

Memorandum

Date: 12/20/2017

To: Joan Heredia, EGP North America

Copy to:

From: Grady Wolf, KLJ

RE: Tree and Shrub Mitigation Plan - Lindahl Wind Farm Project (PU-15-482)



Introduction

Lindahl Wind Project, LLC has proposed the construction of its Lindahl Wind Farm located in northeastern Williams County, North Dakota. The Project area is comprised of 27 sections (containing approximately 13,000 acres) of agricultural land situated north of the City of Tioga. KLJ has developed this Tree and Shrub Mitigation Plan for the Lindahl Wind Project in compliance with the Tree and Shrub Mitigation Specifications for the Lindahl Wind Farm, Case no. PU-15-482.

Field surveys were completed within the study area during the dates; May 4-6, September 16-18, September 23, October 2 & 5 and December 10, 2015 to verify the total number of trees and shrubs within the corridor. Surveys following the Tree Count Methodology document previously provided to the PSC indicated 677 trees and shrubs occurred within the survey areas. Trees and shrubs removed during construction were individually counted to get a total for mitigation. Results of the count indicated a total of 163 trees removed. The planting is planned to take place during the Spring of 2018.

Mitigation Plan

Following the requirements of the PSC Certificate of Site Compatibility, Lindahl Wind Farm will mitigate trees and shrubs removed during construction. Trees and shrubs that were removed by construction were to be replaced at a 2:1 ratio per the PSC Tree and Shrub Mitigation Specifications; however, Lindahl Wind Farm has indicated that all impacted trees and shrubs will be replaced at a 3:1 ratio to ensure meeting the survivability requirements for mitigation. All disturbed trees and shrubs will be replaced by the same or similar species in accordance with the PSC's Tree and Shrub Mitigation Specifications. Non-native and invasive species that were removed during construction will be replaced with a native species, that do not have noxious qualities, are suitable for the available soil types, and are available for purchase locally in North Dakota. The substitute species were chosen based on

recommendations by the North Dakota Forest Service. Please refer to attached **Email Correspondence**. As a result of this correspondence, the following adjustments to mitigation species have been made:

- Caragana, Russian olive, and Siberian elm are non-native species that will not be used for mitigation. Instead, the species will be replaced with Eastern Red Cedar, Rocky Mt. Juniper, and Ponderosa Pine, which are all native to North Dakota.

The following table indicates the total quantity and species that will be replanted following construction:

Tree Removed During Construction		Tree Replacement (3:1)	
Species	Quantity	Species	Quantity
Caragana	87	Eastern Red Cedar (Substitution)	261
Green Ash	58	Green Ash	174
Peach Willow	2	Peach Willow	6
Ponderosa Pine	4	Ponderosa Pine	12
Russian Olive	10	Rocky Mt. Juniper (Substitution)	30
Siberian Elm	2	Ponderosa Pine (Substitution)	6
Total	163	Total	489

For specifications on proposed tree planting plans, please refer to the attached **Rachel, Lindahl Wind, Tree and Shrub Mitigation Plan**.

Landowners and Locations

Five landowners had trees and/or shrubs removed by construction of this project. Three landowners have opted to have the trees and shrubs replaced on their property. The remaining two landowners have signed waivers opting to not have trees replanted on their property. Please refer to the attached **Landowner Waivers**. The trees and shrubs waived for planting on the landowner’s property will be replaced at the Lindahl Wind Project Substation. The three properties that the tree replacement will take place on include: Jerol Gohrick, Darren Gohrick, Joan Gorick, and Orrice J. Gohrick; F. Keven McGinnity; and Raydean Strid and Juli Strid. The following table indicates the species and number of trees and shrubs mitigated at each location. For a visual representation of the location and landowner information for tree plantings, please refer to the attached **Tree and Shrub Mitigation Maps**.



Landowner	Location	Species	Number proposed for Mitigation
Gohrick	Sec. 8, T158N, R95W	Eastern Red Cedar	12
		Ponderosa Pine	12
McGinnity	Sec. 5, T158N, R 95W	Ponderosa Pine	6
Strid	Sec. 26, T159N, R95W	Eastern Red Cedar	21
		Green Ash	9
		Peach Willow	6
		Rocky Mt. Juniper	30
Substation Planting	Sec. 9, T158N, R 95W	Eastern Red Cedar	228
		Green Ash	165
Total			489

From: Lowstuter, Derek
To: [Grady Wolf](#)
Subject: Re: Lindahl Wind Farm
Date: Thursday, October 19, 2017 1:22:38 PM
Attachments: [image001.jpg](#)

Hello Grady,

I am sorry we keep missing each other. Williams County is a very challenging area to establish trees in. Unfortunately, the three species you have listed are not suitable for most soil types in Williams. The three "invasive" species the PSC prohibits were planted in large numbers in that area due to their hardiness and drought tolerance. The three substitutions will not result in adequate survival to meet the PSC requirements for mitigation. Instead, I would recommend eastern red-cedar for Caragana, Rocky Mountain juniper for Russian-olive, and ponderosa pine for Siberian elm. These evergreen species will result in better establishment on a broader range of soil types and planting locations. If those are not adequate for any reason please let me know and I can provide a limited number of alternatives. Please let me know if you have any other questions.

Regards,
Derek

From: Grady Wolf <Grady.Wolf@kljeng.com>
Sent: Thursday, October 19, 2017 8:57:18 AM
To: Lowstuter, Derek
Subject: Lindahl Wind Farm

Derek,

I have been trying to get in contact with you by telephone several times but it seems like we always miss each other. I thought it would be easiest to just send an email. I am working with the Lindahl Wind Farm in Williams County regarding their commitments to replant trees/shrubs that were impacted by construction of the wind farm. The project is regulated by the ND Public Service Commission. As part of the PSC requirements for tree/shrub plantings, the same species should be planted with the exception of invasive or noxious species. The PSC has indicated Caragana, Siberian Elm and Russian Olive are invasive or noxious species and that similar species should be planted in their place. They have also required coordination of similar species to plant with the NDFS. Lindahl would like to get your concurrence on using substitutes for the following species: Redosier Dogwood substituted for Caragana; Amur Maple substituted for Russian Olive; American Basswood substituted for Siberian Elm. If these substitutes are not satisfactory in your opinion, please let us know what easily available species would be a better substitute.

If you have any questions regarding this project or the reestablishment of trees that are planned, please feel free to contact me at the contact information below.

Thanks

Lindah Wind – Tree & Shrub Mitigation Plan Williams County, ND

I. DESCRIPTION

Rachel Contracting (RC) has partnered with a Certified Landscaper and Nursery to provide and install the trees/shrubs as required by the State of North Dakota – Public Service Commission (Case No. PU-15-482). During the development of the Tree & Shrub Mitigation Plan, RC referred to the following documents and parties:

- KLJ - Tree & Shrub Sampling Plan
- KLJ – Impact Verification Mitigation Plan
- ND Public Service Commission – Tree & Shrub Mitigation Specifications
- Williams County Soil Conservation District
- North Dakota Forest Service

II. SCOPE OF WORK

Rachel Contracting (RC) and the selected subcontractor, will provide and install replacement trees/shrubs in accordance with the State, County and Project Specifications. Certain trees/shrubs removed during construction were considered non-native species and therefore have been substituted by recommendation of the ND Forest Service (noted in table below).

