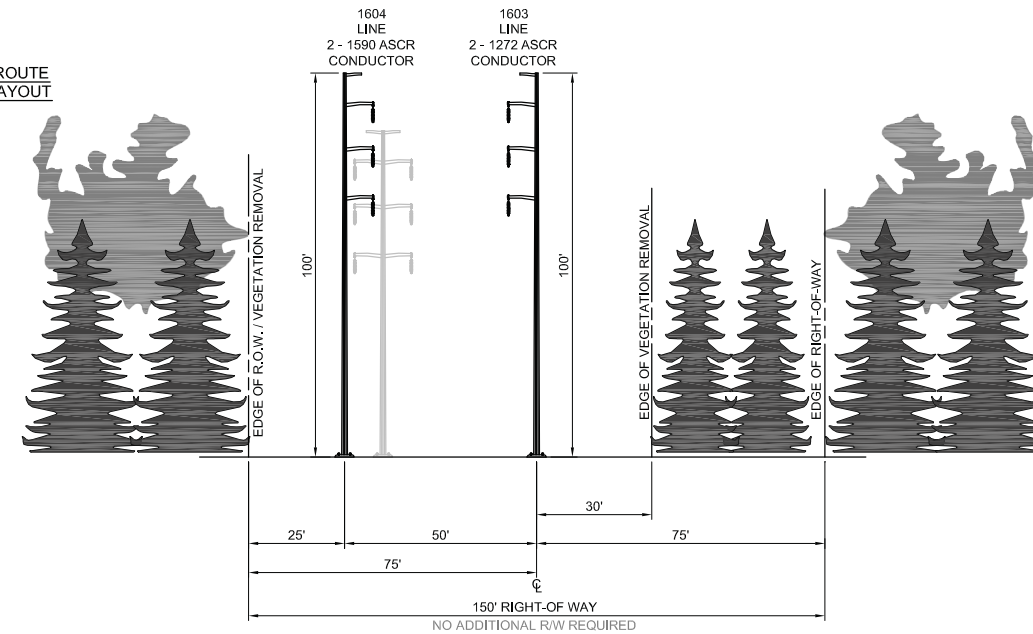
1.0 MILES

EXISTING  
RIGHT-OF-WAY  
150'

LOOKING  
EAST



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



PRELIMINARY -  
SUBJECT TO CHANGE



TITLE  
GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
EXISTING STR 49091 TO EXIT 6 JCT.

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S13	
P.A. #			

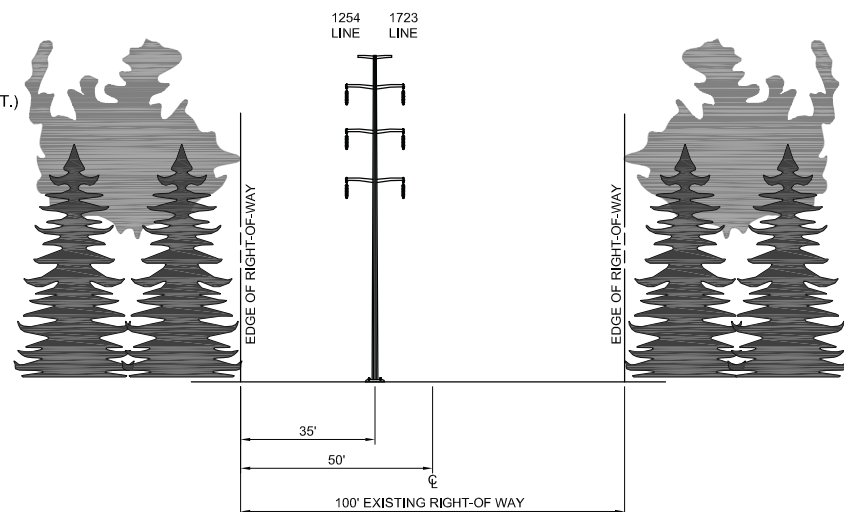


EXISTING LAYOUT  
EAST SPRINGFIELD JCT.  
TO  
EXISTING STR 49091  
(1.5 MILES EAST OF EAST SPRINGFIELD JCT.)

