

DESIGN DATA				
Interstate-94				
TRAFFIC	AVERAGE DAILY			MAX HR
CURRENT N/A	PASS: N/A	TRUCKS: N/A	TOTAL: N/A	N/A
FORECAST N/A	PASS: N/A	TRUCKS: N/A	TOTAL: N/A	N/A
Clear Zone Distance: 34'	Design Speed: N/A			
Minimum Sight Dist. for Stopping: N/A	Bridges: N/A			
Minimum Sight Dist. for Safe Passing: N/A	Sight Dist. for No Passing Zone: N/A			
Pavement Design Life N/A (years)				

**JOB #5**

STATE	PROJECT NO.	PCN	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	19140	1	1
	STI-1-194(005)000	17271		
	S-TNU-1-810(023)000	17272		

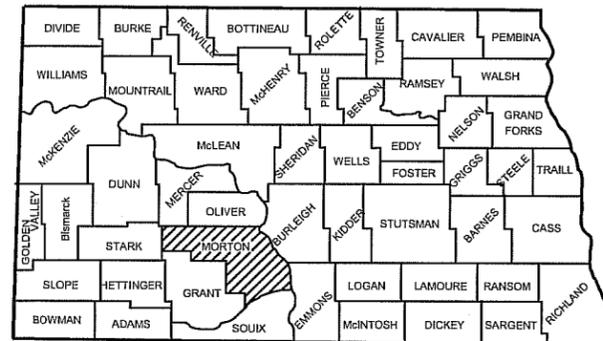
**NORTH DAKOTA  
DEPARTMENT OF TRANSPORTATION**

**STI-1-094(150)149, PCN 19140  
STI-1-194(005)000, PCN 17271  
S-TNU-1-810(023)000, PCN 17272**

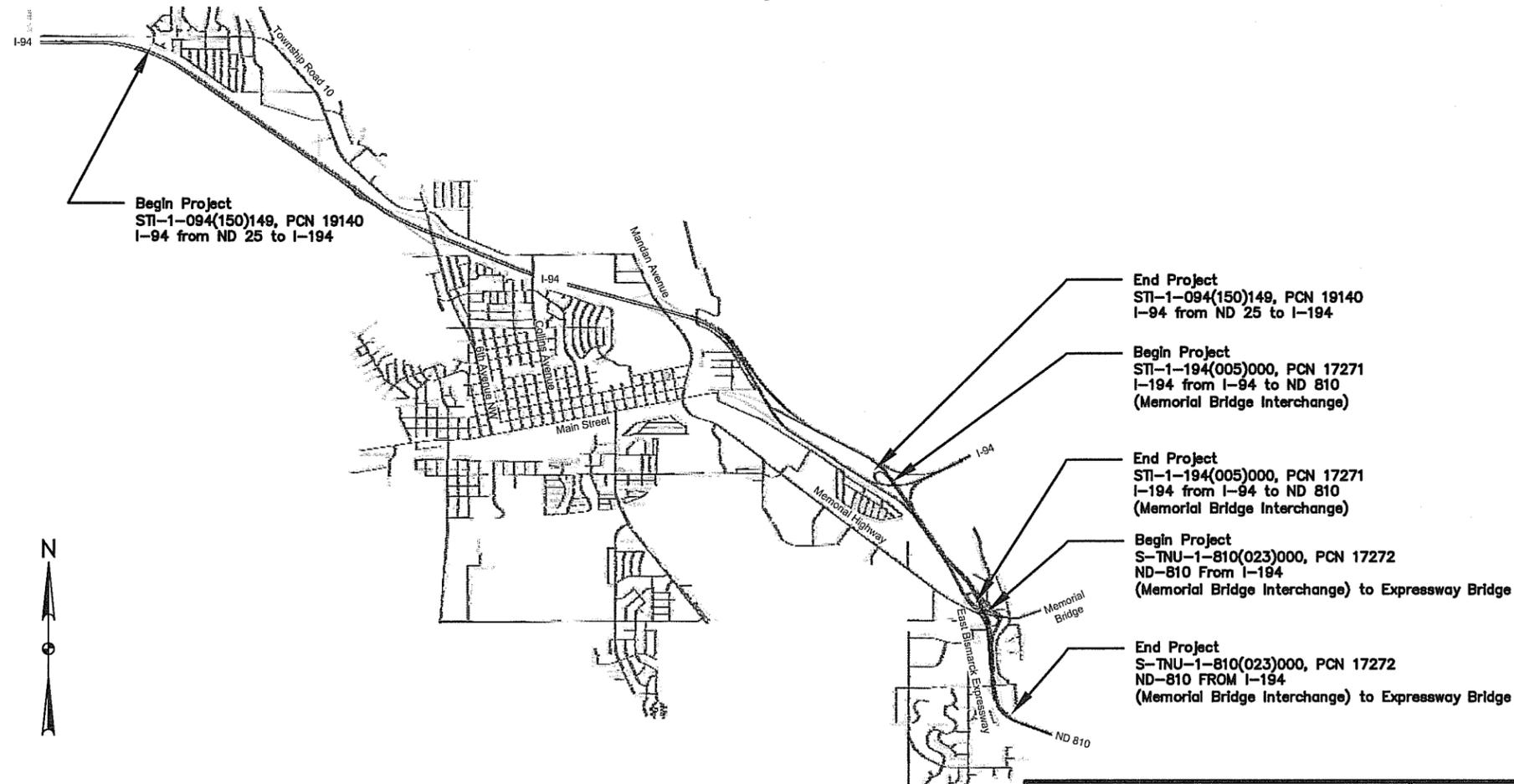
FHWA Limited Involvement  
Morton County, North Dakota  
Interstate Highway 94, Interstate Highway 194 and ND 810  
City of Mandan  
Landscape Enhancement Project

**Governing Specifications:**  
Standard Specifications adopted by the North Dakota Department of Transportation October 2008; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

DESCRIPTION	LENGTH OF PROJECT	
	NET MILES	GROSS MILES
STI-1-094(150)149	5.83	5.83
STI-1-194(005)000	1.21	1.21
S-TNU-1-810(023)000	0.82	0.82



STATE OF NORTH DAKOTA



DESIGNERS
David Mayer, PLA
Joe Lucht, ASLA



APPROVED DATE: 6 May 13

*Robert Fode*  
OFFICE OF PROJECT DEVELOPMENT  
ND DEPARTMENT OF TRANSPORTATION

I HEREBY CERTIFY THAT THE ATTACHED PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED LANDSCAPE ARCHITECT UNDER THE LAWS OF THE STATE OF NORTH DAKOTA.

*David Mayer*  
DAVID MAYER, PLA  
DATE: 3-19-13

I hereby certify that this plan specification, or report was prepared by me or under my direct supervision, and that I am a duly Registered Landscape Architect under the laws of the State of North Dakota.

*David Mayer*  
Date: 3-19-13 Reg. No. 13

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	STI-1-094(150)149 STI-1-194(005)000 S-TNU-1-810(023)000	2	1

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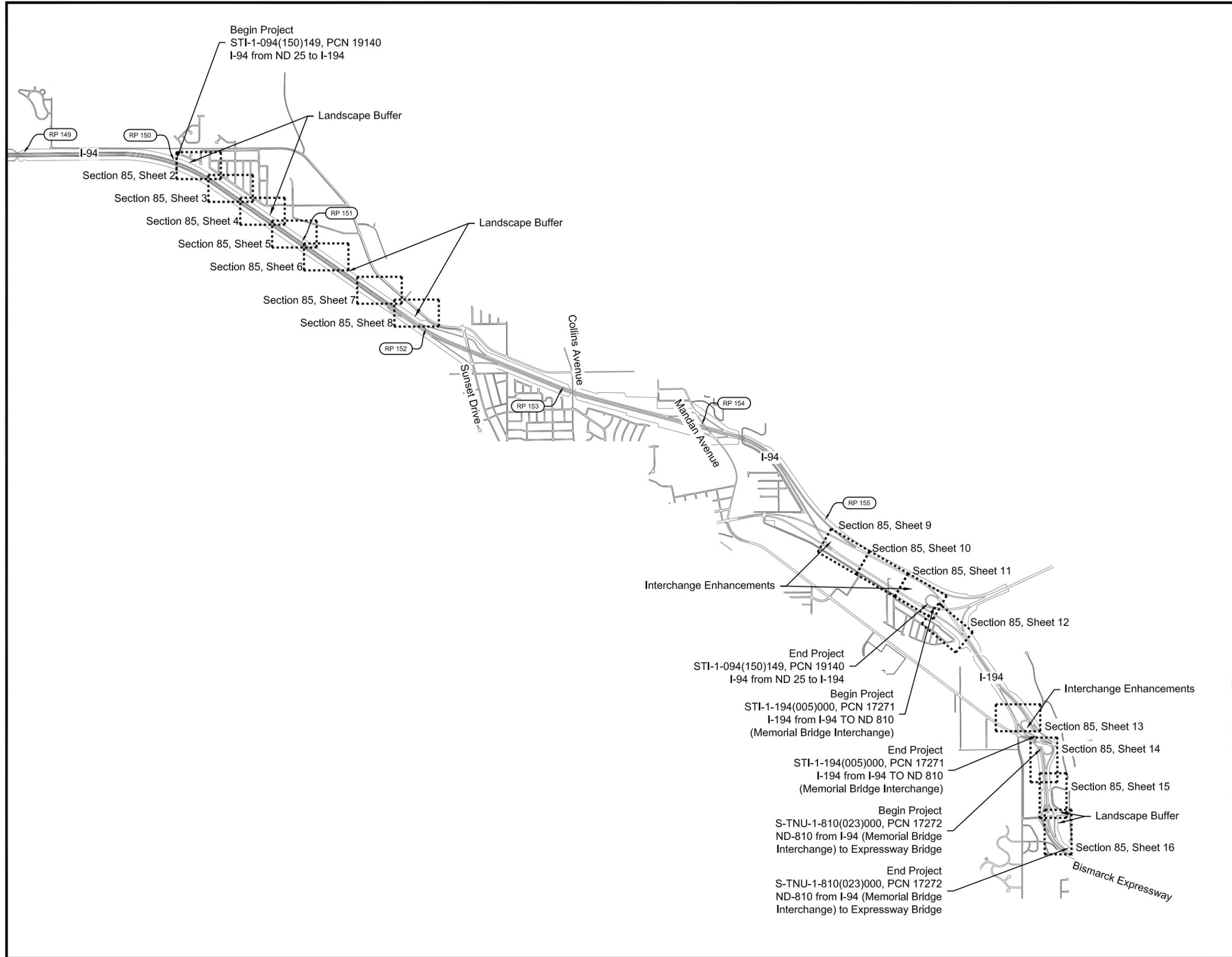
<u>Section No.</u>	<u>Sheet No.</u>	<u>Description</u>
1	1	Title Sheet
2	1	Table of Contents/Standard Drawings
4	1	Scope of Work
6	1-3	Plan Notes
8	1	Estimate of Quantities
85	1	Planting Details
85	2-16	Planting Layouts
100	1	Traffic Control Device List

LIST OF STANDARD DRAWINGS

<u>Standard No.</u>	<u>Description</u>
D-20-1, 2, 3	Abbreviations
D-20-10	Utility Company Abbreviations
D-20-20, 21	Linestyles
D-20-30, 31, 32	Symbols
D-704-24	Construction Sign and Barricade Location Details

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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	4	1
	STI-1-194(005)000		
	S-TNU-1-810(023)000		



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Rev'd. 00/00/0000			
<b>LANDSCAPE ENHANCEMENT PROJECT</b> DEPARTMENT OF TRANSPORTATION MANDAN, NORTH DAKOTA			
		Scope of Work	
DRWN. BY JDL	CHK'D BY DMM	PROJECT NO. 1210119	DATE 03/19/2013
J:\trans\1210119\Design\CADD\Sec4_1210119-Scope.dwg			
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## NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	STI-1-094(150)149 STI-1-194(005)000 S-TNU-1-810(023)000	6	1

### SECTION 100

- 100-P01 UTILITIES:** Tree planting locations will be adjusted as needed to avoid conflicts with overhead or underground utilities. The Contractor shall notify the Project Engineer if such conflicts exist.
- 100-P02 EXISTING TREES:** The Contractor shall exercise care during construction operations to ensure that any existing trees are not disturbed. The Contractor shall be responsible for the replacement of any trees found to be damaged as a result of construction operations. The Contractor shall not be permitted any equipment operation under, around, or within tree drip lines.
- 100-P03 CONSTRUCTION TRAFFIC:** The Contractor's construction and maintenance traffic shall be limited to access at interchanges or through a shoulder closure as described in the plan notes, Section 700. Construction traffic will not be permitted to access from one roadway to the other roadway through the median. Traffic control plans shall be provided by the Contractor and shall be submitted to the Project Engineer for approval.

### SECTION 200

- 201-P01 REMOVAL OF TREES:** It is anticipated that existing trees will need to be removed as a part of this project. An estimated quantity of 30 trees has been included to establish a bid price for removals. The engineer will identify trees for removal. The trees shall be removed and disposed of off the project site. The cost for all labor, equipment and materials to complete this work shall be included in the bid price for:
- A. Removal of Trees 10IN
  - B. Removal of Trees 18IN
  - C. Removal of Trees 30IN
- Trees smaller than 8IN shall be considered as clearing and grubbing and will not be paid separately and shall be included in the price bid for other items.

### SECTION 700

- 704-P01 TRAFFIC CONTROL:** The traffic control for this project shall consist of a temporary shoulder closure at each site. Traffic control devices shall comply with the following Standard Drawing: D-704-24 Layout Type HH or Layout Type S.

Quantities for traffic control have been included for work at one location. The required traffic control signs and devices are included in the "Traffic Control Devices List" and will be measured and paid for at the Contract Unit Price for each device. Additional devices required to accommodate operations at more than one location shall be the Contractor's responsibility.

### SECTION 900

- 900-P01 WOOD MULCH:** The Contractor shall furnish and install shredded wood mulch at a 4" depth and 6' diameter at all trees unless otherwise noted. Trees planted in rows shall have a continuous mulch bed as shown in the plans. All evergreen groupings shall be mulched as indicated by plans. See plan and details for the placement of the wood mulch. All materials and labor shall be included in the bid item "Wood Mulch". "Wood Mulch" will be paid at plan quantity unless changes are made in the field.

### 900-P02 GENERAL PLANTING NOTES

1. Fine grading shall be approved by the Project Engineer prior to planting operations.
2. Plant material will be inspected by the Engineer prior to planting. The Contractor shall lay out plant material per plan and face to give best appearance or relation to adjacent plants, structures or views. Consult with Project Engineer to obtain approval prior to installation.
3. Plant locations are diagrammatic and may be adjusted in the field at the Project Engineer's request prior to installation. The Project Engineer will provide beginning and end points for the location of proposed trees along the project.
4. The Contractor shall stake all trees according to the tree planting detail. All materials and labor shall be considered included in the cost of plant material.
5. Contractor shall thoroughly soak soil around root ball halfway through backfilling and again after backfill is completed. Thoroughly re-soak all new plant materials one week after planting completion per weather conditions.
6. Plant material shall only be accepted if grown within Hardiness zone range of 2 to 4.
7. Thirty days after planting, the Contractor shall re-stake and straighten trees as required.
8. Plant material shall only be installed when ambient temperatures are between 35 degrees F and 90 degrees F, when wind velocity is less than 30 mph and within the dates as follows:
  - Spring 2014: April 15 - June 15
9. All excess soil removed becomes property of the Contractor and disposal shall be considered included in the cost of plant material.

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## NOTES

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ND	STI-1-094(150)149 STI-1-194(005)000 S-TNU-1-810(023)000	6	2

- 900-P03 LANDSCAPE PREPARATION:** The Contractor shall prepare the mass planting areas (individual tree locations not included) by the following methods:
- Apply chemical treatment such as FallowMaster, GlyKamba, or an approved equal to area to be planted following all label directions. The rate shall be 44 fluid ounces of chemical per acre. The amount of water shall be dictated by the equipment that is used to apply the chemical. A surfactant, which includes ammonium sulfate, shall be added to the tank at a minimum rate of 2-1/2 gallons per 100 gallons prior to adding the chemical or water.
  - Allow 7-14 days after herbicide application before mowing.
  - Mow vegetation to a height of 1" or less.

The cost for all labor, equipment, and materials required to complete this work shall be included in the bid price for "Landscape Preparation".

### **900-P04 PLANTING SOIL MIXTURE**

1. Topsoil and subsoil excavated in each proposed planting hole shall be removed and the excess material shall be disposed of by the Contractor.
2. All tree pits shall be backfilled with a mixture of 50% native soil and 50% potting mixture or approved equal.
3. Potting mixture shall consist of a mixture of peat moss, topsoil, and sand in a ratio of 1:1:1 by volume. The peat moss shall have the following characteristics:
  - A. Peat Moss shall consist of at least 75% of partially decomposed stems and leaves of sphagnum, hypnum, polytrichum, and other mosses in which the fibrous and cellular structure is still recognizable. It shall be nearly free of decomposed colloidal residue, wood, and other foreign matter, and shall be brown to black in color. Humus peat will not be acceptable.
  - B. Moisture content shall not exceed 60% by weight.
  - C. Ash content shall not exceed 20%, based on the oven dry weight of the material.
  - D. The pH value shall not be less than 3.2 nor greater than 7.0 at 25° C.
  - E. Water holding capacity shall not be less than 400% by weight, on an oven dry basis.
  - F. The Contractor shall furnish the Project Engineer with a certificate stating the type of peat moss, brand name, and the country or place of origin. If packed in bales, provide certificate from marking on bales.
3. The sand shall be from an approved source and 100% shall pass a 3/8" sieve.
4. The cost of providing the planting soil mixture shall be included in the price bid for the individual tree items.