Trees Removed During Construction		Tree Replacement (3:1)	
Species	Quantity	Species	Quantity
Caragana	87	Eastern Red Cedar (Substitution)	261
Green Ash	58	Green Ash	174
Peach Willow	2	Peach Willow	6
Ponderosa Pine	4	Ponderosa Pine	12
Russian Olive	10	Rocky Mt. Juniper (Substitution)	30
Siberian Elm	2	Ponderosa Pine (Substitution)	6
	163		489

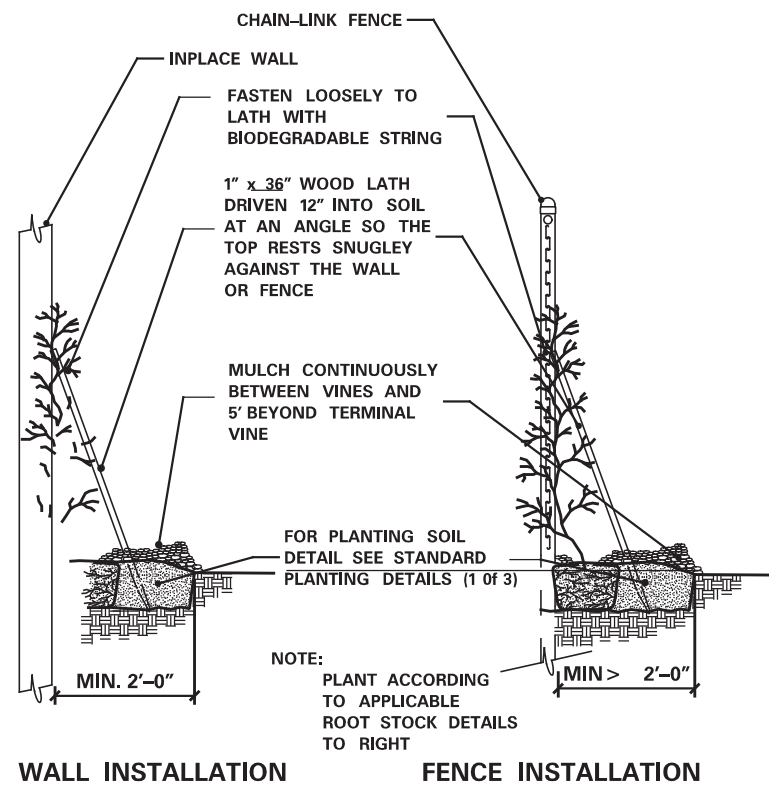
Plantings will consist of the following elements:

- 1-2 gallon potted plants (2 Year-Old Saplings)
- Added compost to amend existing soil
- Shredded hardwood mulch ring to help maintain moisture
- Installation of protective rodent guards

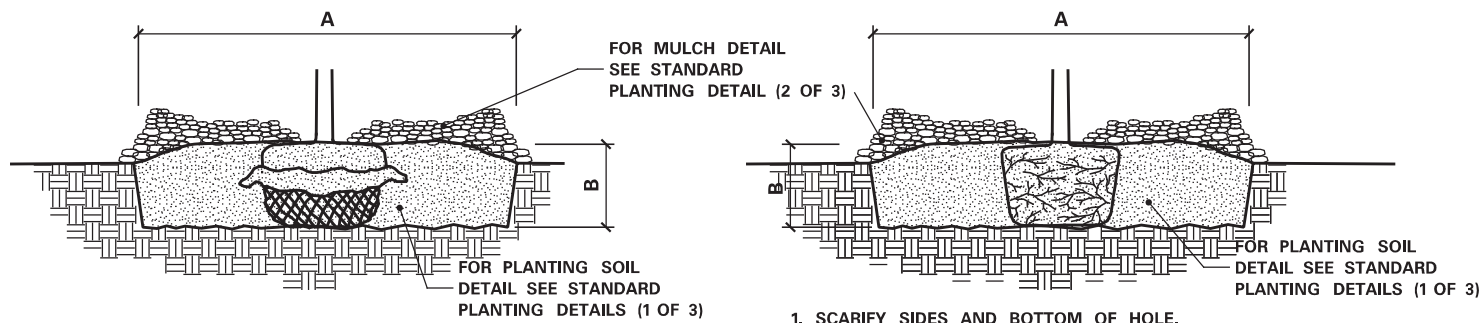
III. TECHNICAL DOCUMENTS

Standard installation practices and procedures are shown in the attached documents.

PLANTING HOLE DIMENSIONS			
HOLE DEPTH FOR B&B AND CONTAINER PLANTS SHALL NOT EXCEED MEASUREMENT FROM ROOT FLAIR TO BOTTOM OF SOIL BALL.			
PLANT TYPE	PLANT SIZE UP TO AND INCLUDING	(A) MINIMUM HOLE WIDTH	(B) APPROXIMATE HOLE DEPTH
DECIDUOUS & ORNAMENTAL TREES	3" B.R.	46"	13"
	4" B.R.	46"	14"
	5" B.R.	48"	14"
	6" B.R.	54"	15"
	7" B.R.	60"	16"
	8" B.R.	66"	19"
	0.75" B.B.	48"	12"
	1" B.B.	54"	14"
	1.25" B.B.	60"	14"
	1.5" B.B.	66"	15"
	1.75" B.B.	72"	16"
	2" B.B.	84"	19"
	4" B.B.	42"	11"
	5" B.B.	48"	12"
	6" B.B.	52"	14"
	8" B.B.	66"	16"
	10" B.B.	66"	16"
	12" B.B.	48"	16"
	1" B.B.	54"	14"
	1.25" B.B.	56"	15"
1.5" B.B.	61"	15"	
1.75" B.B.	66"	16"	
2" B.B.	72"	16"	
2.5" B.B.	84"	19"	
3" B.B.	96"	20"	
3.5" B.B.	114"	23"	
4" B.B.	126"	25"	
12" B.R.	24"	7"	
15" B.R.	28"	8"	
18" B.R.	30"	8"	
2" B.R.	33"	9"	
3" B.R.	42"	11"	
4" B.B.	48"	12"	
5" B.R.	54"	14"	
6" B.R.	60"	14"	
18" B.B.	27"	7"	
2" B.B.	30"	8"	
3" B.B.	36"	9"	
4" B.B.	42"	11"	
5" B.B.	48"	12"	
6" B.B.	54"	14"	
DECIDUOUS SHRUBS, ROSES AND PERENNIALS			
PERENNIAL HOLE DEPTH AND WIDTH SHALL BE BASED UPON ON-CENTER SPACING IN A CONTINUOUS TRENCH.			

