

| | | | | |
|-------|-------------------|-------|-------------|-----------|
| STATE | PROJECT NO. | PCN | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 16956 | 1 | 1 |

**JOB # 32
NORTH DAKOTA**

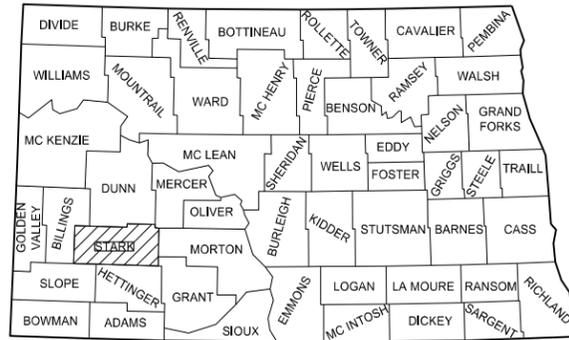
DEPARTMENT OF TRANSPORTATION

TEU-5-022(115)072
Dickinson Highway 22 Landscape Enhancement Project

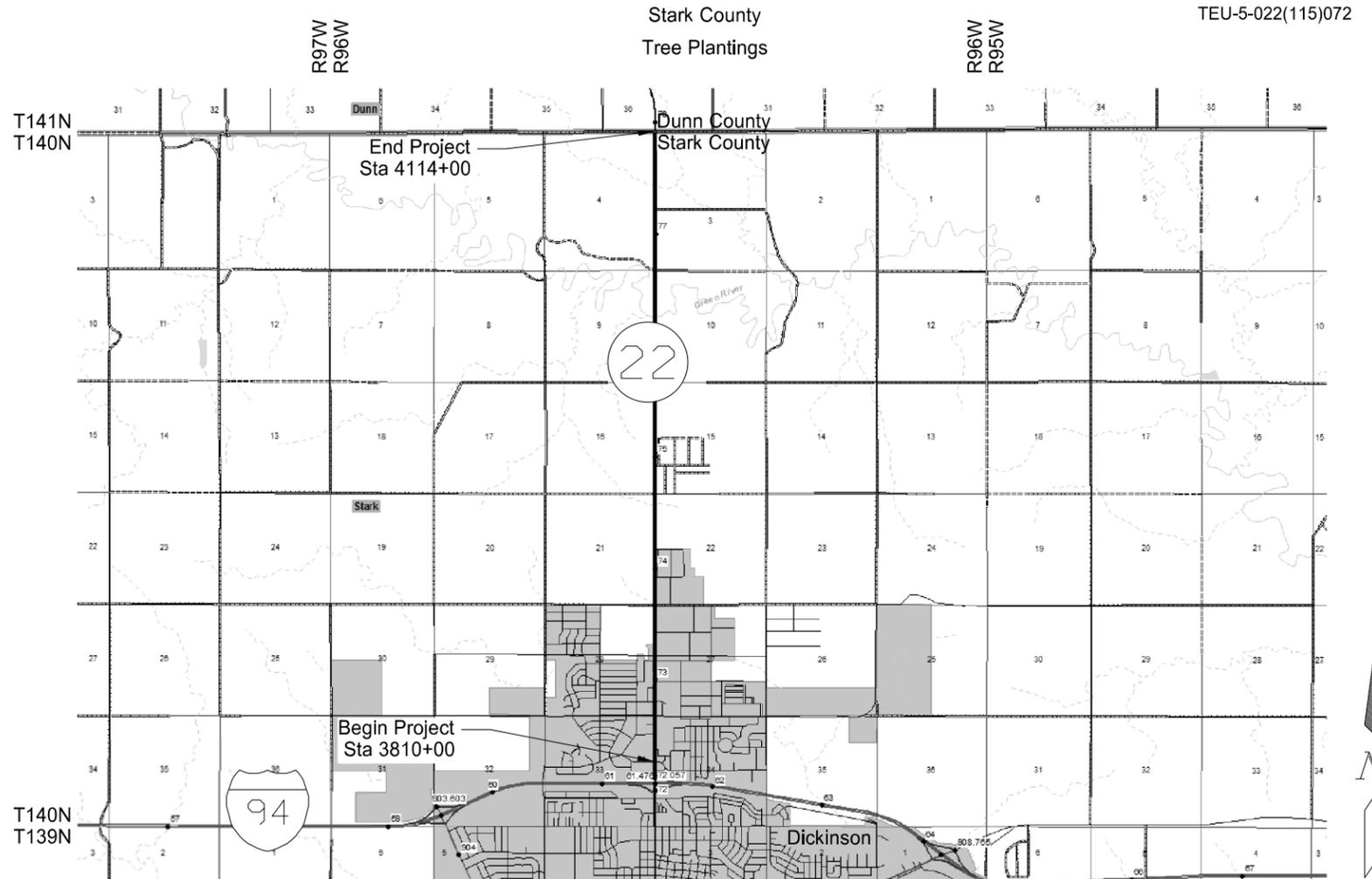
GOVERNING SPECIFICATIONS:

Standard Specifications adopted by the North Dakota Department of Transportation October 2014; Standard Drawings currently in effect; and other Contract Provisions submitted herein.

| PROJECT NUMBER \ DESCRIPTION | NET MILES | GROSS MILES |
|------------------------------|-----------|-------------|
| TEU-5-022(115)072 | 5.758 | 5.758 |



STATE COUNTY MAP



DESIGNERS

Alexis J. Wallevand, PLA, ASLA

J. Steven Windish, PE



APPROVED DATE August 13, 2014

Craig F. Kubas /s/

CITY ENGINEER
CITY OF DICKINSON

APPROVED DATE August 22, 2014

Robert Fode /s/

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 professional landscape architect under the laws of the state of ND.

APPROVED DATE August 14, 2014

Alexis J. Wallevand /s/
ULTEIG ENGINEERS, INC.

This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 08/14/14 and the original document is stored at the North Dakota Department of Transportation

| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 2 | 1 |

TABLE OF CONTENTS

| <u>Section No.</u> | <u>Sheet No.</u> | <u>Description</u> |
|--------------------|------------------|-----------------------------------|
| 1 | 1 | Title Sheet |
| 2 | 1 | Table of Contents |
| 6 | 1-5 | Notes & Environmental Commitments |
| 8 | 1 | Quantities |
| 10 | 1 | Basis of Estimate |
| 20 | 1 | General Details |
| 85 | 1-16 | Landscape Layouts |
| 100 | 1 | Traffic Control Devices List |

LIST OF STANDARD DRAWINGS

| <u>Standard No.</u> | <u>Description</u> |
|---------------------|--|
| D-101-1,2,3 | NDDOT Abbreviations |
| D-101-10 | NDDOT Utility Company and Organization Abbreviations |
| D-101-20, 21 | Linestyles |
| D-101-30,31,32 | Symbols |
| D-261-1 | Erosion Control Fiber Roll Placement Details |
| D-704-7, 8 | Breakaway Systems for Construction Zone Signs |
| D-704-9,10,11 | Construction Sign Details |
| D-704-12 | Shoulder Closure Tapers |
| D-704-13 | Barricade and Channelizing Device Details |
| D-704-14 | Construction Sign Punching and Mounting Details |
| D-704-24 | Shoulder Closures and Bridge Painting Details |

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 6 | 1 |

NOTES

GENERAL NOTES

- 105-P01 CLEANING: Remove all debris from the existing roadway adjacent to the construction area at the end of each construction day before traffic is returned to normal.
- 105-P02 WORK SCHEDULE: No work is allowed from 11:00 P.M. to 7:00 A.M unless approved in writing by the Project Manager.

SECTION 700

- 704-P01 TRAFFIC CONTROL: Install traffic control in areas only where work is in progress. Type S and Type HH on Standard D-704-24 apply depending on operations. Leave the work areas free of all hazards during nonworking hours. Remove traffic control devices at the end of each day and reinstall when work recommences.
- Include all costs for traffic control items necessary to perform the work in the price bid for "Traffic Control".

SECTION 900

- 970-P01 PROJECT PERSONNEL: Have an International Society of Arboriculture (ISA) certified arborist, a local Commercial Arborist Licensee, or other certified individual that is knowledgeable of plant materials and proper planting conditions on the project. Provide proof of current certification to the Project Manager. Submit documentation of equivalent minimum requirements to the Project Manager if any other certifications are being requested for consideration.

Have a Certified Herbicide Applicator available for the project.

970-P02 LANDSCAPE SUBMITTALS:

Pre-construction Conference:

1. Provide a list of all project plant materials and their sources. Indicate any concerns regarding the project plant materials, including plant material suitability and/or availability, in writing.
2. Provide Personnel Certifications
3. Provide a Proposed Planting Schedule

Submittals prior to plant installation approval:

1. Provide Certificate(s) of Inspection as required by governmental authorities
2. Provide one label of each plant type utilized on the project.

Submittals required for project closeout:

1. Provide Plant Establishment Forms (Forms submitted with Payrolls)
2. Provide a Plant Maintenance Recommendations Document

- 970-P03 PLANT SIZES: Comply with size and grading standards of the latest edition of "American Standard for Nursery Stock ". Measure all trees up to four (4) inch calipers at a point six (6) inches above the ground line. If unable to locate plant material in the specified sizes, negotiate for unit price adjustment and/or a plant substitution prior to shipment from the source.

- 970-P04 PLANT SUBSTITUTIONS: If the specified plant material(s) is/are not obtainable, submit proof of non-availability from at least three suppliers to Project Manager. Propose a suitable substitution to the Project Manager for review and approval. Comply with the "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. The substitution(s) must have similar environmental needs (suitable for the project site), plant form/characteristics, and habit as the plant material(s) specified. Provide comparative outlines of the original plant selection(s) and the proposed substitution(s) to the Project Manager. Obtain written approval of acceptable substitution(s) from the Project Manager.

Submit a written proposal for appropriate plant substitutions if any field conditions are deemed inappropriate for the specified plant materials.

- 970-P05 SITE CONDITIONS: Notify the Project Manager in writing of any site conditions which are considered detrimental to plant growth such as chemical residue, rubble fill, clay fill, adverse drainage conditions, obstructions, or the like. Contact the appropriate state, county, and/or city weed control agencies to assure planting areas are free of chemical residue.

- 970-P06 PLANT LOCATIONS: Mark plant material locations as indicated on the plans. Obtain approval from the Project Manager prior to planting. If obstructions are encountered that are not shown on Drawings, do not commence planting operations until alternate plant locations have been selected and reviewed with the Project Manager.

- 970-P07 PLANT ACCEPTANCE: Provide plant materials that have been nursery-grown under climatic conditions found at the site for a minimum of one year prior to the contract date. Provide plant materials that are vigorous and healthy, and true to name.

Provide plant materials which have proper proportions, have no serious injuries to the bark or roots, no broken branches, no objectionable disfigurement, no shriveled and/or dry roots, no broken balls, no insect pests, and no diseases. Provide trees with upright, dominant single leaders that are not broken.

Coordinate with the Project Manager for the initial pre-installation inspection and acceptance of plant materials. Remove rejected plant material from the project site within 24 hours.

This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

NOTES

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 6 | 2 |

970-P08 PLANT LABELS: Deliver each tree, shrub, or perennial to the site bearing a plant label stating its correct size and botanical name. Use labels that are durable, legible labels utilizing weather resistant ink or embossed process. Attach labels in such a manner that will not damage or hinder the growth of the plant to which it is affixed. After installation of the plant materials, remove all labels. Provide one label of each type of plant to the Project Manager for the project records.

970-P09 PLANT TYPES: See planting details and plant schedule for additional information.

Balled and Burlapped (B&B): Dig Balled and Burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide rootball sizes complying with the most recent edition of the "American Standard for Nursery Stock". Loose, broken, manufactured, cracked, or mushroomed balls are not acceptable.

Container-grown: Dig up container-grown stock with adequate fibrous roots, covered with a uniform thick coating of mud that was puddled immediately after they were extracted, or packed in moist straw or peat moss. Provide container-grown plants complying with the most recent edition of the "American Standard for Nursery Stock". Remove all containers prior to backfilling planting pits.

Bare Root: Use bare root trees that have a well branched root system characteristic of the species with a root spread as specified in the most recent edition of the "American Standard for Nursery Stock." Cut all damaged, injured, or broken roots with a sharp, clean pruning shears leaving no damaged, frayed, or splintered cut surfaces.

970-P10 PRODUCT DELIVERY, STORAGE, AND HANDLING: Take all precautions customary in good trade practice in preparing plants for transport. Protect all plants from drying out and protect all roots from exposure to sunlight. If necessary, spray deciduous plants in foliage with an approved Anti-Desiccant immediately after digging to prevent dehydration. Dig, pack, transport, and handle plants with care to ensure protection against injury. Provide inspection certificates required by law accompanying each shipment invoice. Upon arrival, file the certificate(s) with the Project Manager.

If plants cannot be planted within the scheduled workload for the day, properly protect them with soil, wet peat moss, or in a manner acceptable to the Project Manager. Water Balled and Burlapped, container, and heeled-in plantings daily. Do not bind plants with rope or wire in a manner that could damage or break the branches.

970-P11 TREE PITS: Hand dig or roto-till pits to accommodate the root system. Do not dig pits deeper than the first main flare root on the plant. Scarify the sides and bottom of planting pits to remove any glazing affects caused by digging prior to placing plant materials. Plant top flare root of all trees one (1) to two (2) inches higher than finished grade.

970-P12 PLANT INSTALLATION: Set plant material in the planting pit to proper grade and alignment. Set the plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structures.

970-P13 BACKFILL INSTALLATION: Use the native soil for all tree pits. Remove stones larger than one (1) inch diameter and any sticks or extraneous materials. Break up all lumps or clods before backfilling. If the native soil differs from the rootball, provide backfill soil consisting of a mixture of native soil and the soil type of the rootball to ensure proper water movement and promote root regeneration.

Backfill each tree pit with the planting soil placed in layers around the roots. Tamp each layer (maximum 6" depth) carefully in a manner to avoid injury to the roots or disturbing the position of the plant. When approximately 2/3 to 3/4 of the tree pit has been backfilled, water the hole so as to settle the soil in and around all the roots. After the water has been absorbed, fill the tree pit with the planting soil, tamp lightly to grade, and water thoroughly again to eliminate air pockets. Bring any further settlement to grade with additional planting soil. Ensure proper drainage and prevent any pooling of water around the plant material trunks and stems. Remove any excess excavated materials from the site. Water all plant materials within 2 hours of installation.

970-P14 PLANT STAKING: Use six foot(6') long standard steel fence "T" posts for securing newly planted trees. Use stakes that are notched or drilled to retain guy wires. Paint the steel posts with at least one coat of exterior enamel. Drive the stakes so they support the trees and are firm. Set guys sufficiently tight and horizontal to transfer support from the stake to the tree. If tree is under 1 1/4" caliper, support with a minimum of one (1) tree stake. If tree is 1 1/4" caliper or more, support with two (2) tree stakes.

Stake all deciduous trees as shown on planting details. Do not stake evergreen trees provided they are able to maintain an acceptable and stable upright position as determined by the Project Manager. Align stakes within tree rows for ease of mowing and other maintenance. Adjust staking as necessary during the warranty and maintenance period.

Leave the stakes in place for approximately one (1) year. Coordinate with the Project Manager to address site specific timelines to remove the tree staking. All removed stakes and associated hardware will become the property of the Contractor. If certain locations require extended staking, as decided by the Project Manager, leave the staking in those locations which become the property of the City of Dickinson.

Include all costs associated with the plant staking and staking removals in the bid price for the plant materials.

970-P15 RODENT PROTECTION: Use four inch (4") minimum diameter perforated drain tile cylinders installed up to lowest branches for deciduous trees. Leave rodent protection installed through the maintenance period. Rodent protection becomes the property of the Owner upon final acceptance of the plant material.

This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 6 | 3 |

NOTES

Include all costs associated with the perforated drain tile cylinders in the bid price of the plant materials.

970-P16 MULCH: Provide mulch samples to Project Manager. Obtain written approval of mulch material from the Project Manager prior to installation. Provide mulch materials that are free of all foreign debris. Keep mulch six inches away from plant trunks and stems. Remove any mulch material deemed unacceptable by the Project Manager from the project within 24 hours.

Mulch areas immediately after plant installation to avoid open soil weed growth problems. Maintain mulch depth of four(4) inches unless excess soil moisture or poor drainage at site limits potential survivability. If conditions are such that an adjustment to the mulch depth is necessary to maintain healthy plant materials, notify the Project Manager in writing to obtain written approval for any changes to the plans and/or specifications.

Wood Mulch: Provide wood mulch that is long, fibrous in nature, two (2) to four (4) inches in length. Place a minimum six (6) foot diameter (or three foot radius) mulched ring if trees are not planted in a mass tree/shrub bed. Thoroughly water mulched areas to a soil depth of at least six (6) inches. Repair all mulch loss and erosion from water damage immediately.

Include all costs associated with furnishing, installing and maintenance of the tree ring mulch in the cost of the plantings.

970-P17 TREE WATER BAGS: Install tree water bags. Leave the water bags on the project to become the property of the City of Dickinson upon the project closeout.

Include all costs associated with furnishing and installing the tree water bags in the bid price for the plant materials.

970-P18 INITIAL PLANT INSTALLATION ACCEPTANCE: Complete the installation of **ALL** plant materials. Perform any establishment procedures necessary. Notify the Project Manager in writing to request an inspection. The Project Manager will provide a letter of initial plant installation acceptance.

970-P19 PLANTING / MAINTENANCE SCHEDULE: Complete initial plant installation on or before **June 15, 2015**. Maintain all plantings **for one full year** from the date of initial installation acceptance after which time the City will be responsible for maintenance.

970-P20 RETAINAGE: A landscape retainage amount will be based on the project bid costs. A **15%** retainage will be in place after the initial plant installation acceptance. (i.e. if a project total bid is \$100,000, landscape retainage will be \$15,000) This retainage includes the standard NDDOT retainage held on a project.

The landscape retainage will be released on a bi-annual basis. The Project Manager will release up to one-half of the landscape retainage on **October 30, 2015**. Landscape retainage release will be based on the Contractor's performance of the

plant establishment procedures. Upon final inspection and acceptance of the plant materials, the Project Manager will release the remaining landscape retainage prior to closeout of the project.

970-P21 PLANT ESTABLISHMENT PROCEDURES: Provide establishment procedures through the extent of the contract that include additional pruning, protective measures against pests and diseases (including rabbit and/or rodent protection), replacing mulch, keeping the stakes firm and guys adjusted, weeding with a pre-emergent weed control or other pre-approved means, the removal of any dead plant material from the project, and other establishment procedures as deemed necessary by the Project Manager. Clear tree rings of weeds/grass a minimum of once per month. This includes the area immediately adjacent and within six inches of the mulch edge. Remove this material from the project.

Notify the Project Manager five (5) days prior to all scheduled maintenance. The Project Manager will notify the Contractor if any additional site visits are necessary to maintain proper planting conditions.

Submit a detailed plant establishment form to the Project Manager with the corresponding project payrolls. Include the following minimum information on the forms: Project name, Project number, Name of Contractor, Corresponding Payroll Reference, Date of Work, Type of Work, and Comments Section.

970-P22 PLANT MATERIALS REPLACEMENT: Replace any plant material that is 25% or more dead, as determined by the Project Manager. Trees are considered dead when the main leader has died back, or 25% of the crown is dead. Shrubs are considered dead when 25% of the branching is dead. Remove dead plant material immediately; replace immediately or as soon as possible in accordance with acceptable planting dates and weather conditions.

970-P23 PLANTING/REPLANTING DATES: Install plant materials within the allowable planting dates as listed below. Weather conditions may allow for the planting of the plant materials to occur outside of these dates. Obtain written approval from the Project Manager in all such instances.

Spring: April 15 – June 15
Fall: September 15 – October 15

970-P24 PROJECT INSPECTIONS: The Project Manager will inspect the project every month of the warranty/maintenance period during the typical growing season (May – October). He will notify the Contractor of any unacceptable plant materials or site conditions which need to be corrected.

This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

NOTES

| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 6 | 4 |

970-P25 PLANT MAINTENANCE RECOMMENDATIONS DOCUMENT: Provide written recommendations for care of the project site. List procedures for maintenance including, but not be limited to, all pruning, watering, fertilizing, potential changes at different stages of the plant materials growth, etc. Indicate any specific site needs based on any site micro-climate situations.

970-P26 FINAL PLANT ACCEPTANCE: The Project Manager will inspect the plant materials for acceptability approximately one week before the warranty/maintenance period terminates. Complete all items of maintenance prior to the inspection. The Project Manager will notify the Contractor of completion of the project with a letter of final acceptance.

This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

ENVIRONMENTAL COMMITMENTS

| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 6 | 5 |

ENVIRONMENTAL COMMITMENTS: The North Dakota Department of Transportation and the Federal Highway Administration have made several environmental commitments to various agencies and the public to secure approval of this project. The environmental commitments are as follows:

COMMITMENT NO. 1: Based on the NEPA documentation, no additional permits or environmental commitments have been identified beyond what is covered by the NDDOT's Standard Specification of Road and Bridge Construction.

| Wetland Number | Cowardin Classification | Wetland Type | Wetland Size (acres) | Wetland Feature | USACE Jurisdictional Wetlands | Impacts to Wetlands | |
|--|-------------------------|--------------|----------------------|-----------------|-------------------------------|---------------------|-------------|
| | | | | | | Temp. | Perm. |
| There are a number of adjacent wetlands; however, no impacts are anticipated within the limits of construction. | | | | | | | |
| TOTALS: | | | | 0.00 | | 0.00 | 0.00 |

*A wetland Jurisdictional Determination was issued by the USACE on 02/10/2011; NWO-2011-00086-BIS.

| | | | | |
|--|-------|-------------------|-------------|-----------|
| | STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| | ND | TEU-5-022(115)072 | 8 | 1 |

| SPEC | CODE | DESCRIPTION | UNIT | QUANTITY |
|------|------|------------------------------|------|----------|
| 103 | 0100 | CONTRACT BOND | LSUM | 1 |
| 261 | 0106 | FIBER ROLLS 6IN | LF | 220 |
| 702 | 0100 | MOBILIZATION | LSUM | 1 |
| 704 | 1000 | TRAFFIC CONTROL SIGNS | UNIT | 140 |
| 970 | 1000 | TREES | EA | 46 |
| 970 | 2011 | AMUR MAPLE | EA | 43 |
| 970 | 2150 | NORTHERN ACCLAIM HONEYLOCUST | EA | 51 |
| 970 | 2529 | TOBA HAWTHORN | EA | 47 |
| 970 | 3604 | COLORADO SPRUCE | EA | 32 |
| 970 | 3625 | PONDEROSA PINE | EA | 31 |

