**Exhibit C**

**Engineering Specifications for an Overhead Transmission Line**

**Segment 1 of**

PRINCIPAL CIRCUIT

1. Name of Petitioner:

2. Name or Circuit Number of Line:

3. Length of Segment:       miles

4. Segment is located in the following sections, townships, and ranges:

5. Segment ( select phrase ) in     .

6. Segment will be maintained in accordance with the Iowa Electrical Safety Code and the ( ) Edition of the National Electrical Safety Code.

7. Maximum *Capable of Operating* Voltage: ( ) Nominal Operating Voltage: ( )

8. Construction Grade: (\_\_\_) Typical Span:       ft. Maximum Span:       ft.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Vertical Overhead Clearance Requirement\* for the Phase Conductors** | | | | | | | |
|  | *Surface* | *Basic Clearance* | *+* | *Voltage Adder* | *+* | *Additional Adders* | *=* | *Clearance* |
| 9. | *Open Ground* | ft. | + | ft. | + | ft. | = | ft. |
| 10. | *Roads* | ft. | + | ft. | + | ft. | = | ft. |
| 11. | *Railroads* | ft. | + | ft. | + | ft. | = | ft. |
| 12. | *Water* | ft. | + | ft. | + | ft. | = | ft. |
|  | \* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply. | | | | | | | |

**Phase Conductors:**

13. Code Word:       Size:       Stranding:       Material:

**Shield Wire(s):**

14. Size:       Stranding:       Material:

15. Frequency of Shield Wire Grounding (if applicable):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Typical Insulators** | | | |
|  |  |  | *Suspension Type* | |
|  |  |  | *Tan. / Ang.* | *Strain* |
| 16. |  | *Post Type* | *(select)* | *(select)* |
| 17. | *Manufacturer* |  |  |  |
| 18. | *Catalog number* |  |  |  |
| 19. | *Dry Flashover* | kV | kV | kV |
| 20. | *Wet Flashover* | kV | kV | kV |
| 21. | *Impulse Flashover, +* | kV | kV | kV |
| 22. | *Impulse Flashover, –* | kV | kV | kV |

**- Typical Structures:**

23. Structures Typically are: \_\_\_\_\_\_\_\_\_\_\_

24. Typical Height After Installation:       ft.

**Typical Wood Pole:**

25. Species:       Treatment:       Class:       Length:       ft.

**Steel Structures:**

26. Steel Pole or Tower Material:

27. H-Frame Structure Bracing Type:       Spacing Between H-Frame Poles:       ft.

28. Support Arm Type:       Material:       Dimensions:

29. Guys are: \_\_\_\_\_\_\_\_\_ Guy Markers are: \_\_\_\_\_

SECOND TRANSMISSION CIRCUIT (if applicable)

30. Name of Owner:

31. Name or Circuit Number of Line:

32. If Franchised Separately, Docket Number of Order Granting Franchise:

33. Maximum *Capable of Operating* Voltage: ( ) Nominal Operating Voltage: ( )

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Vertical Overhead Clearance Requirement\* for the Phase Conductors** | | | | | | | |
|  | *Surface* | *Basic Clearance* | *+* | *Voltage Adder* | *+* | *Additional Adders* | *=* | *Clearance* |
| 34. | *Open Ground* | ft. | + | ft. | + | ft. | = | ft. |
| 35. | *Roads* | ft. | + | ft. | + | ft. | = | ft. |
| 36. | *Railroads* | ft. | + | ft. | + | ft. | = | ft. |
| 37. | *Water* | ft. | + | ft. | + | ft. | = | ft. |
|  | \* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply. | | | | | | | |

**Phase Conductors:**

38. Code Word:       Size:       Stranding:       Material:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Typical Insulators** | | | |
|  |  |  | *Suspension Type* | |
|  |  |  | *Tan. / Ang.* | *Strain* |
| 39. |  | *Post Type* | *(select)* | *(select)* |
| 40. | *Manufacturer* |  |  |  |
| 41. | *Catalog number* |  |  |  |
| 42. | *Dry Flashover* | kV | kV | kV |
| 43. | *Wet Flashover* | kV | kV | kV |
| 44. | *Impulse Flashover, +* | kV | kV | kV |
| 45. | *Impulse Flashover, –* | kV | kV | kV |

46. Support Arm Type:       Material:       Dimensions:

DISTRIBUTION UNDERBUILD (if applicable)

47. Name of Owner:

48. Nominal Voltage:

49. Number of Distribution Phase Conductors:

50. Neutral is \_\_\_\_\_ Multi-Grounding Frequency:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Vertical Overhead Clearance Requirement\* for the Phase Conductors** | | | | | |
|  | *Surface* | *Basic Clearance* | *+* | *Additional Adders* | *=* | *Clearance* |
| 51. | *Open Ground* | ft. | + | ft. | = | ft. |
| 52. | *Roads* | ft. | + | ft. | = | ft. |
| 53. | *Railroads* | ft. | + | ft. | = | ft. |
| 54. | *Water* | ft. | + | ft. | = | ft. |
|  | \* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply. | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Vertical Overhead Clearance Requirement\* for the Neutral Conductor** (if applicable) | | | | | |
|  | *Surface* | *Basic Clearance* | *+* | *Additional Adders* | *=* | *Clearance* |
| 55. | *Open Ground* | ft. | + | ft. | = | ft. |
| 56. | *Roads* | ft. | + | ft. | = | ft. |
| 57. | *Railroads* | ft. | + | ft. | = | ft. |
| 58. | *Water* | ft. | + | ft. | = | ft. |
|  | \* The Iowa Electrical Safety Code and the applicable edition of the NESC should both be referenced to determine the conditions at which the above clearances apply. | | | | | |

59. Support Arm Type:       Material:       Dimensions:

TYPICAL STRUCTURE DRAWING

60. A drawing of a typical tangent structure, as described in the instructions, \_\_\_\_ been attached.

ADDITIONAL DRAWINGS REQUIRED FOR NEW CONSTRUCTION

61. Angle structures \_\_\_\_\_ be used in this segment of line. A drawing of a typical angle structure, as described in the instructions, \_\_\_\_\_ been attached.

62. Dead-end structures \_\_\_\_\_ be used in this segment of line. A drawing of a typical dead-end structure, as described in the instructions, \_\_\_\_\_ been attached.

ADDITIONAL DRAWINGS REQUIRED FOR ALL DOCKETS

63. There \_\_\_\_\_ along this segment of line. Drawings showing the clearance envelope for each grain bin in relation to the subject line \_\_\_\_\_.

64. There \_\_\_\_\_ along this segment of line. Drawings showing the conductor crossing clearance envelope for each crossing in relation to the subject line \_\_\_\_\_.

65. There \_\_\_\_\_ along this segment of line. Drawings showing the clearance envelope for each structure in relation to the subject line ­­­\_\_\_\_\_.