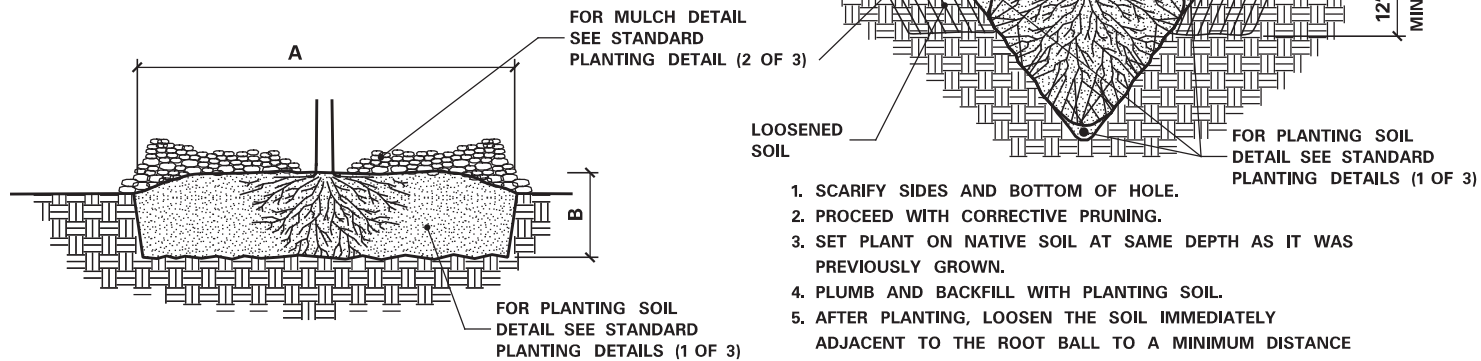


WALL INSTALLATION **FENCE INSTALLATION**
INSTALLATION OF VINES



1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING.
3. SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED PLANTING SOIL. PLACE PLANT SO THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE WITH BURLAP AND WIRE BASKET, (IF USED), INTACT.
4. SLIT REMAINING TREATED BURLAP AT 6" INTERVALS.
5. BACKFILL TO WITHIN APPROXIMATELY 12" OF THE TOP OF THE ROOTBALL, THEN WATER PLANT.
6. REMOVE THE TOP 1/3 OF THE BASKET OR THE TOP TWO HORIZONTAL RINGS WHICHEVER IS GREATER. REMOVE ALL BURLAP AND NAILS FROM THE TOP 1/3 OF THE BALL. REMOVE ALL TWINE. REMOVE OR CORRECT STEM GIRDLING ROOTS.
7. PLUMB AND BACKFILL WITH PLANTING SOIL.
8. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
9. BACK FILL VOIDS AND WATER A SECOND TIME.
10. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

BALLED & BURLAPPED STOCK

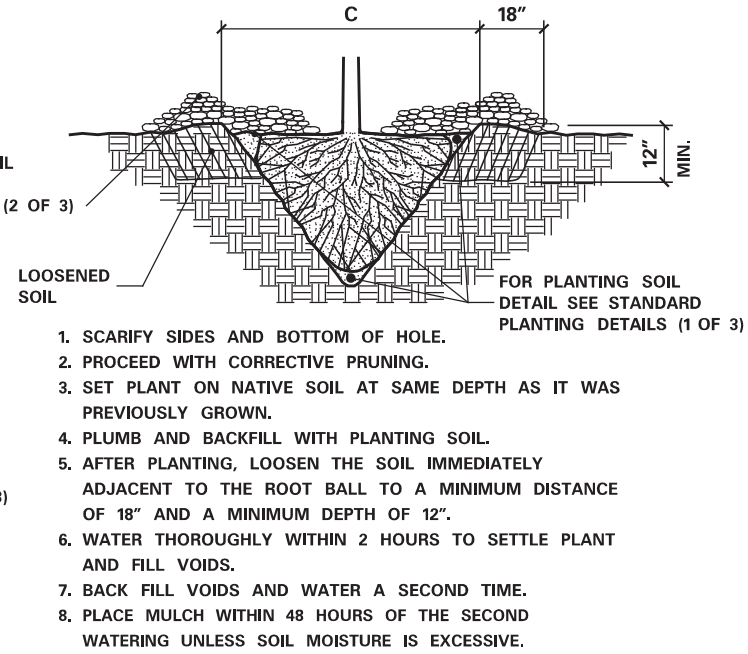


1. SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR BUT NOT MORE THAN 24 HOURS PRIOR TO PLANTING.
2. SCARIFY SIDES AND BOTTOM OF HOLE.
3. PROCEED WITH CORRECTIVE PRUNING OF THE TOP AND ROOTS.
4. TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH PLANTING SOIL.
5. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
6. BACK FILL VOIDS AND WATER A SECOND TIME.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

BARE ROOT STOCK
INSTALLATION OF PLANTS

1. SCARIFY SIDES AND BOTTOM OF HOLE.
2. PROCEED WITH CORRECTIVE PRUNING OF TOP AND ROOT.
3. REMOVE CONTAINER AND SCORE OUTSIDE OF SOIL MASS TO REDIRECT AND PREVENT CIRCLING FIBROUS ROOTS. REMOVE OR CORRECT STEM GIRDLING ROOTS.
4. SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED PLANTING SOIL. INSTALL PLANT SO THE TOP OF THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE.
5. PLUMB AND BACKFILL WITH PLANTING SOIL.
6. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANT AND FILL VOIDS.
7. BACK FILL VOIDS AND WATER A SECOND TIME.
8. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

CONTAINER STOCK

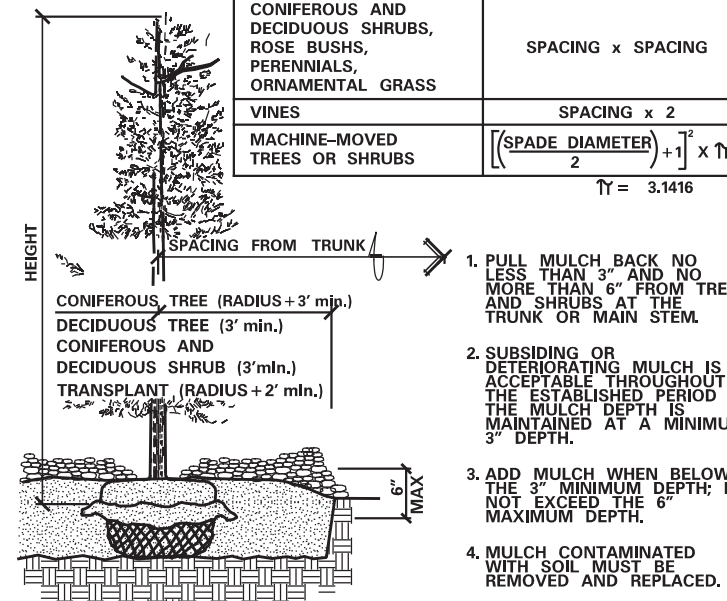


MINIMUM TREE SPADE SIZE REQUIREMENTS			
(C) SPADE DIAMETER SIZE	OAK TREE, CALIPER	DECIDUOUS / ORNAMENTAL TREE, CALIPER	CONIFEROUS TREE, HEIGHT
42"	1" to 1.5"	2" to 3"	5' to 7'
60"	1.5" to 2.5"	3" to 4"	7' to 9'
78"	2.5" to 3.5"	4" to 6"	9' to 14'
85"	3.5" to 5"	6" to 8"	14' to 18'