Dickinson Highway 22
Landscape Enhancement Project
Quantities

BASIS OF ESTIMATE

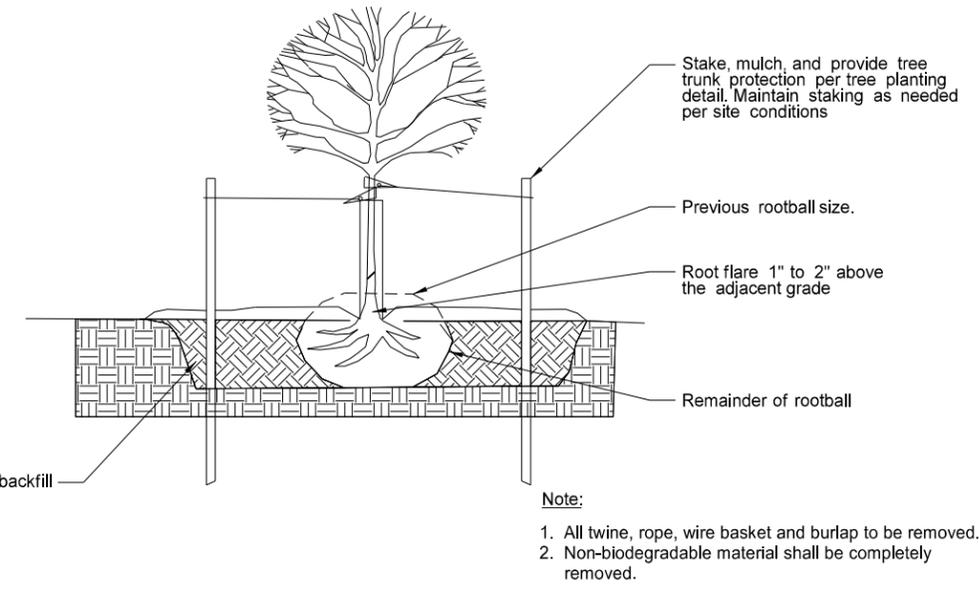
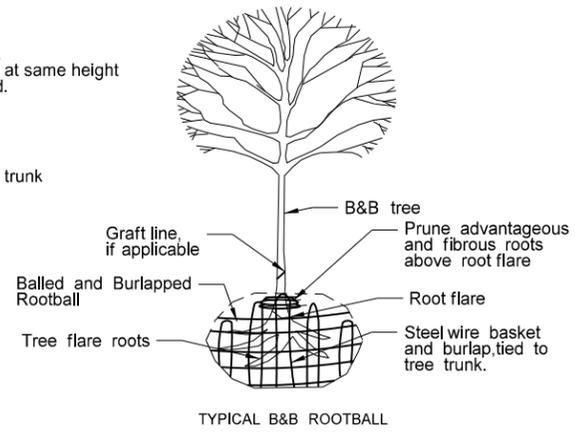
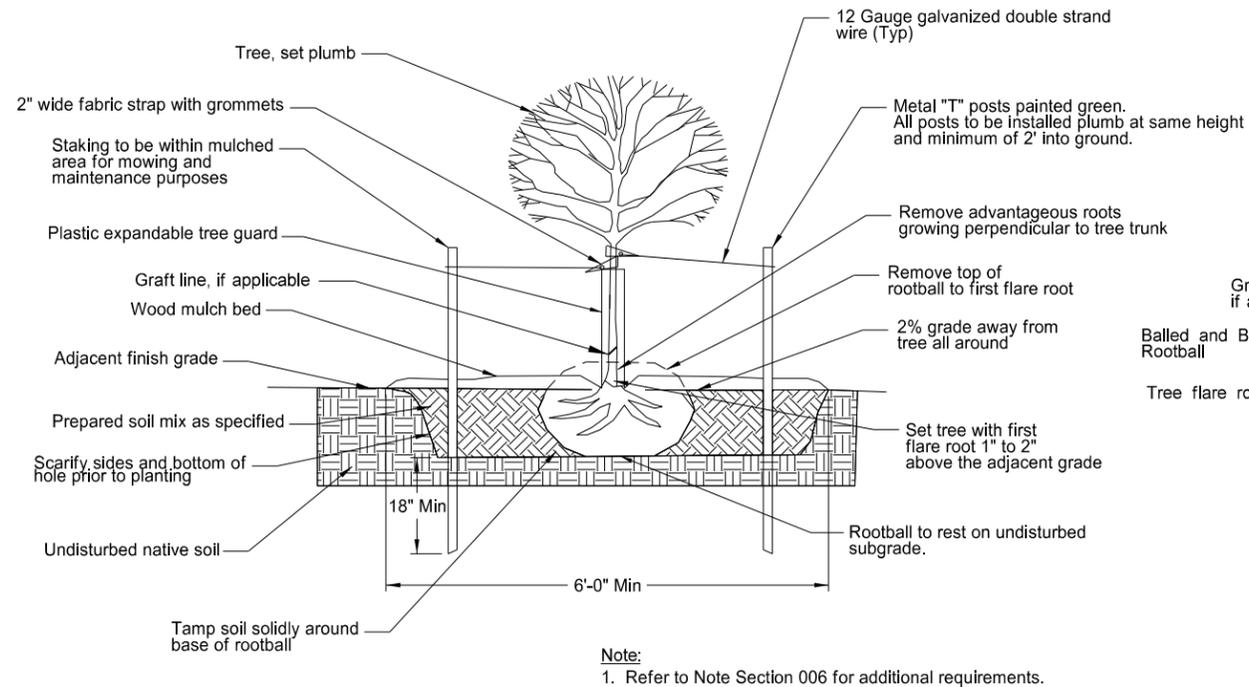
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 10 | 1 |

Plant Schedule

| SPEC | CODE | GROUP/ DISCRIPTION | COMMON NAME | SCIENTIFIC NAME | SIZE | QUANTITY |
|------|------|-----------------------|------------------------------|---|-------------|----------|
| 970 | 1000 | TREES | WELCH JUNIPER | <i>Juniperus scopulorum 'Welchi'</i> | 3.5' Height | 46 EA |
| 970 | 2011 | | AMUR MAPLE | <i>Acer ginnala</i> | 1.5" Cal | 43 EA |
| 970 | 2150 | | NORTHERN ACCLAIM HONEYLOCUST | <i>Gleditsia triacanthus var. inermis 'Harve'</i> | 1.5" Cal | 51 EA |
| 970 | 2529 | | TOBA HAWTHORN | <i>Crataegus x mordenensis 'Toba'</i> | 1.5" Cal | 47 EA |
| 970 | 3604 | | COLORADO SPRUCE | <i>Picea pungens</i> | 4' Height | 32 EA |
| 970 | 3625 | | PONDEROSA PINE | <i>Pinus ponderosa</i> | 4' Height | 31 EA |
| | | | | | | |

This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 20 | 1 |

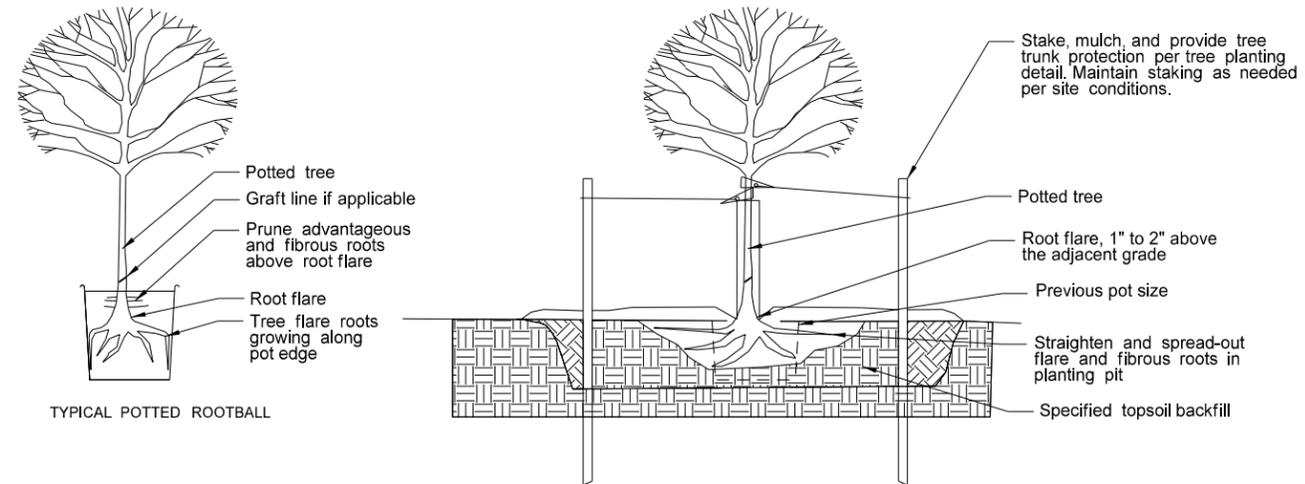


TREE PLANTING DETAIL

NOT TO SCALE

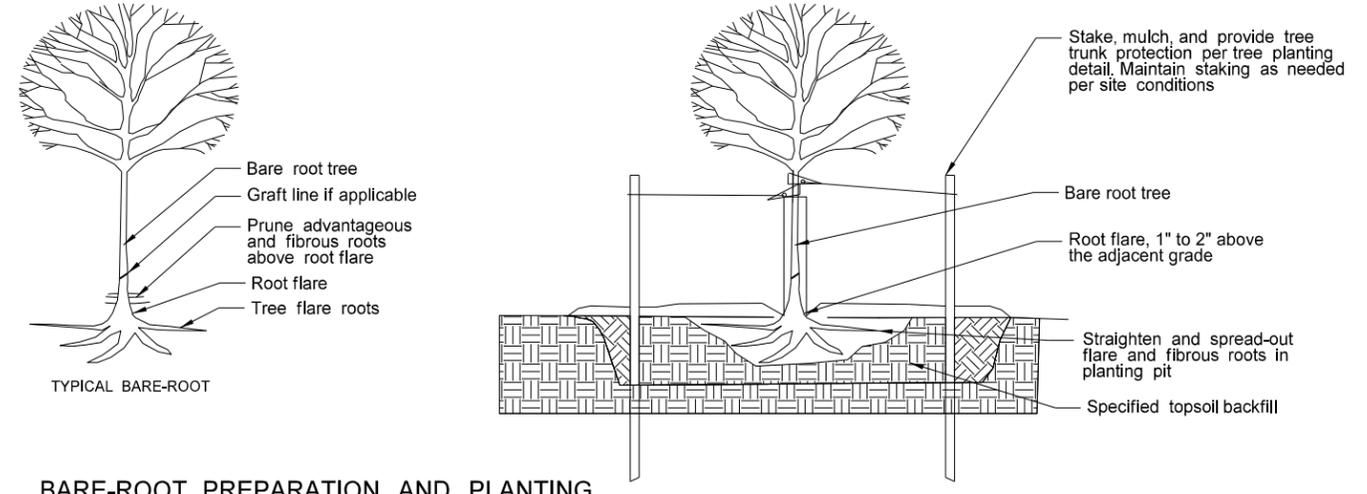
BALLED & BURLAPPED (B&B) TREE ROOTBALL PREPARATION AND PLANTING

NOT TO SCALE



POTTED TREE ROOTBALL PREPARATION AND PLANTING

NOT TO SCALE



BARE-ROOT PREPARATION AND PLANTING

NOT TO SCALE

- Note:
1. Do not allow roots to dry out.
 2. Do not bring trees to site unless trees will be immediately inspected and planted.
 3. Keep plants moist and cool until ready for planting.
 4. Keep trees out of direct sunlight until planted.

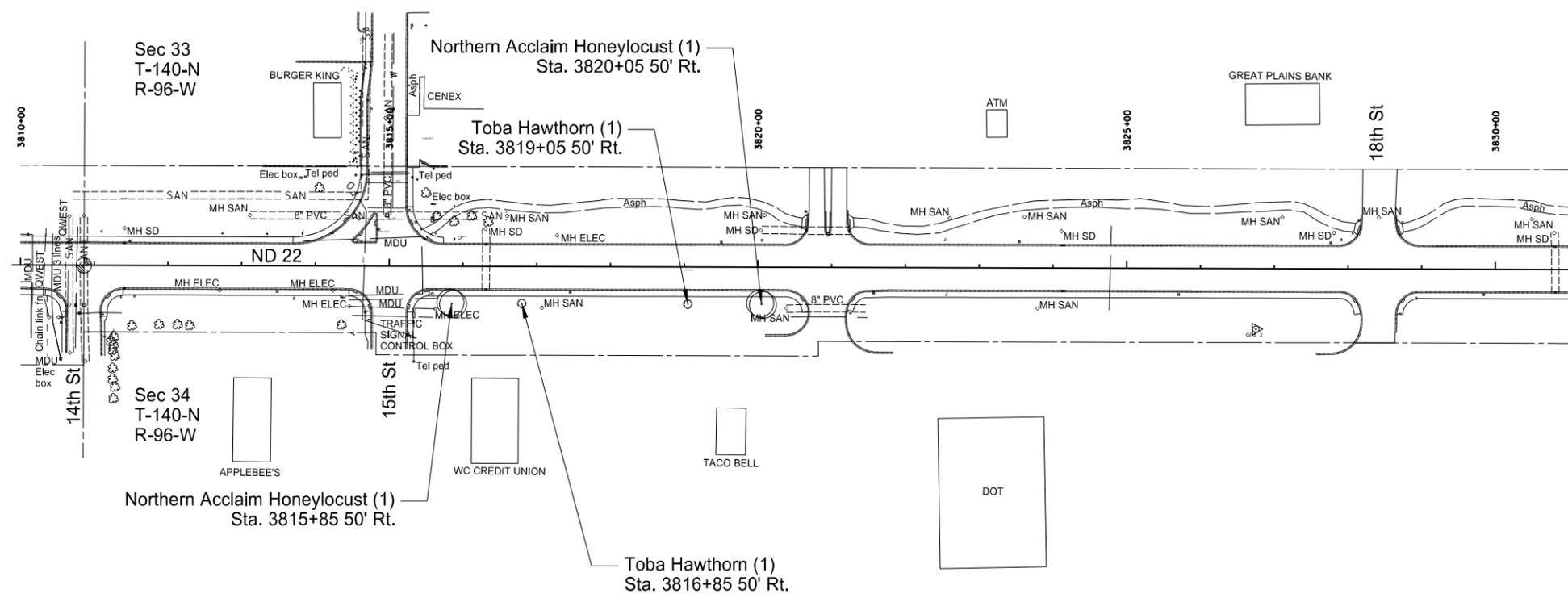
This document was originally issued and sealed by Alexis J. Wallevand, Registration Number LA-3, on 08/13/14 and the original document is stored at the North Dakota Department of Transportation

Dickinson Highway 22
Landscape Enhancement Project
Landscape Planting Details



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 1 |

- Northern Acclaim Honeylocust
Sta. 3815+85 50' Rt. 1 EA
Sta. 3820+05 50' Rt. 1 EA
- Toba Hawthorn
Sta. 3816+85 50' Rt. 1 EA
Sta. 3819+05 50' Rt. 1 EA



This document was originally issued and sealed by
Alexis J. Wallevand
Registration Number
LA- 3,
on 8/13/14 and the original document is stored at the
North Dakota Department
of Transportation

Dickinson Highway 22
Landscape Enhancement Project

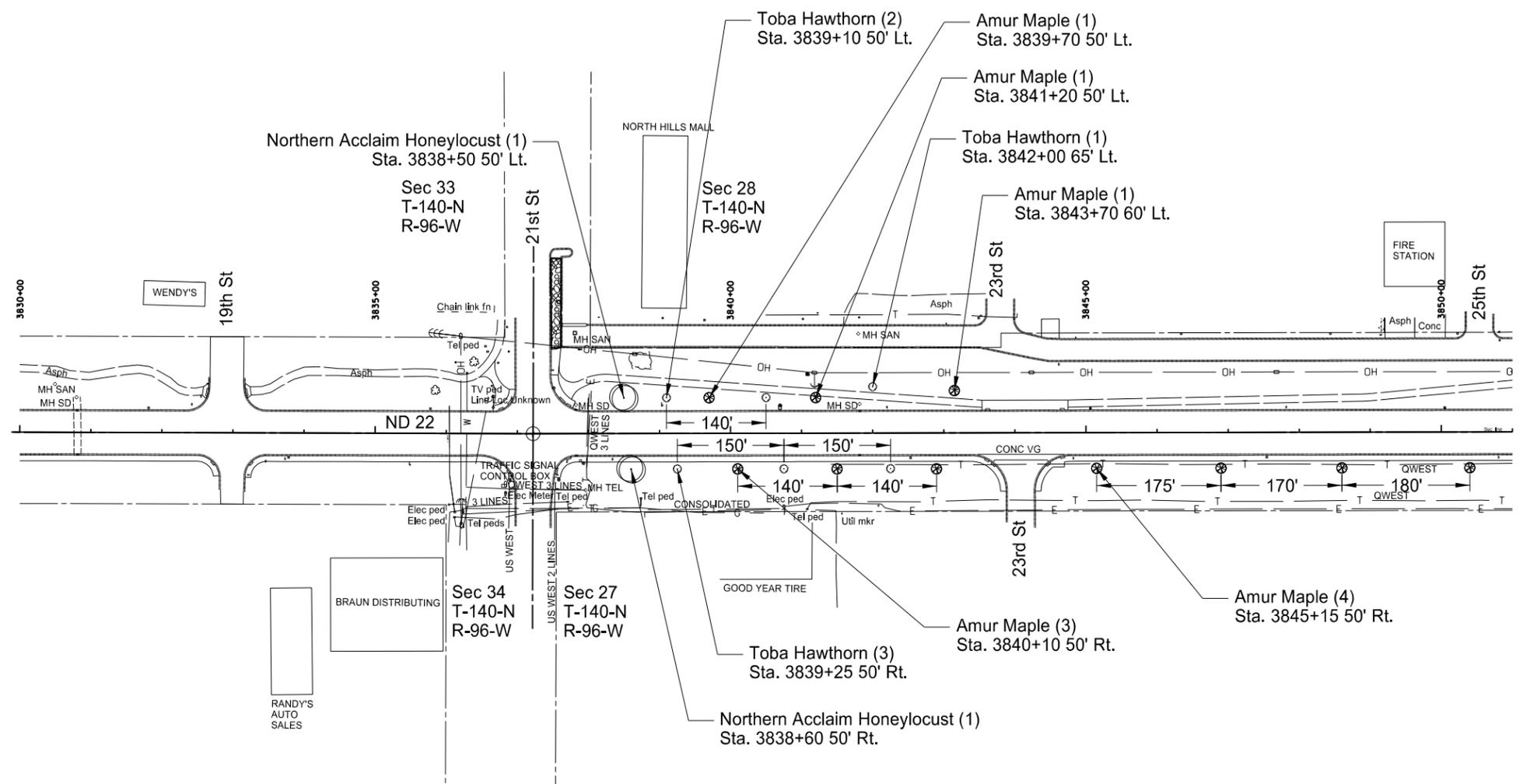
Landscape Layout

Sta. 3810+00 - Sta.3830+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 2 |

| | |
|--------------------------------|------|
| ⊗ Amur Maple | |
| Sta. 3839+70 50' Lt. | 1 EA |
| Sta. 3840+10 50' Rt. | 3 EA |
| Sta. 3841+20 50' Lt. | 1 EA |
| Sta. 3843+70 60' Lt. | 1 EA |
| Sta. 3845+15 50' Rt. | 4 EA |
| ⊙ Northern Acclaim Honeylocust | |
| Sta. 3838+50 50' Lt. | 1 EA |
| Sta. 3838+60 50' Rt. | 1 EA |
| ⊙ Toba Hawthorn | |
| Sta. 3839+10 50' Lt. | 2 EA |
| Sta. 3839+25 50' Rt. | 3 EA |
| Sta. 3842+00 65' Lt. | 1 EA |

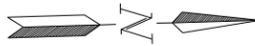


This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

Dickinson Highway 22
Landscape Enhancement Project

Landscape Layout

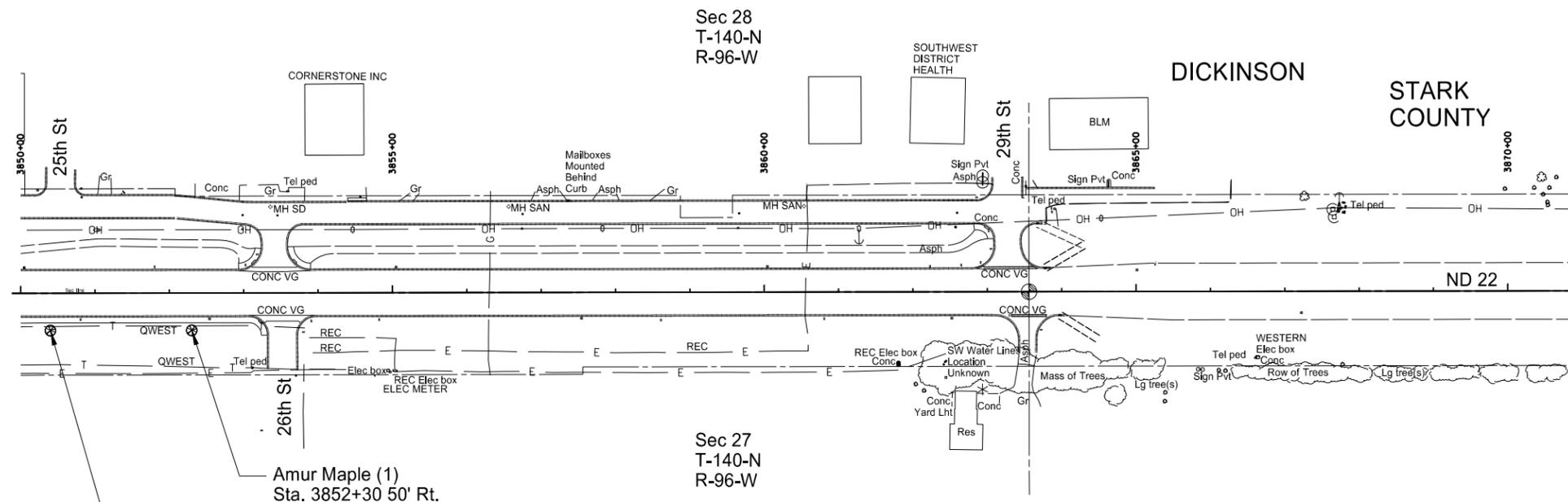
Sta. 3830+00 - Sta.3850+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 3 |

⊗ Amur Maple
Sta. 3852+30 50' Rt.

1 EA



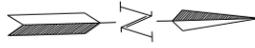
Quantity shown
on previous page

This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

Dickinson Highway 22
Landscape Enhancement Project

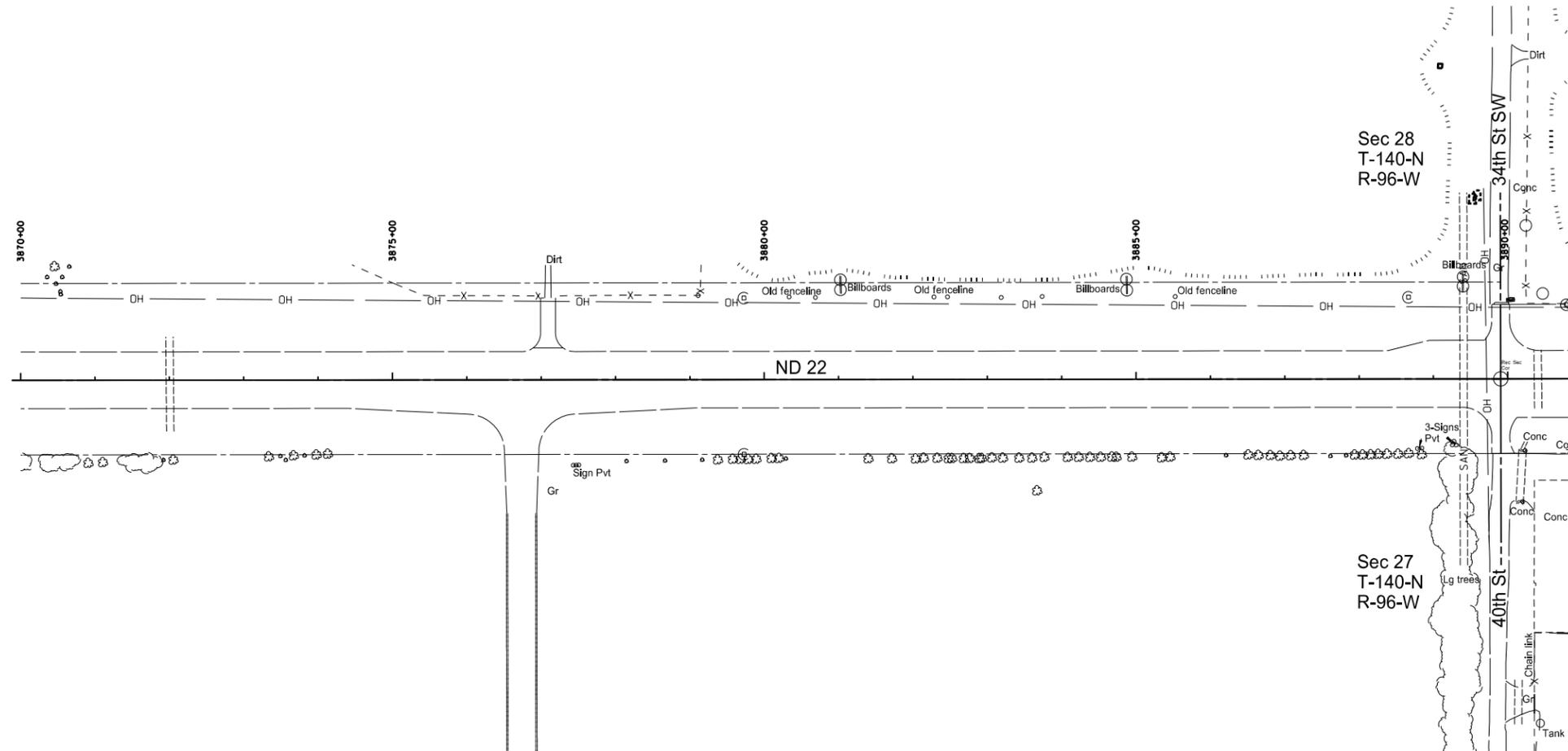
Landscape Layout

Sta. 3850+00 - Sta.3870+00



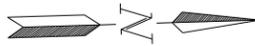
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 4 |