### **900-P05 PLANT CARE MAINTENANCE**

1. The plant establishment period shall extend to June 15, 2015.
2. The Contractor shall properly care for all plants from the time of planting until the contract plant establishment period expires.
3. Proper care of plants shall consist of doing work such as supplemental watering, weeding, pruning, spraying, tightening of braces and guys, retying wrapping, re-mulching and other work as necessary to keep plants in a neat appearance and in a healthy growing condition.
4. Complete watering of trees shall be performed at 21 day intervals which may be lengthened when weather conditions and soil moisture permit. Each tree shall receive a minimum of 50 gallons of water per watering. The water shall be applied at a rate not to exceed 10 gallons per minute. Additional watering may be ordered by the Project Engineer at any time during the plant establishment period should conditions require such watering. If the project receives a rainfall event of 1" it shall be considered a watering.
5. A sufficient amount of water, required to be a minimum of 50 gallons, shall be placed in each plant hole at the time of each watering to keep topsoil backfill material in a moist condition, and to keep the plant in a healthy growing condition.
6. All mulched areas shall be kept free of grass and weeds during the establishment period. Remove weeds, grass and other vegetation from the project. Do not dispose of this material within the right of way. The mulched areas are required to be weed free and clean within 1 week prior to the payment dates specified in note 9 of this section.
7. All bracing and guying materials shall be removed and disposed of by the Contractor after final inspection of the plantings following the expiration of the plant establishment period.
8. The work described in this section is the minimum required to obtain full release of retainage as discussed in note 9. The work described is related only to Plant Care Maintenance and is not tied to the warranty provisions of this contract.

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## NOTES

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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9. **PAYMENT:** Payment for Plant Care Maintenance will be based on release of retainage at specified intervals. Twenty percent (20%) of the total contract amount will be held as retainage for this project. 20% retainage is in addition to the retainage as stated in Section 109 of the Standard Specifications. The Contractor must keep detailed records of their maintenance activities and must notify the Project Engineer 24 hours in advance of their maintenance activities in order to receive full release of retainage for each period. All maintenance records must be submitted to the Project Engineer prior to the partial payment dates listed below to receive payment.

DATE	% OF CONTRACT AMOUNT
July 15, 2014	4%
August 15, 2014	4%
September 15, 2014	4%
June 15, 2015	8%
TOTAL	20%

Maintenance of plant material shall not be necessary from November 1, 2014 to April 15, 2015. A minimum of one final plant care maintenance will be required in the Spring of 2015 prior to the final inspection and acceptance. The Project Engineer will determine the extent to which the Contractor complied with the maintenance requirements during each time period and can elect to release none, some, or the full amount for each period. Any amounts withheld for each period will not be released to the Contractor at a later date, and will remain with the Department.

### **900-P06 WARRANTY**

1. The Contractor shall provide a warranty for all plantings on this project up to June 15, 2015.
2. All plants that die or show evidence of dying during the plant establishment period shall be replaced at the Contractor's expense at the earliest appropriate planting time after this condition becomes apparent. If the plant is not replaced within 2 weeks after notification by the Project Engineer, the unit price amount for the plant will be withheld from the contract amount.
3. Near the end of the plant establishment period, but no later than June 15, 2015 an inspection of the planting will be made and only those plants found to be in a healthy growing condition will be accepted. Those plants not in a healthy growing condition will be replaced by the Contractor at the Contractor's expense.
4. The Contractor shall perform whatever additional maintenance work he deems necessary to ensure plant survivability.
5. The cost of providing this warranty shall be included in the price bid for the individual tree items.

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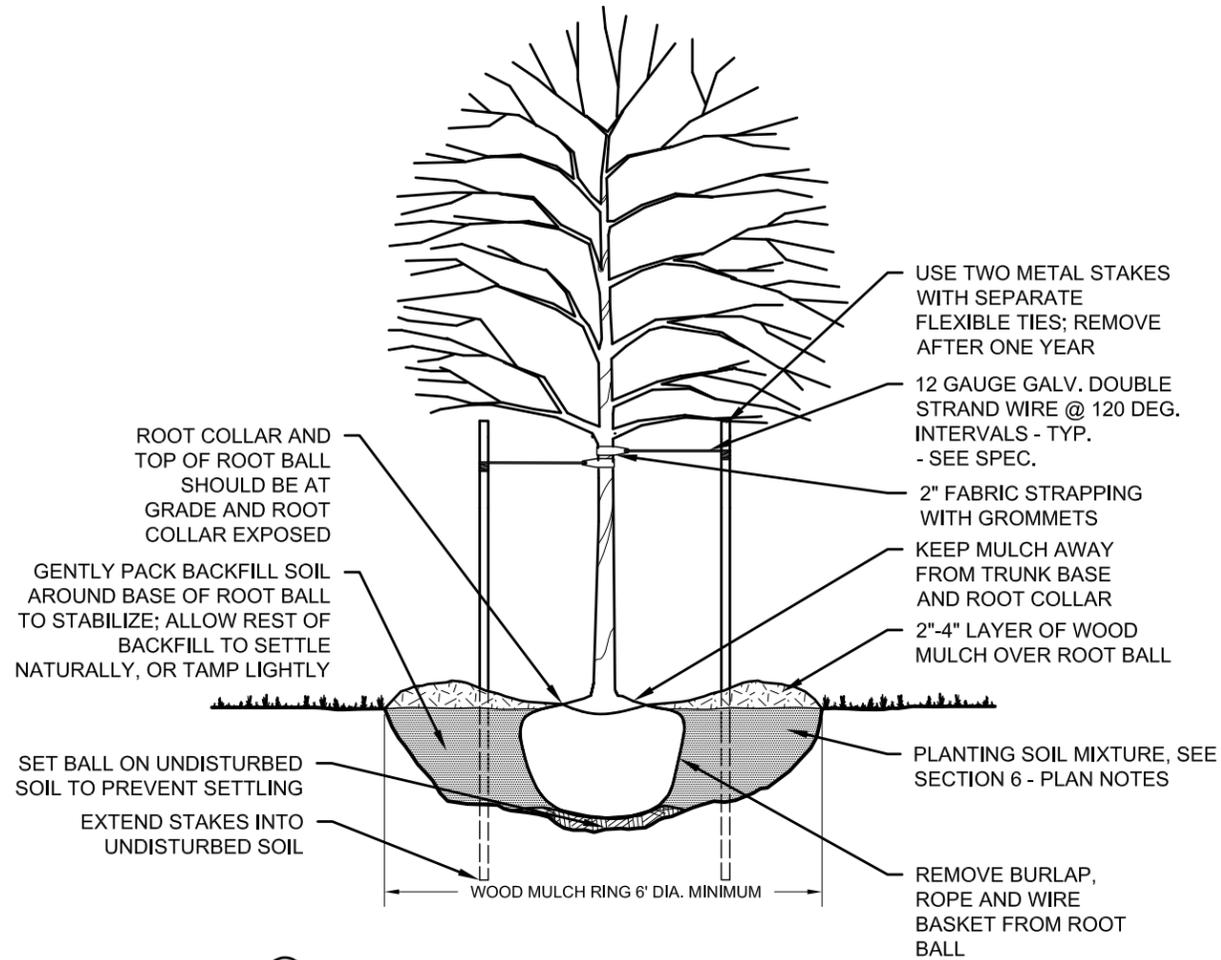
**ESTIMATE OF QUANTITIES**

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	STI-1-094(150)149 STI-1-194(005)000 S-TNU-1-810(023)000	8	1

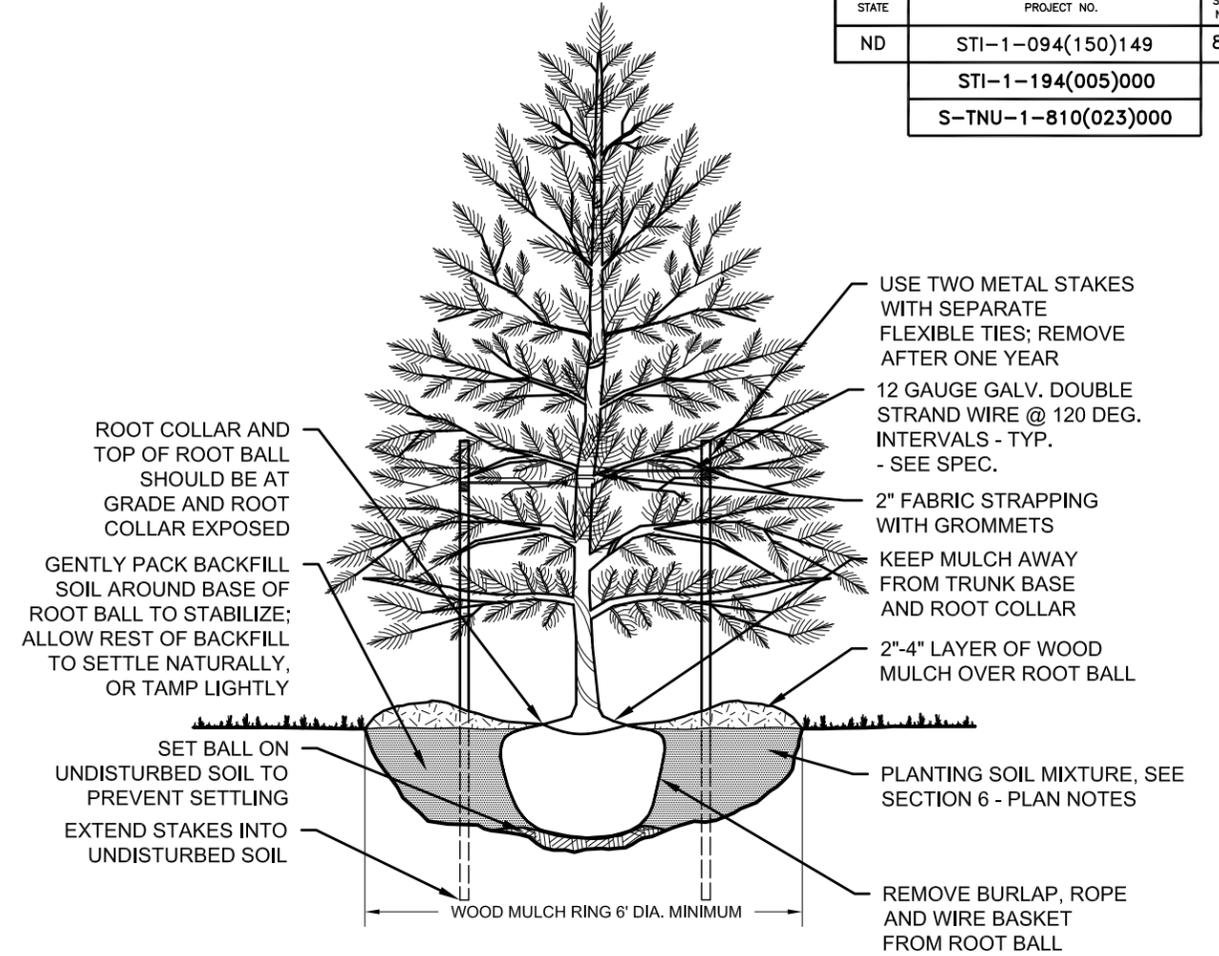
SPEC	CODE	ITEM DESCRIPTION	UNIT	STI-1-094(150)149	STI-1-194(005)000	S-TNU-1-810(023)000	TOTAL
103	0100	CONTRACT BOND	L SUM	.7	.15	.15	1
201	0370	REMOVAL OF TREES 10IN	EA	10			10
201	0380	REMOVAL OF TREES 18IN	EA	10			10
201	0390	REMOVAL OF TREES 30IN	EA	10			10
702	0100	MOBILIZATION	L SUM	.7	.15	.15	1
704	1000	TRAFFIC CONTROL SIGNS	UNIT	495			495
704	1060	DELINEATOR DRUMS	EA	15			15
970	0008	LANDSCAPE PREPARATION	SY	7,500	1,366	1,661	10,527
970	0075	WOOD MULCH	SF	69,986	12,408	14,952	97,346
970	2011	AMUR MAPLE	EA	41	30		71
970	2194	RED SPLENDOR CRABAPPLE	EA	39	21	8	68
970	2197	RED BARON CRABAPPLE	EA	56	12		68
970	2202	SPRING SNOW CRABAPPLE	EA	16	10	7	33
970	2205	THUNDERCHILD CRABAPPLE	EA	38		25	63
970	2215	PRINCESS KAY PLUM	EA	29	10	18	57
970	2250	ROBUSTA COTTONWOOD	EA	26			26
970	2300	PRAIRIE GEM PEAR	EA	56			56
970	2330	BUR OAK	EA	40	3		43
970	2526	ARNOLD HAWTHORN	EA	40		14	54
970	3600	BLACK HILLS SPRUCE	EA	76		33	109
970	3605	COLORADO BLUE SPRUCE	EA	60	8	4	72
970	3625	PONDEROSA PINE	EA	49	4		53

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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	1
STI-1-194(005)000			
S-TNU-1-810(023)000			



1  
85-1 DECIDUOUS PLANTING DETAIL  
NO SCALE



2  
85-1 CONIFEROUS PLANTING DETAIL  
NO SCALE

Landscaping Quantity Summary							
Label	Sym	Quantity STI-1-094(150)149	Quantity STI-1-194(005)000	Quantity S-TNU-1-810(023)000	Common Name	Botanical Name	Type
AM		41	30	-	Amur Maple	Acer ginnala	B&B or Cont.
PGP		56	-	-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM	B&B or Cont.
RSC		39	21	8	Red Splendor Crabapple	Malus x 'Red Splendor'	B&B or Cont.
RBC		56	12	-	Red Baron Crabapple	Malus x 'Red Baron'	B&B or Cont.
SSC		16	10	7	Spring Snow Crabapple	Malus x 'Spring Snow'	B&B or Cont.
TCC		38	-	25	Thunderchild Crabapple	Malus x 'Thunderchild'	B&B or Cont.
PKP		29	10	18	Princess Kay Plum	Prunus nigra 'Princess Kay'	B&B or Cont.
RC		26	-	-	Robusta Cottonwood	Populus x canadensis 'Robusta'	B&B
BO		40	3	-	Bur Oak	Quercus macrocarpa	B&B
AH		40	-	14	Arnold Hawthorn	Crataegus arnoldiana	B&B or Cont.
BHS		76	-	33	Black Hills Spruce	Picea glauca densata	B&B
CBS		60	8	4	Colorado Blue Spruce	Picea pungens	B&B
PP		49	4	-	Ponderosa Pine	Pinus ponderosa	B&B

Cont. = Container  
B&B = Balled and Burlapped

Landscaping Quantity Summary Cont.		
Description	Remarks	Quantity
Wood Mulch	4" Depth	97,346 SF

Survey Control Points		
Point	Northing	Easting
1000	437447.172	1841205.912
BSMK	421173.789	1889225.875

All coordinates in this section are State Plane Coordinates. They are derived from the "North Dakota Coordinate System of 1983" NAVD83(HARN) South Zone.

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LANDSCAPE ENHANCEMENT PROJECT  
DEPARTMENT OF TRANSPORTATION  
MANDAN, NORTH DAKOTA

Planting Details

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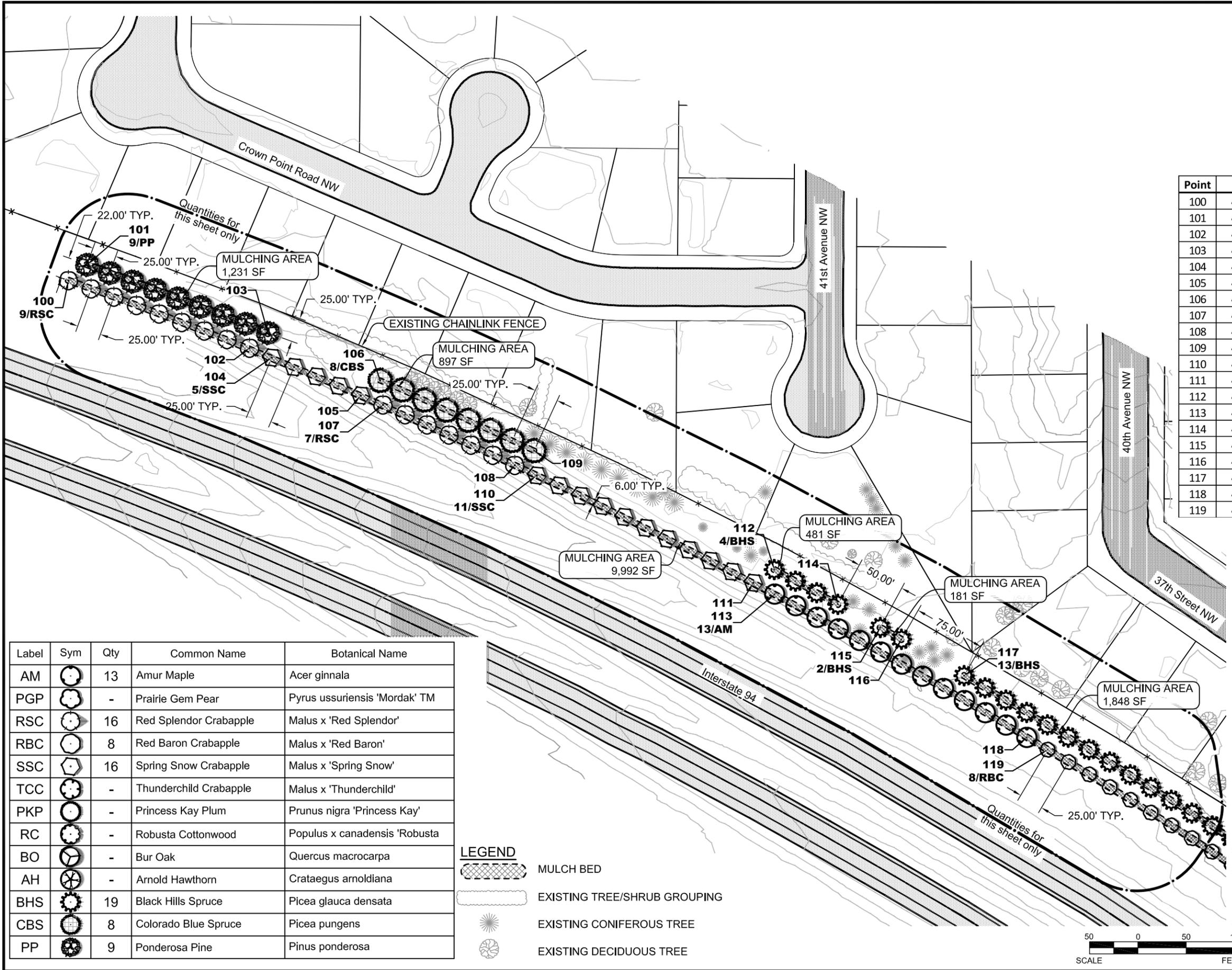
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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	2