MACHINE MOVED STOCK

PLANTING HOLE DIMENSIONS			
HOLE DEPTH FOR B&B AND CONTAINER PLANTS SHALL NOT EXCEED MEASUREMENT FROM ROOT FLAIR TO BOTTOM OF SOIL BALL.			
PLANT TYPE	PLANT SIZE UP TO AND INCLUDING	(A) MINIMUM HOLE WIDTH	(B) APPROXIMATE HOLE DEPTH
CONIFEROUS TREES	2" B.B.	36"	10"
	3" B.B.	42"	11"
	4" B.B.	51"	13"
	5" B.B.	60"	13"
	6" B.B.	66"	15"
	7" B.B.	72"	16"
	8" B.B.	81"	18"
	9" B.B.	90"	20"
	10" B.B.	102"	21"
	12" B.B.	114"	24"
CONIFEROUS SHRUBS (UPRIGHT)	18" B.B.	24"	7"
	3" B.B.	48"	12"
CONIFEROUS SHRUBS (SPREADING)	18" SPR B.B.	30"	8"
	2" SPR B.B.	36"	9"
CONTAINER GROWN PLANTS	CELLPACKS / PLUGS	6"	2.5"
	2.25" CONT.	7"	3"
	3.5" CONT.	10"	3"
	4" CONT.	11"	4"
	4.5" CONT.	13"	4"
	6" QT CONT.	15"	5.5"
	1# CONT.	18"	6"
	2# CONT.	23"	7.5"
	3# CONT.	29"	8.5"
	5# CONT.	30"	11"
SEEDLINGS	7# CONT.	37"	11"
	15# CONT.	44"	14"
	10# CONT.	45"	15"
	20# CONT.	60"	16"
	25# CONT.	72"	17"
	6" SEEDLING	15"	14"
	9" SEEDLING	18"	14"
	12" SEEDLING	23"	16"
	18" SEEDLING	30"	16"
	2" SEEDLING	36"	18"
VINES	1 YR. MED. B.R.	15"	11"
	1 YR. NO. 1 B.R.	17"	14"
	2 YR. MED. B.R.	33"	12"
	2 YR. NO. 1 B.R.	42"	15"

MULCH AREA CALCULATOR	
TYPE OF PLANT	SQ. FT. PER PLANT
CONIFEROUS TREES	$\left[\left(\frac{3}{5} \times \text{HEIGHT}\right) + 3\right]^2 \times \pi$
DECIDUOUS AND ORNAMENTAL TREES	$3^2 \times \pi$
CONIFEROUS AND DECIDUOUS SHRUBS, ROSE BUSHES, PERENNIALS, ORNAMENTAL GRASS	SPACING x SPACING
VINES	SPACING x 2
MACHINE-MOVED TREES OR SHRUBS	$\left[\left(\frac{\text{SPADE DIAMETER}}{2}\right) + 1\right]^2 \times \pi$
	$\pi = 3.1416$



MULCH

REVISION:
 APPROVED: DECEMBER 11, 2015
 Chief Environmental Officer

MINNESOTA DEPARTMENT OF TRANSPORTATION
 REVISION:
 APPROVED: 12-11-2015
 STATE DESIGN ENGINEER

(MnDOT 2571.3F)
 STANDARD PLANTING DETAILS
 STANDARD PLAN 5-297.301 2 OF 3
 (MnDOT 2571.3H)

GENERAL NOTES

- SEE SPECIAL PROVISIONS FOR SPECIFIC PROJECT REQUIREMENTS.
- REFER TO MnDOT SPECIFICATIONS 2571, 3861, AND THE "2015" INSPECTION AND CONTRACT ADMINISTRATION MANUAL FOR MnDOT LANDSCAPE PROJECTS" FOR GENERAL REQUIREMENTS.
- COMPLETE PREPARATORY WORK BEFORE STARTING INITIAL PLANTING OPERATIONS.
- ACCEPT ALL PLANT STOCK IN ACCORDANCE WITH (MnDOT 3861) PRIOR TO PLANTING.
- THE CONTRACTOR WILL DEMONSTRATE COMPETENCY FOR SOIL CULTIVATION OPERATIONS IN ACCORDANCE WITH (MnDOT 2571.3D2 STEP 4)
- THE CONTRACTOR WILL DEMONSTRATE COMPETENCY FOR ALL PLANT INSTALLATION OPERATIONS IN ACCORDANCE WITH (MnDOT 2571.3F1)

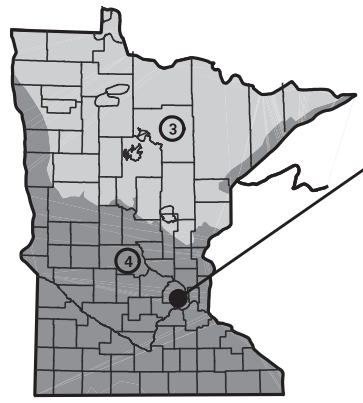
RODENT PROTECTION	SEE SPECIAL PROVISIONS AND STANDARD PLANTING DETAILS (C)
FERTILIZER	SEE SPECIAL PROVISIONS
COMPOST	MnDOT 3890 GRADE 2 UNLESS OTHERWISE SPECIFIED.
MULCH MATERIAL	MnDOT 3882 TYPE 6 UNLESS OTHERWISE SPECIFIED.
MASS PLANTING BEDS	PREPARE MASS PLANTING BEDS FOR PLANTS PLACED AT 15' OR LESS, UNLESS OTHERWISE SPECIFIED ON SHEETS. PLANT BEDS IN STAGGERED ROWS ON THE PERIMETER FIRST, THEN UNIFORMLY FILL IN WITH REMAINING PLANTS. USE TRIANGULAR SPACING, UNLESS SPECIFIED OTHERWISE. PROVIDE 5' RADIUS CLEAR OF SHRUBS AROUND EACH DECIDUOUS TREE AND 8' CLEAR RADIUS AROUND EACH CONIFER TREE. RADIUS WILL BE MEASURED FROM THE CENTER OF THE TREE TO THE CENTER OF THE SHRUB. NOTIFY ENGINEER OF GROSS PLANT QUANTITY SURPLUS OR DEFICIENCY IMMEDIATELY. MULCH ENTIRE MASS PLANTING BED. SEE STANDARD PLANTING DETAILS (C)

TREE PAINTING (FROST CRACK PREVENTION)	PAINT OAK, LINDEN, LOCUST, MAPLE, CRABAPPLE AND MOUNTAIN ASH. ONLY UNDILUTED EXTERIOR WHITE LATEX PAINT IS ACCEPTABLE. PAINT TREE CIRCUMFERENCE FROM GROUND LINE TO FIRST MAJOR BRANCH.
--	---

PLANTING PLAN DIMENSIONS	STATED DIMENSIONS SUPERCEDE SCALING FROM PLAN.
--------------------------	--

WATERING GUIDELINES (MnDOT 2571.3G)	PLANT TYPE	AVERAGE GALLONS OF WATER PER APPLICATION
	MACHINE TRANSPLANTED TREES	50-100
	BALLED AND BURLAPPED TREES	20
	BARE ROOT AND CONTAINER TREES	15
	BALLED AND BURLAPPED SHRUBS	10
	BARE ROOT AND CONTAINER SHRUBS	7
	WOODY SEEDLINGS	4
	PERENNIALS AND VINES	3

IT IS THE CONTRACTOR'S RESPONSIBILITY TO MONITOR AND MAINTAIN SOIL MOISTURE AT ADEQUATE BUT NOT EXCESSIVE LEVELS. THE AMOUNTS LISTED ABOVE ARE GUIDELINES, NOT REQUIREMENTS.