No Quantities This Sheet

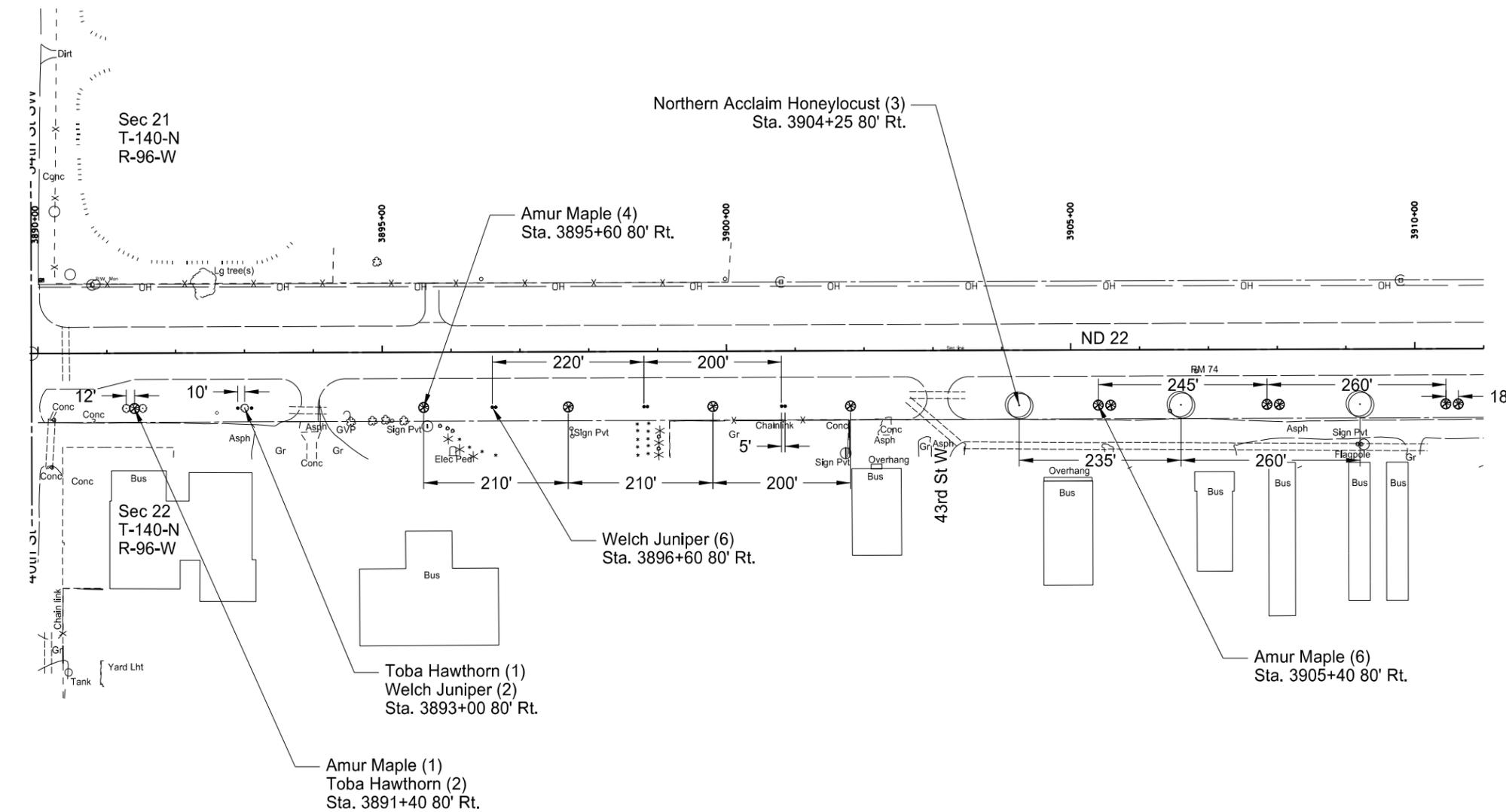


This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 3870+00 - Sta.3890+00



| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 85 | 5 |



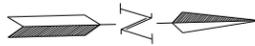
- Trees
 - Sta. 3893+00 80' Rt. 2 EA
 - Sta. 3896+60 80' Rt. 6 EA
- ⊗ Amur Maple
 - Sta. 3891+40 80' Rt. 1 EA
 - Sta. 3895+60 80' Rt. 4 EA
 - Sta. 3905+40 80' Rt. 6 EA
- ⊙ Northern Acclaim Honeylocust
 - Sta. 3904+25 80' Rt. 3 EA
- Toba Hawthorn
 - Sta. 3891+40 80' Rt. 2 EA
 - Sta. 3893+00 80' Rt. 1 EA

This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

Dickinson Highway 22
Landscape Enhancement Project

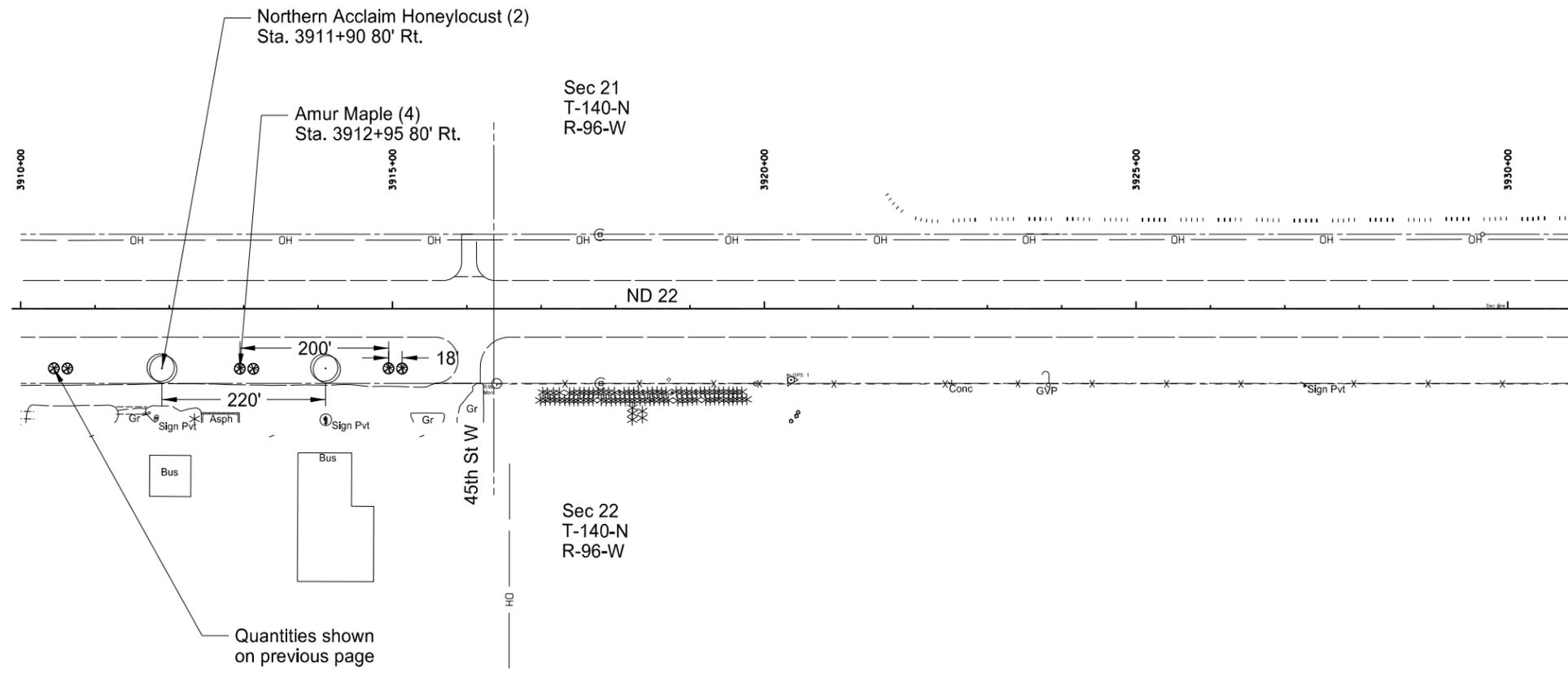
Landscape Layout

Sta. 3890+00 - Sta.3910+00



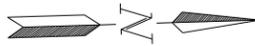
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 6 |

- ⊗ Amur Maple
Sta. 3912+95 80' Rt. 4 EA
- ⊙ Northern Acclaim Honeylocust
Sta. 3911+90 80' Rt. 2 EA



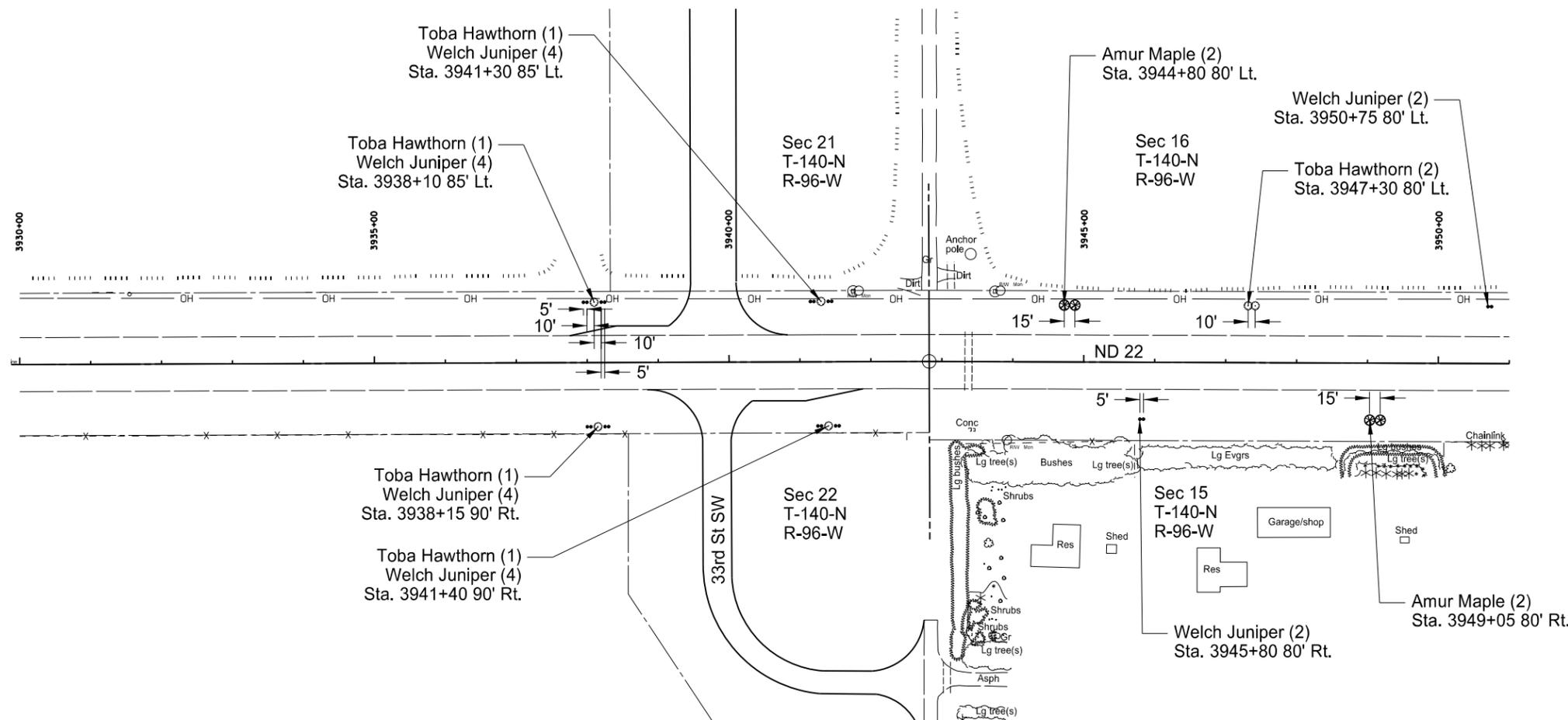
This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 3910+00 - Sta.3930+00



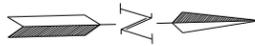
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 7 |

- Trees
 - Sta. 3938+10 85' Lt. 4 EA
 - Sta. 3938+15 90' Rt. 4 EA
 - Sta. 3941+30 85' Lt. 4 EA
 - Sta. 3941+40 90' Rt. 4 EA
 - Sta. 3945+80 80' Rt. 2 EA
 - Sta. 3950+75 80' Lt. 2 EA
- ⊗ Amur Maple
 - Sta. 3944+80 80' Lt. 2 EA
 - Sta. 3949+05 80' Rt. 2 EA
- Toba Hawthorn
 - Sta. 3938+10 85' Lt. 1 EA
 - Sta. 3938+15 90' Rt. 1 EA
 - Sta. 3941+30 85' Lt. 1 EA
 - Sta. 3941+40 90' Rt. 1 EA
 - Sta. 3947+30 80' Lt. 2 EA



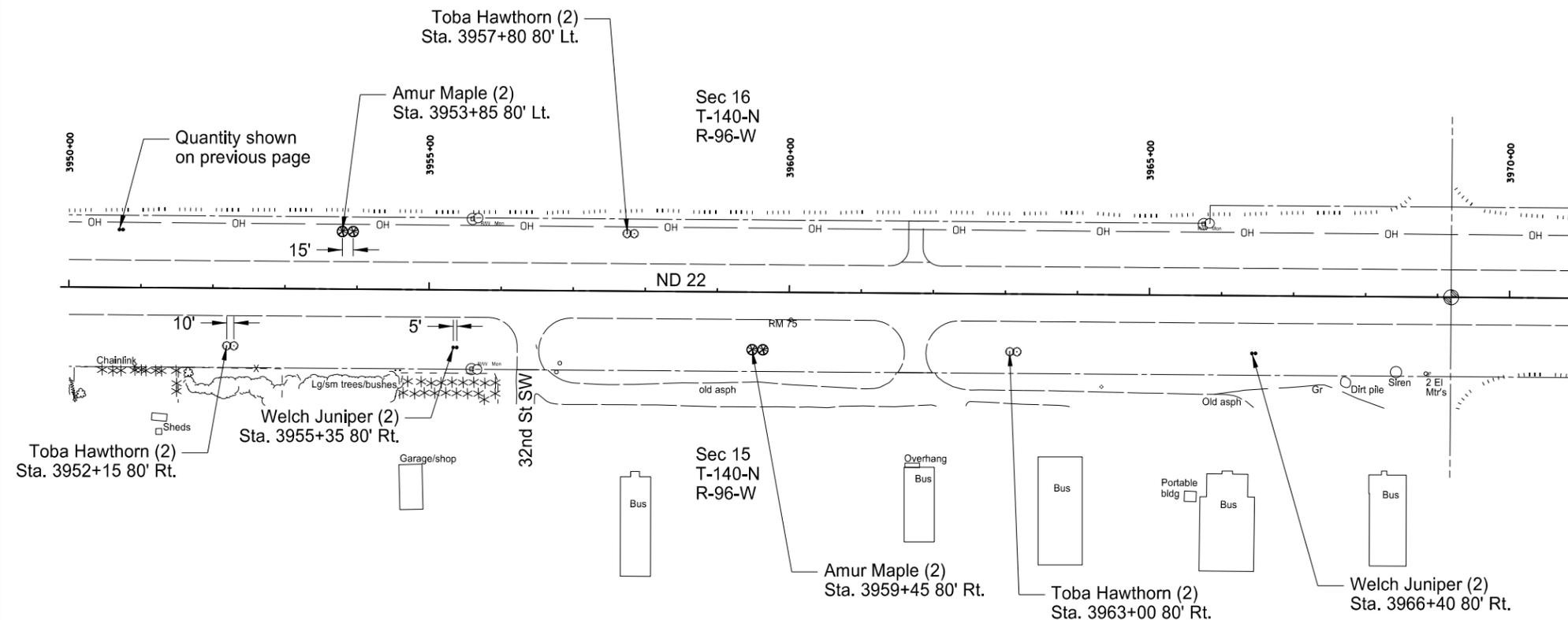
This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 3930+00 - Sta.3950+00



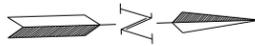
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 8 |

- Trees
 - Sta. 3955+35 80' Rt. 2 EA
 - Sta. 3966+40 80' Rt. 2 EA
- ⊗ Amur Maple
 - Sta. 3953+85 80' Lt. 2 EA
 - Sta. 3959+45 80' Rt. 2 EA
- Toba Hawthorn
 - Sta. 3952+15 80' Rt. 2 EA
 - Sta. 3957+80 80' Lt. 2 EA
 - Sta. 3963+00 80' Rt. 2 EA



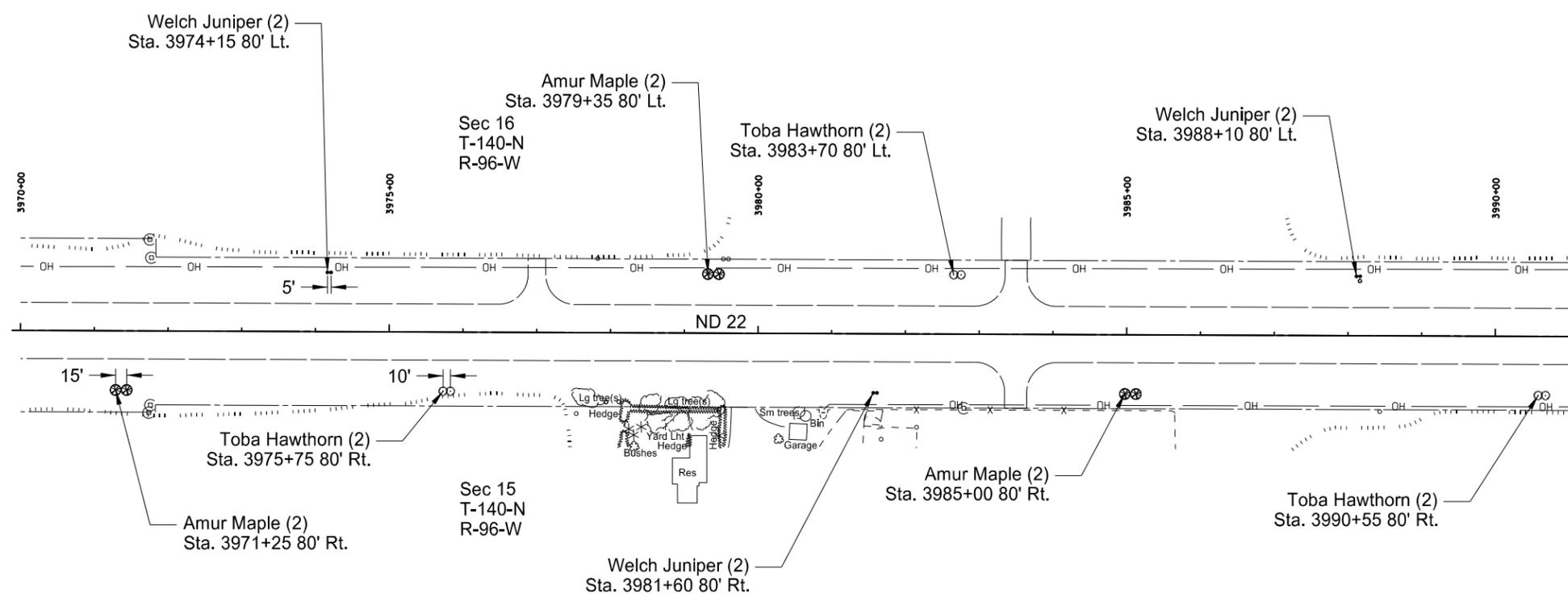
This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 3950+00 - Sta.3970+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 9 |

- Trees
 - Sta. 3974+15 80' Lt. 2 EA
 - Sta. 3981+60 80' Rt. 2 EA
 - Sta. 3988+10 80' Lt. 2 EA
- ⊗ Amur Maple
 - Sta. 3971+25 80' Rt. 2 EA
 - Sta. 3979+35 80' Lt. 2 EA
 - Sta. 3985+00 80' Rt. 2 EA
- ⊙ Toba Hawthorn
 - Sta. 3976+85 80' Rt. 2 EA
 - Sta. 3983+70 80' Lt. 2 EA
 - Sta. 3990+55 80' Rt. 2 EA

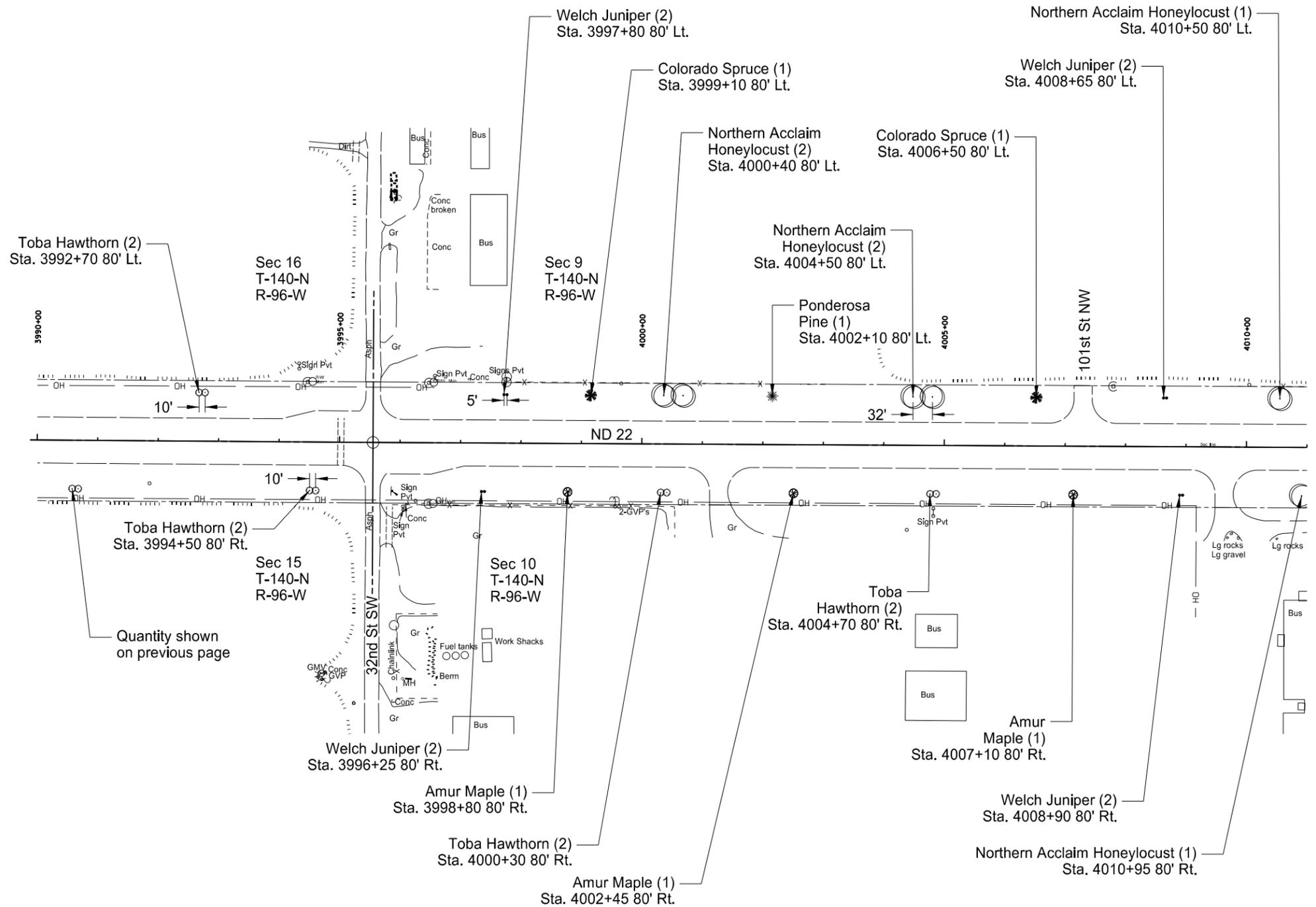


This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 3970+00 - Sta.3990+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 10 |