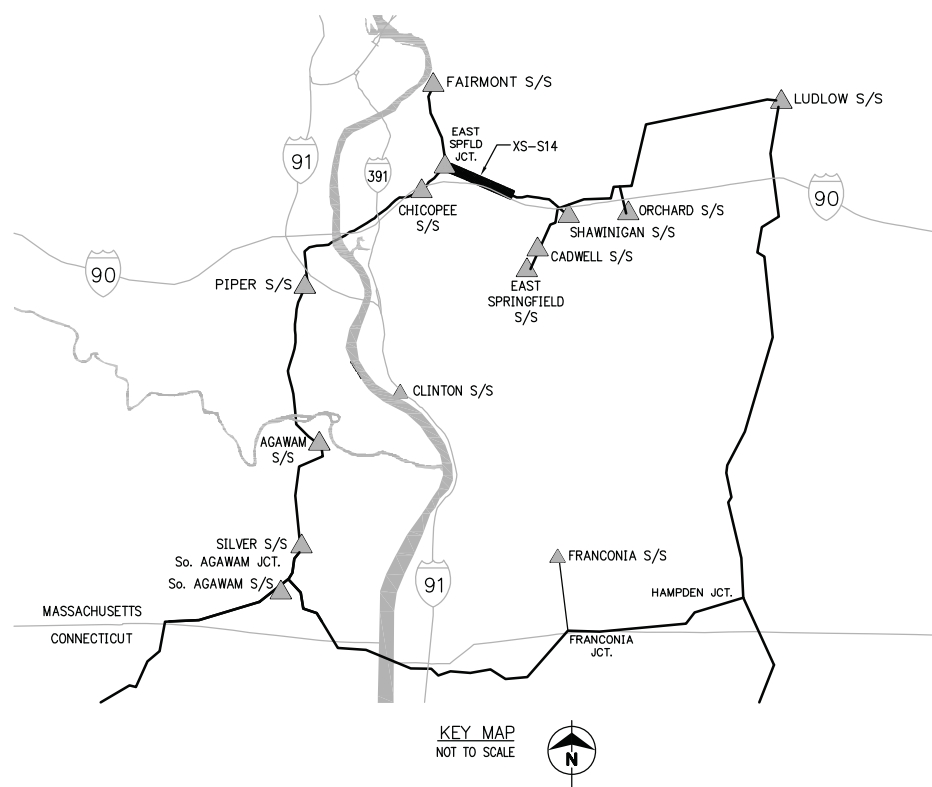
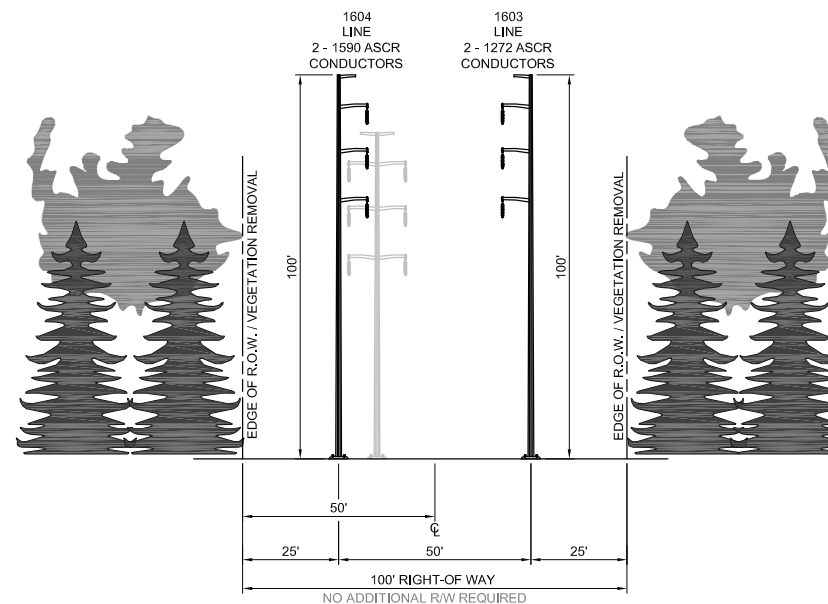
1.5 MILES

EXISTING  
RIGHT-OF-WAY  
100'

LOOKING  
EAST



ALTERNATE ROUTE  
PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
EAST SPRINGFIELD JCT. TO EXISTING STR 49091**

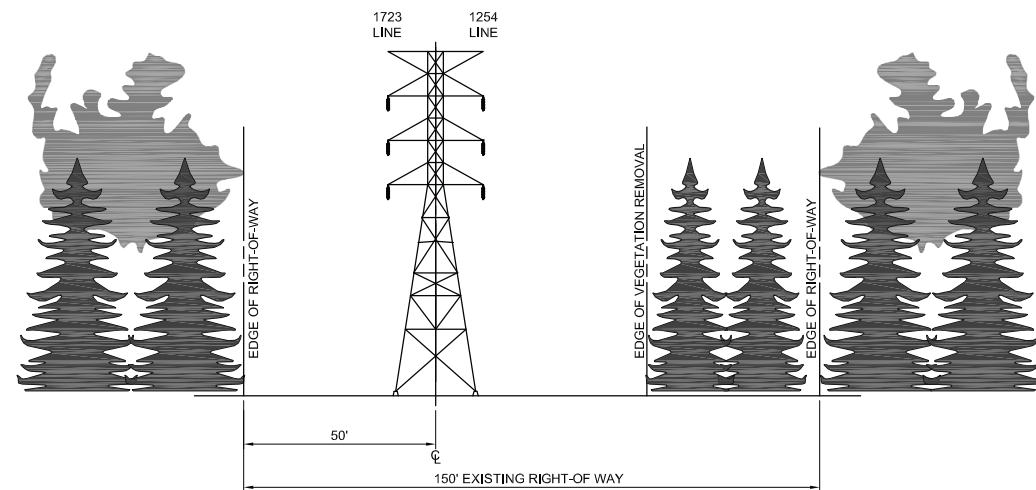
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S14	
P.A. #			