PROJECT LOCATION

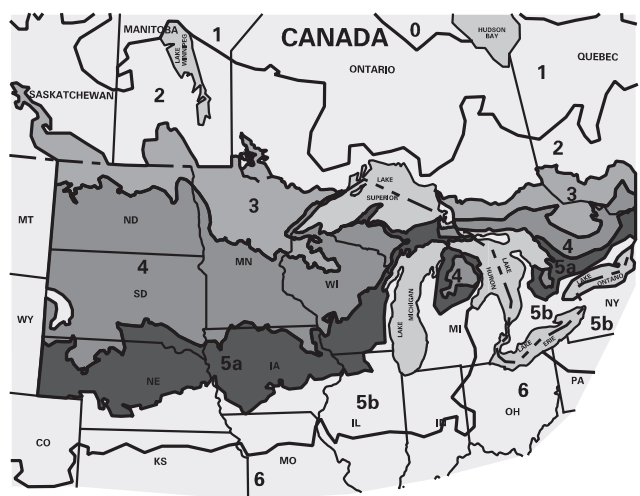
PLANTING DATES BY ZONE

		3	4
SPRING	DECIDUOUS BARE ROOT	APRIL 21 TO JUNE 1	APRIL 7 TO JUNE 1
	CONTAINER B&B	APRIL 21 TO JUNE 30	APRIL 7 TO JUNE 30
	CONIFEROUS	APRIL 21 TO JUNE 1	APRIL 7 TO MAY 17
	PERENNIALS	MAY 1 TO JUNE 30	MAY 1 TO JUNE 30
	SEEDLINGS	APRIL 21 TO JUNE 1	APRIL 7 TO JUNE 1
FALL	DECIDUOUS BARE ROOT	OCT. 1 TO NOV. 1	OCT. 10 TO NOV. 15
	CONTAINER B&B	AUG. 25 TO OCT. 15	AUG. 25 TO NOV. 1
	CONIFEROUS	AUG. 25 TO SEPT. 15	AUG. 25 TO SEPT. 15
	PERENNIALS	AUG. 25 TO SEPT. 15	AUG. 25 TO SEPT. 15
	PERENNIALS	AUG. 25 TO SEPT. 15	AUG. 25 TO SEPT. 15

- BARE ROOT PERENNIALS MUST BE INSTALLED IN THE SPRING NO LATER THAN JUNE 1ST OR FOLLOW THE FALL DECIDUOUS PLANTING DATES.
- ACTUAL DATES MAY CHANGE DEPENDING UPON SEASONAL CONDITIONS, AS DETERMINED BY THE ENGINEER.
- FALL PLANTING IS NOT ALLOWED FOR BARE ROOT FORM OF THE FOLLOWING SPECIES: HAWTHORN, DOGWOOD, POPLAR, HACKBERRY, LINDEN, IRONWOOD, HONEYLOCUST, BIRCH, MOUNTAIN ASH, MAPLE, WILLOW, CRABAPPLE, PLUMCHERRY, OAKS, AND SUMAC.
- ALL REPLACEMENT PLANTS MUST BE INSTALLED DURING THE MONTH OF MAY (SPRING PLANTING) AND SEPTEMBER (FALL PLANTING) DURING THE FIRST YEAR OF THE PLANT ESTABLISHMENT PERIOD.
- MACHINED MOVED PLANTING DATES WILL BE SPECIFIED IN THE SPECIAL PROVISIONS.

PLANT INSTALLATION PERIOD

(MnDOT 2571.3F2)



ZONES	LEGEND	MIN. TEMP.
3		-34.4° TO -40° F
4		-28.9° TO -34.4° F
5a		-26.1° TO -28.9° F

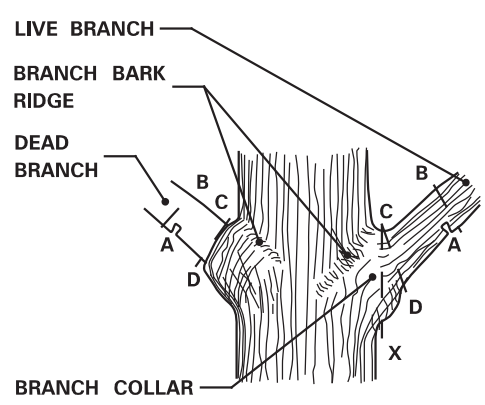
ZONES	LEGEND
0, 1, 2, 5b and 6	UNACCEPTABLE ZONES

FOR ALL PLANT STOCK, DOCUMENT ACCEPTABILITY FOR HARDINESS IN THE MINNESOTA ZONE WHERE THE PROJECT SITE IS LOCATED, AS FOLLOWS:

- A. PLANT STOCK CONTINUOUSLY GROWN FOR AT LEAST THE LAST TWO YEARS WITHIN THE ACCEPTABLE LIMITS SHOWN.
- OR
- B. PLANT STOCK, GROWN OUTSIDE THE ACCEPTABLE GROWING RANGE LIMITS, HAVING SEED SOURCE OR ROOT AND GRAFT STOCK ORIGINATING FROM THE ACCEPTABLE LIMITS SHOWN.

ACCEPTABLE PLANT STOCK GROWING RANGE LIMITS

SOURCE: USDA PLANT HARDINESS ZONE MAP (MnDOT 3861.2C)

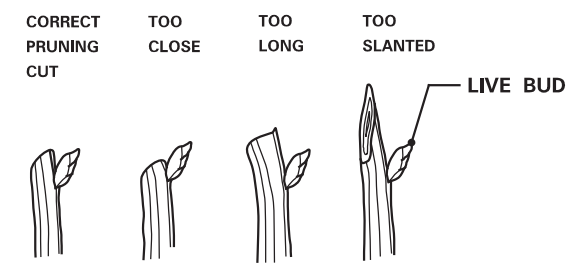


- STEPS TO PRUNING WITH PRUNING SAW:**
- CUT PART WAY THROUGH THE BRANCH AT POINT A.
 - CUT COMPLETELY THROUGH BRANCH FROM POINT B TO A.
 - AT BRANCH COLLAR CUT FROM POINT C TO D.

INCORRECT CUT FROM POINT C TO X (TOO CLOSE) WILL RESULT IN DISCONTINUOUS CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

CORRECT CUT FROM POINT C TO D (LEAVING BRANCH COLLAR BUT NOT THE STUB FROM POINT B TO A) WILL RESULT IN CONTINUOUS DOUGHNUT SHAPED CALLUS FORMATION AFTER ONE SEASON OF GROWTH.

BRANCHES PRUNED AT TRUNK (SHIGO METHOD)

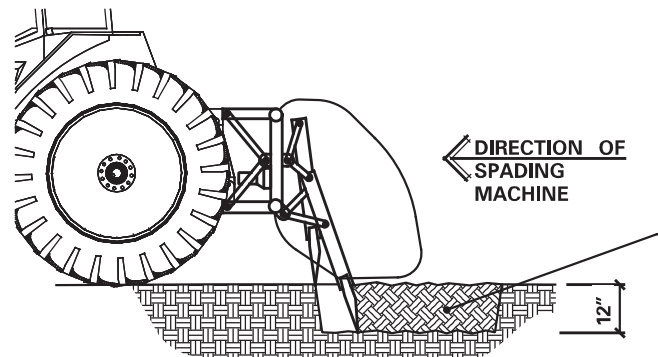


- PRUNING NOTES:**
- PRUNE USING CLEAN AND SHARP SCISSOR-TYPE PRUNER OR PRUNING SAW.
 - THE BEST TIME TO PRUNE IS LATE DORMANT SEASON OR EARLY SPRING.
 - AVOID PRUNING OAKS IN APRIL, MAY, JUNE OR JULY.
 - IF PRUNING IS NECESSARY OR IF WOUNDS OCCUR TO OAK TREES IN APRIL, MAY, JUNE OR JULY, IMMEDIATELY PAINT CUT SURFACE OR WOUND WITH LATEX PAINT OR SHELLAC.