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	1,626 SY
<b>WOOD MULCH</b>	
Mulch Bed	14,630 SF

Point	Northing	Easting	RP
100	436666.0530	1856407.668	150.025
101	436682.2232	1856426.854	150.028
102	436596.3166	1856595.111	150.063
103	436611.9554	1856614.061	150.653
104	436586.5494	1856618.124	150.067
105	436547.4810	1856710.176	150.086
106	436562.8489	1856730.278	150.088
107	436537.7139	1856733.189	150.090
108	436475.3398	1856869.602	150.118
109	436490.3723	1856889.553	150.120
110	436464.8813	1856892.309	150.123
111	436354.0600	1857116.425	150.169
112	436367.7451	1857138.055	150.171
113	436342.4459	1857138.497	150.174
114	436331.8396	1857203.901	150.186
115	436307.9025	1857247.799	150.195
116	436295.7592	1857269.652	150.200
117	436258.1574	1857334.545	150.213
118	436194.5284	1857399.454	150.230
119	436181.7769	1857420.958	150.234

**NOTES:**  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		13	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		16	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		8	Red Baron Crabapple	Malus x 'Red Baron'
SSC		16	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		19	Black Hills Spruce	Picea glauca densata
CBS		8	Colorado Blue Spruce	Picea pungens
PP		9	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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LANDSCAPE ENHANCEMENT PROJECT  
 DEPARTMENT OF TRANSPORTATION  
 MANDAN, NORTH DAKOTA

**KLJ** Landscaping Layout

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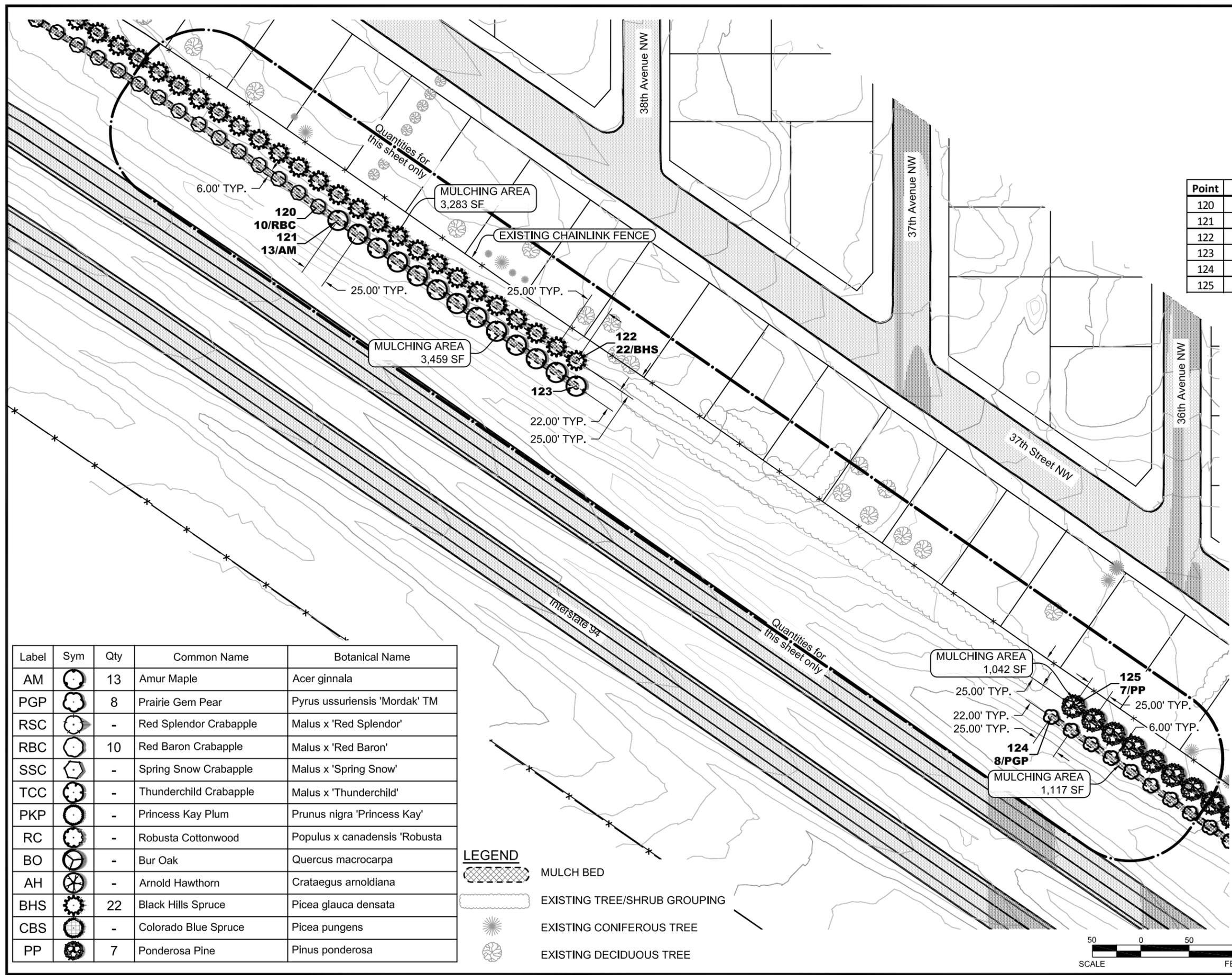
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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	3

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	989 SY
<b>WOOD MULCH</b>	
Mulch Bed	8,901 SF

Point	Northing	Easting	RP
120	435950.0579	1857777.055	150.313
121	435935.7798	1857797.577	150.318
122	435791.1132	1858044.279	150.372
123	435764.663	1858043.987	150.375
124	435423.2774	1858535.72	150.488
125	435434.0657	1858558.434	150.491

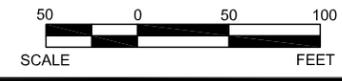
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TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		22	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		7	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE



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 MANDAN, NORTH DAKOTA

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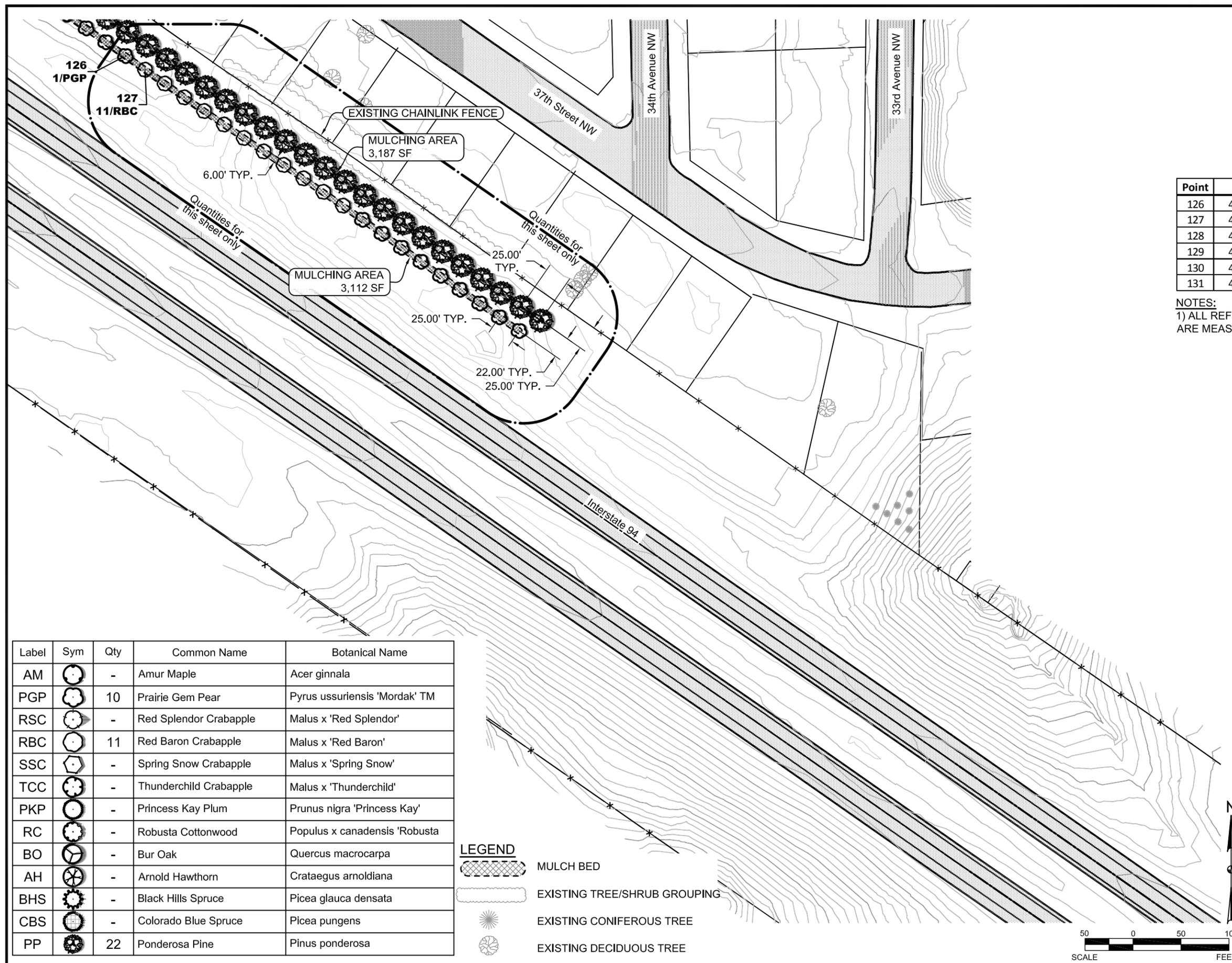
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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	4

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	700 SY
<b>WOOD MULCH</b>	
Mulch Bed	6,299 SF

Point	Northing	Easting	RP
126	435309.2231	1858700.008	150.526
127	435294.8377	1858720.454	150.531
128	435153.5255	1858926.675	150.578
129	435138.9794	1858947.007	150.583
130	435023.3375	1859110.181	150.621
131	435034.0573	1859132.845	150.623

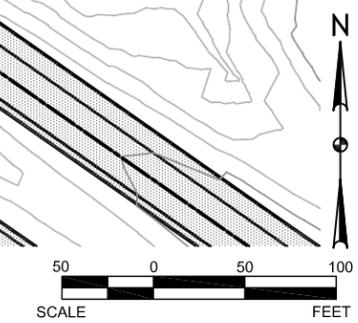
**NOTES:**  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		10	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		11	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		22	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE



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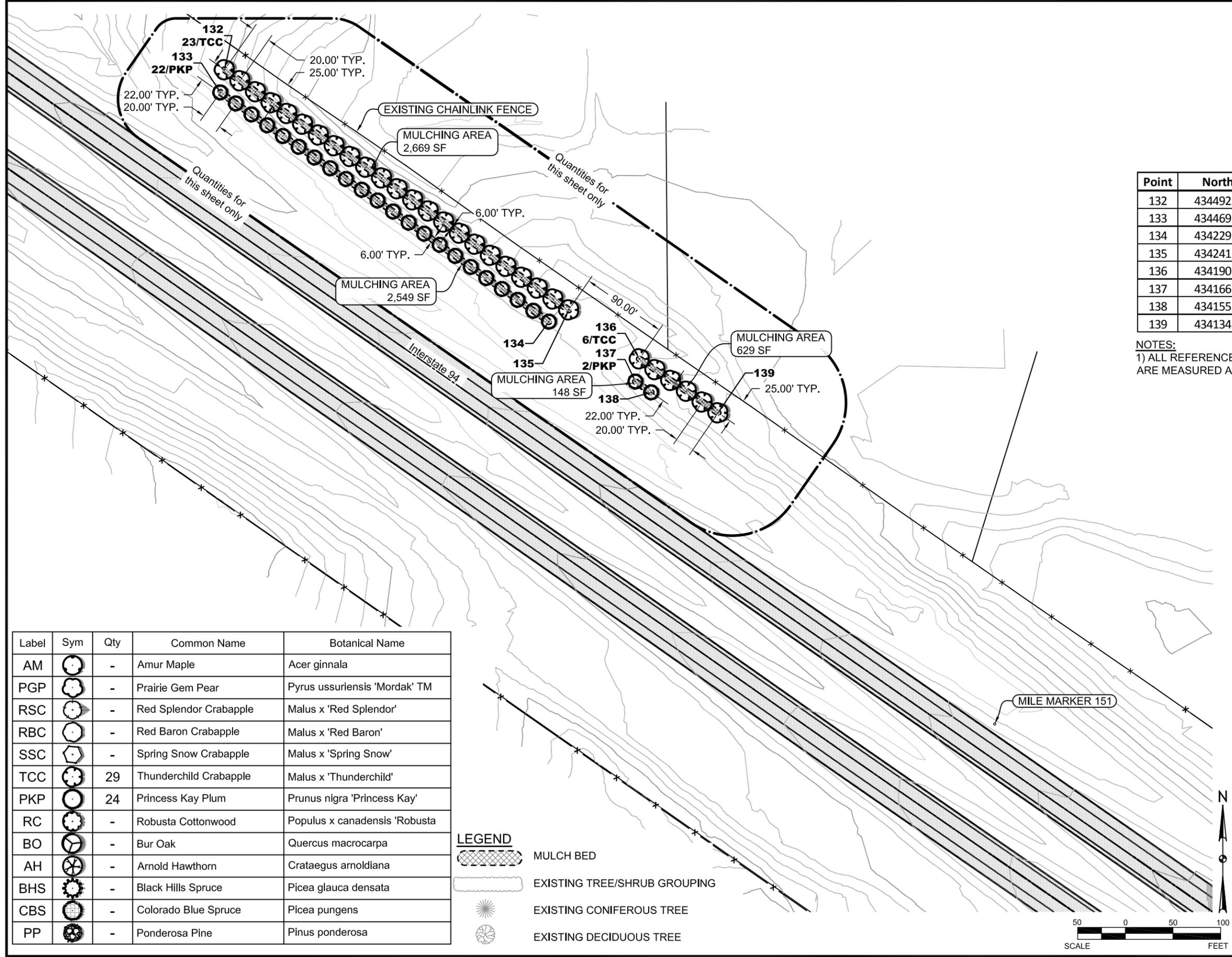
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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	5

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	666 SY
<b>WOOD MULCH</b>	
Mulch Bed	5,995 SF

Point	Northing	Easting	RP
132	434492.9643	1859911.225	150.803
133	434469.2147	1859906.758	150.805
134	434229.4383	1860251.567	150.884
135	434241.7451	1860272.435	150.886
136	434190.5624	1860346.465	150.903
137	434166.7601	1860342.288	150.905
138	434155.4615	1860358.791	150.909
139	434134.0695	1860428.979	150.922

**NOTES:**  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		29	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		24	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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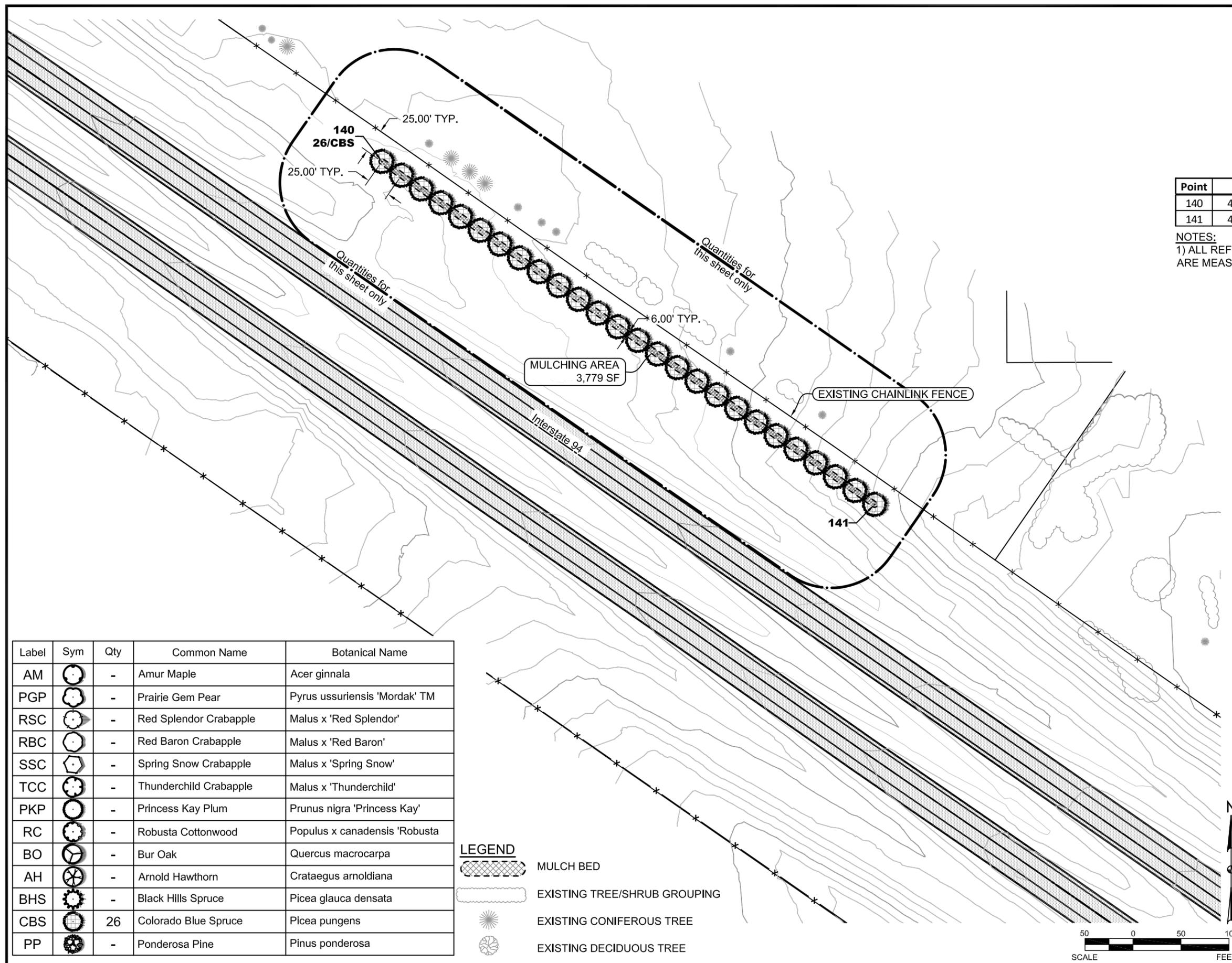
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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	6