**EXISTING LAYOUT**  
CHICOPEE S/S TO EAST SPRINGFIELD JCT.

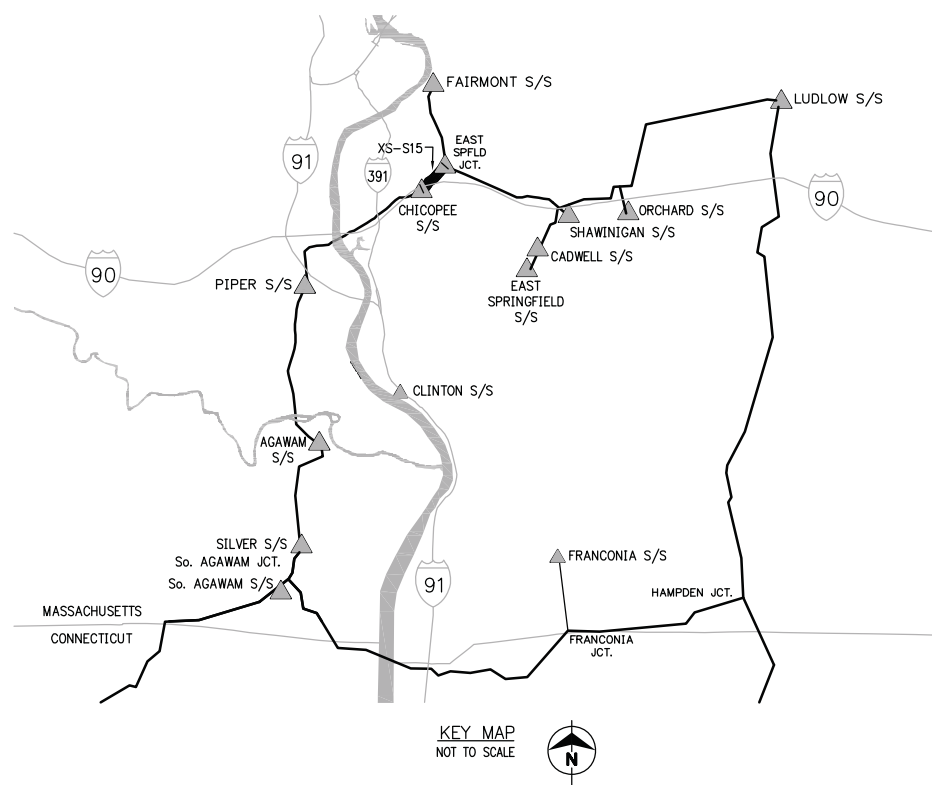
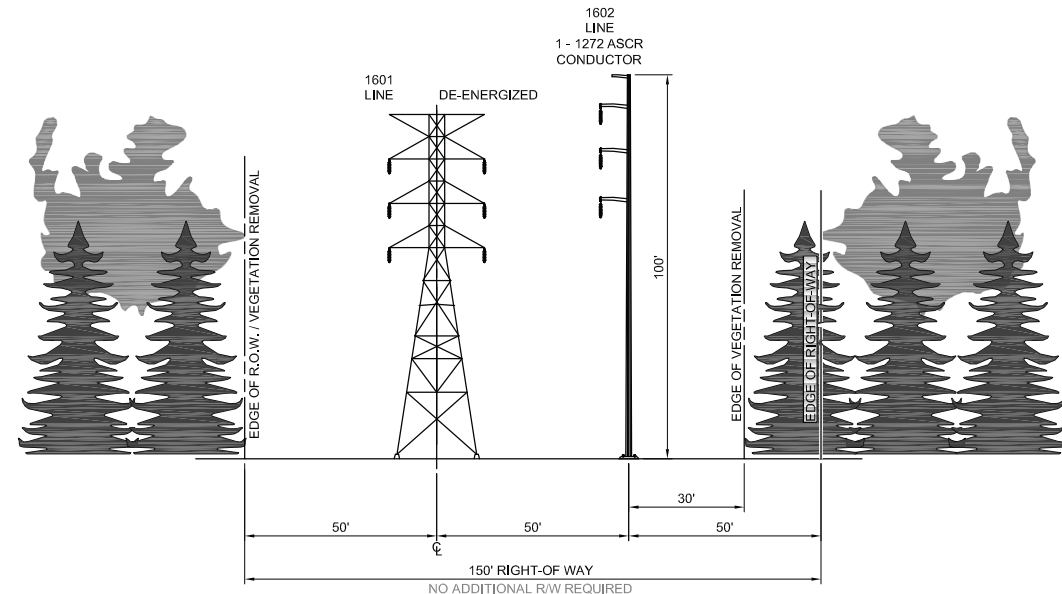
0.7 MILES

EXISTING RIGHT-OF-WAY 150'