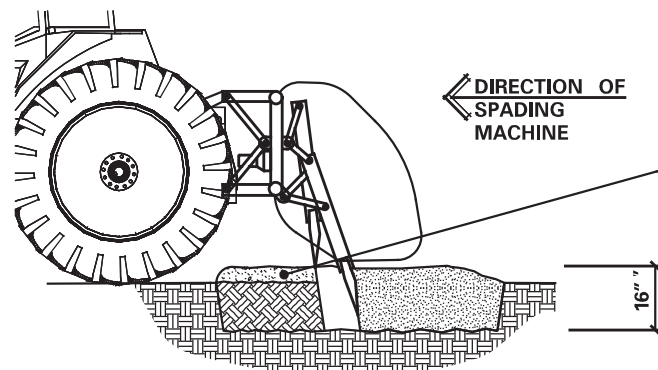
BRANCHES PRUNED TO LIVE BUD

PRUNING

(MnDOT 2571.3K2a9 and 2571.3E1)



PRIMARY TILLAGE - PASS 1



INCORPORATION TILLAGE - PASS 2

PLANTING SOIL

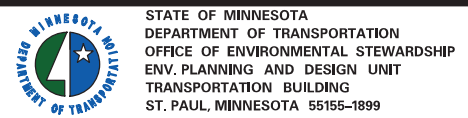
4 INCHES OF GRADE 2 COMPOST AND OTHER SPECIFIED ADDITIVES THOROUGHLY MIXED WITH INPLACE CULTIVATED SOILS

(MnDOT 2571.3D2)

DATE PRINTED:
REVISED - JANUARY / 01 / 2014

PROJECT MANAGER
DAVID LARSON

DRAWN BY
OFFICE OF ENVIRONMENTAL STEWARDSHIP



STANDARD PLANTING DETAILS (A)

FOR PLANTING SOIL
DETAIL SEE STANDARD
PLANTING DETAILS (A)

FOR MULCH DETAIL
SEE STANDARD
PLANTING DETAIL (B)

8" AUGER HOLES

1. EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF ROOT MASS 1"-3" HIGHER THAN FINISHED GRADE.
2. AUGER 8" DIAMETER HOLES ENTIRELY THROUGH IMPERVIOUS OR POORLY DRAINED HARD PAN SOIL LAYER TO ADEQUATELY DRAIN SUBSOIL.
3. TEST FOR POSITIVE DRAINAGE. RE-AUGER AN ADDITIONAL 8" IF NECESSARY FOR POSITIVE DRAINAGE.
4. THOROUGHLY BACKFILL AUGER HOLES WITH A UNIFORM INCORPORATED MIXTURE OF 50% SAND AND 50% INPLACE SOIL.
5. COMPLETE PLANTING ACCORDING TO ROOT TYPE. SEE STANDARD PLANTING DETAILS (B).

INSTALL GRANULAR FILTER

FOR PLANTING SOIL
DETAIL SEE STANDARD
PLANTING DETAILS (A)

FOR MULCH DETAIL
SEE STANDARD
PLANTING DETAIL (B)

4" DRAIN TILE

1. EXCAVATE HOLE OR BED TO ALLOW PLACING THE TOP OF THE ROOT MASS 1"-3" HIGHER THAN FINISHED GRADE.
2. INSTALL 4" MINIMUM DIAMETER DRAIN TILE DAYLIGHTING AT A LOWER GRADE.
3. COMPLETE PLANTING ACCORDING TO ROOT TYPE. SEE STANDARD PLANTING DETAILS (B).

INSTALL TILE DRAINAGE

FOR PLANTING SOIL
DETAIL SEE STANDARD
PLANTING DETAILS (A)

FOR MULCH DETAIL
SEE STANDARD
PLANTING DETAIL (B)

1/4" ROOT MASS

1. EXCAVATE HOLE OR BED 1/4 THE DEPTH OF THE ROOT MASS.
2. SET ROOT MASS IN HOLE.
3. CONSTRUCT BERM WITH PLANTING SOIL. EXTEND THE BERM BASE TO A WIDTH OF 3 TIMES THE BERM HEIGHT.
4. COMPLETE PLANTING ACCORDING ROOT TYPE. SEE STANDARD PLANTING DETAILS (B).

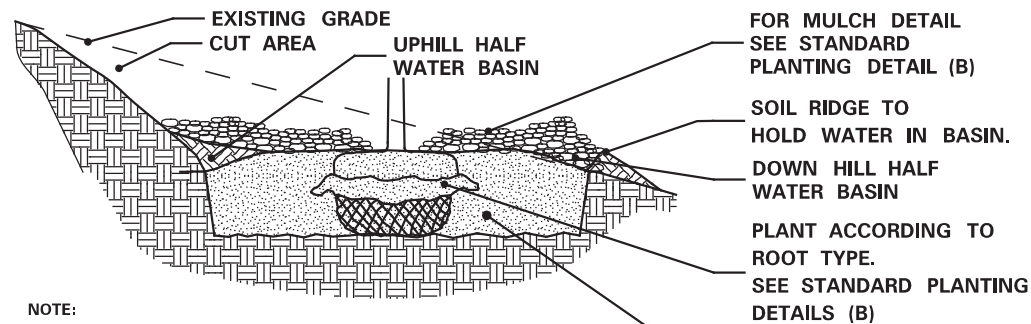
INSTALL MINI-BERM

NOTE:

1. THE NEED FOR USING PLANTING DETAILS FOR POORLY DRAINED SOILS AND WHICH TYPE TO USE ARE DETERMINED BY THE CONTRACTOR, SUBJECT TO ENGINEER APPROVAL.

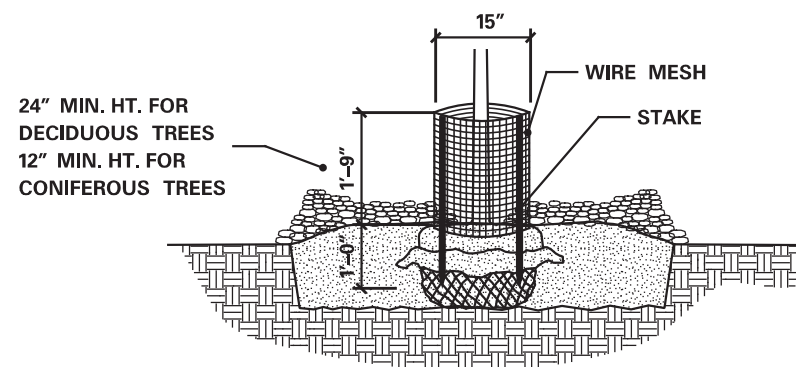
PLANTING DETAIL FOR POORLY DRAINED SOILS

(MnDOT 2571.3D2 (STEP 8))



NOTE:
1. ON 1:2 SLOPES OR GREATER, DO NOT CONSTRUCT THE UPHILL HALF OF THE WATERING BASIN.