<u>LANDSCAPE PREPARATION</u>	
Mulch Bed	420 SY
<u>WOOD MULCH</u>	
Mulch Bed	3,779 SF

Point	Northing	Easting	RP
140	433607.4621	1861187.608	151.094
141	433250.9241	1861700.928	151.212

NOTES:  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		26	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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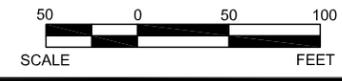
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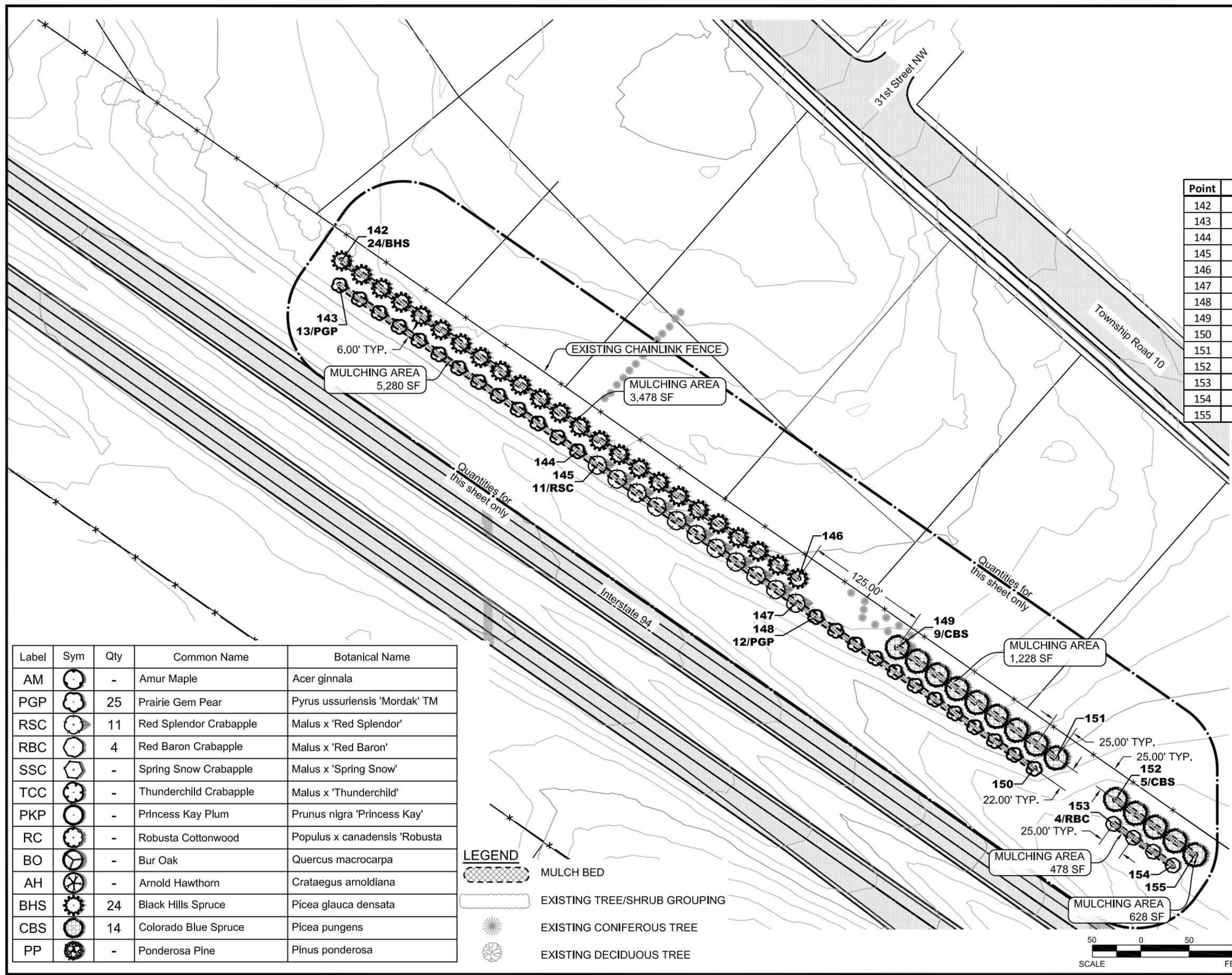


STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	7

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	1,232 SY
<b>WOOD MULCH</b>	
Mulch Bed	11,092 SF

Point	Northing	Easting	RP
142	432342.3699	1863005.781	151.514
143	432317.1675	1863003.524	151.516
144	432145.9046	1863249.843	151.573
145	432131.5489	1863270.311	151.578
146	432014.1828	1863477.919	151.623
147	431989.0166	1863475.667	151.625
148	431974.8299	1863496.252	151.630
149	431943.2493	1863580.844	151.646
150	431818.142	1863722.265	151.682
151	431829.076	1863745.052	151.684
152	431786.1881	1863806.579	151.698
153	431760.992	1863804.253	151.701
154	431718.1042	1863865.781	151.715
155	431729.0372	1863888.639	151.717

NOTES:  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		25	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		11	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		4	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		24	Black Hills Spruce	Picea glauca densata
CBS		14	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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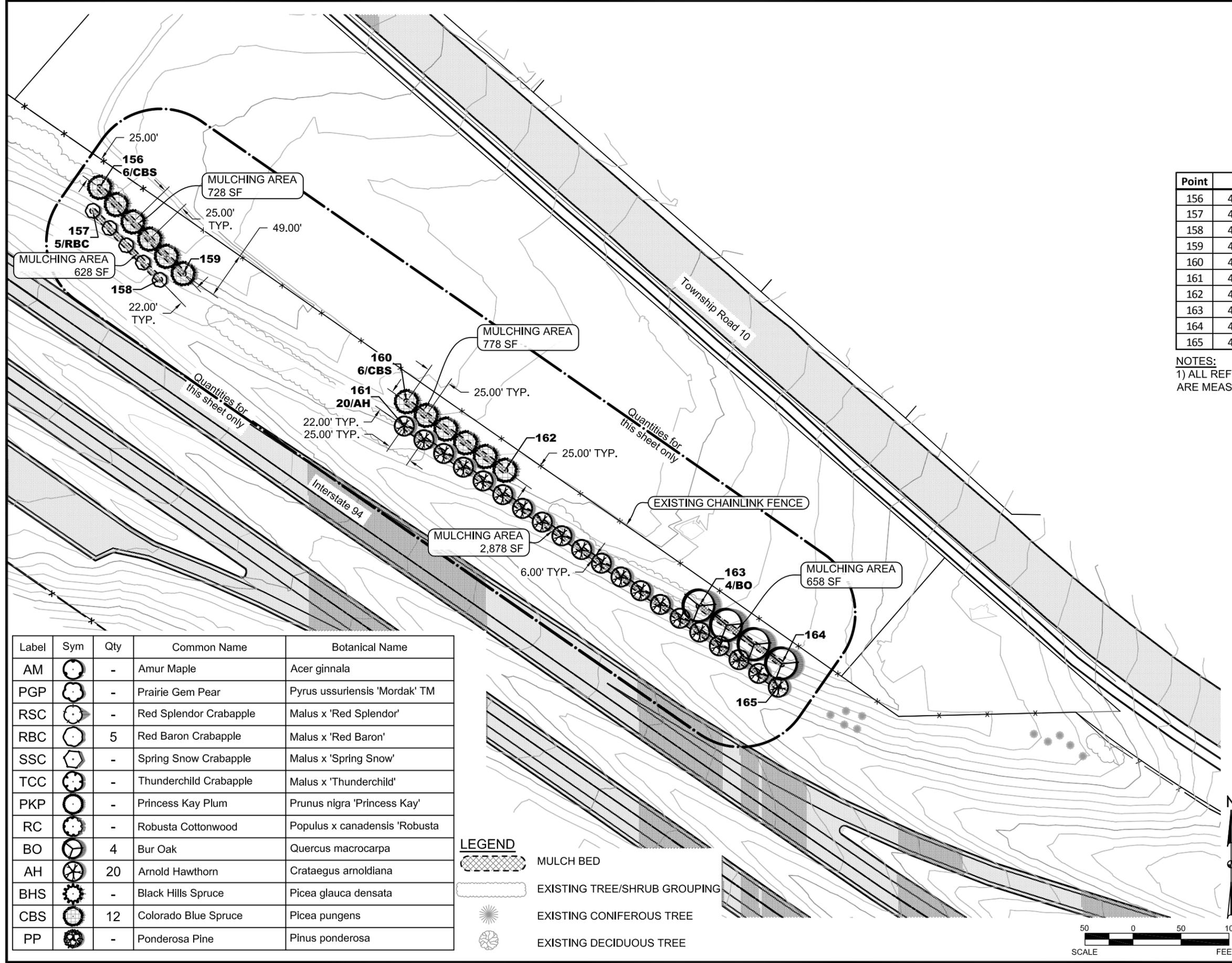
STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	8

**LANDSCAPE PREPARATION**  
 Mulch Bed 630 SY

**WOOD MULCH**  
 Mulch Bed 5,670 SF

Point	Northing	Easting	RP
156	431615.3094	1864053.156	151.755
157	431591.0166	1864046.078	151.757
158	431519.2648	1864115.732	151.775
159	431525.6196	1864140.224	151.778
160	431392.5155	1864372.863	151.829
161	431367.3147	1864370.58	151.831
162	431321.2114	1864475.531	151.853
163	431180.3303	1864677.833	151.899
164	431120.1337	1864763.865	151.919
165	431095.8302	1864760.35	151.921

NOTES:  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG WESTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		5	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		4	Bur Oak	Quercus macrocarpa
AH		20	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		12	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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ND	STI-1-094(150)149	85	9

Point	Northing	Easting	RP
166	423313.6695	1879257.227	155.159
167	423312.1703	1879277.17	155.162
168	423281.7831	1879274.848	155.166
169	423172.9739	1879392.095	155.198
170	423309.172	1879317.058	155.168
171	423276.4738	1879354.248	155.179
172	423267.4789	1879473.91	155.198
173	423294.1832	1879516.46	155.201
174	423182.8838	1879479.915	155.211
175	423117.7736	1879505.619	155.223
176	423062.487	1879514.629	155.232

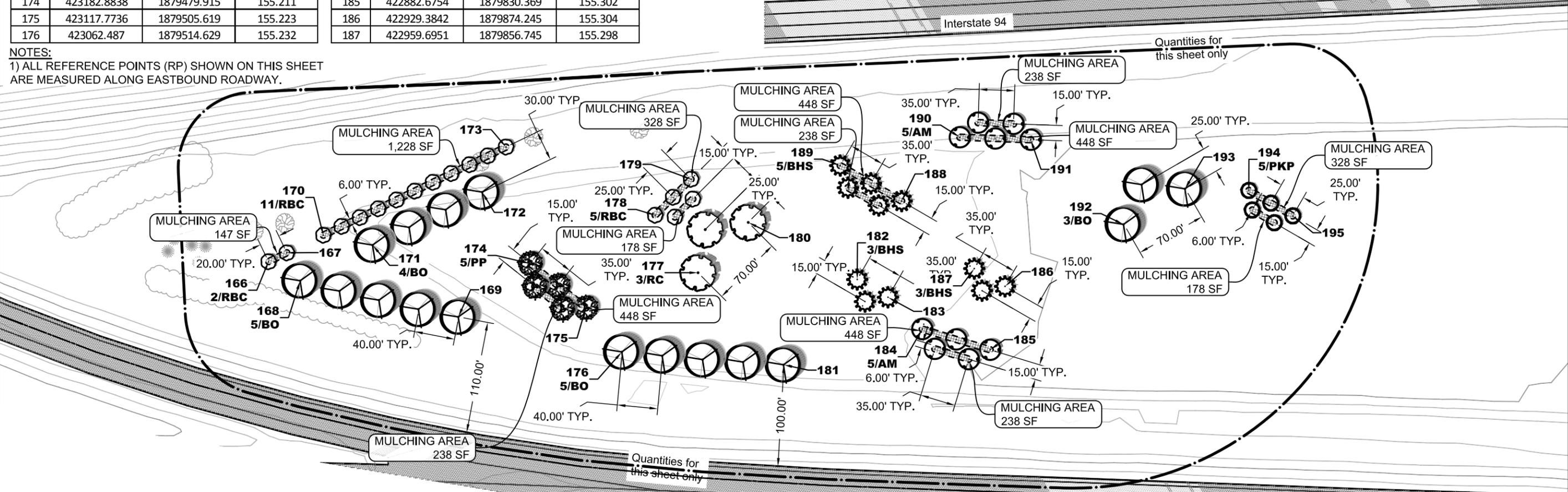
Point	Northing	Easting	RP
177	423092.4168	1879618.664	155.244
178	423162.5439	1879610.338	155.235
179	423175.4848	1879658.635	155.241
180	423110.5342	1879686.279	155.255
181	422971.812	1879646.43	155.263
182	423008.1377	1879751.368	155.276
183	422977.8268	1879768.868	155.282
184	422933.7781	1879782.531	155.289
185	422882.6754	1879830.369	155.302
186	422929.3842	1879874.245	155.304
187	422959.6951	1879856.745	155.298

Point	Northing	Easting	RP
188	423052.9449	1879827.864	155.284
189	423113.5667	1879792.864	155.272
190	423078.6872	1879908.986	155.295
191	423041.5843	1879968.344	155.308
192	422923.6779	1880005.9	155.326
193	422923.6779	1880075.9	155.337
194	422890.7939	1880129.734	155.349
195	422847.4926	1880154.734	155.357

**LANDSCAPE PREPARATION**  
 Mulch Bed 570 SY

**WOOD MULCH**  
 Mulch Bed 5,131 SF  
 Individual Trees (26) 735 SF

**NOTES:**  
 1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG EASTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		10	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		18	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		5	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		3	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		17	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		11	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		5	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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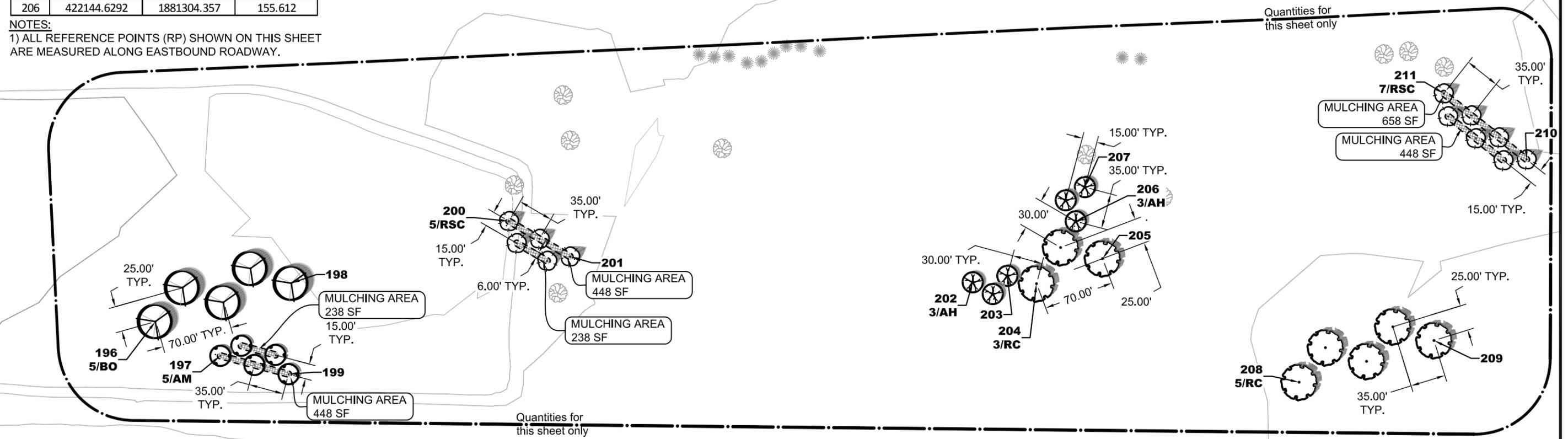
STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	10

Point	Northing	Easting	RP
196	422515.2359	1880464.068	155.440
197	422453.6681	1880502.88	155.453
198	422480.6519	1880599.73	155.466
199	422404.1706	1880552.377	155.466
200	422425.8368	1880817.454	155.506
201	422365.215	1880852.454	155.518
202	422143.4479	1881185.59	155.594
203	422131.8021	1881218.596	155.600
204	422110.6767	1881239.721	155.606
205	422099.3215	1881308.896	155.618
206	422144.6292	1881304.357	155.612

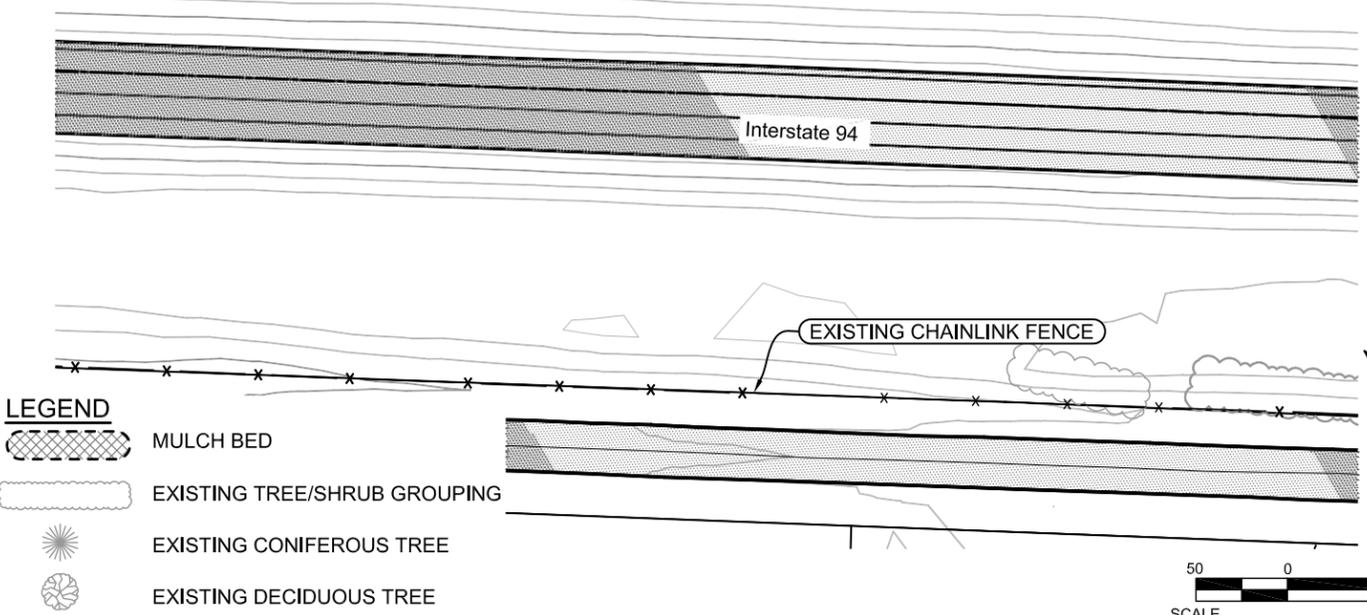
Point	Northing	Easting	RP
207	422169.378	1881329.106	155.614
208	421895.9048	1881416.7	155.656
209	421864.7821	1881553.196	155.681
210	421973.934	1881722.27	155.697
211	422071.6038	1881683.726	155.681

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	275 SY
<b>WOOD MULCH</b>	
Mulch Bed	2,478 SF
Individual Trees (19)	537 SF

NOTES:  
1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG EASTBOUND ROADWAY.