LOOKING NORTH



**ALTERNATE ROUTE PROPOSED LAYOUT**



PRELIMINARY -  
SUBJECT TO CHANGE



**TITLE**  
GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
CHICOPEE S/S TO EAST SPRINGFIELD JCT

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S15	
P.A. #			



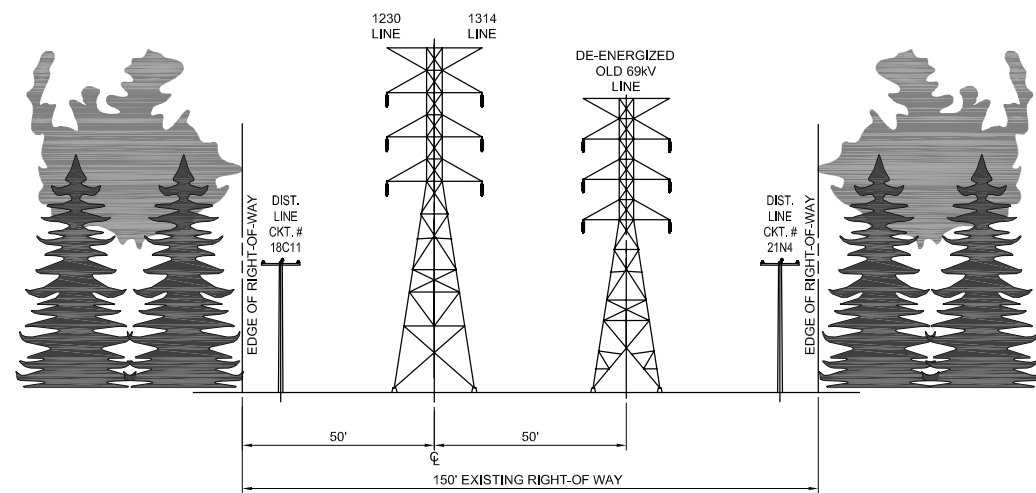
**EXISTING LAYOUT**

AGAWAM S/S  
TO  
PIPER S/S

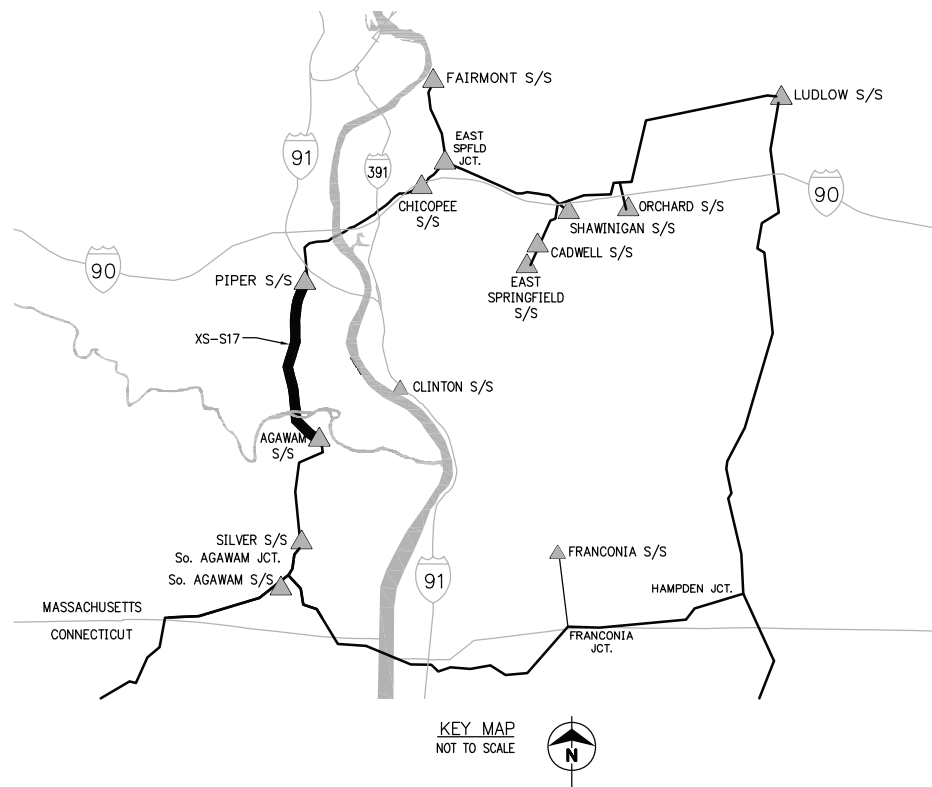
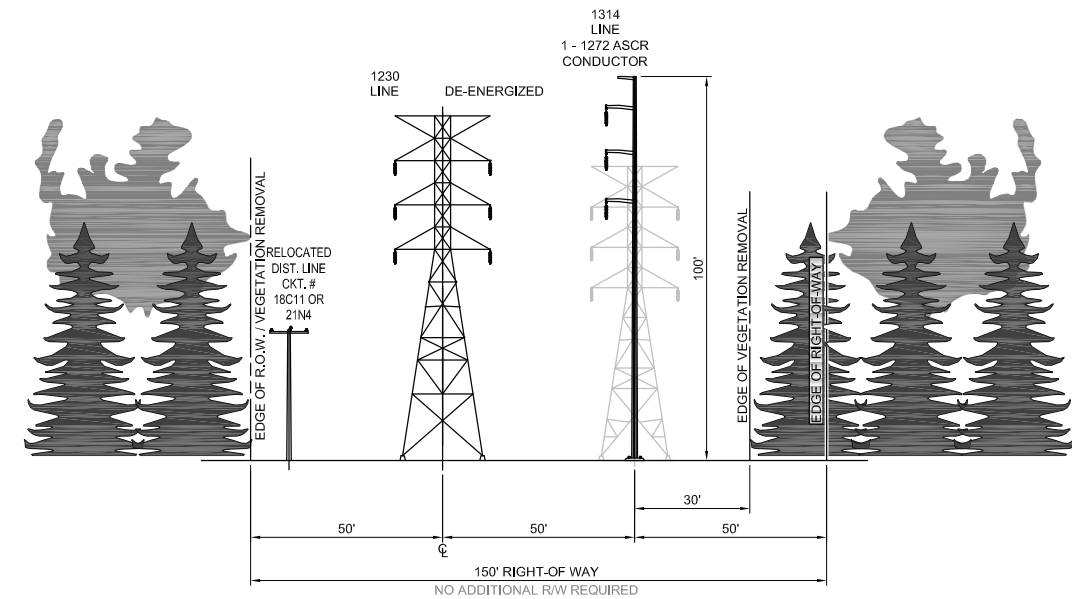
3.6 MILES