PLANTING ON SLOPES

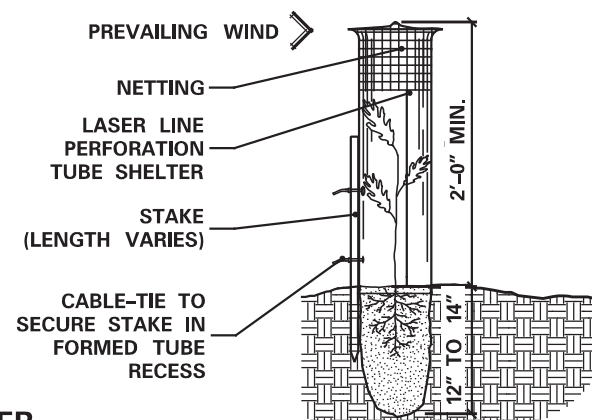


1. FORM A DOUBLE-LAYERED CYLINDER USING 0.25" GRID GALVANIZED WELDED WIRE MESH (HARDWARE CLOTH). OVERLAP THE CUT END 2".
2. DRIVE TWO 1" x 1" OPPOSING HEARTWOOD WHITE OAK STAKES INTO THE GROUND, 7" FROM THE CENTER OF THE TREE STEM.
3. SECURE THE MESH CYLINDER TO THE OUTSIDE OF THE STAKES USING EITHER, SCREWS AND WASHERS OR CABLE-TIES ALONG THE OVERLAP. SPACE APPROXIMATELY 4" ON CENTER ALONG THE OVERLAP.
 - a. SCREWS SHALL BE ROUND HEAD GALVANIZED 1/8" DIA. x 3/4" LONG WITH WASHERS.
 - OR
 - b. CABLE-TIES SHALL BE NYLON, AT LEAST 8" LONG AND BETWEEN 75LB TO 120LB TENSILE STRENGTH.
4. EMBED THE LOWER EDGE OF THE MESH CYLINDER 1" BELOW THE SOIL SURFACE WITHOUT DISTURBING THE TREE ROOTS.
5. CUT EDGES WILL NOT BE PERMITTED AT THE TOP OF THE CYLINDER. STAKE WILL BE FLUSH WITH THE TOP OF THE CYLINDER.
6. MULCH WITHIN THE CYLINDER SHALL NOT EXCEED 3" DEPTH AND SHALL BE PULLED BACK FROM THE TRUNK AS SPECIFIED IN MULCH PLACEMENT DETAIL.
7. THE BOTTOM WHORL OF PINE AND LARCH BRANCHES MAY HAVE TO BE REMOVED TO PERMIT INSTALLATION OF 12" MIN. HEIGHT RODENT GUARDS.
8. INSTALL ON ALL DECIDUOUS, PINE AND LARCH TREES, DO NOT PLACE ON SPRUCE TREES.

RODENT PROTECTION

(MnDOT 2571.3I2)

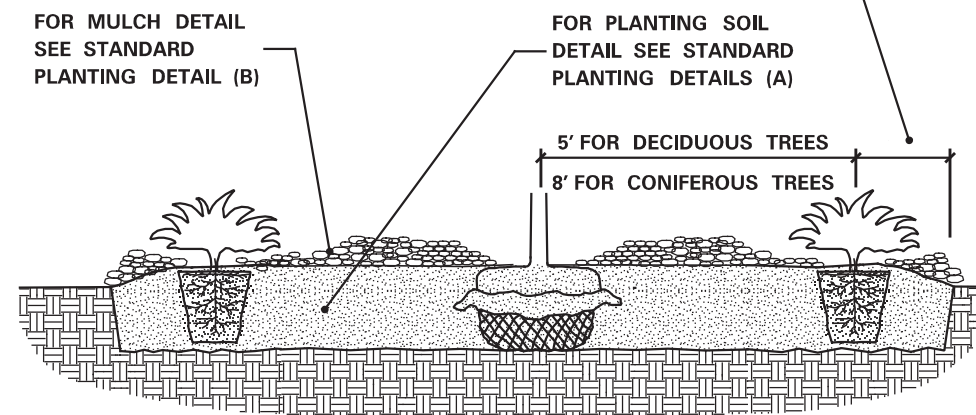
1. USE SEAMLESS, EXTRUDED, TWIN-WALL, RIGID AND SEMI TRANSLUCENT POLYPROPYLENE TUBES WITH A LASER LINE PERFORATION AND AN OUTWARD-FLARED TOP RIM.
2. SECURE SHELTER WITH NYLON CABLE-TIES ATTACHED TO A 1" x 1" WHITE OAK STAKE TO PREVENT DISLODGING OR TWISTING.
3. EMBED THE BOTTOM OF THE TUBE A MINIMUM OF 1" BELOW THE SOIL SURFACE WITHOUT DISTURBING THE TREE ROOTS.
4. INSTALL A PLASTIC PHOTODEGRADABLE NETTING COVER AND SLEEVE OVER THE TOP OF THE TUBE. PULL NETTING DOWN AS SHOWN.



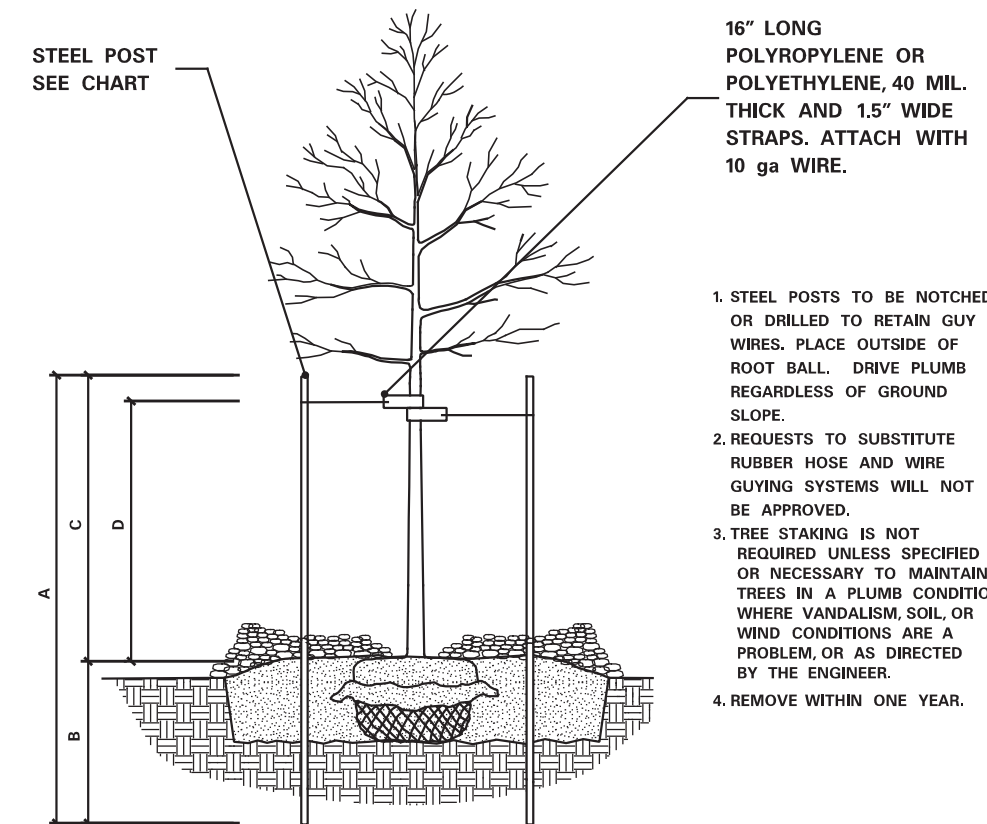
SEEDLING TREE SHELTER

(MnDOT 2571.3I4)