Label	Sym	Qty	Common Name	Botanical Name
AM		5	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		12	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		8	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		5	Bur Oak	Quercus macrocarpa
AH		6	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa



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LANDSCAPE PREPARATION  
Mulch Bed 392 SY

WOOD MULCH  
Mulch Bed 3,524 SF  
Individual Trees (43) 1,215 SF

STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-094(150)149	85	11

Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		13	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		9	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		15	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		14	Bur Oak	Quercus macrocarpa
AH		14	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		6	Ponderosa Pine	Pinus ponderosa

Point	Northing	Easting	RP	231	421659.0907	1881691.906	155.724
212	421953.5213	1882037.076	155.749	232	421697.3349	1881671.715	155.717
213	421892.6473	1882071.636	155.761	233	421685.5686	1881649.493	155.714
214	421863.6841	1882079.455	155.765	234	421497.855	1881534.762	155.714
215	421794.1138	1882118.951	155.779	235	421351.9065	1881773.703	155.768
216	421772.5562	1882139.814	155.785	236	420922.0908	1882460.264	155.921

NOTES:  
1) ALL REFERENCE POINTS (RP) SHOWN ON THIS SHEET ARE MEASURED ALONG EASTBOUND ROADWAY.

**LEGEND**

- MULCH BED
- EXISTING TREE/SHRUB GROUPING
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE

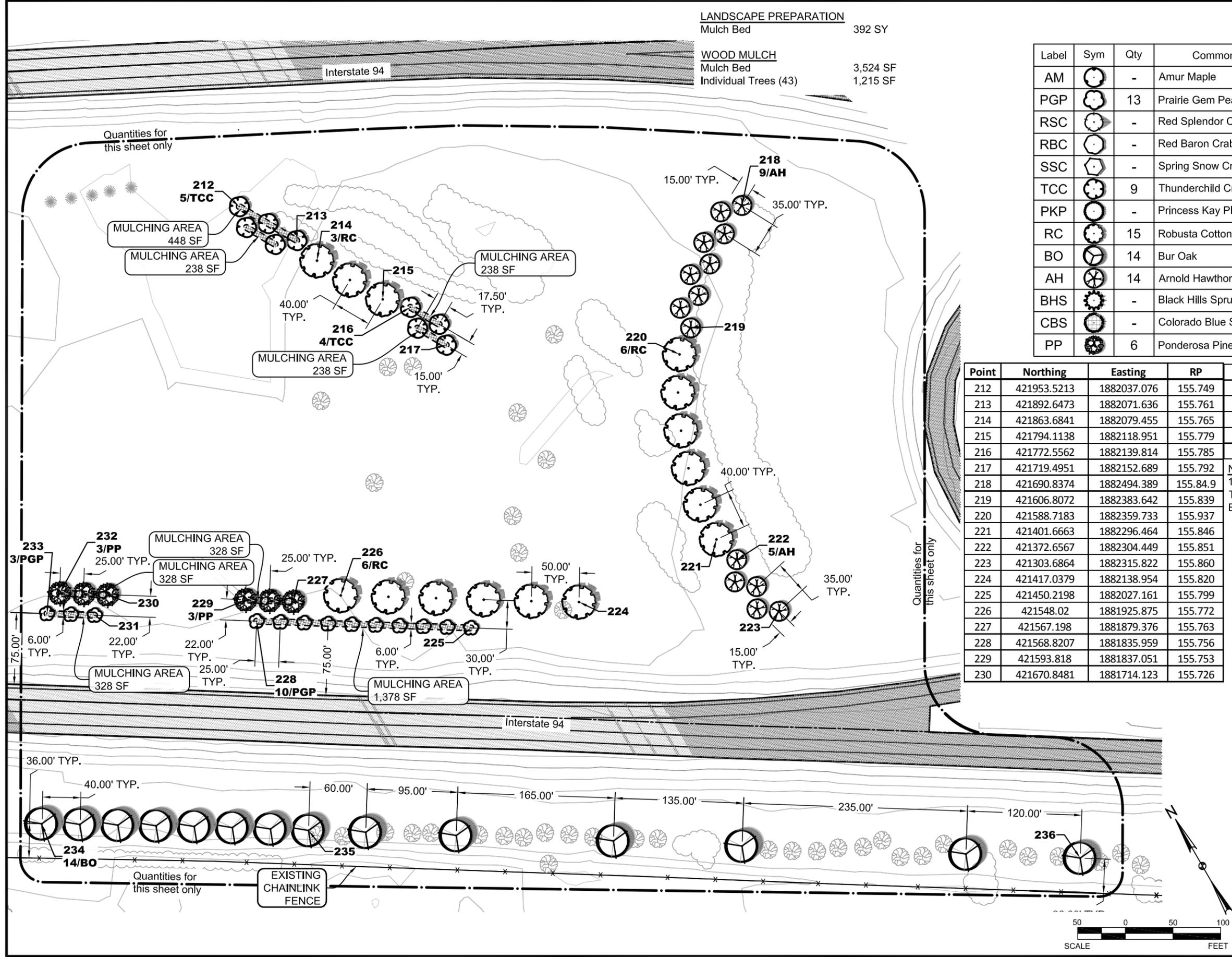
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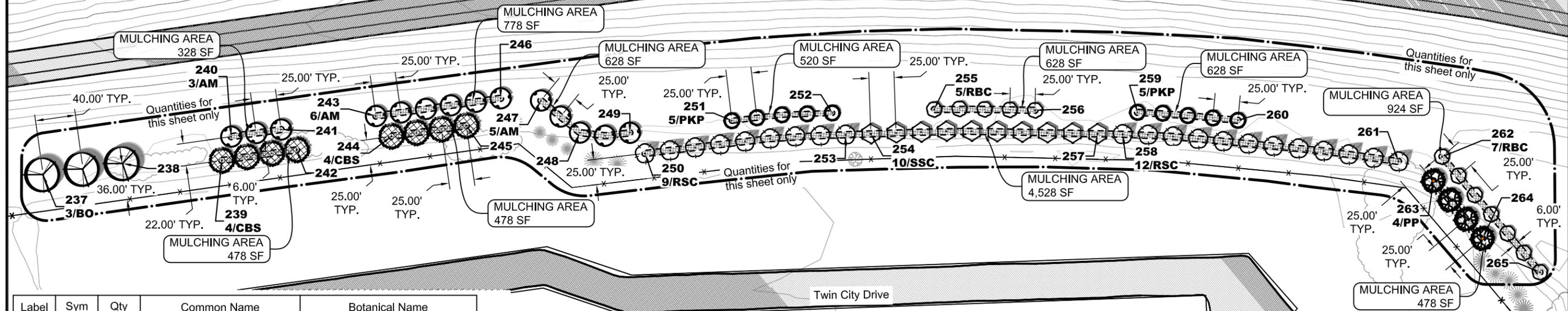


STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-194(005)000	85	12

Point	Northing	Easting
237	420780.2713	1882687.133
238	420737.968	1882754.714
239	420676.8601	1882832.083
240	420688.9227	1882854.326
241	420662.4832	1882896.763
242	420637.2007	1882895.739
243	420612.2479	1882977.395
244	420586.9655	1882976.37
245	420547.3061	1883040.027
246	420546.149	1883083.488
247	420518.7791	1883112.666
248	420469.6305	1883121.853
249	420437.5807	1883159.747
250	420412.3286	1883158.139
251	420381.7308	1883244.941

Point	Northing	Easting
252	420323.5799	1883326.193
253	420298.5507	1883322.48
254	420283.1447	1883342.169
255	420261.2261	1883405.881
256	420196.3254	1883481.935
257	420138.6511	1883514.553
258	420122.211	1883533.387
259	420129.4674	1883558.528
260	420059.3019	1883629.732
261	419925.7671	1883725.612
262	419901.6519	1883761.748
263	419888.6803	1883739.818
264	419813.6832	1883740.471
265	419751.6558	1883762.658

<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	1,155 SY
<b>WOOD MULCH</b>	
Mulch Bed	10,396 SF
Individual Trees (3)	85 SF



Label	Sym	Qty	Common Name	Botanical Name
AM		14	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		21	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		12	Red Baron Crabapple	Malus x 'Red Baron'
SSC		10	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		10	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		3	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		8	Colorado Blue Spruce	Picea pungens
PP		4	Ponderosa Pine	Pinus ponderosa

**LEGEND**

- MULCH BED
- EXISTING TREE/SHRUB GROUPING
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE

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Rev'd. 00/00/0000

**LANDSCAPE ENHANCEMENT PROJECT**  
DEPARTMENT OF TRANSPORTATION  
MANDAN, NORTH DAKOTA

**KLJ** Landscaping Layout

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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	STI-1-194(005)000	85	13

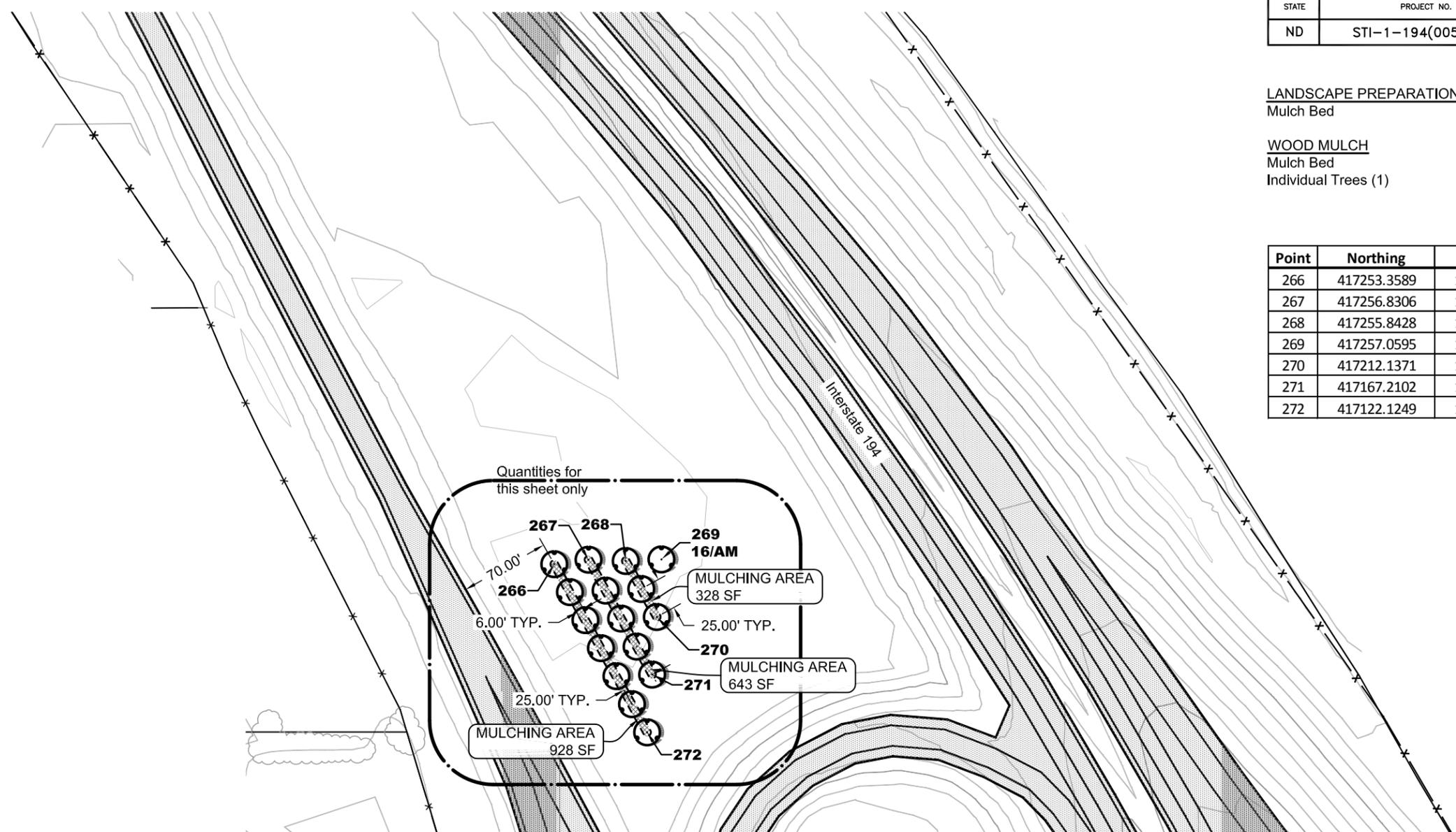
**LANDSCAPE PREPARATION**

Mulch Bed	211 SY
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**WOOD MULCH**

Mulch Bed	1,899 SF
Individual Trees (1)	28 SF

Point	Northing	Easting
266	417253.3589	1885731.749
267	417256.8306	1885758.539
268	417255.8428	1885787.688
269	417257.0595	1885815.612
270	417212.1371	1885811.974
271	417167.2102	1885808.339
272	417122.1249	1885804.391



Label	Sym	Qty	Common Name	Botanical Name
AM		16	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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**LANDSCAPE ENHANCEMENT PROJECT**  
DEPARTMENT OF TRANSPORTATION  
MANDAN, NORTH DAKOTA

Landscaping Layout

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STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	S-TNU-1-810(023)000	85	14

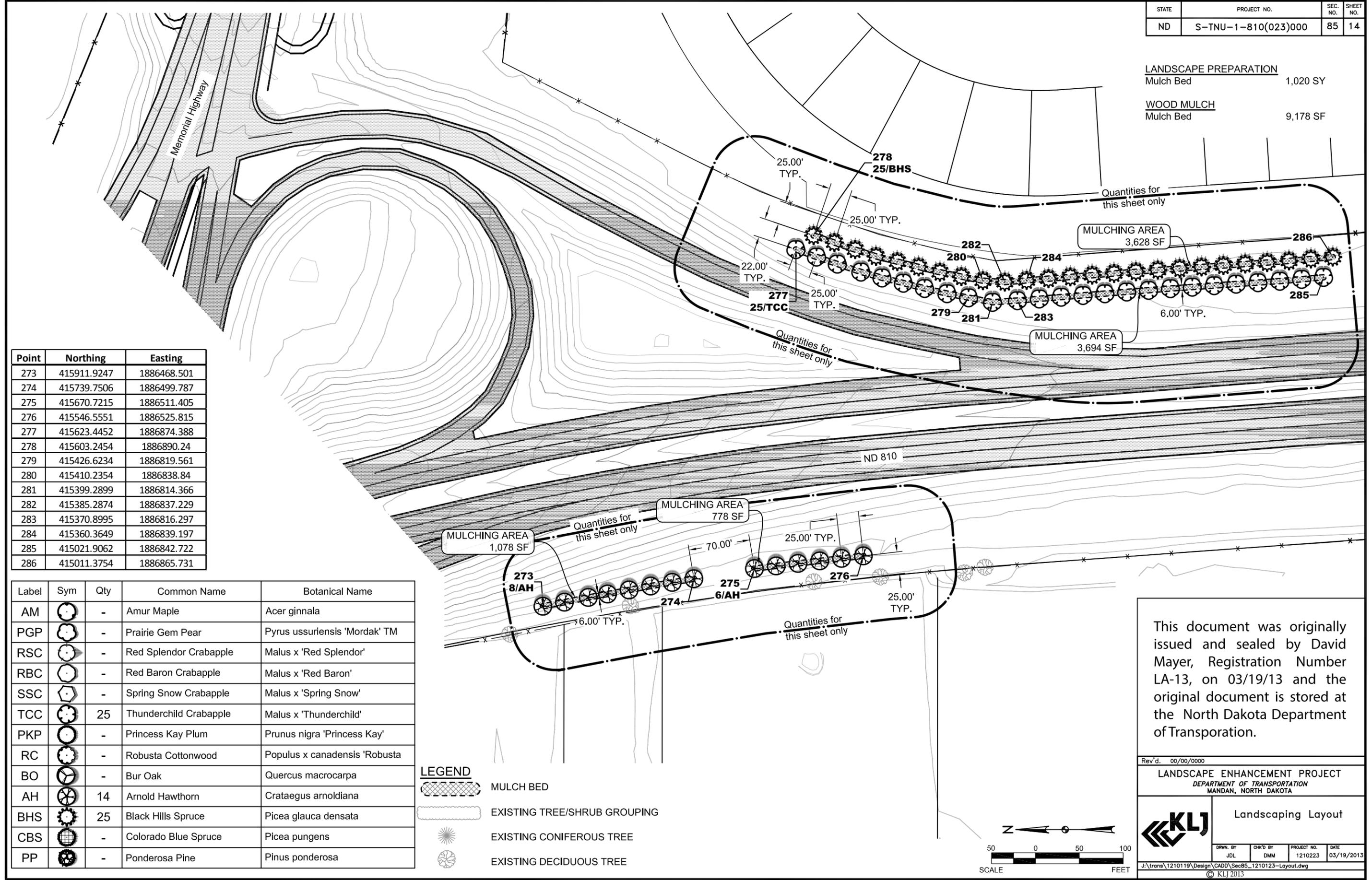
<b>LANDSCAPE PREPARATION</b>	
Mulch Bed	1,020 SY
<b>WOOD MULCH</b>	
Mulch Bed	9,178 SF