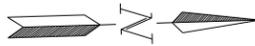
Quantity shown on previous page

This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

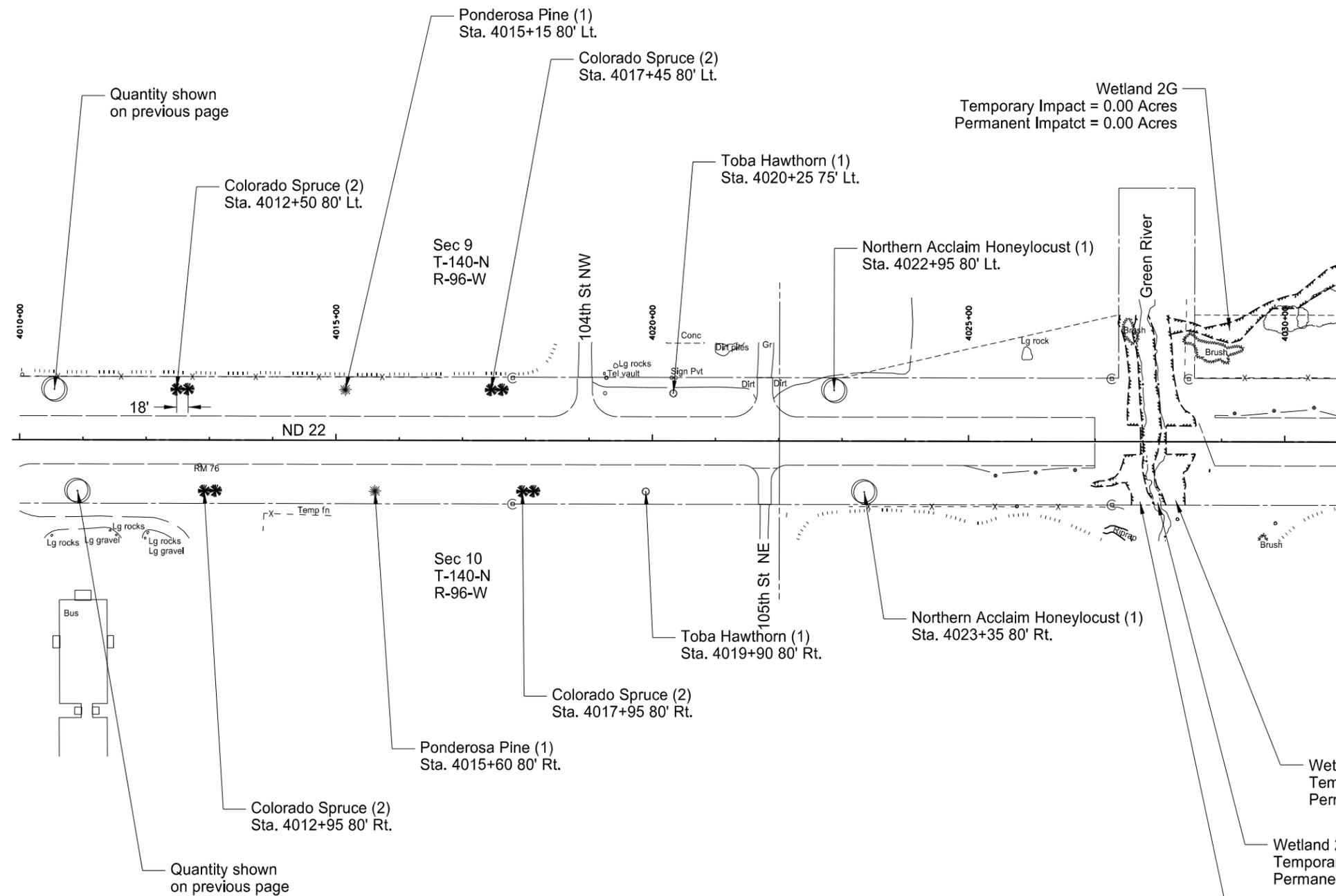
Dickinson Highway 22
Landscape Enhancement Project

Landscape Layout

Sta. 3990+00 - Sta.4010+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 11 |



| | |
|--------------------------------|------|
| ○ Northern Acclaim Honeylocust | 1 EA |
| Sta. 4022+95 80' Lt. | 1 EA |
| Sta. 4023+35 80' Rt. | |
| ○ Toba Hawthorn | 1 EA |
| Sta. 4019+90 80' Rt. | 1 EA |
| Sta. 4020+25 75' Lt. | |
| * Colorado Spruce | 2 EA |
| Sta. 4012+50 80' Lt. | 2 EA |
| Sta. 4012+95 80' Rt. | 2 EA |
| Sta. 4017+45 80' Lt. | 2 EA |
| Sta. 4017+95 80' Rt. | 2 EA |
| * Ponderosa Pine | 1 EA |
| Sta. 4015+15 80' Lt. | 1 EA |
| Sta. 4015+60 80' Rt. | |

This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

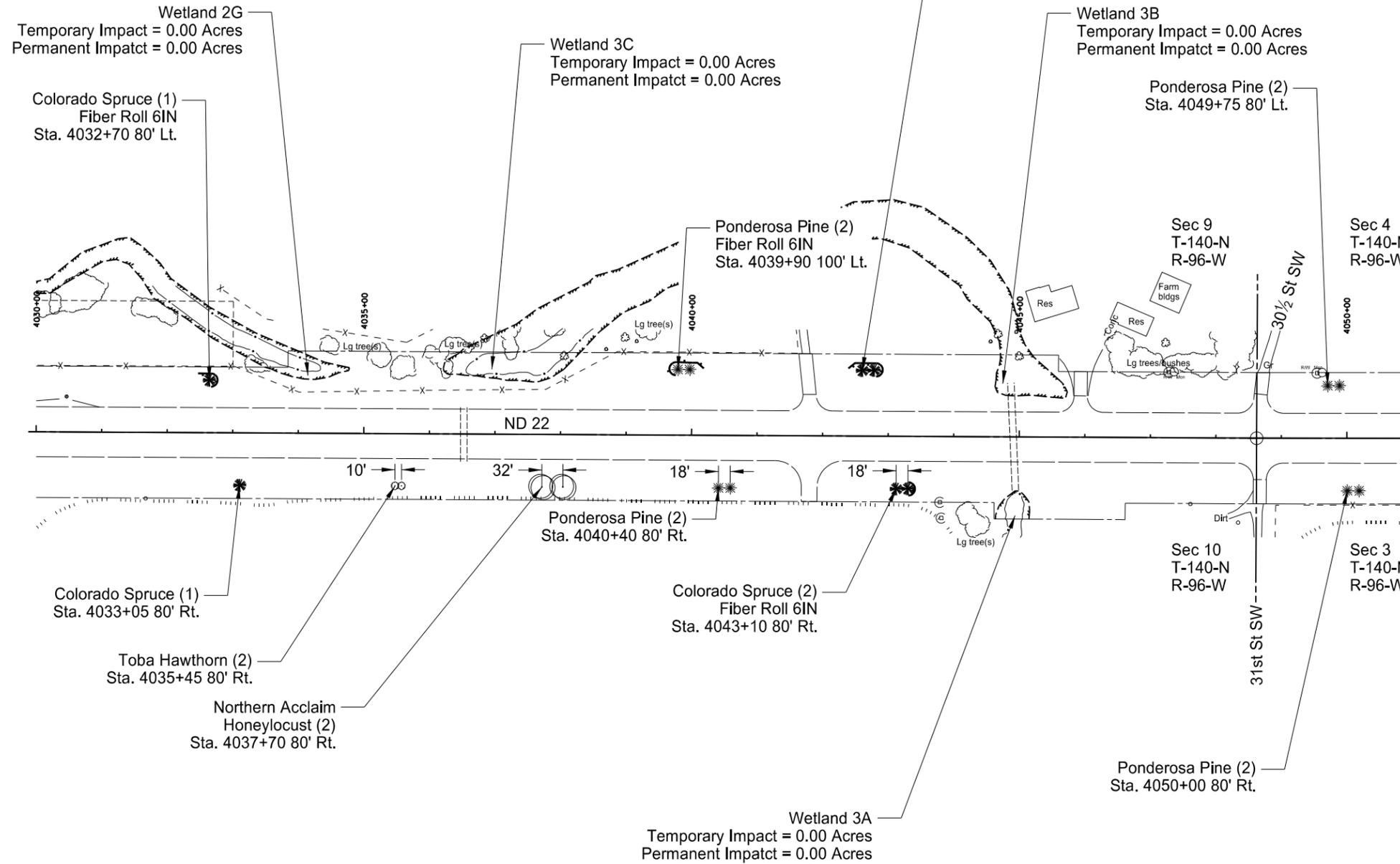
Dickinson Highway 22
Landscape Enhancement Project

Landscape Layout

Sta. 4010+00 - Sta.4030+00



| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 85 | 12 |



Wetland 2G
Temporary Impact = 0.00 Acres
Permanent Impact = 0.00 Acres

Colorado Spruce (1)
Fiber Roll 6IN
Sta. 4032+70 80' Lt.

Wetland 3C
Temporary Impact = 0.00 Acres
Permanent Impact = 0.00 Acres

Ponderosa Pine (2)
Fiber Roll 6IN
Sta. 4039+90 100' Lt.

Wetland 3B
Temporary Impact = 0.00 Acres
Permanent Impact = 0.00 Acres

Ponderosa Pine (2)
Sta. 4049+75 80' Lt.

Sec 9
T-140-N
R-96-W

Sec 4
T-140-N
R-96-W

ND 22

10'

32'

18'

18'

Ponderosa Pine (2)
Sta. 4040+40 80' Rt.

Colorado Spruce (1)
Sta. 4033+05 80' Rt.

Toba Hawthorn (2)
Sta. 4035+45 80' Rt.

Northern Acclaim
Honeylocust (2)
Sta. 4037+70 80' Rt.

Colorado Spruce (2)
Fiber Roll 6IN
Sta. 4043+10 80' Rt.

Sec 10
T-140-N
R-96-W

Sec 3
T-140-N
R-96-W

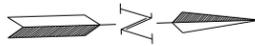
Ponderosa Pine (2)
Sta. 4050+00 80' Rt.

Wetland 3A
Temporary Impact = 0.00 Acres
Permanent Impact = 0.00 Acres

| | |
|--------------------------------|-------|
| Fiber Roll 6IN | |
| Sta. 4032+70 80' Lt. | 50 LF |
| Sta. 4039+90 100' Lt. | 70 LF |
| Sta. 4042+60 100' Lt. | 70 LF |
| Sta. 4043+10 80' Rt. | 30 LF |
| ○ Northern Acclaim Honeylocust | |
| Sta. 4037+70 80' Rt. | 2 EA |
| ○ Toba Hawthorn | |
| Sta. 4035+45 80' Rt. | 2 EA |
| * Colorado Spruce | |
| Sta. 4032+70 80' Lt. | 1 EA |
| Sta. 4033+05 80' Rt. | 1 EA |
| Sta. 4042+60 100' Lt. | 2 EA |
| Sta. 4043+10 80' Rt. | 2 EA |
| * Ponderosa Pine | |
| Sta. 4039+90 100' Lt. | 2 EA |
| Sta. 4040+40 80' Rt. | 2 EA |
| Sta. 4049+75 80' Lt. | 2 EA |
| Sta. 4050+00 80' Rt. | 2 EA |

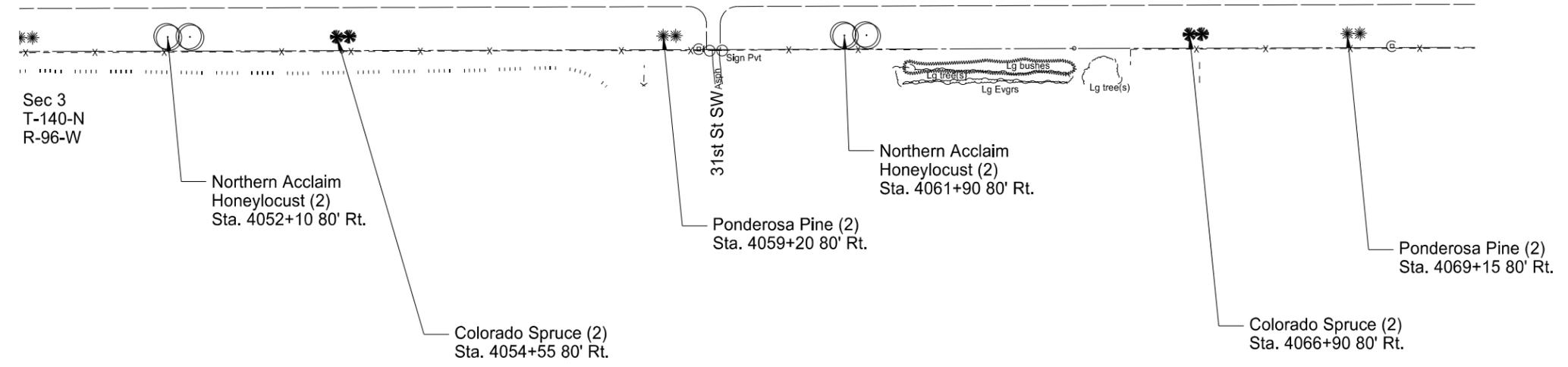
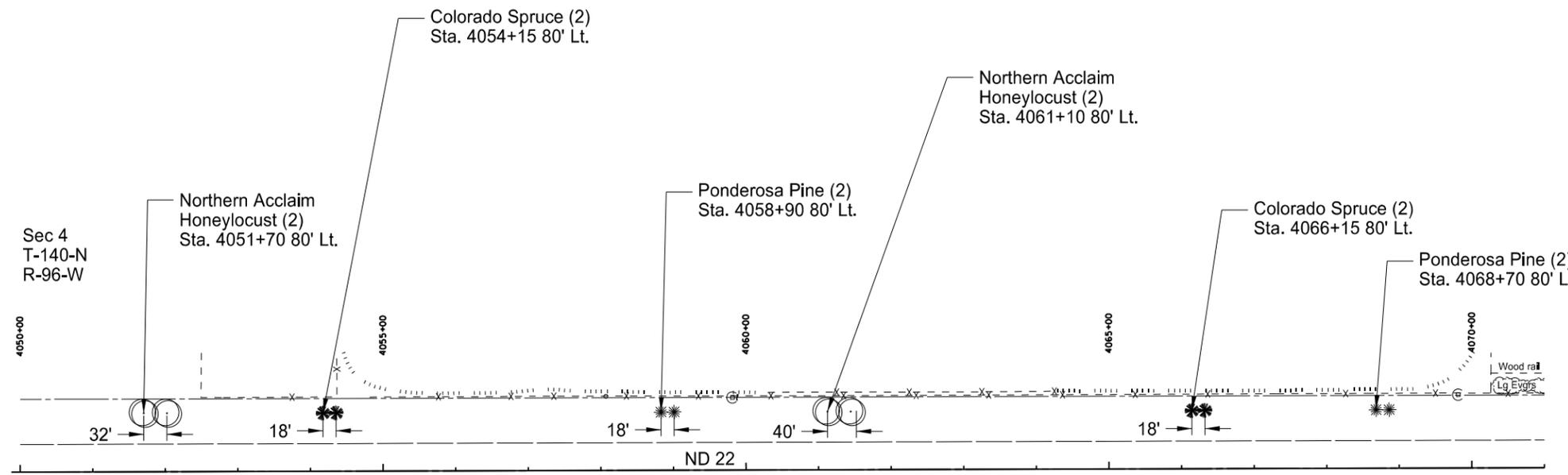
This document was originally issued and sealed by Alexis J. Wallevand Registration Number LA- 3, on 8/13/14 and the original document is stored at the North Dakota Department of Transportation

Dickinson Highway 22
Landscape Enhancement Project
Landscape Layout
Sta. 4030+00 - Sta.4050+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 13 |

| | | |
|---|------------------------------|------|
| ○ | Northern Acclaim Honeylocust | |
| | Sta. 4051+70 80' Lt. | 2 EA |
| | Sta. 4052+10 80' Rt. | 2 EA |
| | Sta. 4061+10 80' Lt. | 2 EA |
| | Sta. 4061+90 80' Rt. | 2 EA |
| ✱ | Colorado Spruce | |
| | Sta. 4054+15 80' Lt. | 2 EA |
| | Sta. 4054+55 80' Rt. | 2 EA |
| | Sta. 4066+15 80' Lt. | 2 EA |
| | Sta. 4066+90 80' Rt. | 2 EA |
| ✱ | Ponderosa Pine | |
| | Sta. 4058+90 80' Lt. | 2 EA |
| | Sta. 4059+20 80' Rt. | 2 EA |
| | Sta. 4068+70 80' Lt. | 2 EA |
| | Sta. 4069+15 80' Rt. | 2 EA |

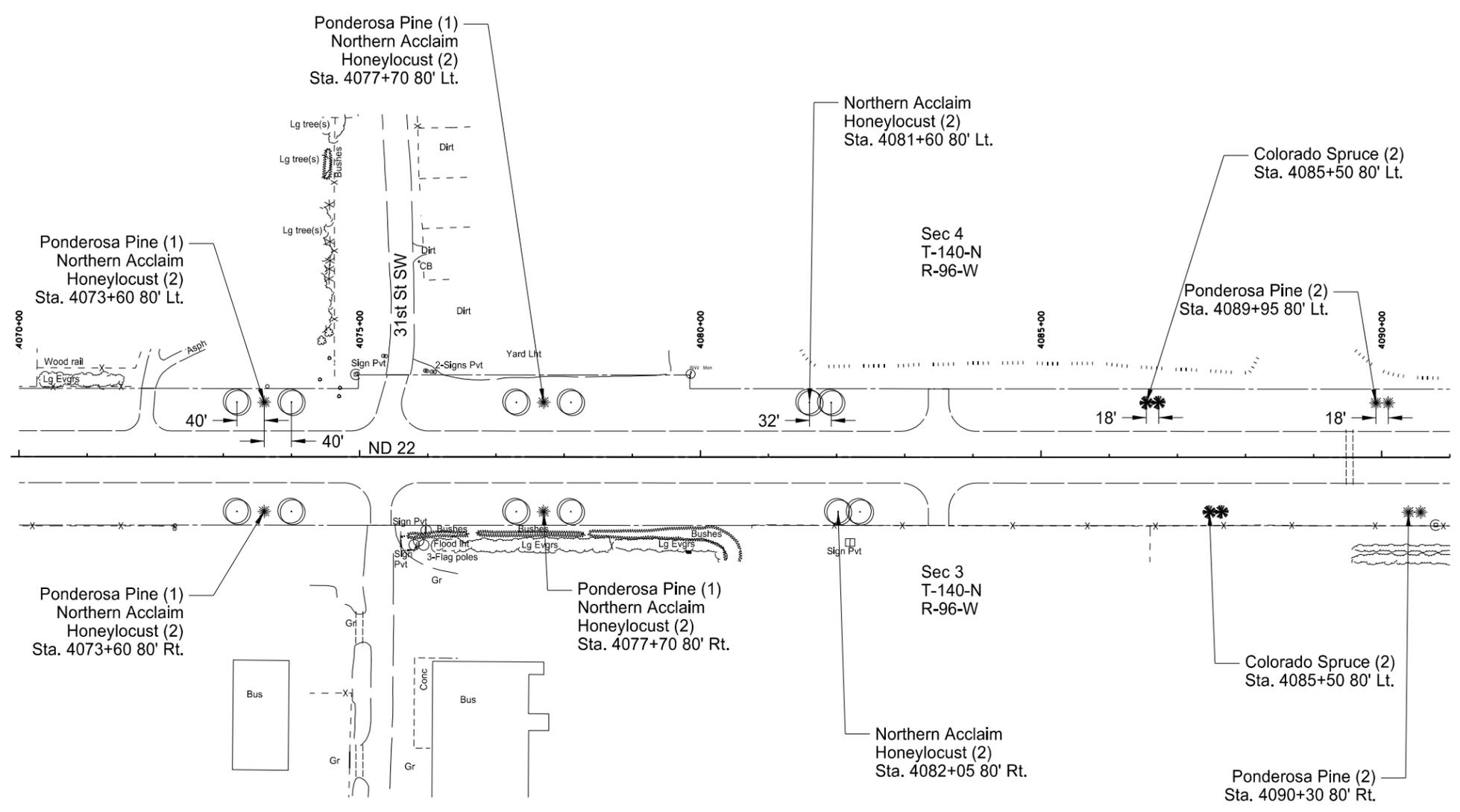


This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 4050+00 - Sta.4070+00



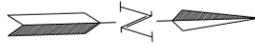
| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 14 |



| | | |
|---|------------------------------|------|
| ○ | Northern Acclaim Honeylocust | |
| | Sta. 4073+60 80' Lt. | 2 EA |
| | Sta. 4073+60 80' Rt. | 2 EA |
| | Sta. 4077+70 80' Lt. | 2 EA |
| | Sta. 4077+70 80' Rt. | 2 EA |
| | Sta. 4081+60 80' Lt. | 2 EA |
| | Sta. 4082+05 80' Rt. | 2 EA |
| ✱ | Colorado Spruce | |
| | Sta. 4085+50 80' Lt. | 2 EA |
| | Sta. 4085+50 80' Rt. | 2 EA |
| ✱ | Ponderosa Pine | |
| | Sta. 4073+60 80' Lt. | 1 EA |
| | Sta. 4073+60 80' Rt. | 1 EA |
| | Sta. 4077+70 80' Lt. | 1 EA |
| | Sta. 4077+70 80' Rt. | 1 EA |
| | Sta. 4089+95 80' Lt. | 2 EA |
| | Sta. 4090+30 80' Rt. | 2 EA |

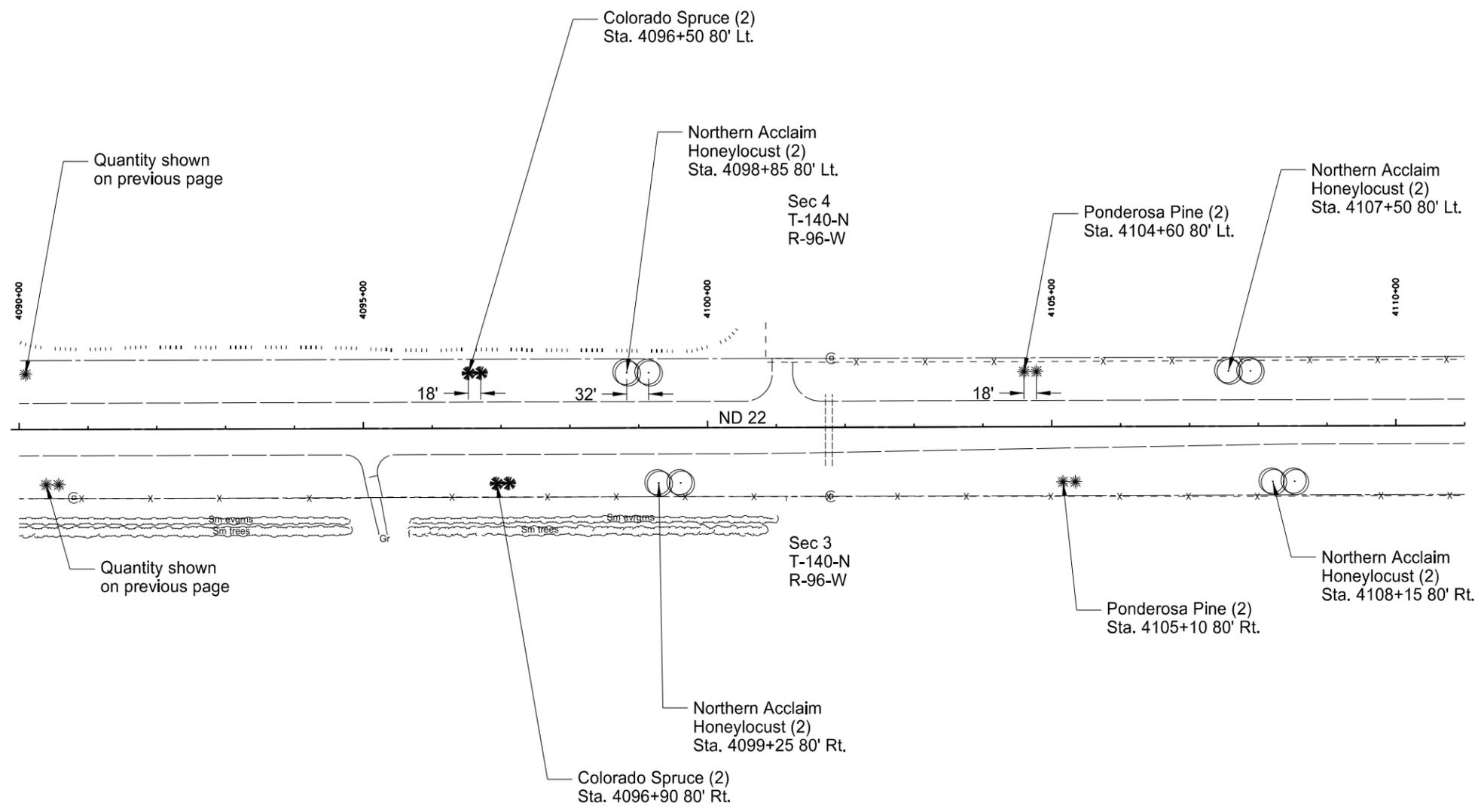
This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 4070+00 - Sta.4090+00



| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
|-------|-------------------|-------------|-----------|
| ND | TEU-5-022(115)072 | 85 | 15 |

| | | |
|---|------------------------------|------|
| ○ | Northern Acclaim Honeylocust | |
| | Sta. 4098+85 80' Lt. | 2 EA |
| | Sta. 4099+25 80' Rt. | 2 EA |
| | Sta. 4107+50 80' Lt. | 2 EA |
| | Sta. 4108+15 80' Rt. | 2 EA |
| * | Colorado Spruce | |
| | Sta. 4096+50 80' Lt. | 2 EA |
| | Sta. 4096+90 80' Rt. | 2 EA |
| * | Ponderosa Pine | |
| | Sta. 4104+60 80' Lt. | 2 EA |
| | Sta. 4105+10 80' Rt. | 2 EA |