EXISTING  
RIGHT-OF-WAY  
150'

LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
AGAWAM S/S TO PIPER S/S**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S17	
P.A. #			

N:\PROJECTS\04700\04700.dwg [D:\Users\jlightner] 08-15-2008 15:14:44 BMM



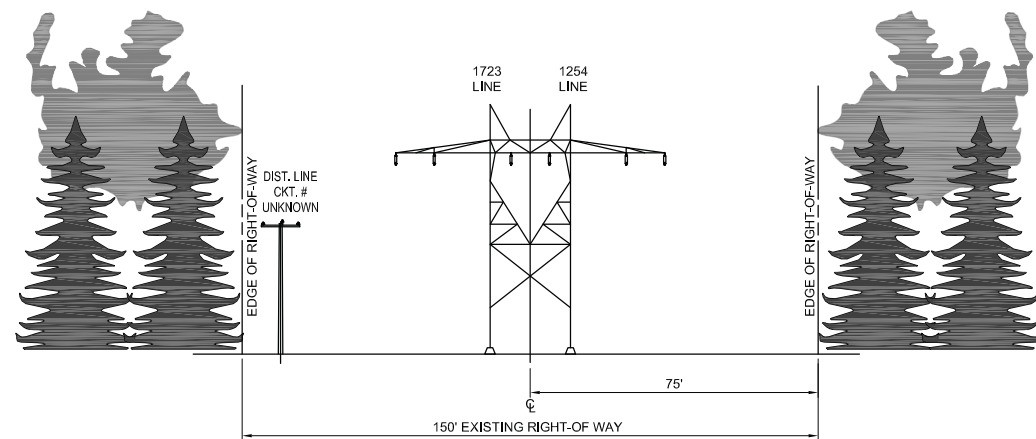
**EXISTING LAYOUT**

EAST SPRINGFIELD JCT.  
TO  
FAIRMONT S/S

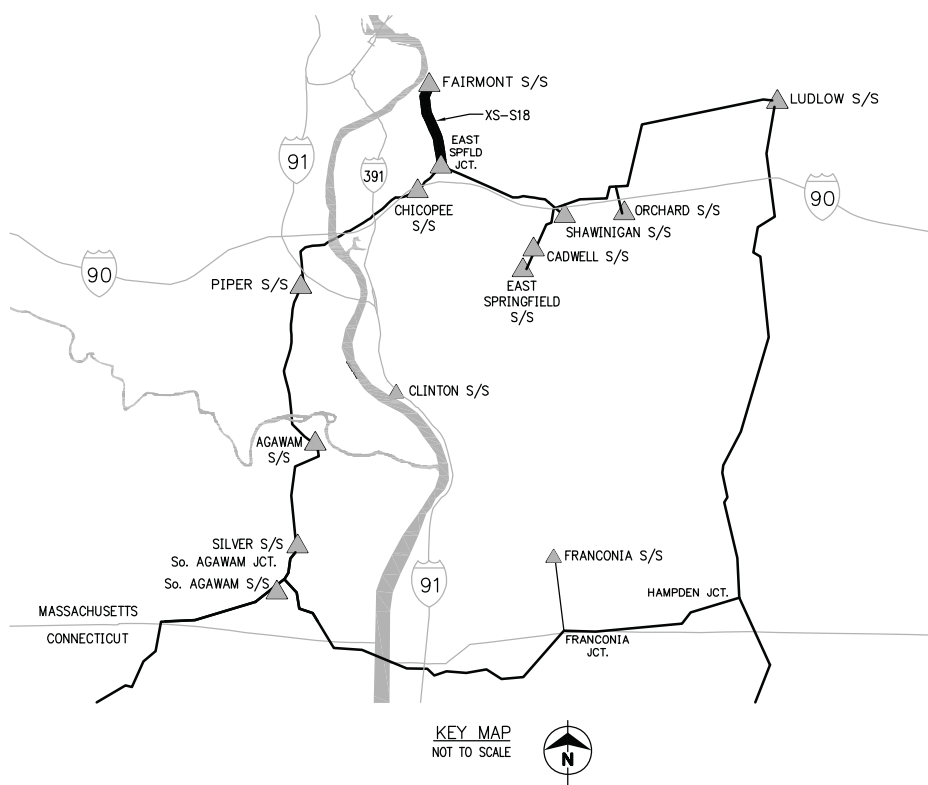
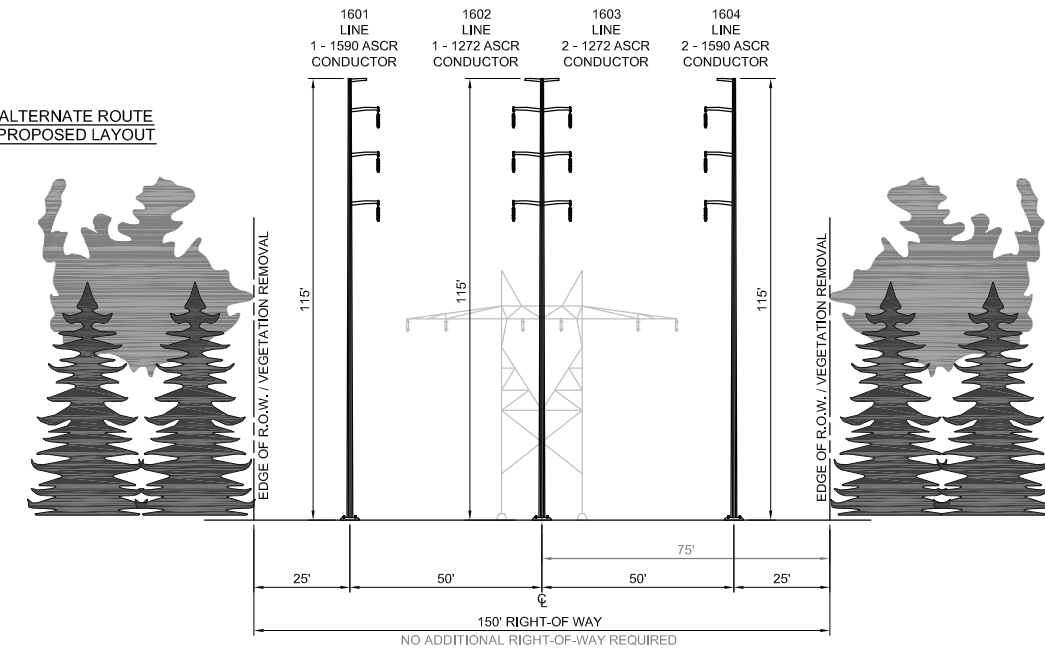
1.7 MILES