Point	Northing	Easting
273	415911.9247	1886468.501
274	415739.7506	1886499.787
275	415670.7215	1886511.405
276	415546.5551	1886525.815
277	415623.4452	1886874.388
278	415603.2454	1886890.24
279	415426.6234	1886819.561
280	415410.2354	1886838.84
281	415399.2899	1886814.366
282	415385.2874	1886837.229
283	415370.8995	1886816.297
284	415360.3649	1886839.197
285	415021.9062	1886842.722
286	415011.3754	1886865.731

Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		25	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		14	Arnold Hawthorn	Crataegus arnoldiana
BHS		25	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

- MULCH BED
- EXISTING TREE/SHRUB GROUPING
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE



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DEPARTMENT OF TRANSPORTATION  
MANDAN, NORTH DAKOTA

**KLJ** Landscaping Layout

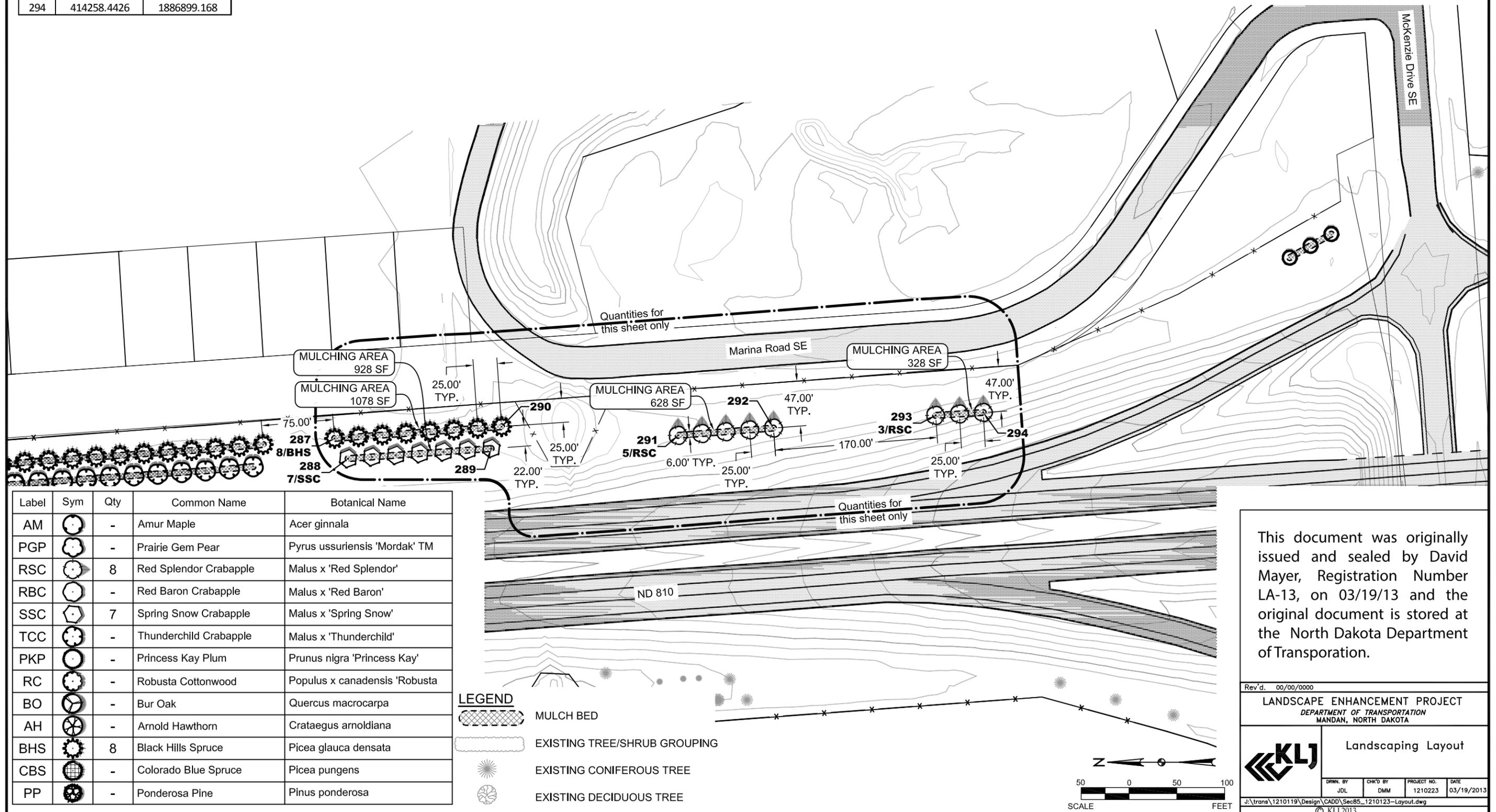
DRWN. BY	CHK'D BY	PROJECT NO.	DATE
JDL	DMM	1210223	03/19/2013

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Point	Northing	Easting
287	414936.6475	1886872.109
288	414922.634	1886851.039
289	414773.0056	1886861.546
290	414762.0774	1886884.368
291	414577.5441	1886875.28
292	414477.8359	1886882.914
293	414308.3502	1886896.129
294	414258.4426	1886899.168

STATE	PROJECT NO.	SEC. NO.	SHEET NO.
ND	S-TNU-1-810(023)000	85	15

LANDSCAPE PREPARATION	
Mulch Bed	329 SY
WOOD MULCH	
Mulch Bed	2,962 SF



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		8	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		7	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		-	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		8	Black Hills Spruce	Picea glauca densata
CBS		-	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

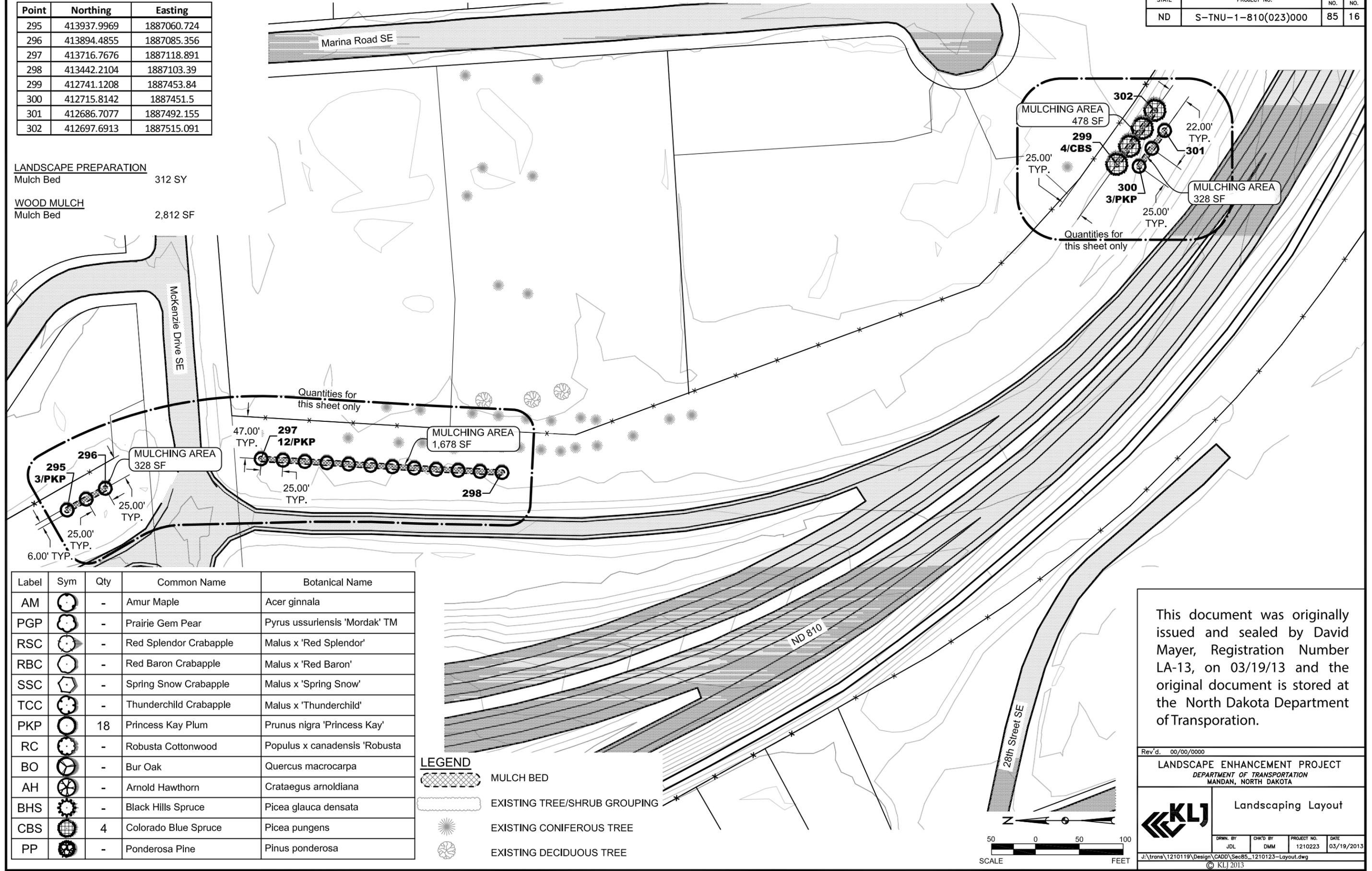
	MULCH BED
	EXISTING TREE/SHRUB GROUPING
	EXISTING CONIFEROUS TREE
	EXISTING DECIDUOUS TREE

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DEPARTMENT OF TRANSPORTATION MANDAN, NORTH DAKOTA			
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Point	Northing	Easting
295	413937.9969	1887060.724
296	413894.4855	1887085.356
297	413716.7676	1887118.891
298	413442.2104	1887103.39
299	412741.1208	1887453.84
300	412715.8142	1887451.5
301	412686.7077	1887492.155
302	412697.6913	1887515.091

**LANDSCAPE PREPARATION**  
 Mulch Bed 312 SY  
**WOOD MULCH**  
 Mulch Bed 2,812 SF



Label	Sym	Qty	Common Name	Botanical Name
AM		-	Amur Maple	Acer ginnala
PGP		-	Prairie Gem Pear	Pyrus ussuriensis 'Mordak' TM
RSC		-	Red Splendor Crabapple	Malus x 'Red Splendor'
RBC		-	Red Baron Crabapple	Malus x 'Red Baron'
SSC		-	Spring Snow Crabapple	Malus x 'Spring Snow'
TCC		-	Thunderchild Crabapple	Malus x 'Thunderchild'
PKP		18	Princess Kay Plum	Prunus nigra 'Princess Kay'
RC		-	Robusta Cottonwood	Populus x canadensis 'Robusta'
BO		-	Bur Oak	Quercus macrocarpa
AH		-	Arnold Hawthorn	Crataegus arnoldiana
BHS		-	Black Hills Spruce	Picea glauca densata
CBS		4	Colorado Blue Spruce	Picea pungens
PP		-	Ponderosa Pine	Pinus ponderosa

**LEGEND**

- MULCH BED
- EXISTING TREE/SHRUB GROUPING
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE

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Rev'd. 00/00/0000

**LANDSCAPE ENHANCEMENT PROJECT**  
 DEPARTMENT OF TRANSPORTATION  
 MANDAN, NORTH DAKOTA

**KLJ** Landscaping Layout

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NDDOT ABBREVIATIONS

Abn abandoned  
 Abut abutment  
 Ac acres  
 Adj adjusted  
 Aggr aggregate  
 Ahd ahead  
 ARV air release valve  
 Align alignment  
 Al alley  
 Alt alternate  
 Alum aluminum  
 A ampere  
 & and  
 Appr approach  
 Approx approximate  
 ACP asbestos cement pipe  
 Asph asphalt  
 AC asphalt cement  
 Assmd assumed  
 @ at  
 Atten attenuation  
 Ave Avenue  
 Avg average  
 ADT average daily traffic  
 Az azimuth  
 Bk back  
 BF back face  
 Bs backsight  
 Balc balcony  
 B Wire barbed wire  
 Barr barricade  
 Btry battery  
 Brg bearing  
 BI beehive inlet  
 Beg begin  
 BM bench mark  
 Bkwy bikeway  
 Bit bituminous  
 Blk block  
 Bd Ft board feet  
 BH bore hole  
 BS both sides  
 Bot bottom  
 Blvd Boulevard  
 Bndry boundary  
 BC brass cap  
 Brkwy breakaway  
 Br bridge  
 Bldg building  
 BLM Bureau of Land Management  
 BV butterfly valve  
 Byp bypass  
 C Gdrl cable guardrail  
 Calc calculate  
 Cd candela  
 CIP cast iron pipe

CB catch basin  
 CRS cationic rapid setting  
 C Gd cattle guard  
 C To C center to center  
 Cl or C centerline  
 Cm centimeter  
 Ch chain  
 Chnlk chain-link  
 Ch Blk channel block  
 Ch Ch channel change  
 Chk check  
 Chsld chiseled  
 Cir circle  
 Cl class  
 Cl clay  
 Cl F clay fill  
 Cl Hvy clay heavy  
 Cl Lm clay loam  
 Cint clean-out  
 Cir clear  
 Cl&gr clearing & grubbing  
 Co S coal slack  
 Comb. combination  
 Coml commercial  
 Compr compression  
 CADD computer aided drafting & design  
 Conc concrete  
 Cond conductor  
 Const construction  
 Cont continuous  
 CSB continuous split barrel sample  
 Contr contraction  
 Contr contractor  
 CP control point  
 Coord coordinate  
 Cor comer  
 Corr corrected  
 CAES corrugated aluminum end section  
 CAP corrugated aluminum pipe  
 CMES corrugated metal end section  
 CMP corrugated metal pipe  
 CPVCP corrugated poly-vinyl chloride pipe  
 CSES corrugated steel end section  
 CSP corrugated steel pipe  
 C coulomb  
 Co County  
 Crse course  
 C Gr course gravel  
 CS course sand  
 Ct Court  
 Xarm cross arm  
 Xbuck cross buck  
 Xsec cross sections  
 Xing crossing  
 Cm crown  
 CF cubic feet

M3 cubic meter  
 M3/s cubic meters per second  
 CY cubic yard  
 Cy/mi cubic yards per mile  
 Culv culvert  
 C&G curb & gutter  
 CI curb inlet  
 CR curb ramp  
 CS curve to spiral  
 C cut  
 Dd Ld dead load  
 Defl deflection  
 Defm deformed  
 Deg or D degree  
 DInt delineate  
 DIntr delineator  
 Depr depression  
 Desc description  
 Det detail  
 Dtr detour  
 Dia diameter  
 Dir direction  
 Dist distance  
 DM disturbed material  
 DB ditch block  
 DG ditch grade  
 Dbl double  
 Dn down  
 Dwg drawing  
 Dr drive  
 Drwy driveway  
 DI drop inlet  
 D dry density  
 Ea each  
 Esmt easement  
 E East  
 Elast elastomeric  
 EL electric locker  
 E Mtr electric meter  
 Elec electric/al  
 EDM electronic distance meter  
 Elev or El elevation  
 Ellipt elliptical  
 Emb embankment  
 Emuls emulsion/emulsified  
 ES end section  
 Engr engineer  
 Eq equal  
 Eq equation  
 Evgr evergreen  
 Exc excavation  
 Exst existing  
 Exp expansion  
 Expy Expressway  
 E external of curve  
 Extru extruded

FOS factor of safety  
 F Fahrenheit  
 FS far side  
 F farad  
 Fed Federal  
 FHWA Federal Highway Administration  
 FP feed point  
 Ft feet/foot  
 Fn fence  
 Fn P fence post  
 FO fiber optic  
 FB field book  
 FD field drive  
 F fill  
 FS fine sand  
 FH fire hydrant  
 Fl flange  
 Flrd flared  
 FES flared end section  
 F Bcn flashing beacon  
 FA flight auger sample  
 FL flow line  
 Ftg footing  
 FM force main  
 Fs foresight  
 Fnd found  
 Fdn foundation  
 Frac fractional  
 Frwy freeway  
 Frt front  
 FF front face  
 F Disp fuel dispenser  
 FFP fuel filler pipes  
 FLS fuel leak sensor  
 Furn furnish/ed  
 Gal gallon  
 Galv galvanized  
 Gar garage  
 Gs L gas line  
 G Reg gas line regulator  
 GMV gas main valve  
 G Mtr gas meter  
 GSV gas service valve  
 GVP gas vent pipe