This document was originally issued and sealed by
 Alexis J. Wallevand
 Registration Number
 LA- 3,
 on 8/13/14 and the original document is stored at the
 North Dakota Department
 of Transportation

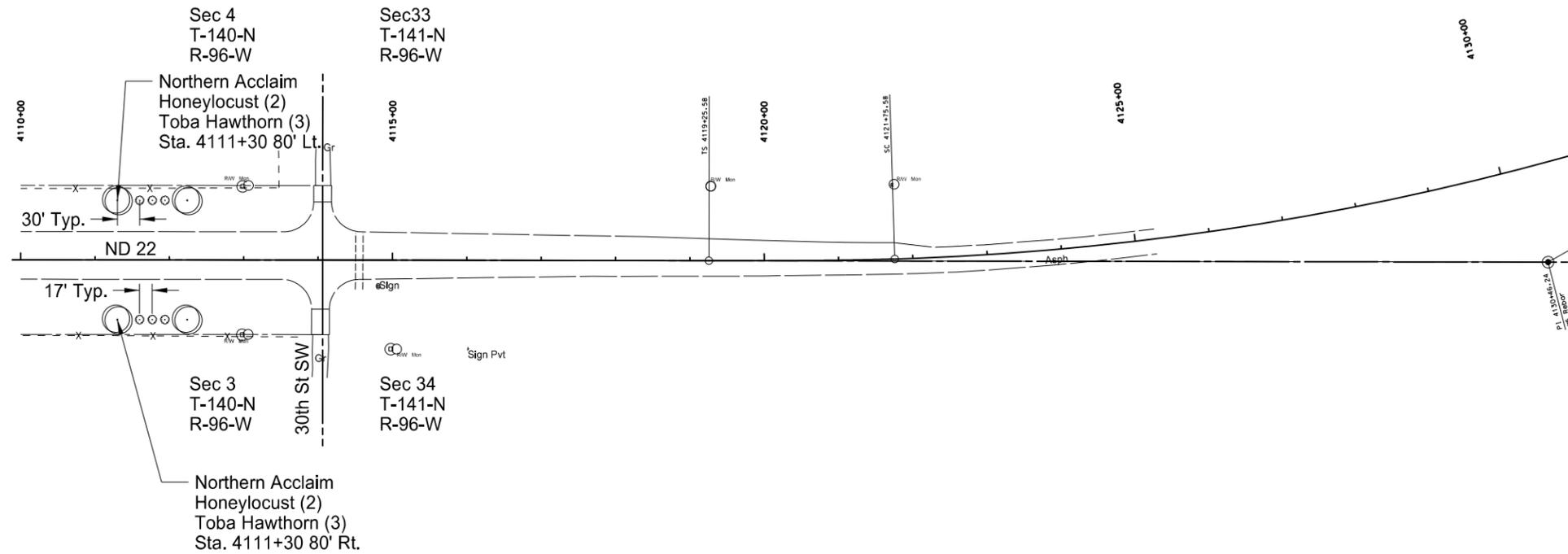
Dickinson Highway 22
 Landscape Enhancement Project
 Landscape Layout
 Sta. 4090+00 - Sta.4110+00



| | | | |
|-------|-------------------|-------------|-----------|
| STATE | PROJECT NO. | SECTION NO. | SHEET NO. |
| ND | TEU-5-022(115)072 | 85 | 16 |

- Northern Acclaim Honeylocust
Sta. 4111+30 80' Lt. 2 EA
Sta. 4111+30 80' Rt. 2 EA
- Toba Hawthorn
Sta. 4111+30 80' Lt. 3 EA
Sta. 4111+30 80' Rt. 3 EA

STARK COUNTY DUNN COUNTY



This document was originally issued and sealed by
Alexis J. Wallevand
Registration Number
LA- 3,
on 8/13/14 and the original document is stored at the
North Dakota Department
of Transportation

Dickinson Highway 22
Landscape Enhancement Project

Landscape Layout

Sta. 4110+00 - Sta.4120+00

NDDOT ABBREVIATIONS

? This is a special text character used in the labeling of existing features. It indicates a feature that has an unknown characteristic, potentially based on: lack of description, location accuracy or purpose.

Abn abandoned
 Abut abutment
 Ac acres
 Adj adjusted
 Aggr aggregate
 Ahd ahead
 ARV air release valve
 Align alignment
 Al alley
 Alt alternate
 Alum aluminum
 ADA Americans with Disabilities Act
 A ampere
 & and
 Appr approach
 Approx approximate
 ACP asbestos cement pipe
 Asph asphalt
 AC asphalt cement
 Assmd assumed
 @ at
 Atten attenuation
 ATR automatic traffic recorder
 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

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
 Clnt clean-out
 Clr 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 corner
 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
 Xrd Crossroad
 Crn 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
 DWP detectable warning panel
 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
 EB Eastbound
 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
 ESS environmental sensor station
 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
 FP feed point
 Ft feet/foot
 Fn fence
 Fn P fence post
 FO fiber optic
 FB field book
 FD field drive
 F fill
 FAA fine aggregate angularity
 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

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

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

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT ABBREVIATIONS

D-101-3

| | | | | | | | |
|-----------|------------------------------------|-----------|----------------------------|----------|------------------------------------|------|-----------------------|
| Qty | quantity | Sig | signal | TS | tangent to spiral | WB | Westbound |
| Qtr | quarter | Si Cl | silt clay | Tel | telephone | Wrng | wiring |
| Rad or R | radius | Si Cl Lm | silty clay loam | Tel B | Telephone Booth | W/ | with |
| RR | railroad | Si Lm | silty loam | Tel P | telephone pole | W/o | without |
| Rlwy | railway | Sgl | single | Temp | temperature | WC | witness corner |
| Rsd | raised | SC | slow curing | Temp | temporary | WGS | World Geodetic System |
| RTP | random traverse point | SS | slow setting | TBM | temporary bench mark | Z | zenith |
| Rge or R | range | Sm | small | T | tesla | | |
| RC | rapid curing | S | South | T | thinwall tube sample | | |
| Rec | record | SE | South East | T/mi | tons per mile | | |
| Rcy | recycle | SW | South West | Ts | topsoil | | |
| RPCC | recycled Portland cement concrete | SB | Southbound | Twp or T | township | | |
| Ref | reference | Sp | spaces | Traf | traffic | | |
| R Mkr | reference marker | Spcl | special | TSCB | traffic signal control box | | |
| RM | reference monument | SA | special assembly | Tr | trail | | |
| Refl | reflectorized | SP | special provisions | Transf | transformer | | |
| RCB | reinforced concrete box | G | specific gravity | TB | transit book | | |
| RCES | reinforced concrete end section | Spk | spike | Trans | transition | | |
| RCP | reinforced concrete pipe | SC | spiral to curve | TT | transmission tower | | |
| RCPS | reinforced concrete pipe sewer | ST | spiral to tangent | Trans | transverse | | |
| Reinf | reinforcement | SB | split barrel sample | Trav | traverse | | |
| Res | reservation | SH | sprinkler head | TP | traverse point | | |
| Ret | retaining | SV | sprinkler valve | Trtd | treated | | |
| Rev | reverse | Sq | square | Trmt | treatment | | |
| Rt | right | SF | square feet | Qc | triaxial compression | | |
| R/W | right of way | Km2 | square kilometer | TERO | tribal employment rights ordinance | | |
| Riv | river | M2 | square meter | Tpl | triple | | |
| Rd | road | SY | square yard | TP | turning point | | |
| Rdbd | road bed | Stk | stake | Typ | typical | | |
| Rdwy | roadway | Std | standard | Qu | unconfined compressive strength | | |
| RWIS | Roadway Weather Information System | N | standard penetration test | Ugrnd | underground | | |
| Rk | rock | Std Specs | Standard Specifications | USC&G | US Coast & Geodetic Survey | | |
| Rt | route | Sta | station | USGS | US Geologic Survey | | |
| Salv | salvage(d) | Sta Yd | station yards | Util | utility | | |
| Sd | sand | Stm L | steam line | VG | valley gutter | | |
| Sdy Cl | sandy clay | SEC | steel encased concrete | Vap | vapor | | |
| Sdy Cl Lm | sandy clay loam | SSD | stopping sight distance | Vert | vertical | | |
| Sdy Fl | sandy fill | SD | storm drain | VC | vertical curve | | |
| Sdy Lm | sandy loam | St | street | VCP | vitrified clay pipe | | |
| San | sanitary sewer line | SPP | structural plate pipe | V | volt | | |
| Sc | scoria | SPPA | structural plate pipe arch | Vol | volume | | |
| Sec | seconds | Str | structure | Wkwy | walkway | | |
| Sec | section | Subd | subdivision | W | water content | | |
| SL | section line | Sub | subgrade | WGV | water gate valve | | |
| Sep | separation | Sub Prep | subgrade preparation | WL | water line | | |
| Seq | sequence | Ss | subsoil | WM | water main | | |
| Serv | service | SE | superelevation | WMV | water main valve | | |
| Sh | shale | SS | supplement specification | W Mtr | water meter | | |
| Sht | sheet | Supp | supplemental | WSV | water service valve | | |
| Shtng | sheeting | Surf | surfacing | WW | water well | | |
| Shldr | shoulder | Surv | survey | W | watt | | |
| Sw | sidewalk | Sym | symmetrical | Wrng | wearing | | |
| S | siemens | SI | Systems International | Wb | weber | | |
| SD | sight distance | Tan | tangent | WIM | Weigh In Motion | | |
| SN | sign number | T | tangent (semi) | W | West | | |

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

D-101-10

702COM 702 Communications
 ACCENT Accent Communications
 AGASSIZ WU Agassiz Water Users Incorporated
 AGC Associated General Contractors of America
 All PI Alliance Pipeline
 ALL SEAS WU All Seasons Water Users Association
 AMOCO PI Amoco Pipeline Company
 AMRDA HESS Amerada Hess Corporation
 AT&T AT&T Corporation
 B PAW Bear Paw Energy Incorporated
 BAKER ELEC Baker Electric
 BASIN ELEC Basin Electric Cooperative Incorporated
 BEK TEL Bek Communications Cooperative
 BELLE PL Belle Fourche Pipeline Company
 BLM Bureau of Land Management
 BNSF Burlington Northern Santa Fe Railway
 BOEING Boeing
 BRNS RWD Barnes Rural Water District
 BURK-DIV ELEC Burke-Divide Electric Cooperative
 BURL WU Burleigh Water Users
 Cable One Cable One
 CABLE SERV Cable Services
 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
 CBLCOM Cablecom Of Fargo
 CENEX PL Cenex Pipeline
 CENT PL WATER DIST Central Pipe Line Water District
 CENT PWR ELEC Central Power Electric Cooperative
 COE Corps of Engineers
 CONS TEL Consolidated Telephone
 CONT RES Continental Resource Inc
 CPR Canadian Pacific Railway
 D O E Department Of Energy
 DAK CARR Dakota Carrier Network
 DAK CENT TEL Dakota Central Telephone
 DAK RWD Dakota Rural Water District
 DGC Dakota Gasification Company
 DICKEY R NET Dickey Rural Networks
 DICKEY RWU Dickey Rural Water Users Association
 DICKEY TEL Dickey Telephone
 DNRR Dakota Northern Railroad
 DOME PL Dome Pipeline Company
 DVELEC Dakota Valley Electric Cooperative
 DVMW Dakota, Missouri Valley & Western
 ENBRDG Enbridge Pipelines Incorporated
 ENVENTIS Enventis Telephone
 FALK MNG Falkirk Mining Company
 FHWA Federal Highway Administration
 G FKS-TRL WD Grand Forks-traill Water District
 GETTY TRD & TRAN Getty Trading & Transportation
 GLDN W ELEC Golden West Electric Cooperative
 GRGS CO TEL Griggs County Telephone

GT PLNS NAT GAS Great Plains Natural Gas Company
 HALS TEL Halstad Telephone Company
 IDEA1 Idea1
 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
 MCKENZIE ELEC McKenzie Electric Cooperative
 MCKNZ WRD McKenzie County Water Resource District
 MCLEOD McLeod USA
 MCLN ELEC McLean Electric Cooperative
 MCLN-SHRDN R WAT McLean-Sheridan Rural Water
 MDU Montana-dakota Utilities
 MID-CONT CABLE Mid-Continent Cable
 MIDSTATE TEL Midstate Telephone Company
 MINOT CABLE Minot Cable Television
 MINOT TEL Minot Telephone Company
 MISS W W S Missouri West Water System
 MNKOTA PWR Minnkota Power
 MOR-GRAN-SOU ELEC Mor-gran-sou Electric Cooperative
 MOUNT-WILLI ELEC Mountrail-williams Electric Cooperative
 MRE LBTY TEL Moore & Liberty Telephone
 MUNICIPAL City Water And Sewer
 MUNICIPAL City Of '.....'
 N CENT ELEC North Central Electric Cooperative
 N VALL W DIST North Valley Water District
 ND PKS & REC North Dakota Parks And Recreation
 ND TEL North Dakota Telephone Company
 NDDOT North Dakota Department of Transportation
 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
 NPR Northern Plains Railroad
 NSP Northern States Power
 NTH PRAIR RW Northern Prairie Rural Water Association
 NTHN BRDR PL Northern Border Pipeline
 NTHN PLNS ELEC Northern Plains Electric Cooperative Incorporated
 NTHWSTRN REF Northwestern Refinery Company
 NW COMM Northwest Communication Cooperation
 ONEOK Oneok gas
 OSHA Occupational Safety and Health Administration
 OTTR TL PWR Otter Tail Power Company
 P L E M Prairielands Energy Marketing
 POLAR COM Polar Communications
 PVT ELEC Private Electric
 QWEST Qwest Communications
 R & T W SUPPLY R & T Water Supply Association
 RAMSEY R SEW Ramsey Rural Sewer Association
 RAMSEY RW Ramsey Rural Water Association
 RAMSEY UTIL Ramsey County Rural Utilities

RED RIV TEL Red River Rural Telephone
 RESVTN TEL Reservation Telephone
 ROBRTS TEL Roberts Company Telephone
 R-RIDER ELEC Roughrider Electric Coop
 RRVW Red River Valley & Western Railroad
 RSR ELEC R.S.R. Electric Cooperative
 S E W U South East Water Users Incorporated
 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 Incorporated
 SOURIS RIV TELCOM Souris River Telecommunications
 ST WAT COMM State Water Commission
 STATE LN WATER State Line Water Cooperative
 STER ENG Sterling Energy
 STUT RWU Stutsman Rural Water Users
 SW PL PRJ Southwest Pipeline Project
 T M C Turtle Mountain Communications
 TCI TCI of North Dakota
 TESORO GHG PLNS PL Tesoro High Plains Pipeline
 TRI-CNTY WU Tri-County Water Users Incorporated
 TRL CO RWU Traill County Rural Water Users
 UNTD TEL United Telephone
 UPPR SOUR WUA Upper Souris Water Users Association
 US SPRINT U.S. Sprint
 USAF MSL CABLE U.S.A.F. Missile Cable
 USFWS US Fish and Wildlife Service
 USW COMM U.S. West Communications
 VRNDRY ELEC Verendrye Electric Cooperative
 W RIV TEL West River Telephone Incorporated
 WEB W. E. B. Water Development Association
 WILLI RWA Williams Rural Water Association
 WILSTN BAS PL Williston Basin Interstate Pipeline Company
 WLSH RWD Walsh Water Rural Water District
 WOLVRTN TEL Wolverton Telephone
 XLENER Xcel Energy
 YSVR Yellowstone Valley Railroad

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

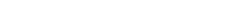
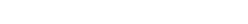
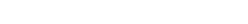
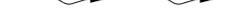
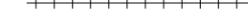
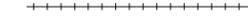
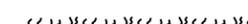
Line Styles

| | | | | | | | |
|--------------------------------|---|------------------------|--|--------------|---|------------------|---------------------------------------|
| | Limits of Const Transition 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 |
| | Sight Distance Triangle Line | Void — void — void — v | Existing Assumed Ground (Not Surveyed) | —— ——— ——— | Existing Underground Vault or Lift Station | —— - - - - - | Existing Right of Way |
| - - - - - | Small Hidden Object | Void — void — void — v | Tentative Ground Line | —— ——— ——— | Tangent Line | —— - - - - - | Existing Right of Way Railroad |
| - - - - - | Dimension Leader | —— ——— w —— | Existing Water or Steam Line | - - - - - | Hidden Object | - - - - - | Failure Line |
| - - - - - | Existing Ground | ===== | Existing Under Drain | —— ——— ——— | Existing Dirt Surface | - - - - - | Existing Conditions |
| - - - - - | Existing Topsoil (Cross Section View) | ===== | 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 |
| —— ——— FO —— | Existing Fiber Optic Line | ===== | Barrier with Centerline Pavement Marking | - - - - - | Existing Loop Detector | - | Existing Guardrail Cable |
| —— ——— FO —— | 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 | - - - - - | Stripe 8 IN Lane Drop | —— ——— ——— | Existing Reinforcement Rebar | —— | Existing Government Lot Line |
| —— ——— P —— | Existing Power | —— v v v v —— | Wetland Mitigation | —— ——— ——— | 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 | | Existing Adjacent Subdivision Lines |
| —— ——— 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 | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Line Styles

| | | | | | |
|---|---|--|--|---|--------------------------------------|
|  | Subgrade Reinforcement |  | Existing Railroad Switch |  | Sheet Piling |
|  | Existing Down Guy Wire Down Guy |  | Overhead Sign Structure Cantilever |  | W-Beam w Posts |
|  | Existing Fence |  | 24 Inch Pipe |  | Existing W-Beam Guardrail with Posts |
|  | Existing Railroad |  | Reinforced Concrete Pipe |  | Exst Wet Area-Vegetation Break |
|  | Existing Sanitary Sewer |  | Signal Head with Mast Arm |  | Existing Wetland Delineated |
|  | Existing Sanitary Force Main |  | Existing Signal Head with Mast Arm | | |
|  | Existing Storm Drain |  | Tie Bar at Random Spacing | | |
|  | Existing Storm Drain Force Main |  | 3-Cable w Posts | | |
|  | Fence |  | Existing 3-Cable w Posts | | |
|  | Silt Fence |  | Site Boundary | | |
|  | Existing Field Line |  | Fiber Rolls | | |
|  | Exst Flow |  | Doweled Joint | | |
|  | Flow |  | Tie Bar 30 Inch 4 Foot Center to Center | | |
|  | Existing Culvert |  | Tie Bar 18 Inch 3 Foot Center to Center | | |
|  | Existing Curb |  | Existing Berm, Dike, Pit, or Earth Dam | | |
|  | Existing Valley Gutter |  | Existing Ditch Block | | |
|  | Existing Driveway Gutter |  | Depression Contours | | |
|  | Existing Curb and Gutter |  | Existing City Corporate Limits or Reservation Boundary | | |
|  | Existing Mountable Curb and Gutter |  | Gravel Pit - Borrow Area | | |
|  | Existing Double Micro Loop Detector |  | Existing Tree Boundary | | |
|  | Micro Loop Detector Double |  | Tree Row | | |
|  | Existing Overhead Sign Structure |  | Existing Brush or Shrub Boundary | | |
|  | Existing Micro Loop Detector |  | Existing Retaining Wall | | |
|  | Micro Loop Detector |  | Existing Planter or Wall | | |
|  | Existing Overhead Sign Structure Cantilever |  | Retaining Wall (Plan View) | | |

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

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 |
| | Cairn 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 | | |

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

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

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|--|--------|
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 07/01/14 and the original document is stored at the North Dakota Department of Transportation

Symbols

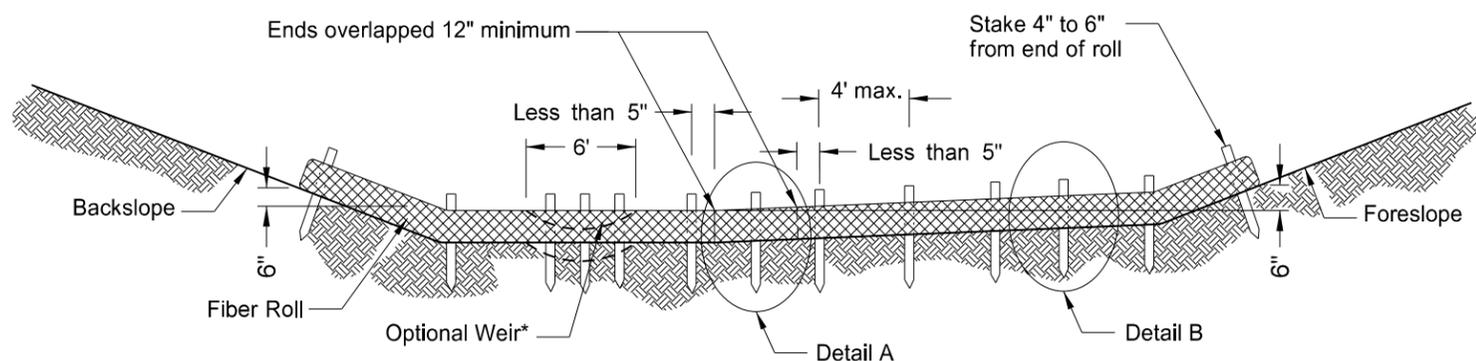
D-101-32

| | | | |
|---|--|---|--|
|  Pad Mounted Feed Point  Pipe Mounted Feed Point with Pad  Pole Mounted Feed Point  Headwall  Double Headwall with Vegetation Barrier  Single Headwall with Vegetation Barrier  Pole Mounted Head  Sprinkler Head  Fire Hydrant  Inlet Type 1  Inlet Type 2  Double Inlet Type 2  Inlet Gate Type 2  Junction Box  High Mast Light Standard 10 Luminaire  High Mast Light Standard 3 Luminaire  High Mast Light Standard 4 Luminaire  High Mast Light Standard 5 Luminaire  High Mast Light Standard 6 Luminaire  High Mast Light Standard 7 Luminaire  High Mast Light Standard 8 Luminaire  High Mast Light Standard 9 Luminaire  Relocate Light Standard  Overhead Sign Structure Load Center  Light Standard 100 Watt High Pressure Sodium Vapor Luminaire |  Light Standard 1000 Watt High Pressure Sodium Vapor Luminaire  Light Standard 150 Watt High Pressure Sodium Vapor Luminaire  Light Standard 175 Watt High Pressure Sodium Vapor Luminaire  Light Standard 200 Watt High Pressure Sodium Vapor Luminaire  Light Standard 250 Watt High Pressure Sodium Vapor Luminaire  Light Standard 310 Watt High Pressure Sodium Vapor Luminaire  Light Standard 35 Watt High Pressure Sodium Vapor Luminaire  Light Standard 400 Watt High Pressure Sodium Vapor Luminaire  Light Standard 50 Watt High Pressure Sodium Vapor Luminaire  Light Standard 70 Watt High Pressure Sodium Vapor Luminaire  Light Standard 700 Watt High Pressure Sodium Vapor Luminaire  Manhole  Manhole 48 Inch  Sanitary Force Main Manhole  Sanitary Sewer Manhole  Storm Drain Manhole  Storm Drain Manhole with Inlet  Reset Mile Post  Mile Post Type A  Mile Post Type B  Mile Post Type C  Right of Way Marker  Tubular Marker  Alignment Monument  Iron Pin Reference Monument |  Object Marker Type I  Object Marker Type II  Object Marker Type III  Caution Mode Arrow Panel  Back to Back Vertical Panel Sign  Double Direction Arrow Panel  Left Directional Arrow Panel  Right Directional Arrow Panel  Sequencing Arrow Panel  Truck Mounted Arrow Panel  Power Pole  Wood Pole  Pedestrian Push Button Post  Property Corner  Pull Box  Intelligent Transportation Pull Box  Sanitary Pump  Storm Drain Pump  Reinforced Pavement  Reinforced Concrete End Section 15 Inch  Reinforced Concrete End Section 18 Inch  Reinforced Concrete End Section 24 Inch  Reinforced Concrete End Section 30 Inch  Reinforced Concrete End Section 36 Inch  Reinforced Concrete End Section 42 Inch |  Reinforced Concrete End Section 48 Inch  Reinforced Concrete End Section 54 Inch  Reset Right of Way Marker  Reset USGS Marker  Right of Way Markers  Riser 30 Inch  Continuous Split Barrel Sample  Flight Auger Sample  Split Barrel Sample  Thinwall Tube Sample  Highway Sign  SNOW GATE 18 FT  SNOW GATE 28 FT  SNOW GATE 40 FT  Standard Penetration Test  Transformer  Inclinometer Tube  Underdrain Cleanout  Excavation Unit  Water Valve |
|---|--|---|--|

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 07-01-14 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