EXISTING  
RIGHT-OF-WAY  
150'

LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
EAST SPRINGFIELD JCT. TO FAIRMONT S/S**

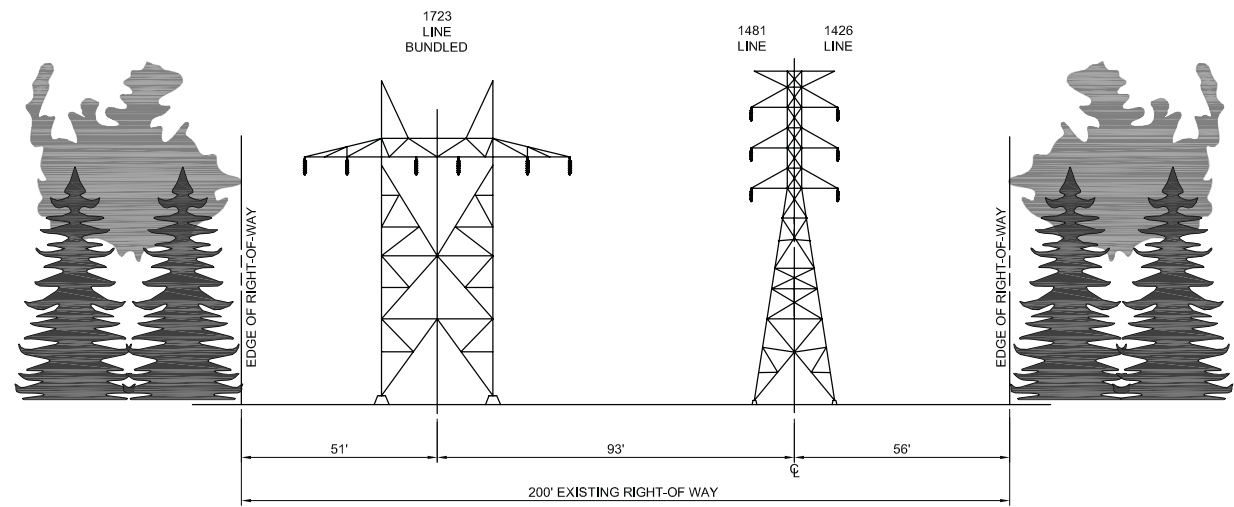
BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 10/13/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S18	
P.A. #			