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-01-96	
REVISIONS	
DATE	CHANGE
01-27-97	Cont and CPVCP
05-05-97	Added items
12-01-04	PE stamp added
03-04-08	General revisions & standard # change (pages added)

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NDDOT ABBREVIATIONS

GV	gate valve	Lat	latitude	Mtd	mounted	POT	point on tangent
Ga	gauge	Lt	left	Mtg	mounting	PE	polyethylene
Geod	geodetic	L	length of curve	Mk	muck	PVC	polyvinyl chloride
GIS	Geographical Information System	Lens	lenses	Mun	municipal	PCC	Portland Cement concrete
G	giga	Lvl	level	N	nano	Lb or #	pounds
GPS	Global Positioning System	LB	level book	NGS	National Geodetic Survey	PP	power pole
Gov	government	LvIng	leveling	NS	near side	Preempt	preemption
Grd	graded/grade	Lht	light	Neop	neoprene	Prefab	prefabricated
Gr	gravel	LP	light pole	Ntwk	network	Prfmd	performed
Grnd	ground	Ltg	lighting	N	newton	Prep	preparation
GWM	ground water monitor	Lig Co	lignite coal	N	North	Press.	pressure
Gdrl	guardrail	Lig Sl	lignite slack	NDDOT	North Dakota Department of Transportation	PRV	pressure relief valve
Gtr	gutter	LF	linear foot	NE	North East	Prestr	prestressed
H Plg	H piling	Liq	liquid	NW	North West	Pvt	private
Hdwl	headwall	LL	liquid limit	No. or #	number	PD	private drive
Ha	hectare	L	litre	Obsc	obscure(d)	Prod.	production/produce
Ht	height	Lm	loam	Obsn	observation	Prog	programmed
HI	height of instrument	Loc	location	Ocpd	occupied	Prop.	property
Hel	helical	LC	long chord	Ocpy	occupy	Prop Ln	property line
H	henry	Long.	longitude	Off Loc	office location	Ppsd	proposed
Hz	hertz	Lp	loop	O/s	offset	PB	pull box
HM	high mast	LD	loop detector	OC	on center	Qty	quantity
HP	high pressure	Lm	lumen	C	one dimensional consolidation	Qtr	quarter
HPS	high pressure sodium	Lum	luminaire	OC	organic content	Rad or R	radius
Hwy	highway	L Sum	lump sum	Orig	original	RR	railroad
Hor	horizontal	Lx	lux	O To O	out to out	Rlwy	railway
Hr	hour(s)	ML	main line	OD	outside diameter	Rsd	raised
Hyd	hydrant	M Hr	man hour	OH	overhead	RTP	random traverse point
Ph	hydrogen ion content	MH	manhole	PMT	pad mounted transformer	Rge or R	range
Id	identification	Mkd	marked	Pg	pages	RC	rapid curing
In or "	inch	Mkr	marker	Pntd	painted	Rec	record
Incl	inclinometer tube	Mkg	marking	Pr	pair	Rcy	recycle
IMH	inlet manhole	MA	mast arm	Pnl	panel	RPCC	recycled Portland cement concrete
ID	inside diameter	Matl	material	Pk	park	Ref	reference
Inst	instrument	Max	maximum	PK	Parker-Kalon nail	R Mkr	reference marker
Intchg	interchange	MC	meander corner	Pa	pascal	RM	reference monument
Intmtd	intermediate	Meas	measure	PSD	passing sight distance	Refl	reflectorized
Intscn	intersection	Mdn	median	Pvmt	pavement	RCB	reinforced concrete box
Inv	invert	MD	median drain	Ped	pedestal	RCES	reinforced concrete end section
IM	iron monument	MC	medium curing	Ped	pedestrian	RCP	reinforced concrete pipe
I Pn	Iron Pin	M	mega	PPP	pedestrian pushbutton post	RCPS	reinforced concrete pipe sewer
IP	iron Pipe	Mer	meridian	Pen.	penetration	Reinf	reinforcement
Jt	joint	M	meter	Perf	perforated	Res	reservation
J	joule	M/s	meters per second	Per.	perimeter	Ret	retaining
Jct	junction	M	mid ordinate of curve	PL	pipeline		
K	kelvin	Mi	mile	PI	place		
Kn	kilo newton	MM	mile marker	P&P	plan & profile		
Kpa	kilo pascal	MP	mile post	PL	plastic limit		
Kg	kilogram	Ml	milliliter	PI	plate		
Kg/m3	kilogram per cubic meter	Mm	millimeter	Pt	point		
Km	kilometer	Mm/hr	millimeters per hour	PCC	point of compound curve		
K	Kip(s)	Min	minimum	PC	point of curve		
LS	Land Surveyor (licensed)	Misc	miscellaneous	PI	point of intersection		
LSIT	Land Surveyor In Training	Mon	monument	PRC	point of reverse curvature		
Ln	lane	Mnd	mound	PT	point of tangent		
Lg	large	Mtbl	mountable	POC	point on curve		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
01-27-97	Cont and CPVCP
05-05-97	Added items
12-01-04	PE stamp added
03-04-08	General revisions & standard # change (pages added)

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NDDOT ABBREVIATIONS

D-20-3

Rev	reverse	Stk	stake	Ugrnd	underground
Rt	right	Std	standard	USC&G	US Coast & Geodetic Survey
R/W	right of way	N	standard penetration test	USGS	US Geologic Survey
Riv	river	Std Specs	Standard Specifications	Util	utility
Rd	road	Sta	station	VG	valley gutter
Rdbd	road bed	Sta Yd	station yards	Vap	vapor
Rdwy	roadway	Stm L	steam line	Vert	vertical
Rk	rock	SEC	steel encased concrete	VC	vertical curve
Rt	route	SSD	stopping sight distance	VCP	vitrified clay pipe
Salv	salvage(d)	SD	storm drain	V	volt
Sd	sand	St	street	Vol	volume
Sdy Cl	sandy clay	SPP	structural plate pipe	Wkwy	walkway
Sdy Cl Lm	sandy clay loam	SPPA	structural plate pipe arch	W	water content
Sdy Fl	sandy fill	Str	structure	WGV	water gate valve
Sdy Lm	sandy loam	Subd	subdivision	WL	water line
San	sanitary sewer line	Sub	subgrade	WM	water main
Sc	scoria	Sub Prep	subgrade preparation	WMV	water main valve
Sec	seconds	Ss	subsoil	W Mtr	water meter
Sec	section	SE	superelevation	WSV	water service valve
SL	section line	SS	supplement specification	WW	water well
Sep	separation	Supp	supplemental	W	watt
Seq	sequence	Surf	surfacing	Wmg	wearing
Serv	service	Surv	survey	Wb	weber
Sh	shale	Sym	symmetrical	W	West
Sht	sheet	SI	Systems International	Wmg	wiring
Shtng	sheeting	Tan	tangent	W/	with
Shldr	shoulder	T	tangent (semi)	W/o	without
Sw	sidewalk	TS	tangent to spiral	WC	witness corner
S	siemens	Tel	telephone	WGS	World Geodetic System
SD	sight distance	Tel P	telephone pole	Z	zenith
Sig	signal	Tv	television		
Si Cl	silt clay	Temp	temperature		
Si Cl Lm	silty clay loam	Temp	temporary		
Si Lm	silty loam	TBM	temporary bench mark		
Sgl	single	T	tesla		
SC	slow curing	T	thinwall tube sample		
SS	slow setting	T/mi	tons per mile		
Sm	small	Ts	topsoil		
S	South	Twp or T	township		
SE	South East	Traf	traffic		
SW	South West	TSCB	traffic signal control box		
Sp	spaces	Tr	trail		
Spcl	special	Transf	transformer		
SP	special provisions	TB	transit book		
G	specific gravity	Trans	transition		
Spk	spike	TT	transmission tower		
SC	spiral to curve	Trans	transverse		
ST	spiral to tangent	Trav	traverse		
SB	split barrel sample	TP	traverse point		
SH	sprinkler head	Trtd	treated		
SV	sprinkler valve	Trmt	treatment		
Sq	square	Qc	triaxial compression		
SF	square feet	Tpl	triple		
Km2	square kilometer	TP	turning point		
M2	square meter	Typ	typical		
SY	square yard	Qu	unconfined compressive strength		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
01-27-97	Cont and CPVCP
05-05-97	Added items
12-01-04	PE stamp added
03-04-08	General revisions & standard # change (pages added)

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NDDOT UTILITY COMPANY ABBREVIATIONS

D-20-10

702COM 702 Communications  
 Accent Accent Communications  
 AGASSIZ WU Agassiz Water Users Incorporated  
 ALL SEAS WU All Seasons Water Users Association  
 All PI Alliance Pipeline  
 AMRDA HESS Amerada Hess Corporation  
 AMOCO PI Amoco Pipeline Company  
 AT&T AT&T Corporation  
 BRNS RWD Barnes Rural Water District  
 BASIN ELEC Basin Electric Cooperative Incorporated  
 B Paw Bear Paw Energy Incorporated  
 BEK TEL Bek Communications Cooperative  
 Belle P L Belle Fourche Pipeline Company  
 BOEING Boeing  
 BURK-DIV ELEC Burke-Divide Electric Cooperative  
 BURL WU Burleigh Water Users  
 Cable One Cable One  
 CABLE SERV Cable Services  
 CBLCOM Cablecom Of Fargo  
 CAP ELEC Capital Electric Cooperative Incorporat  
 CASS CO ELEC Cass County Electric Cooperative  
 CASS RWU Cass Rural Water Users Incorporated  
 CAV ELEC Cavalier Rural Electric Cooperative  
 CENEX PL Genex Pipeline  
 CENT PWR ELEC Central Power Electric Cooperative  
 MUNICIPAL City Of '.....'  
 MUNICIPAL City Water And Sewer  
 CONS TEL Consolidated Telephone  
 Dak Carr Dakota Carrier Network  
 DAK CENT TEL Dakota Central Telephone  
 DGC Dakota Gasification Company  
 DAK RWD Dakota Rural Water District  
 DVELEC Dakota Valley Electric Cooperative  
 D O E Department Of Energy  
 DICKEY R NET Dickey Rural Networks  
 Dickey RWU Dickey Rural Water Users Association  
 DICKEY TEL Dickey Telephone  
 DOME PL Dome Pipeline Company  
 ENBRDG Enbridge Pipelines Incorporated  
 FALK MNG Falkirk Mining Company  
 GETTY TRD & TRAN Getty Trading & Transportation  
 GLDN W ELEC Golden West Electric Cooperative  
 G FKS-TRL WD Grand Forks-trail Water District  
 GT PLNS NAT GAS Great Plains Natural Gas Company  
 GRGS CO TEL Griggs County Telephone  
 HALS TEL Halstad Telephone Company  
 INT-COMM TEL Inter-Community Telephone Company  
 KANEB PL Kaneb Pipeline Company  
 KEM ELEC Kem Electric Cooperative Incorporated  
 KOCH GATH SYS Koch Gathering Systems Incorporated  
 LKHD PL Lakehead Pipeline Company  
 LNGDN RWU Langdon Rural Water Users Incorporated  
 LWR YELL R ELEC Lower Yellowstone Rural Electric  
 Mcknz Con McKenzie Consolidated Telcom  
 MCKNZ ELEC McKenzie Electric Cooperative  
 MCLN ELEC Mclean Electric Cooperative

MCLN-SHRDN R WAT Mclean-Sheridan Rural Water  
 McLeod McLeod USA  
 MID-CONT CABLE Mid-Continent Cable  
 MIDSTATE TEL Midstate Telephone Company  
 MNKOTA PWR Minnkota Power  
 MINOT CABLE Minot Cable Television  
 MINOT TEL Minot Telephone Company  
 MISS W W S Missouri West Water System  
 MDU Montana-dakota Utilities  
 MOR-GRAN-SOU ELEC Mor-gran-sou Electric Cooperative  
 MOUNT-WILLI ELEC Mountrail-williams Electric Cooperative  
 NDSU SOIL SCI DEPT Ndsu Soil Science Department  
 NEMONT TEL Nemont Telephone  
 NODAK R ELEC Nodak Rural Electric Cooperative  
 NOON FRMS TEL Noonan Farmers Telephone Company  
 N CENT ELEC North Central Electric Cooperative  
 ND PKS & REC North Dakota Parks And Recreation  
 ND TEL North Dakota Telephone Company  
 N VALL W DIST North Valley Water District  
 NTHN BRDR PL Northern Border Pipeline  
 NTHN PLNS ELEC Northern Plains Electric Cooperative Incorporated  
 NTH PRAIR RW Northern Prairie Rural Water Association  
 NSP Northern States Power  
 NW COMM Northwest Communication Cooperation  
 NTHWSTRN REF Northwestern Refinery Company  
 OLVR-MERC ELEC Oliver-Mercer Electric Cooperative  
 OTTR TL PWR Otter Tail Power Company  
 Polar Com Polar Communications  
 P L E M Prairielands Energy Marketing  
 Qwest Qwest Communications  
 R & T Water Supply Association R & T Water Supply Association  
 RSR ELEC R.S.R. Electric Cooperative  
 Ramsey Util Ramsey County Rural Utilities  
 RAMSEY R SEW Ramsey Rural Sewer Association  
 RAMSEY RW Ramsey Rural Water Association  
 RED RIV TEL Red River Rural Telephone  
 RESVTN TEL Reservation Telephone  
 ROBRTS TEL Roberts Company Telephone  
 SCOTT CABLE Scott Cable Television Dickinson  
 SHERDN ELEC Sheridan Electric Cooperative  
 SHEYN VLY ELEC Sheyenne Valley Electric Cooperative  
 SKYTECH Skyland Technologies Incorporated  
 SLOPE ELEC Slope Electric Cooperative  
 SLOPE ELEC Slope Electric Cooperative Incorporated  
 SOURIS RIV TELCOM Souris River Telecommunications  
 S E W U South East Water Users Incorporated  
 STATE LN WATER State Line Water Cooperative  
 ST WAT COMM State Water Commission  
 STUT RWU Stutsman Rural Water Users  
 TCI TCI of North Dakota  
 TRL CO RWU Trail County Rural Water Users  
 TRI-CNTY WU Tri-County Water Users Incorporated  
 T M C Turtle Mountain Communications  
 US SPRINT U.S. Sprint  
 USW COMM U.S. West Communications  
 USAF MSL CABLE U.S.A.F. Missile Cable

UNTD TEL United Telephone  
 UPPR SOUR WUA Upper Souris Water Users Association  
 VRNDRY ELEC Verendrye Electric Cooperative  
 WEB W. E. B. Water Development Association  
 WLSH RWD Walsh Water Rural Water District  
 W RIV TEL West River Telephone Incorporated  
 WILLI RWA Williams Rural Water Association  
 WILSTN BAS PL Williston Basin Interstate Pipeline Company  
 WOLVRTN TEL Wolverton Telephone  
 XLENER Xcel Energy

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
08-15-96	General revisions
09-09-97	General revisions
03-15-01	General revisions
12-01-04	PE stamp added and general revisions
03-04-08	General revisions & standard # change

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LINESTYLES

.....	Sight Distance Triangle Line	— s — s —	Floating Silt Curtain	— — — — —	Existing Aggregate (Cross Section View)	- - - - -	Existing Centerline
.....	Bale Check	— — — — — T —	Existing Telephone Line	— — — — —	Existing Curb and Gutter (Cross Section View)	- - - - -	Supplemental Contour
.....	Rock Check	— — — — — TV —	Existing TV Line	- - - - -	Existing Riprap	— — — — —	Right of Way
- - - - -	Small Hidden Object	Void — Void — Void — v	Existing Assumed Ground (Not Surveyed)	— — — — —	Existing Underground Vault or Lift Station	— — — — —	Existing Right of Way
- - - - -	Dimension Leader	Void — Void — Void — v	Tentative Ground Line	— — — — —	Tangent Line	— — — — —	Existing Right of Way Railroad
- - - - -	Existing Ground	— — — — — W —	Existing Water or Steam Line	- - - - -	Hidden Object	.....	Failure Line
- - - - -	Existing Topsoil (Cross Section View)	=====	Existing Under Drain	— — — — —	Existing Dirt Surface	- - - - -	Existing Conditions
— — — — —	Existing Profile	=====	Under Drain	— — — — —	Existing Conduit	- - - - -	Existing Ground (Details)
— — — — —	Large Hidden Object	=====	Wall	— — — — —	Topsoil Profile	— — — — —	Existing Sixteenth Section Line
— — — — —	Edge Drain	=====	Existing Slotted Drain	- - - - -	Existing Conductor	- - - - -	Existing Right of Way Not State Owned
— D — D —	Geotextile Fabric Type D	— + — + —	Existing Cemetary Boundary	- - - - -	Conductor	- - - - -	Phantom Object
— — — — — E —	Existing Electrical	— — — — —	Centerline Pavement Marking	- - - - -	Fiber Optic	- - - - -	Centerline Main
— — — — — F0 —	Existing Fiber Optic Line	=====	Barrier with Centerline Pavement Marking	- - - - -	Existing Loop Detector	.....	Existing Guardrail Cable
— — — — — F0 —	Existing TV Fiber Optic	=====	Barrier Pavement Marking	- - - - -	Subgrade, Subcut or Ditch Grade	— . — . — . — .	Existing Guardrail Metal
— — — — — G —	Existing Gas Pipe	- - - - -	Stripe 4 IN Dotted Extension White	— — — — —	Existing Asphalt Surface	— . — . — . — .	Existing Edge of Water
— — — — — Geo — Geo —	Geogrid	- - - - -	Stripe 8 IN Dotted Extension White	— — — — —	Existing Asphalt (Cross Section View)	.....	Excavation Limits
— — — — — OH —	Existing Overhead Utility Line	— * — * — *	Wetland Mitigated Established	— — — — —	Existing Reinforcement Rebar	— . — . — . — .	Existing Government Lot Line
— — — — — P —	Existing Power	— * — * — *	Wetland Mitigation Proposed	— — — — —	Existing Tie Point Line	.....	Existing Adjacent Block Lines
— — — — — PL —	Existing Fuel Pipeline	- - - - -	Existing Box Culvert Bridge	— — — — —	Existing State or International Line	.....	Existing Adjacent Lot Lines
— — — — — PL —	Existing Undefined Above Ground Pipe Line	- - - - -	Existing Concrete Surface	— — — — —	Existing Quarter Section Line	.....	Existing Adjacent Property Line
— R — R —	Geotextile Fabric Type R	- - - - -	Existing Drainage Structure	— — — — —	Existing County	- - - - -	
— R — R —	Geotextile Fabric Type R1	- - - - -	Easement	— — — — —	Existing Section Line	- - - - -	
— REMOVE — REMOVE —	Remove Line	- - - - -	Existing Concrete	— — — — —	Existing Township	- - - - -	
— RR — RR —	Geotextile Fabric Type RR	- - - - -	Existing Easement	— — — — —	Existing Railroad Centerline	- - - - -	
— S — S —	Geotextile Fabric Type S	— — — — —	Existing Gravel Surface	— — — — —	Centerline	- - - - -	