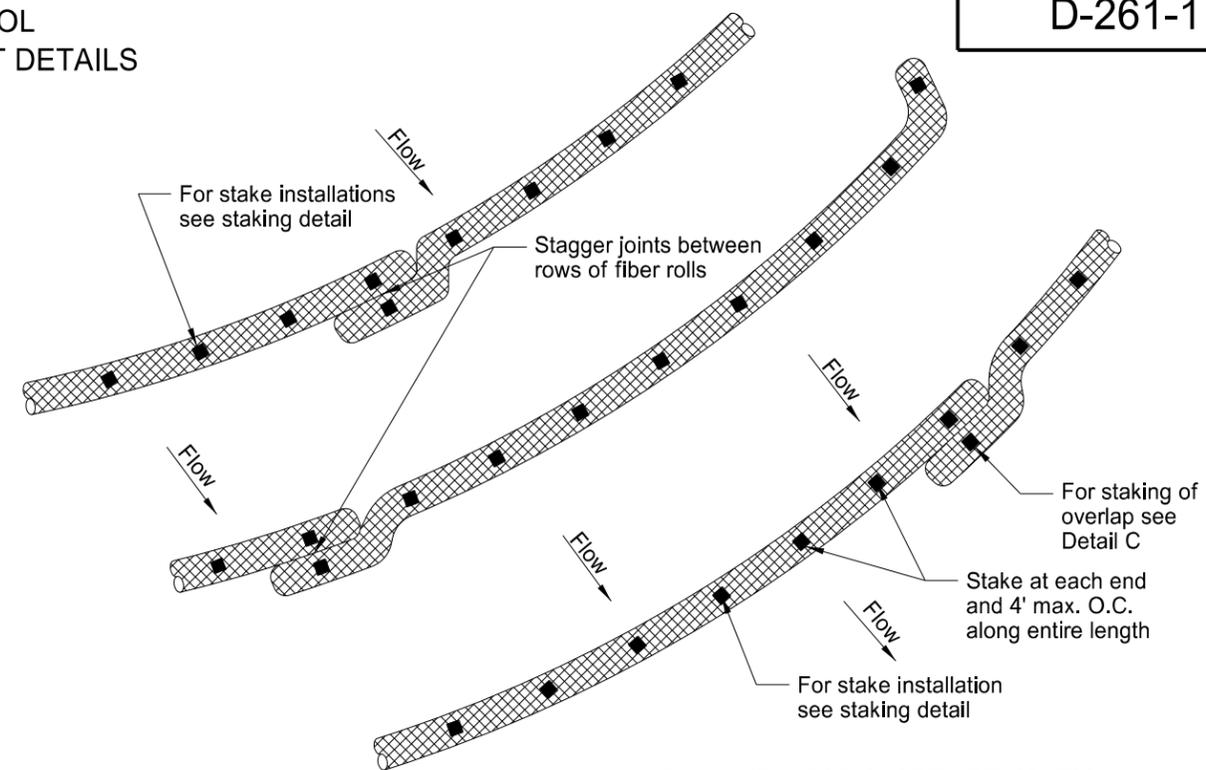
This document was originally issued and sealed by
Roger Weigel,
 Registration Number
 PE-2930,
 on 07/01/14 and the original document is stored at the
 North Dakota Department
 of Transportation

EROSION CONTROL
FIBER ROLL PLACEMENT DETAILS

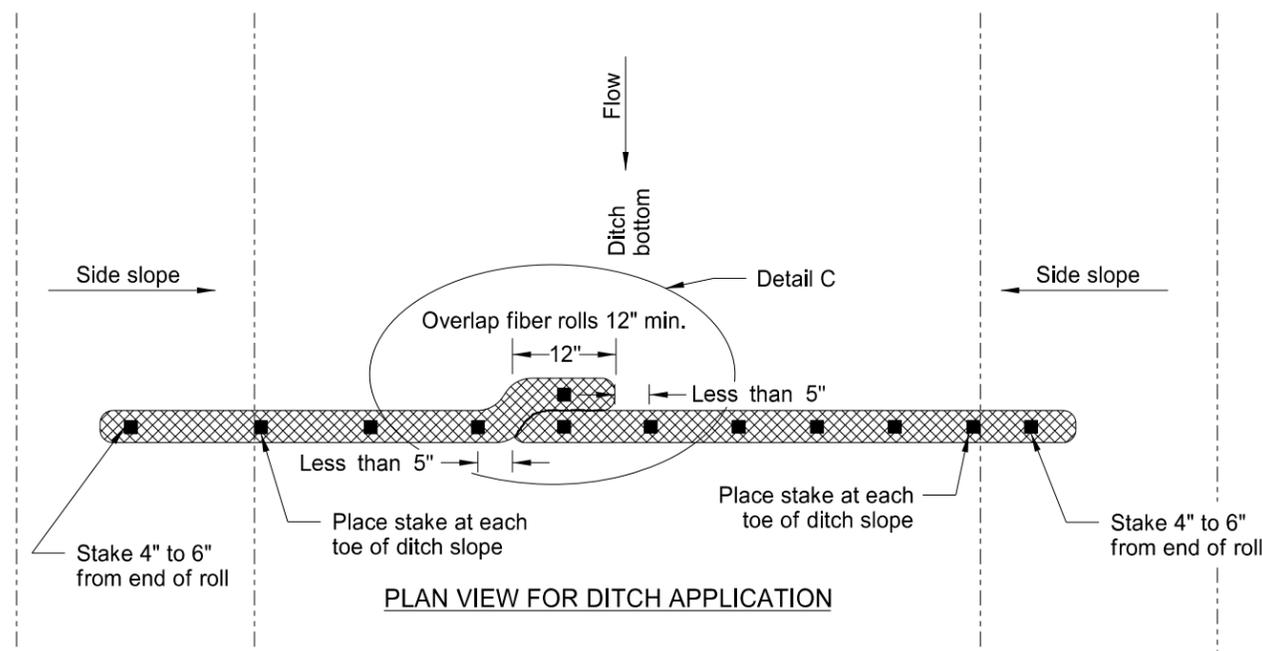


*Optional Weir. Use in flat areas, such as the Red River Valley, where there is potential for water to back up on adjacent property. Lower fiber roll enough to prevent water from backing up on adjacent property. Do not use 20-inch fiber rolls in flat areas where there is potential for water to back up on adjacent property.

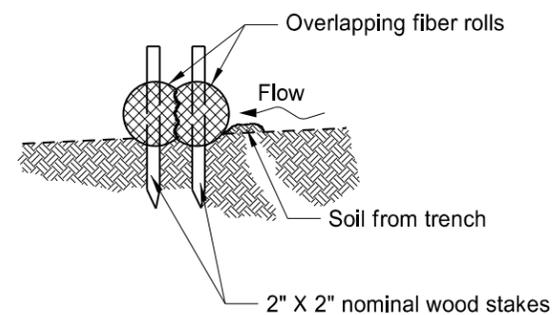
12 OR 20 INCH FIBER ROLL - DITCH BOTTOM



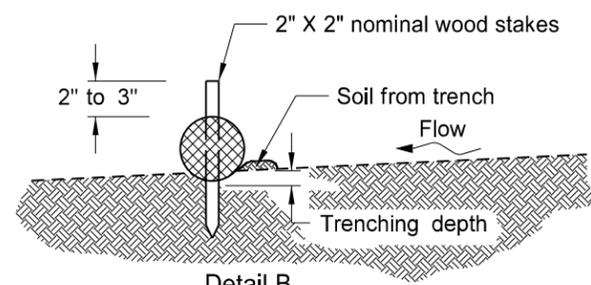
PLAN VIEW FOR SLOPE APPLICATION



PLAN VIEW FOR DITCH APPLICATION



Detail A
Fiber Roll Overlapping Staking Detail



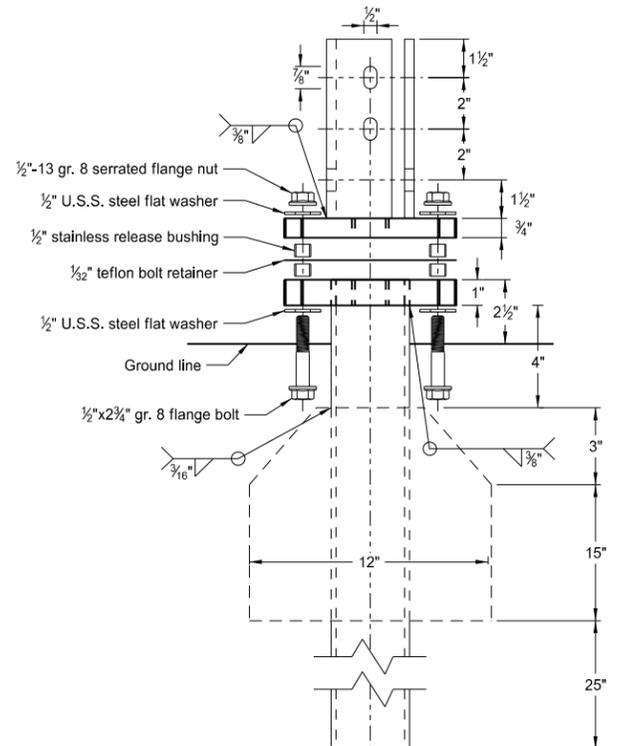
Detail B
Fiber Roll Staking Detail

| FIBER ROLL DIAMETER | NOMINAL STAKE SIZE | MINIMUM STAKE LENGTH | MINIMUM TRENCH DEPTH | MAXIMUM TRENCH DEPTH |
|---------------------|--------------------|----------------------|----------------------|----------------------|
| 6" | 2" x 2" | 18" | 2" | 2" |
| 12" | 2" x 2" | 24" | 2" | 3" |
| 20" | 2" x 2" | 36" | 3" | 5" |

NOTE: Runoff must not be allowed to run under or around roll.

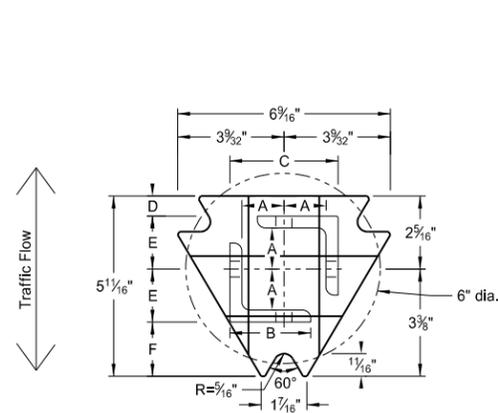
| | |
|--|---|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 11-18-10 | |
| REVISIONS | |
| DATE | CHANGE |
| 06-10-13 | Added plan view for ditch and slope application, Added table with values for stake and trench dimensions. |
| 10-04-13 | Revised fiber roll overlap detail. |
| 06-26-14 | Changed standard drawing number from D-708-7 to D-261-1 |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 06/26/14 and the original document is stored at the North Dakota Department of Transportation

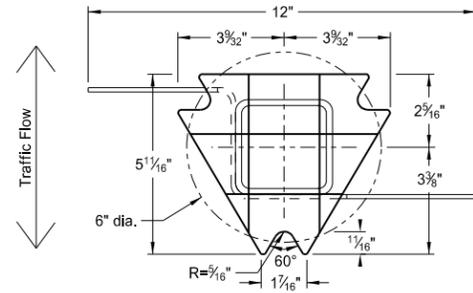


Multi-Directional Slip Base Assembly

Perforated Tube



Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2 1/2" x 2 1/2" x 3/8" ASTM A36 structural angle



Bottom Soil Stub
Tube - 3"x3"x7 gauge ASTM A500 grade B tube
Stabilizing Wing - 7 gauge H.R.P.O. ASTM A1011
Plate - ASTM A572 grade 50

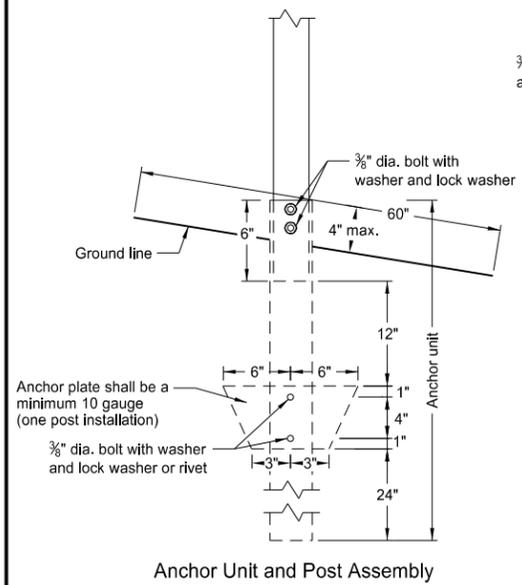
Notes:

1. Slip base bolts shall be torqued as specified by the manufacturer.
2. Anchor shall have a yield strength of 43.9 KSI and tensile strength of 59.3 KSI.
3. The 4" vertical clearance is required for the anchor or breakaway base. The 4"x60" measurement shall be made above and below post location and also back and ahead of the post.
4. When used in concrete sidewalk, anchor shall be same except without the wings.
5. Four post signs shall have over 7' between the first and the fourth posts.

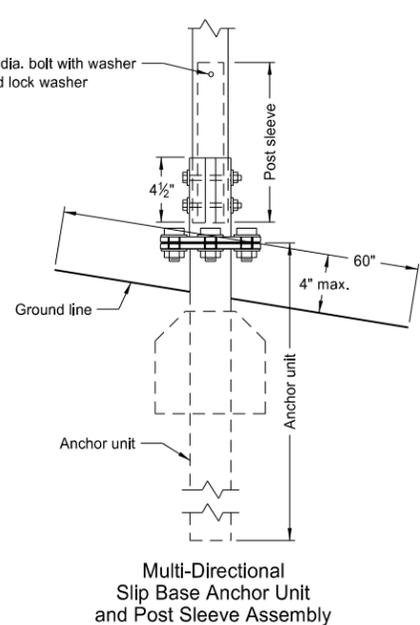
| Telescoping Perforated Tube | | | | | | |
|-----------------------------|---------------|----------------------|-----------------|----------------------|-----------|-----------------------------------|
| Number of Posts | Post Size in. | Wall Thickness Gauge | Sleeve Size in. | Wall Thickness Gauge | Slip Base | Anchor Size without Slip Base in. |
| 1 | 2 | 12 | | | No | 2 1/4 |
| 1 | 2 1/4 | 12 | | | No | 2 1/2 |
| 1 | 2 1/2 | 12 | | | (A) | 3 |
| 1 | 2 1/2 | 10 | | | Yes | |
| 1 | 2 1/4 | 12 | 2 | 12 | Yes | |
| 1 | 2 1/2 | 12 | 2 1/4 | 12 | Yes | |
| 2 | 2 | 12 | | | No | 2 1/4 |
| 2 | 2 1/4 | 12 | | | No | 2 1/2 |
| 2 | 2 1/2 | 12 | | | Yes | |
| 2 | 2 1/2 | 12 | | | Yes | |
| 2 | 2 1/4 | 10 | 2 | 12 | Yes | |
| 2 | 2 1/2 | 12 | 2 1/4 | 12 | Yes | |
| 3 & 4 | 2 1/2 | 12 | | | Yes | |
| 3 & 4 | 2 1/2 | 10 | | | Yes | |
| 3 & 4 | 2 1/2 | 12 | 2 1/4 | 12 | Yes | |
| 3 & 4 | 2 1/4 | 12 | 2 | 12 | Yes | |
| 3 & 4 | 2 1/2 | 10 | 2 3/16 | 10 | Yes | |

| Properties of Telescoping Perforated Tube | | | | | | |
|---|--------------------|---------------------|----------------------|------------------------------------|----------------------------------|----------------------------------|
| Tube Size in. | Wall Thickness in. | U.S. Standard Gauge | Weight per Foot lbs. | Moment of Inertia in. ⁴ | Cross Sec. Area in. ² | Section Modulus in. ³ |
| 1 1/2 x 1 1/2 | 0.105 | 12 | 1.702 | 0.129 | 0.380 | 0.172 |
| 2 x 2 | 0.105 | 12 | 2.416 | 0.372 | 0.590 | 0.372 |
| 2 1/4 x 2 1/4 | 0.105 | 12 | 2.773 | 0.561 | 0.695 | 0.499 |
| 2 3/16 x 2 3/16 | 0.135 | 10 | 3.432 | 0.605 | 0.841 | 0.590 |
| 2 1/2 x 2 1/2 | 0.105 | 12 | 3.141 | 0.804 | 0.803 | 0.643 |
| 2 1/2 x 2 1/2 | 0.135 | 10 | 4.006 | 0.979 | 1.010 | 0.785 |

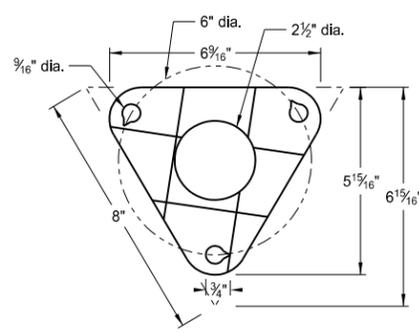
| Top Post Receiver Data Table | | | | | | |
|------------------------------|---------|--------|---------|---------|----------|--------|
| Square Post Sizes (B) | A | B | C | D | E | F |
| 2 3/16" x 10 ga. | 1 9/64" | 2 1/2" | 3 1/32" | 2 5/32" | 1 33/64" | 1 1/8" |
| 2 1/2" x 10 ga. | 1 9/32" | 2 1/2" | 3 5/16" | 5/8" | 1 21/32" | 1 3/4" |



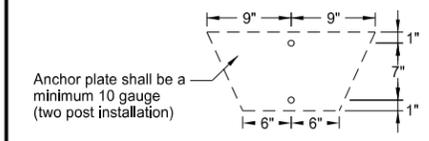
Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



Bolt Retainer for Base Connection
Bolt Retainer - 1/32" Reprocessed Teflon

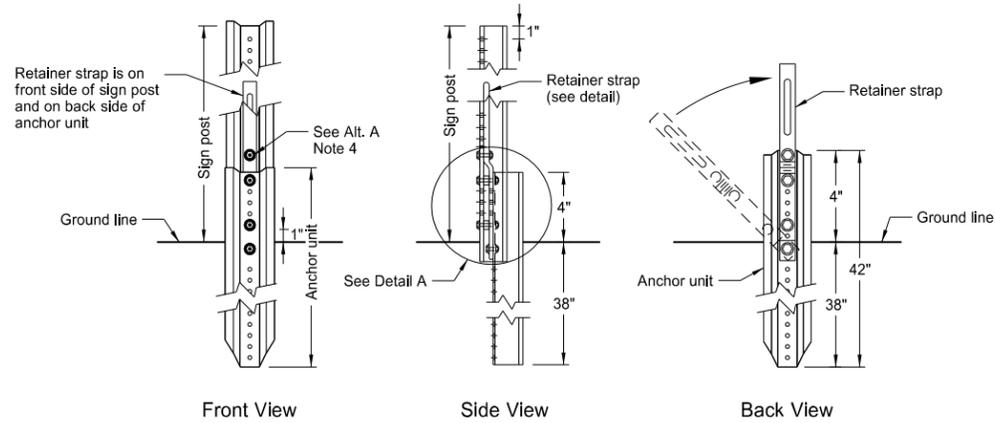
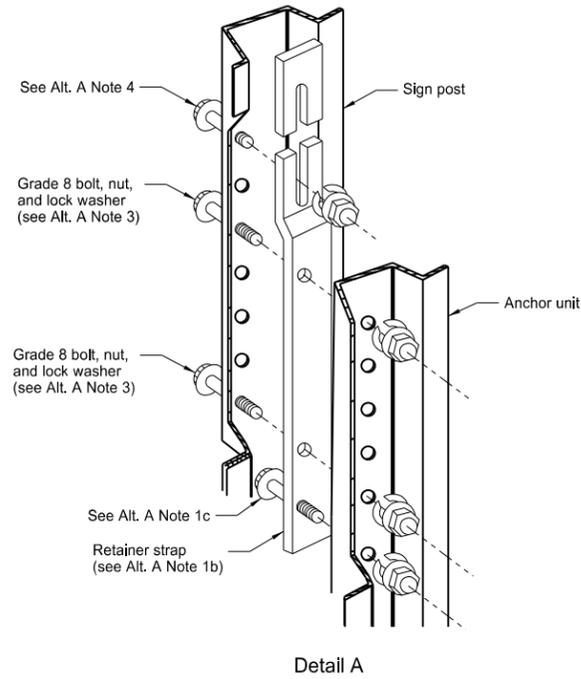


Anchor plate shall be a minimum 10 gauge (two post installation)

- (A) The breakaway base is required when the support is placed in weak soils. The Engineer shall determine if the soils are weak.
- (B) The 2 3/16" x 10 ga. may be inserted into 2 1/2" x 10 ga. for additional wind load.

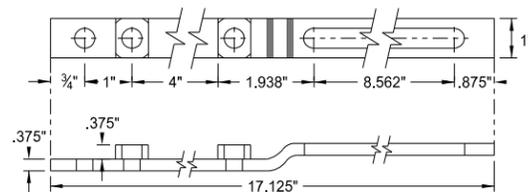
| | | |
|--|--------|---|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | | This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 2/28/14 and the original document is stored at the North Dakota Department of Transportation |
| 2-28-14 | | |
| REVISIONS | | |
| DATE | CHANGE | |

U-Channel Post

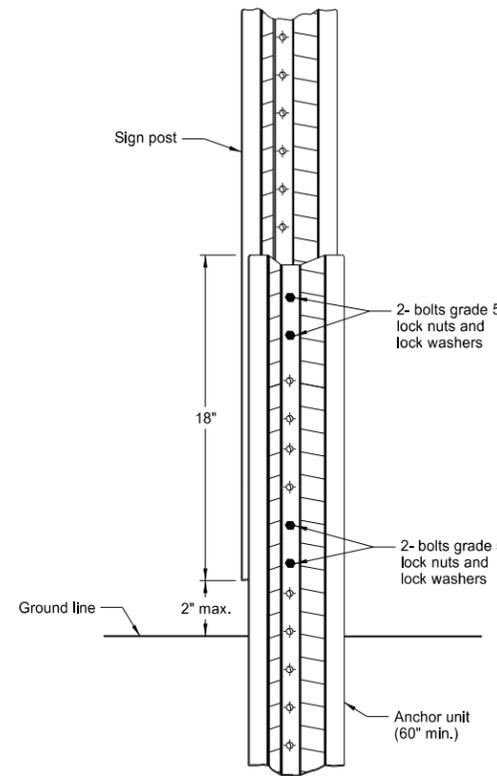


Breakaway U-Channel Detail Alternate A

A maximum of 2 posts shall be installed within 7'.

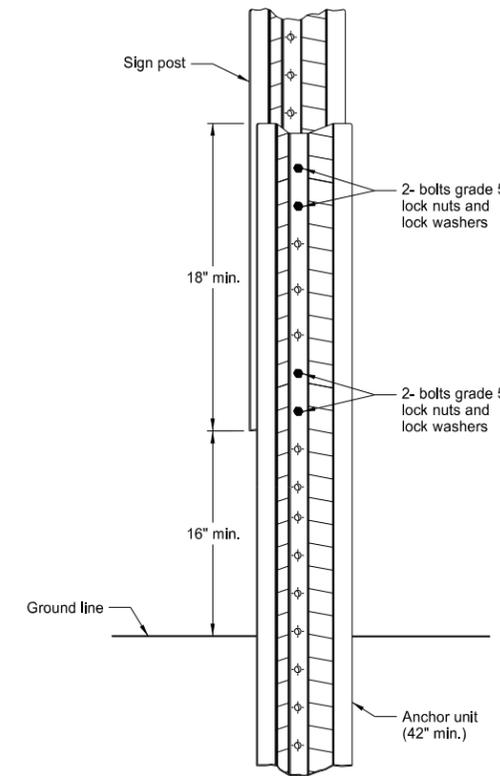


Retainer Strap Detail



Breakaway U-Channel Splice Detail Alternate B (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.



Breakaway U-Channel Splice Detail Alternate C (2.5 and 3 lb/ft)

A maximum of 3 posts shall be installed within 7'.