**EXISTING LAYOUT**  
CADWELL S/S  
TO  
SHAWINIGAN S/S / EXIT 6 JCT.

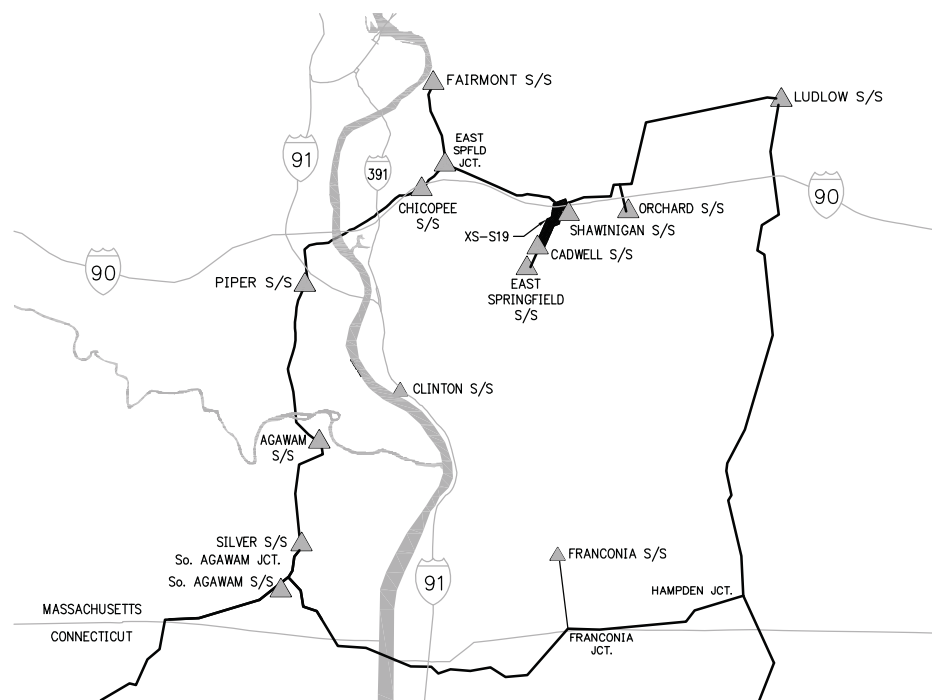
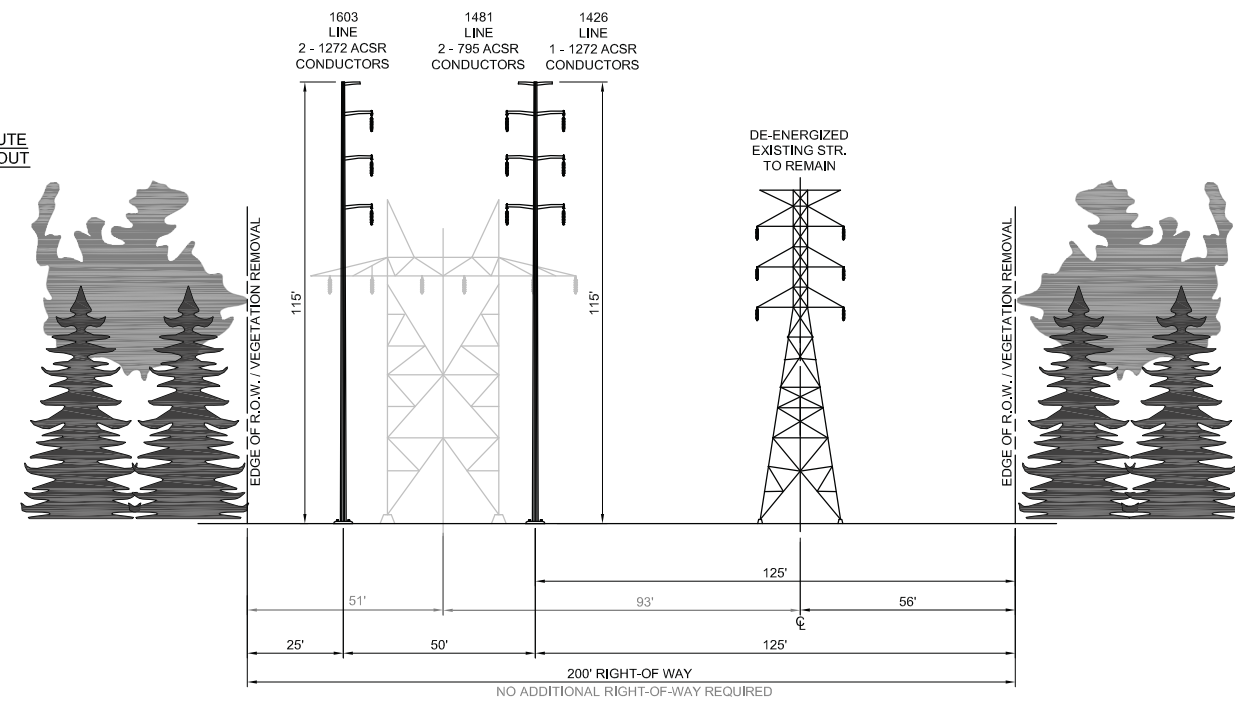
0.9 / 0.8 MILES

EXISTING  
RIGHT-OF-WAY  
200'

LOOKING  
NORTH



**ALTERNATE ROUTE  
PROPOSED LAYOUT**



KEY MAP  
NOT TO SCALE



**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
CADWELL S/S TO SHAWINIGAN S/S / EXIT 6 JCT.**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 10/13/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S19	
P.A. #			

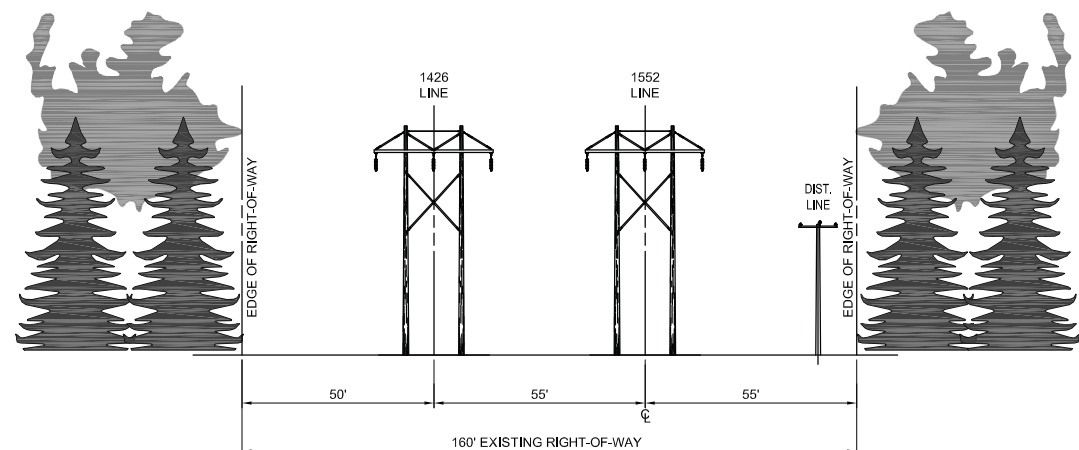
EXISTING LAYOUT

ORCHARD S/S TO  
ORCHARD JCT.