HOLE EXCAVATION WIDTH IN ACCORDANCE WITH MINIMUMS FROM THE PLANTING HOLE DIMENSIONS CHART ON STANDARD PLANTING DETAILS (B)



PLANT SPACING IN MASS BEDS



1. STEEL POSTS TO BE NOTCHED OR DRILLED TO RETAIN GUY WIRES. PLACE OUTSIDE OF ROOT BALL. DRIVE PLUMB REGARDLESS OF GROUND SLOPE.
2. REQUESTS TO SUBSTITUTE RUBBER HOSE AND WIRE GUYING SYSTEMS WILL NOT BE APPROVED.
3. TREE STAKING IS NOT REQUIRED UNLESS SPECIFIED OR NECESSARY TO MAINTAIN TREES IN A PLUMB CONDITION WHERE VANDALISM, SOIL, OR WIND CONDITIONS ARE A PROBLEM, OR AS DIRECTED BY THE ENGINEER.
4. REMOVE WITHIN ONE YEAR.

STEEL POST SIZING

CALIPER	STEEL POST TYPE	A	B	C	D
LESS THEN 4 INCHES	ROLLED STEEL FENCE POST (MnDOT 3403) OR APPROVED EQUAL.	7'-0"	3'-0" MIN.	4'-0"	3'-0"
GREATER THEN 4 INCHES	10', 2.2 LB. FLANGED CHANNEL STEEL SIGN POST (MnDOT 3401) OR APPROVED EQUAL.	10'-0"	4'-0" MIN.	6'-0"	5'-0"

STAKING AND GUYING

(MnDOT 2571.3I1)

DATE PRINTED:
REVISED - JANUARY /01 /2014

PROJECT MANAGER
DAVID LARSON

DRAWN BY
OFFICE OF ENVIRONMENTAL STEWARDSHIP



STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION
OFFICE OF ENVIRONMENTAL STEWARDSHIP
ENV. PLANNING AND DESIGN UNIT
TRANSPORTATION BUILDING
ST. PAUL, MINNESOTA 55155-1899

STANDARD PLANTING DETAILS (C)

STATE PROJECT SP 1901-171 (T.H. 13)

SHEET NO. 9 OF 9 SHEETS

TREE AND SHRUB REPLACEMENT WAIVER

In accordance with the North Dakota Public Service Commission's December 2, 2015 Findings of Fact, Conclusions of Law and Order granting a Certificate of Site Compatibility to Lindahl Wind Project, LLC ("Lindahl Wind") for the Lindahl Wind Farm Project ("Project"), Lindahl Wind must inventory and replace in a ratio of 2 to 1 trees and shrubs removed in conjunction with construction of the Project. The owners of a parcel from which trees and/or shrubs are removed have the option of having replacement trees and shrubs planted on their property, either on the parcel from which the trees/shrubs were removed or on other property they own. However, landowners may waive these options, allowing the replacement trees and/or shrubs to be planted off of their property.

The undersigned own property leased to Lindahl Wind and within the designated Project site, which is described in Agreement No. 2770600 (the "Property"). Trees and/or shrubs were removed from the Property in conjunction with the Project. The undersigned hereby waive the option of having the replacement trees and/or shrubs planted on the Property or on other property owned by the undersigned.

Dated this 29th day of November, 2017.


Howard M. Ives

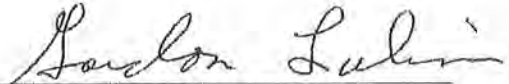
[INSERT NAME OF
LANDOWNER]

TREE AND SHRUB REPLACEMENT WAIVER

In accordance with the North Dakota Public Service Commission's December 2, 2015 Findings of Fact, Conclusions of Law and Order granting a Certificate of Site Compatibility to Lindahl Wind Project, LLC ("Lindahl Wind") for the Lindahl Wind Farm Project ("Project"), Lindahl Wind must inventory and replace in a ratio of 2 to 1 trees and shrubs removed in conjunction with construction of the Project. The owners of a parcel from which trees and/or shrubs are removed have the option of having replacement trees and shrubs planted on their property, either on the parcel from which the trees/shrubs were removed or on other property they own. However, landowners may waive these options, allowing the replacement trees and/or shrubs to be planted off of their property.

The undersigned own property leased to Lindahl Wind and within the designated Project site, which is described in Agreement No. 2948800 (the "Property"). Trees and/or shrubs were removed from the Property in conjunction with the Project. The undersigned hereby waive the option of having the replacement trees and/or shrubs planted on the Property or on other property owned by the undersigned.

Dated this 30 day of November 2017.



[INSERT NAME OF
LANDOWNER]

[INSERT NAME OF
LANDOWNER]

Document Location: P:\Private\ND\County\Williams\1614490_TradeWind Lindahl Wind Farm\enviro\Tree and Shrub\Mitigation Report\Maps_MXD\Tree Map.mxd

106th Ave. NW

4

9

T: 158 N
R: 95W

228 Eastern Red Cedar
165 Green Ash

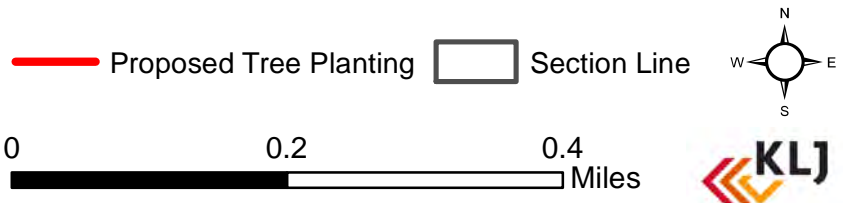
76th St. NW

16

Service Layer Credits: Copyright:© 2013 National Geographic Society, i-cubed



**Lindahl Wind Project
Williams County, ND
Lindahl Wind Project Substation
Tree Location Map**



Document Location: P:\Private\ND\County\Williams\1614490_TradeWind Lindahl\Wind Farm\Enviro\Tree and Shrub\Mitigation Report\Maps_MXD\Tree Map2.mxd



Service Layer Credits: Copyright: © 2013 National Geographic Society, i-cubed



Lindahl Wind Project
Williams County, ND
Landowner: Jerol Gohrick, Darren Gohrick,
Joan Gohrick & Orrice J. Gohrick
Tree Mitigation Map





Document Location: P:\Private\ND\County\Williams\1614490_TradeWind\Lindahl\Wind\Farm\Enviro\Tree and Shrub\Mitigation_Report\Maps_MXD\Tree_Map3.mxd

Service Layer Credits: Copyright: © 2013 National Geographic Society, i-cubed



Lindahl Wind Project
Williams County, ND
Landowner: F. Kevin McGinnity
Tree Mitigation Map



104th Ave. NW

23

26
T: 159N
R: 95W

21 Eastern Red Cedar
9 Green Ash
6 Peach Willow
30 Rocky Mt. Juniper

79th St. NW

35



Lindahl Wind Project
Williams County, ND
Landowner: Raydean Strid & Juli Strid
Tree Mitigation Map