Alternate A Steps of Installation:

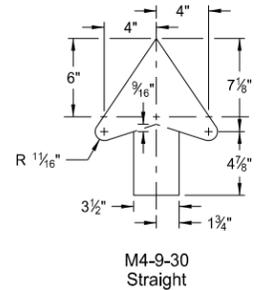
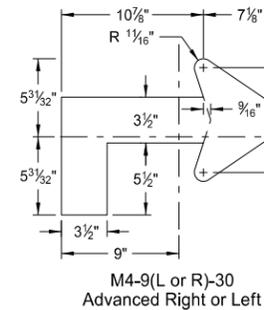
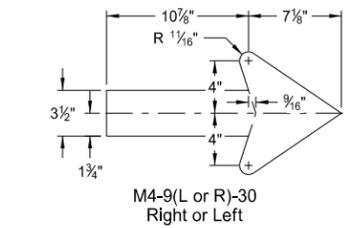
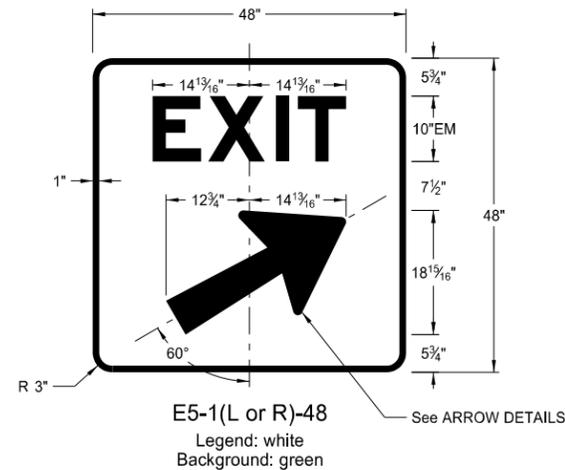
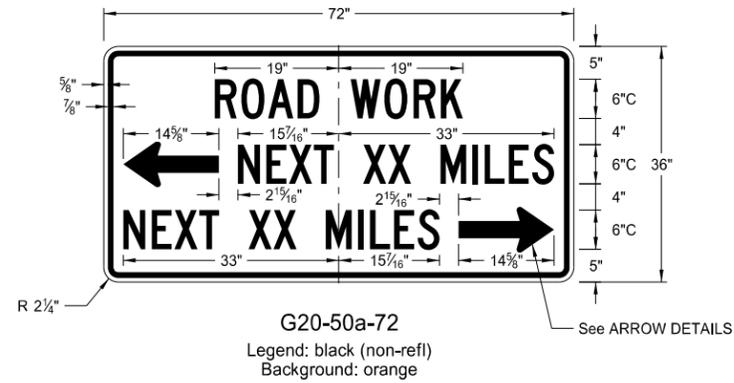
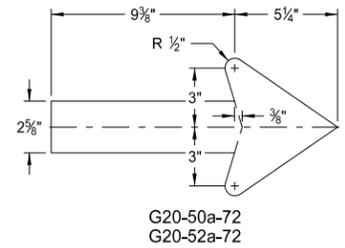
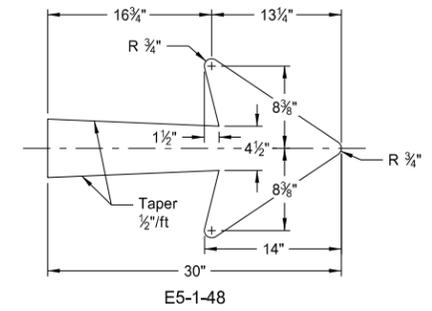
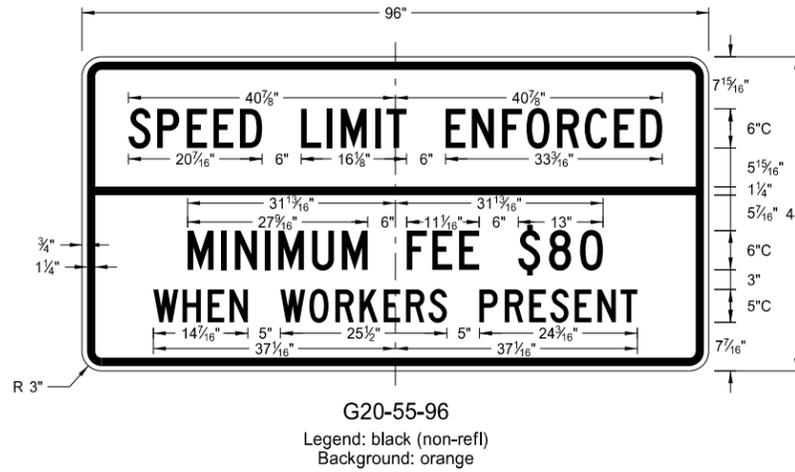
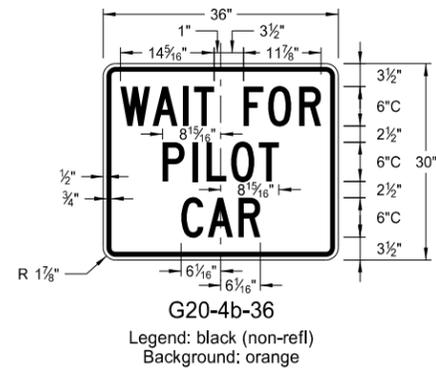
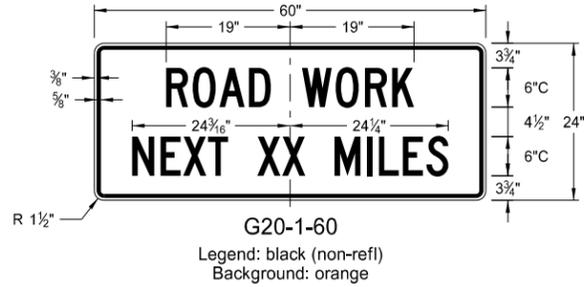
1. a) Drive anchor unit to within 12" of ground level.
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a) Drive anchor unit to 4" above ground.
b) Rotate strap to vertical position.
3. a) Place 5/16"x2" bolt, lock washer and nut in bottom of sign post to facilitate alignment of sign post with proper hole in anchor unit.
b) Alternately tighten two connector bolts.
4. Complete assembly by tightening 5/16"x2" bolt (this fastens sign post to retainer strap).
5. The base post, strap and sign post shall be properly nested. Proper nesting occurs when all flat surfaces of the base post, strap, and sign post at the bolts have full contact across the entire width.

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 2-28-14 | |
| REVISIONS | |
| DATE | CHANGE |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 2/28/14 and the original document is stored at the North Dakota Department of Transportation

CONSTRUCTION SIGN DETAILS
 TERMINAL AND GUIDE SIGNS

D-704-9



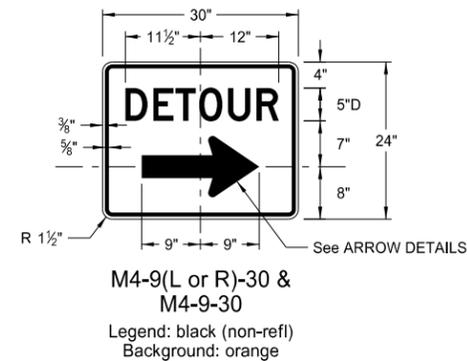
ARROW DETAILS

NOTES:

(A) Arrow may be right or left of the legend to indicate construction to the right or left.

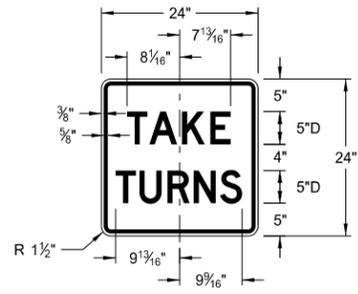
| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by
 Roger Weigel,
 Registration Number
 PE-2930,
 on 8/13/13 and the original document is stored at the
 North Dakota Department
 of Transportation

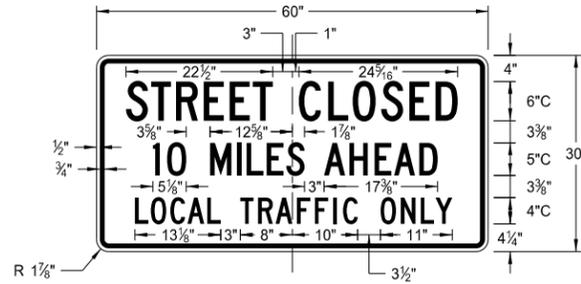


CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

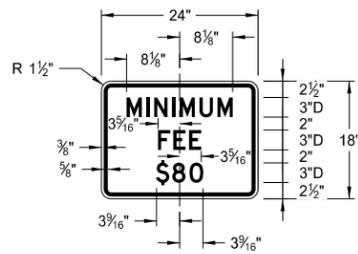
D-704-10



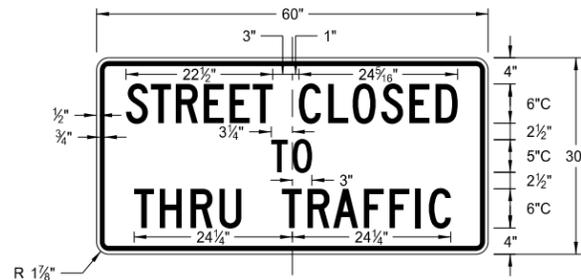
R1-50-24
Legend: black (non-refl)
Background: white



R11-3c-60
Legend: black (non-refl)
Background: white



R2-1a-24
Legend: black (non-refl)
Background: white



R11-4a-60
Legend: black (non-refl)
Background: white

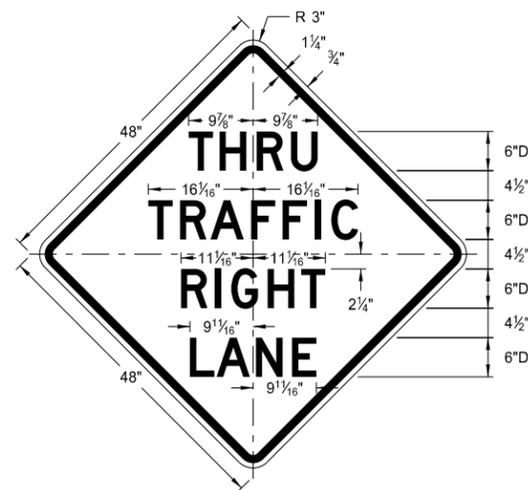


R11-2a-48
Legend: black (non-refl)
Background: white

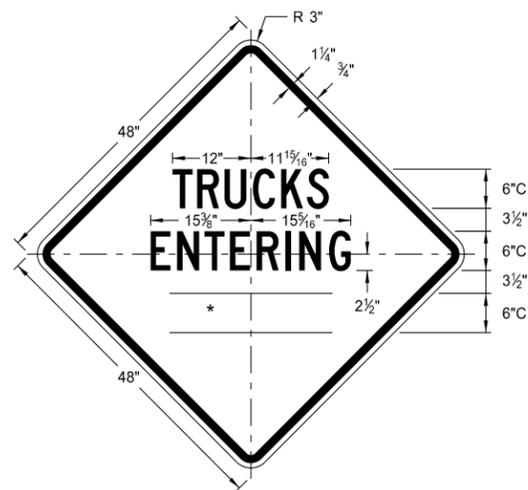
| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 8/13/13 and the original document is stored at the North Dakota Department of Transportation

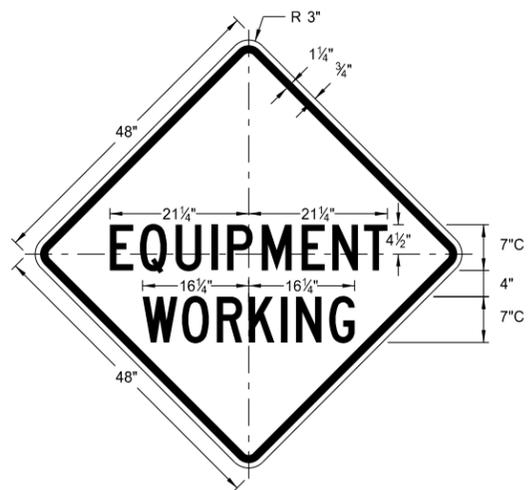
CONSTRUCTION SIGN DETAILS
WARNING SIGNS



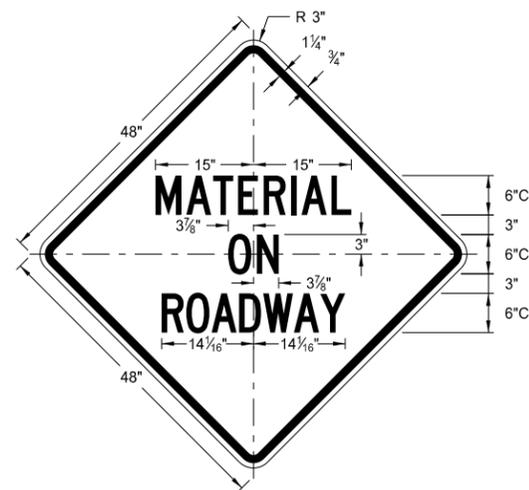
W5-8-48
Legend: black (non-refl)
Background: orange



W8-54-48
Legend: black (non-refl)
Background: orange



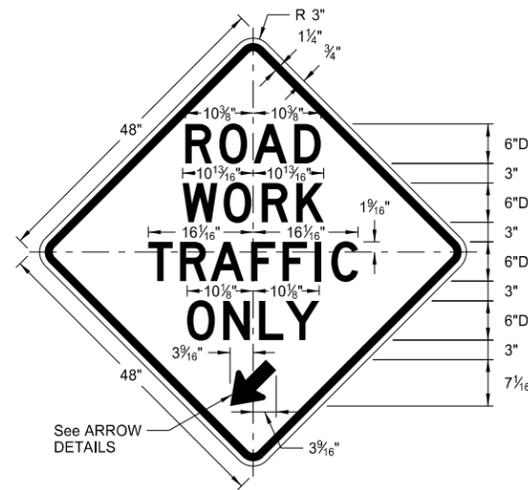
W20-51-48
Legend: black (non-refl)
Background: orange



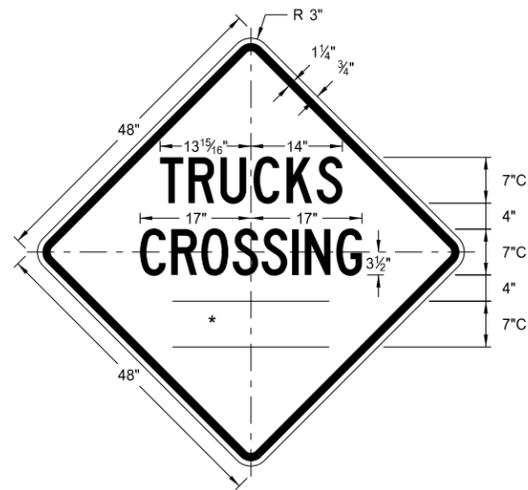
W21-51-48
Legend: black (non-refl)
Background: orange

| WORD | LETTER SPACING |
|---------|----------------|
| AHEAD | Standard |
| 200 FT | Standard |
| 350 FT | Standard |
| 500 FT | Standard |
| 1000 FT | Reduce 40% |
| 1500 FT | Reduce 40% |
| ½ MILE | Reduce 50% |
| 1 MILE | Standard |

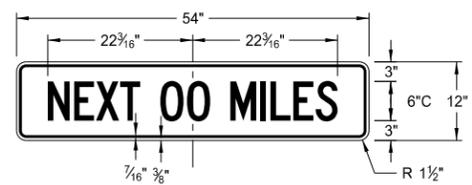
* DISTANCE MESSAGES



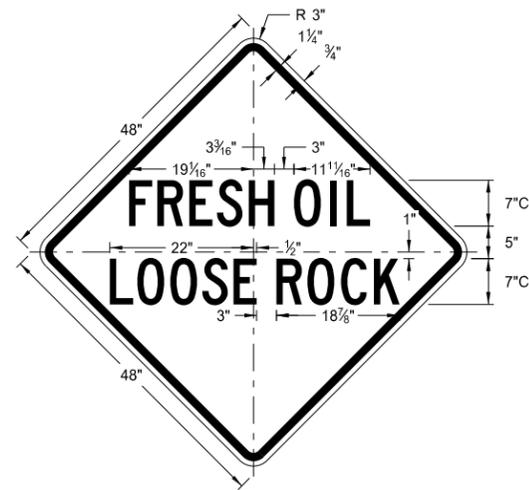
W5-9-48
Legend: black (non-refl)
Background: orange



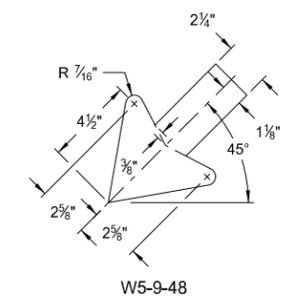
W8-55-48
Legend: black (non-refl)
Background: orange



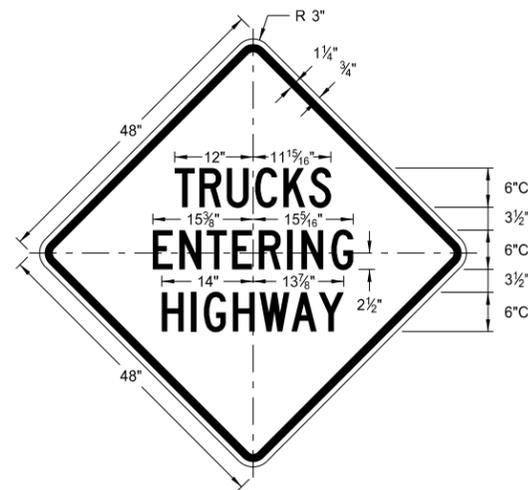
W20-52-54
Legend: black (non-refl)
Background: orange



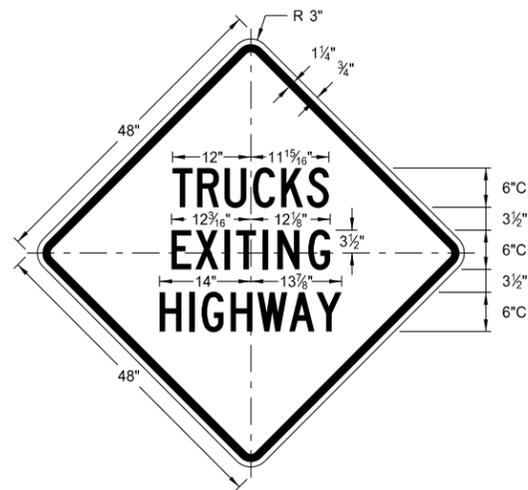
W22-8-48
Legend: black (non-refl)
Background: orange



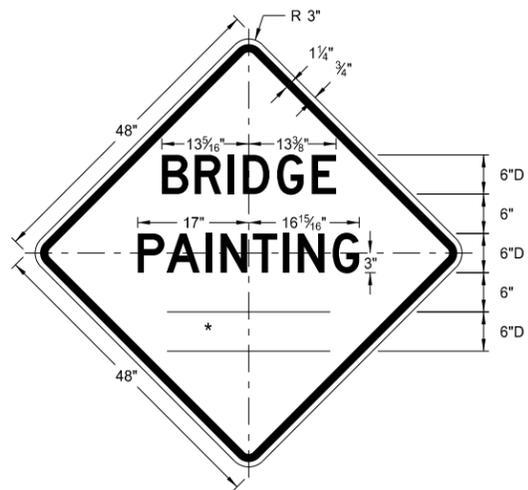
W5-9-48
ARROW DETAILS



W8-53-48
Legend: black (non-refl)
Background: orange



W8-56-48
Legend: black (non-refl)
Background: orange



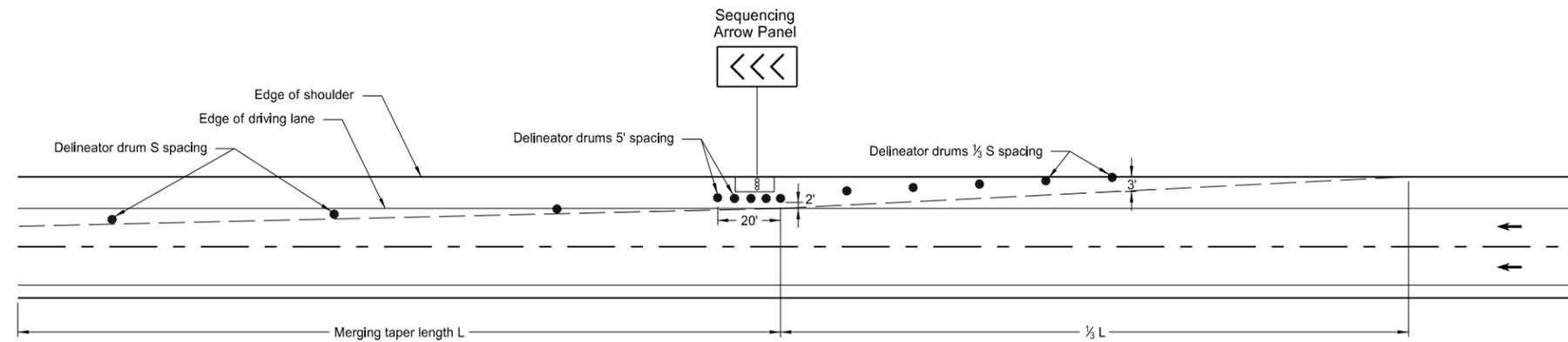
W21-50-48
Legend: black (non-refl)
Background: orange

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|--|--------|
| 8-13-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

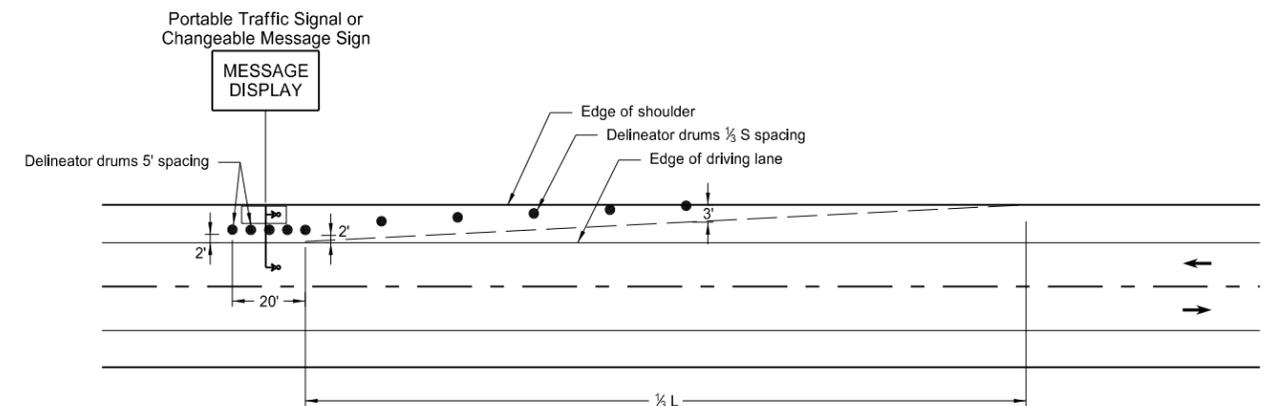
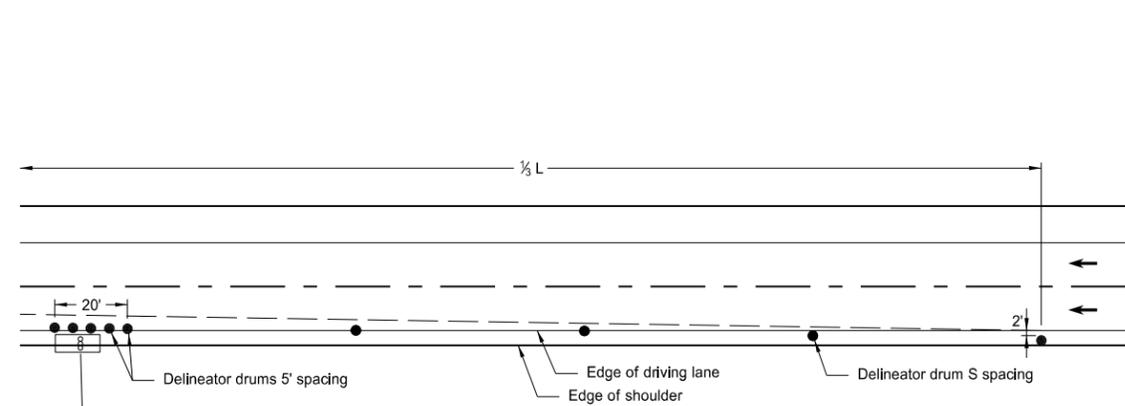
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 8/13/13 and the original document is stored at the North Dakota Department of Transportation

SHOULDER CLOSURE TAPERS

D-704-12

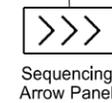


SHOULDER CLOSURE WITH LANE CLOSURE
(when shoulder is 8' or wider)



SHOULDER CLOSURE USED WITH LANE CLOSURE
(when shoulder is less than 8' wide)

PORTABLE TRAFFIC SIGNAL OR CHANGEABLE MESSAGE SIGN ON SHOULDER



| KEY | |
|-------------------|---------------------------|
| ● Delineator Drum | ∞ Sequencing Arrow Panel |
| • Message Display | ↳ Portable Traffic Signal |

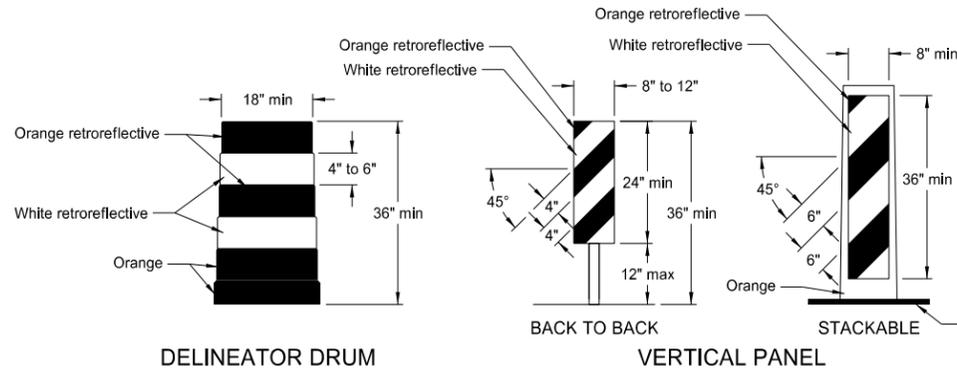
Notes:

- S = Posted Speed Limit in mph
W = Width of offset in feet
L = Taper length in feet
L = WS²/60 (40mph or less)
L = WS (45mph or more)
- If a shoulder taper is used, it should have a length of approximately 1/2 L. If a shoulder is used as a travel lane, a normal merging or shifting taper should be used.
- When paved shoulders of 8 foot width or more are closed, channelizing devices shall be used to close the shoulder in advance to delineate the beginning of the work space and direct vehicular traffic to remain within the traveled way.