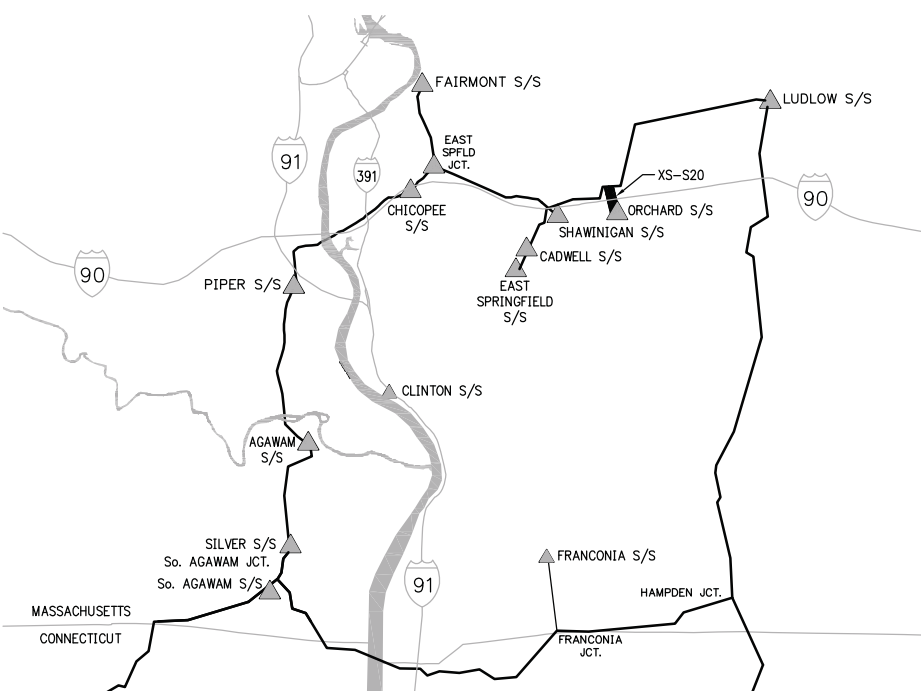
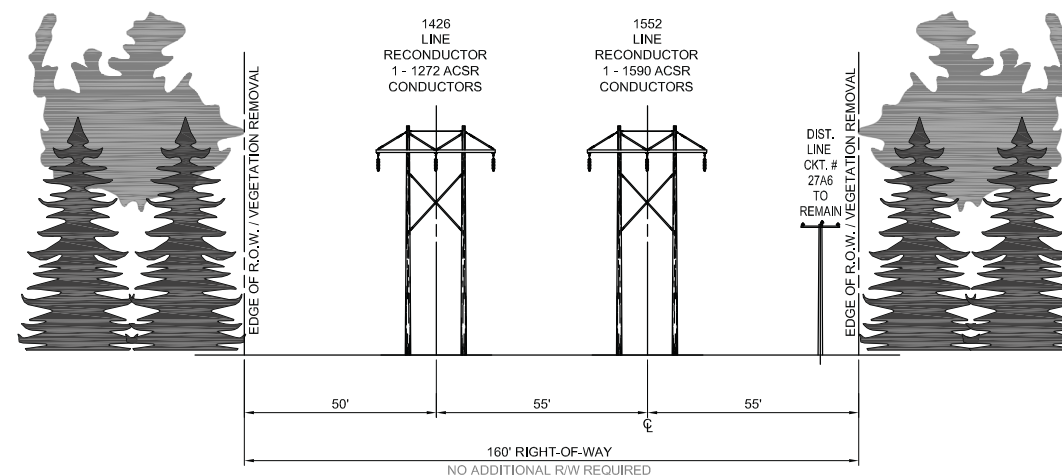
0.7 MILES

EXISTING  
RIGHT-OF-WAY  
160' MIN.

LOOKING  
NORTH



ALTERNATE ROUTE  
PROPOSED LAYOUT



KEY MAP  
NOT TO SCALE

**PRELIMINARY -  
SUBJECT TO CHANGE**



TITLE  
**GREATER SPRINGFIELD RELIABILITY PROJECT  
ALTERNATE ROUTE PROPOSED CROSS SECTIONS  
ORCHARD S/S TO ORCHARD JCT.**

BY J. LIGHTNER	CHKD P.M. WILLIAMS	APP	APP
DATE 9/15/08	DATE	DATE	DATE
SCALE NONE	MICROFILM DATE	DWG. NO. XS-S20	
P.A. #			

R:\MS20\45760\Drawings\Sheet\Drawings\Sheet\_27A6\27A6\_CS.dwg (05/2007) 09-15-2008 15:16 NJM BMM