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
06-20-96	General revisions
08-16-96	Add tie bars & guardrail
03-14-01	General revisions
12-01-04	PE stamp added
03-04-08	General revisions & standard # change

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LINESTYLES

.....	Existing Adjacent Subdivision Lines	●-----	Existing Railroad Switch
.....	Subgrade Reinforcement	●-----	Overhead Sign Structure Cantilever
----->	Existing Down Guy Wire Down Guy	=====	24 Inch Pipe
- - - - -x- - - - -x- - - -	Existing Fence	=====	Reinforced Concrete Pipe
	Existing Railroad	-----	Signal Head with Mast Arm
-----SAN-----	Existing Sanitary Sewer	-----	Existing Signal Head with Mast Arm
-----SAN FM-----	Existing Sanitary Force Main	+++++	Tie Bar at Random Spacing
-----SD-----	Existing Storm Drain	-----	Site Boundary
-----SD FM-----	Existing Storm Drain Force Main	-----	Fiber Rolls
x- - - -x- - - -x- - -	Fence	+++++	Doweled Joint
x- - - -x- - - -x- - -	Silt Fence	+++++	Tie Bar 30 Inch 4 Foot Center to Center
.....	Existing Field Line	+++++	Tie Bar 18 Inch 3 Foot Center to Center
~~~~~>	Flow	.....	Existing Berm, Dike, Pit, or Earth Dam
-----	Existing Culvert	.....	Existing Ditch Block
=====	Existing Curb	-----	Depression Contours
-----	Existing Valley Gutter	//////	Existing City Corporate Limits or Reservation Boundary
-----	Existing Driveway Gutter	~~~~~	Existing Tree Boundary
=====	Existing Curb and Gutter	=====	Existing Brush or Shrub Boundary
=====	Existing Mountable Curb and Gutter	.....	Existing Retaining Wall
●-----	Existing Double Micro Loop Detector	==	Existing Planter or Wall
●-----	Micro Loop Detector Double	~~~~~	Retaining Wall (Plan View)
●-----	Existing Overhead Sign Structure	~~~~~	Sheet Piling
●-----	Existing Micro Loop Detector	~~~~~	Existing Wetland Marsh Slough Non-Delineated
●-----	Micro Loop Detector	~~~~~	Existing Wetland Delineated
●-----	Existing Overhead Sign Structure Cantilever		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
REVISIONS	
DATE	CHANGE
06-20-96	General revisions
08-15-96	Add tie bars & guardrail
03-14-01	General revisions
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**SYMBOLS**

	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	Caim or Stone Circle		Flexible Delineator		Existing Sanitary Cleanout		Existing Pole Mounted Feed Point
	Video Detection Camera		Flexible Delineator Type A		Existing Concrete Foundation		Existing Railroad Frog
	Storm Drain Cap or Stub		Flexible Delineator Type B		Existing Traffic Signal Controller		Existing Snow Gate 18
	Corrugated Metal End Section 18 Inch		Flexible Delineator Type C		Existing Pad Mounted Signal Controller		Existing Snow Gate 28
	Corrugated Metal End Section 24 Inch		Flexible Delineator Type D		Existing Sixteenth Section Corner		Existing Snow Gate 40
	Corrugated Metal End Section 30 Inch		Flexible Delineator Type E		Existing Quarter Section Corner		Existing Headwall
	Corrugated Metal End Section 36 Inch		Delineator Type A		Existing Section Corner		Existing Pedestrian Head with Number
	Corrugated Metal End Section 42 Inch		Delineator Type A Reset		Existing Railroad Crossbuck		Existing Signal Head
	Corrugated Metal End Section 48 Inch		Delineator Type B		Existing Satellite Dish		Existing Sprinkler Head
	Concrete Foundation		Delineator Type B Reset		Existing Fuel Dispensers		Existing Fire Hydrant
	Ground Connection Conductor		Delineator Type C		Existing Flexible Delineator Type A		Existing Catch Basin Drop Inlet
	Neutral Connection Conductor		Delineator Type D		Existing Flexible Delineator Type B		Existing Curb Inlet
	Phase 1 Connection Conductor		Delineator Type E		Existing Flexible Delineator Type C		Existing Manhole Inlet
	Phase 2 Connection Conductor		Delineator Drums		Existing Flexible Delineator Type D		Existing Junction Box
	Traffic Cone		Spot Elevation		Existing Flexible Delineator Type E		
	Signal Controller		Existing Access Control Arrow		Existing Delineator Type A		
	Pad Mounted Signal Controller		Existing Artifact		Existing Delineator Type B		
	Alignment Data Point		Existing Flashing Beacon		Existing Delineator Type C		
	Emergency Vehicle Detector		Existing Benchmark		Existing Delineator Type D		

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SYMBOLS

	Existing Light Standard		Existing Undefined Manhole		Existing Pole		Existing Small Tree
	Existing High Mast Light Standard 10 Luminaire		Existing Manhole with Valve Water		Existing Power Pole		Existing Tree Trunk
	Existing High Mast Light Standard 3 Luminaire		Existing Water Manhole		Existing Power Pole with Transformer		Existing Pad Mounted Traffic Signal Control Box
	Existing High Mast Light Standard 4 Luminaire		Existing Mile Post Type A		Existing Telephone Pole		Existing Undefined Pull Box
	Existing High Mast Light Standard 5 Luminaire		Existing Mile Post Type B		Existing Wood Pole		Existing Undefined Pedestal
	Existing High Mast Light Standard 6 Luminaire		Existing Mile Post Type C		Existing Post		Existing Undefined Valve
	Existing High Mast Light Standard 7 Luminaire		Existing Reference Marker		Existing Pedestrian Push Button Post		Existing Undefined Pipe Vent
	Existing High Mast Light Standard 8 Luminaire		Existing RW Marker		Existing Control Point CP		Existing Gas Valve
	Existing High Mast Light Standard 9 Luminaire		Existing Utility Marker		Existing Control Point GPS-RTK		Existing Water Valve
	Existing Overhead Sign Structure Load Center		Existing Monument Found		Existing Control Point TRI		Existing Fuel Pipe Vent
	Existing Luminaire		Existing Monument set		Existing Reference Marker Point NGS		Existing Sanitary Pipe Vent
	Existing Light Standard Luminaire		Existing RW Property Monument Found		Existing Pull Box		Existing Storm Drain Pipe Vent
	Existing Meter		Existing RW Property Monument set		Existing Intelligent Transportation Pull Box		Existing Water Pipe Vent
	Existing Federal Mailbox		Existing Object Marker Type I		Existing Water Pump		Existing Weather Station
	Existing Private Mailbox		Existing Object Marker Type II		Existing Slotted Reinforced Concrete Pipe		Existing Ground Water Well Bore Hole
	Existing Meander Section Corner		Existing Object Marker Type III		Existing RR Profile Spot		Existing Windmill or Tower
	Existing Electrical Manhole		Existing Electric Pull Box		Existing Fuel Leak Sensors		Existing Witness Corner
	Existing Gas Manhole		Existing Electrical Pedestal		Existing Highway Sign		Flashing Beacon
	Existing Sanitary Manhole		Existing Telephone Pedestal		Existing Miscellaneous Spot		Flagger
	Existing Sanitary Force Main Manhole		Existing Fiber Optic Telephone Pedestal		Existing Lighting Standard Pole		Pipe Mounted Flasher
	Existing Sanitary Manhole with Valve		Existing TV Pedestal		Existing Traffic Signal Standard		
	Existing Storm Drain Manhole		Existing Fiber Optic TV Pedestal		Existing Transformer		
	Existing Force Main Storm Drain Manhole		Existing Gas Pipe Vent		Existing Large Evergreen Tree		
	Existing Force Main Storm Drain Manhole with Valve		Existing Fuel Filler Pipes		Existing Small Evergreen Tree		
	Existing Telephone Manhole		Existing Traverse PI Aerial Panel		Existing Large Tree		

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SYMBOLS

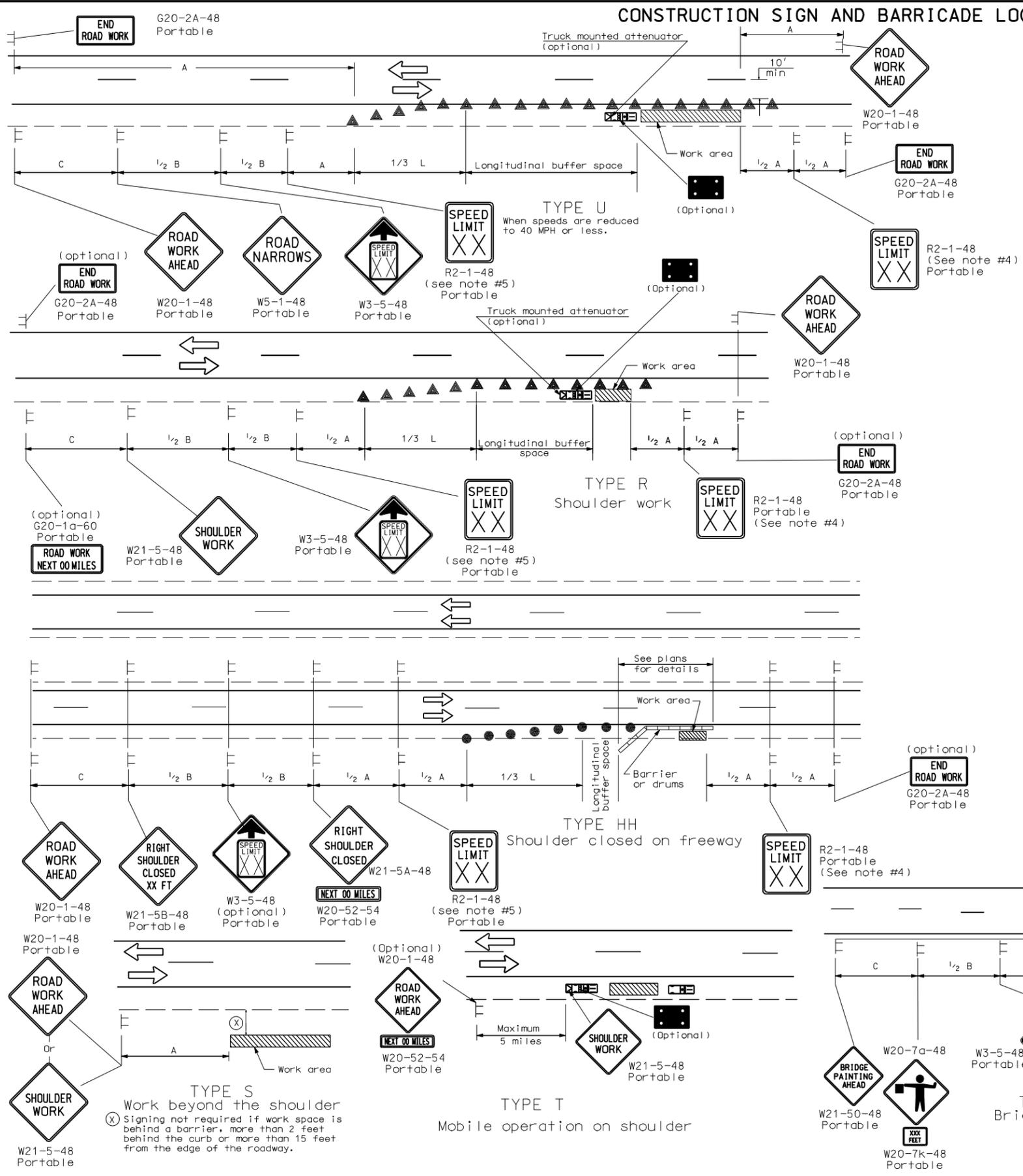
	Sanitary Force Main with Valve		Light Standard 100 Watt High Pressure Sodium Vapor Luminaire		Concrete Monument to Be Set		Reinforced Concrete End Section 36 Inch
	Pad Mounted Feed Point		Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire		RW Property Monument to Be Set		Reinforced Concrete End Section 42 Inch
	Pipe Mounted Feed Point with Pad		Light Standard 150 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type I		Reinforced Concrete End Section 48 Inch
	Pole Mounted Feed Point		Light Standard 175 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type II		Reinforced Concrete End Section 54 Inch
	Headwall		Light Standard 200 Watt High Pressure Sodium Vapor Luminaire		Object Marker Type III		Reinforced Concrete End Section 60 Inch
	Double Headwall with Vegetation Barrier		Light Standard 250 Watt High Pressure Sodium Vapor Luminaire		Caution Mode Arrow Panel		Reset Right of Way Marker
	Single Headwall with Vegetation Barrier		Light Standard 310 Watt High Pressure Sodium Vapor Luminaire		Back to Back Vertical Panel Sign		Reset USGS Marker
	Pole Mounted Head		Light Standard 35 Watt High Pressure Sodium Vapor Luminaire		Double Direction Arrow Panel		Right of Way Markers
	Sprinkler Head		Light Standard 400 Watt High Pressure Sodium Vapor Luminaire		Left Directional Arrow Panel		Riser 30 Inch
	Fire Hydrant		Light Standard 50 Watt High Pressure Sodium Vapor Luminaire		Right Directional Arrow Panel		Continuous Split Barrel Sample
	Inlet Type 1		Light Standard 70 Watt High Pressure Sodium Vapor Luminaire		Sequencing Arrow Panel		Flight Auger Sample
	Inlet Type 2		Light Standard 700 Watt High Pressure Sodium Vapor Luminaire		Truck Mounted Arrow Panel		Split Barrel Sample
	Double Inlet Type 2		Manhole		Power Pole		Thinwall Tube Sample
	Inlet Grate Type 2		Manhole 48 Inch		Wood Pole		Highway Sign
	Junction Box		Sanitary Force Main Manhole		Pedestrian Push Button Post		Standard Penetration Test
	High Mast Light Standard 10 Luminaire		Sanitary Sewer Manhole		Property Corner		Transformer
	High Mast Light Standard 3 Luminaire		Storm Drain Manhole		Pull Box		Inclinometer Tube
	High Mast Light Standard 4 Luminaire		Storm Drain Manhole with Inlet		Intelligent Transportation Pull Box		Underdrain Cleanout
	High Mast Light Standard 5 Luminaire		Reset Mile Post		Sanitary Pump		Excavation Unit
	High Mast Light Standard 6 Luminaire		Mile Post Type A		Storm Drain Pump		Water Valve
	High Mast Light Standard 7 Luminaire		Mile Post Type B		Reinforced Pavement		
	High Mast Light Standard 8 Luminaire		Mile Post Type C		Reinforced Concrete End Section 15 Inch		
	High Mast Light Standard 9 Luminaire		Right of Way Marker		Reinforced Concrete End Section 18 Inch		
	Relocate Light Standard		Tubular Marker		Reinforced Concrete End Section 24 Inch		
	Overhead Sign Structure Load Center				Reinforced Concrete End Section 30 Inch		

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
03-04-08	
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DATE	CHANGE

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CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS

- Notes
- Variables  
 S = Numerical value of speed limit or 85th percentile.  
 W = The width of the taper.  
 L = Minimum length of taper, or  $S \times W$  for freeways, expressways, and all other roads with speeds of 45 mph or greater, or  $W \times S^2/60$  for urban, residential, and other streets with speeds of 40 mph or less.
  - Delineator drums, or cones used for tapering traffic shall be spaced at dimension "S". Delineator drums, or cones used for tangents shall be spaced at 2 times "S".
  - Sequencing Arrow Panels  
 Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph and 750 ADT or less).  
 Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph and 5000 ADT or less).  
 Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph and 5000 ADT).  
 The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
  - The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at  $1/2 B$ .
  - When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  - Existing speed limit signs within a reduced speed zone shall be covered.
  - The contractor has the option of using portable sign supports in lieu of post mounted sign as shown on the standard drawings as specified in section 704.03 C.



Longitudinal Buffer Space	
Speed (mph)	Length Min (feet)
20	115
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730
75	820

Road Type	Distance Between Signs Min. (ft)		
	A	B	C
Urban - Low Speed (30 mph or less)	150	150	150
Urban - Low Speed (over 30 to 40 mph)	280	280	280
Urban - High Speed (over 40 mph to 50 mph)	360	360	360
Rural - High Speed (over 50 mph to 65 mph)	720	720	720
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500

**KEY**

- Type I barricade
- Type II barricade
- Type III barricade
- Sign
- Delineator drum
- Cones
- Work area
- Flagger
- Sequencing arrow panel
- Type A delineator or vertical panels back to back

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
10-01-99	General revisions
10-04-99	Type HH barrier
11-15-99	Add taper width & note
03-15-01	Revised note 2
07-19-02	Reversed End Road Work & Speed Limit signs
07-25-03	Revised R2-1a and W20-1
04-01-04	Removed fee sign & rev warning & buffer spacing rev note 5
12-01-04	PE Stamp added
06-29-05	Replaced R2-5a with W3-5 Rev. Adv. Warning Table, Rev. Note 5

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