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 10-3-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

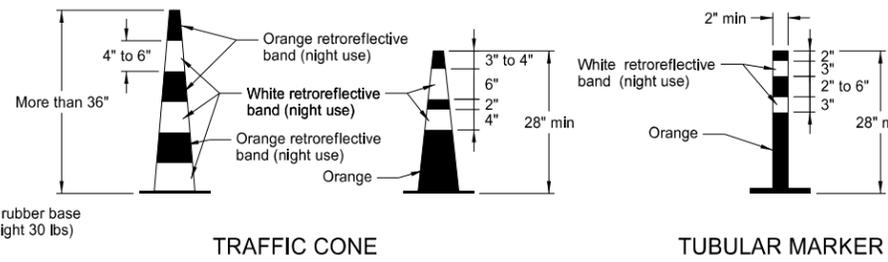
This document was originally issued and sealed by Roger Weigel Registration Number PE-2930, on 10/3/13 and the original document is stored at the North Dakota Department of Transportation

BARRICADE AND CHANNELIZING DEVICE DETAILS



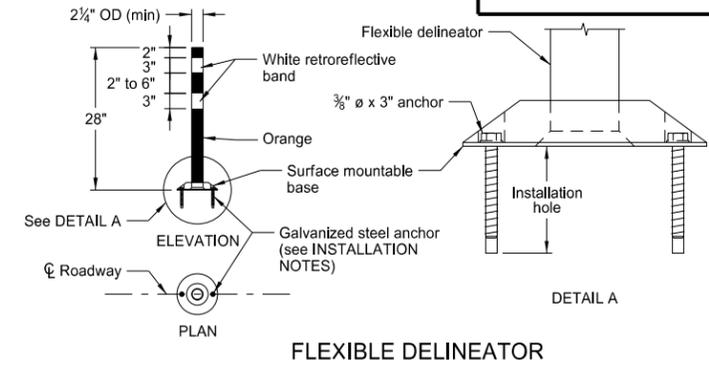
The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 4" to 6" wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED spaces between the horizontal orange and white stripes shall not exceed 3" wide. Stripes shall not be placed on ribs or indentations in the drum. Drums shall have closed tops that will not allow collection of construction debris or other debris. Ballast shall not be placed on the top of a drum.

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward in the direction vehicular traffic is to pass. Retroreflective sheeting shall be placed on both sides of panel and shall have a minimum of 270 square inches of retroreflective area facing vehicular traffic. Where the height of the retroreflective material on the vertical panel is 36 inches or more, a stripe width of 6 inches shall be used.



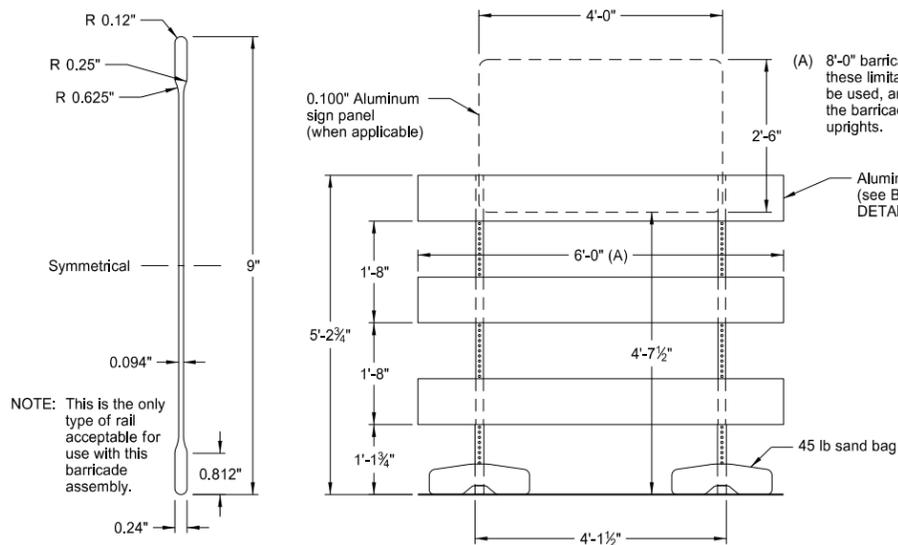
RetroreflectORIZATION of cones more than 36" in height shall be provided by alternating orange and white retroreflective stripes. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectORIZED space between the orange and white stripes shall not exceed 3" wide.

RetroreflectORIZATION of tubular markers more than 42" in height shall be provided by alternating four 4" to 6" wide orange and white stripes with the top stripe being orange.



INSTALLATION NOTES:

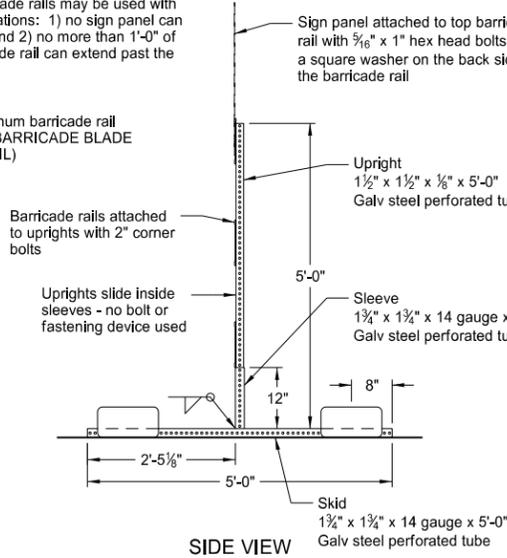
1. Drill installation holes to diameter and depth as required by manufacturer's specifications.
2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
3. In lieu of bolted down base, the contractor may use an 8" x 8" butyl pad or hot melt butyl. Butyl shall be removed as close as possible to pavement surface.



BARRICADE BLADE DETAIL

ELEVATION VIEW

BARRICADE ASSEMBLY DETAIL (Aluminum Barricade Rails)

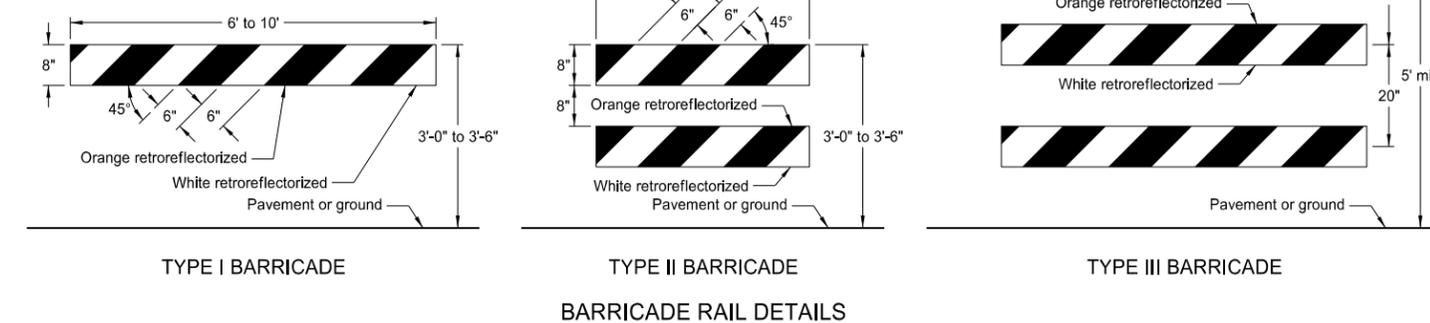


ELEVATION VIEW

SIDE VIEW

BARRICADE ASSEMBLY DETAIL (Wood or Plastic Rails)

NOTE: Markings for barricades shall be alternating orange and white retroreflective stripes, sloping downward in the direction traffic is to pass. Retroreflective sheeting shall be placed on both sides of the rails and shall have a minimum of 270 square inches of visible retroreflective area facing vehicular traffic. When the barricade length is less than 36", the rail stripe width shall be 4".

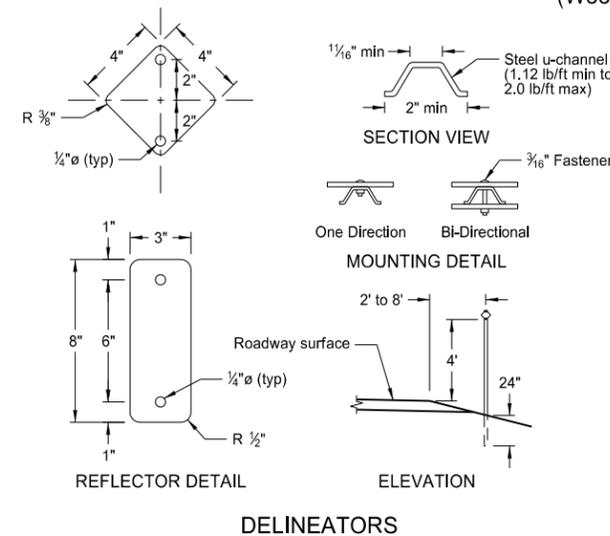


TYPE I BARRICADE

TYPE II BARRICADE

BARRICADE RAIL DETAILS

TYPE III BARRICADE



REFLECTOR DETAIL

DELINEATORS

MINIMUM BALLAST (For each side of barricade support)

| | |
|--------------|--------------------|
| Without Sign | 4 - 25 lb sandbags |
| With Sign | 6 - 25 lb sandbags |

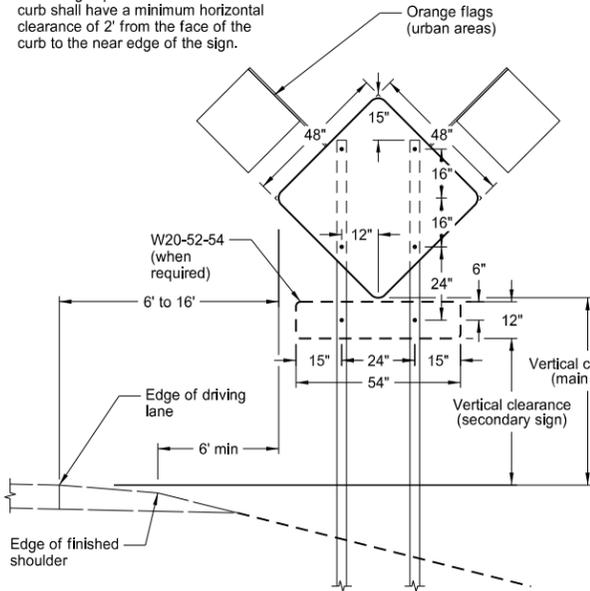
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 10-3-13 | |
| REVISIONS | |
| DATE | CHANGE |

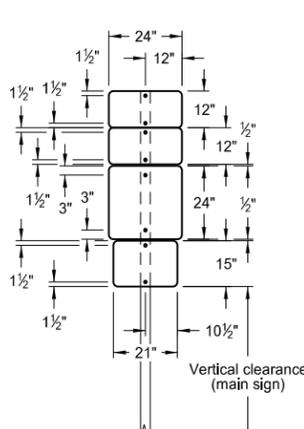
This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 10/3/13 and the original document is stored at the North Dakota Department of Transportation

CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

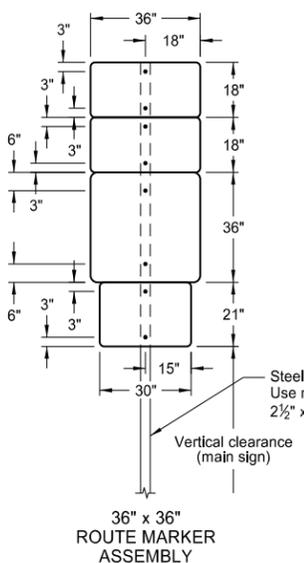
Note: Signs placed in sections with curb shall have a minimum horizontal clearance of 2' from the face of the curb to the near edge of the sign.



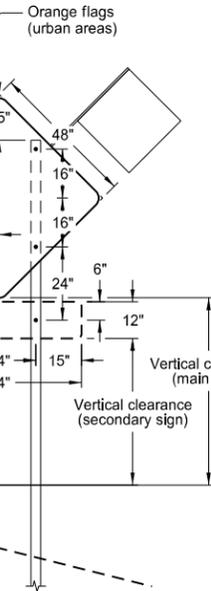
TYPICAL SECTION
(48" x 48" diamond warning sign shown)



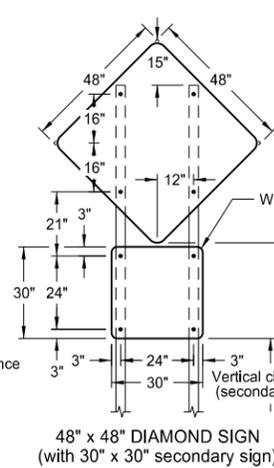
24" x 24" ROUTE MARKER ASSEMBLY



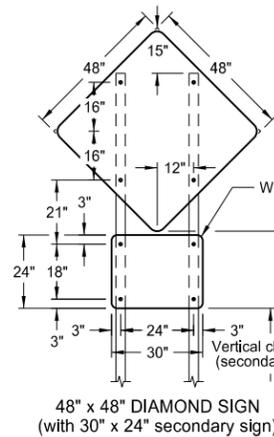
36" x 36" ROUTE MARKER ASSEMBLY



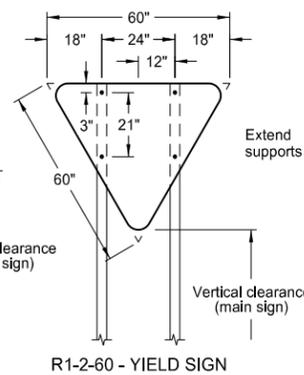
18" x 18" DIAMOND SIGN



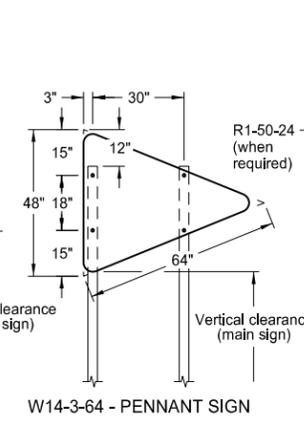
48" x 48" DIAMOND SIGN
(with 30" x 30" secondary sign)



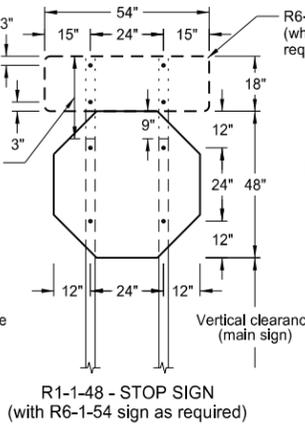
48" x 48" DIAMOND SIGN
(with 30" x 24" secondary sign)



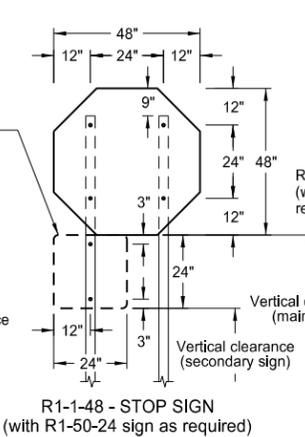
R1-2-60 - YIELD SIGN



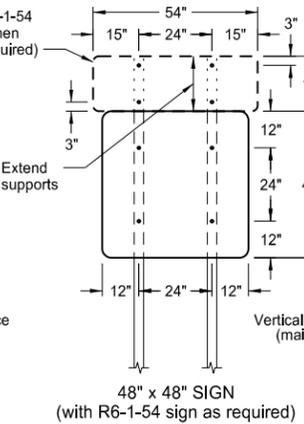
W14-3-64 - PENNANT SIGN



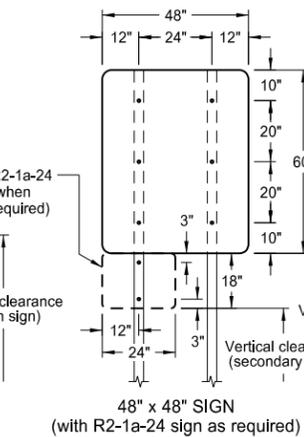
R1-1-48 - STOP SIGN
(with R6-1-54 sign as required)



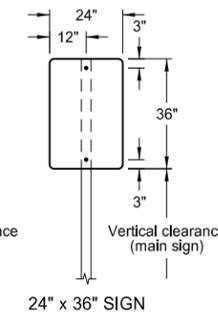
R1-1-48 - STOP SIGN
(with R1-50-24 sign as required)



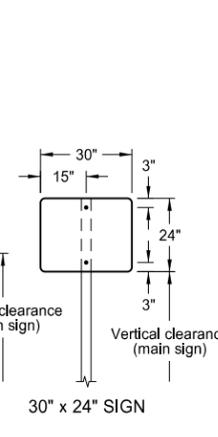
48" x 48" SIGN
(with R6-1-54 sign as required)



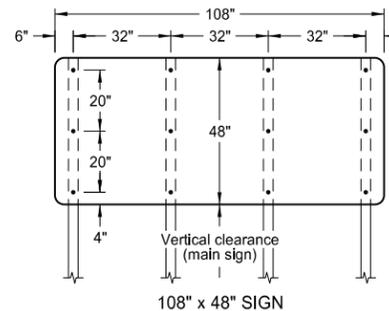
48" x 48" SIGN
(with R2-1a-24 sign as required)



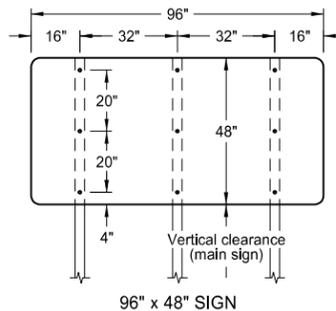
24" x 36" SIGN



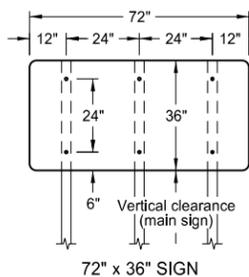
30" x 24" SIGN



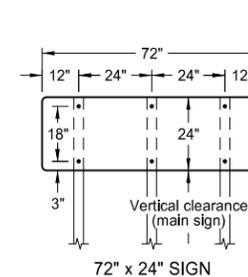
108" x 48" SIGN



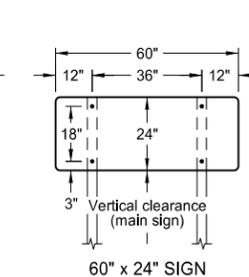
96" x 48" SIGN



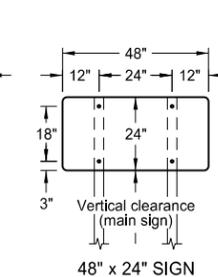
72" x 36" SIGN



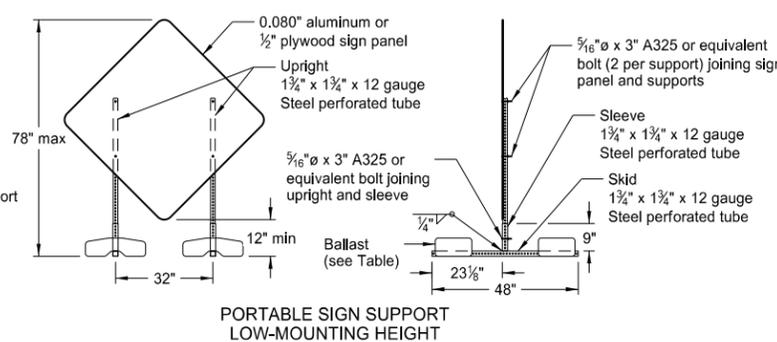
72" x 24" SIGN



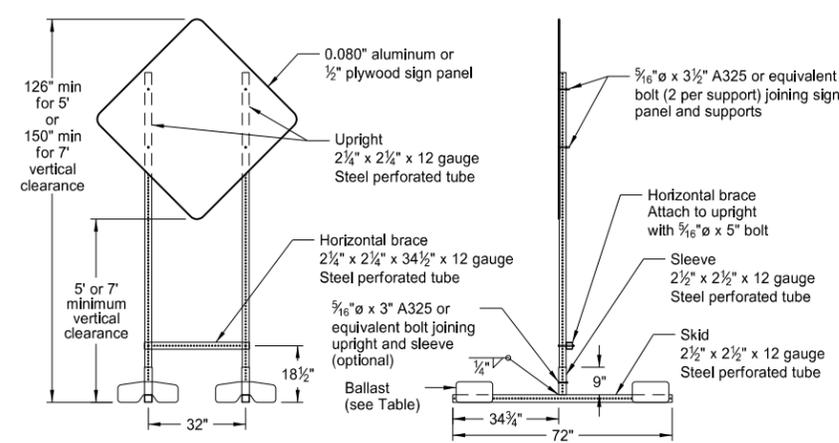
60" x 24" SIGN



48" x 24" SIGN



PORTABLE SIGN SUPPORT
LOW-MOUNTING HEIGHT



PORTABLE SIGN SUPPORT
HIGH-MOUNTING HEIGHT

NOTES:

1. Sign Supports: Supports shall be galvanized or painted. Minimum post sizes are 2.5 lb/ft u-channel or 2" x 2" x 12 gauge steel perforated tube, except where noted. When installing signs on u-channel, the minimum post size for assemblies containing a secondary sign is 3.0 lb/ft. Post sizes are based on a wind speed of 55 MPH.

Signs over 50 square feet should be installed on 2 1/2" x 2 1/2" perforated tube supports as a minimum.

Guy wires shall not be attached to sign supports. Wind beams may be attached to u-posts behind the sign panels.

2. Sign Panels: Provide sign panels made of 0.100" aluminum, 1/2" plywood, or other approved material, except where noted. All holes to be punched round for 3/8" bolts.

3. Alternate Messages: The signs that have alternate messages may have these alternate messages placed on a reflectorized plate (without a border) and installed and removed as required. (i.e. "Left" and "Right" message on a lane closure sign)

4. Route Marker Auxiliary Signs: Provide route marker auxiliary signs, such as the cardinal direction and directional arrows, with a background and legend that match the route marker they are used with:

Interstate - white legend on blue background
Interstate Business Loop - white legend on green background
US and State - black legend on white background
County - yellow legend on blue background

5. Vertical Clearance: Install signs with a vertical clearance of 5'-0" (see TYPICAL SECTION.) In areas where parking or pedestrian movements are likely or the view of the sign may be obstructed, install signs with a vertical clearance of 7'-0" from the top of the curb or from the near edge of the driving lane in absence of a curb.

The vertical clearance to secondary signs is 1'-0" less than the vertical clearance as stated above.

Large signs having an area exceeding 50 square feet shall have a minimum clearance of 7'-0" from the ground at the post.

6. Portable Signs: Provide portable signs that meet the vertical clearance as stated above. Use portable signs when it is necessary to place signs within the pavement surface.

When portable signs are used for 5 days or less, low-mounting height (minimum 12" vertical clearance) sign supports may be used as long as the view of the sign is not obstructed. Time delays caused by unforeseen circumstances, such as equipment breakdown, rain, subgrade failures, etc., will not accrue towards the 5 day period. The R9-8 through R9-11a series, W1-5 through W1-8 series, M4-10, and E5-1 may be used for longer than 5 days.

Signs mounted to the portable sign supports shown in the LOW-MOUNTING HEIGHT and HIGH-MOUNTING HEIGHT Details shall have a maximum surface area of 16 square feet.

MINIMUM BALLAST
(For each side of sign support base)

| Sign Panel Mounting Height (ft) | Number of 25 lb sandbags for 4' x 4' sign panel |
|---------------------------------|---|
| 1' | 6 |
| 5' | 8 |
| 7' | 10 |

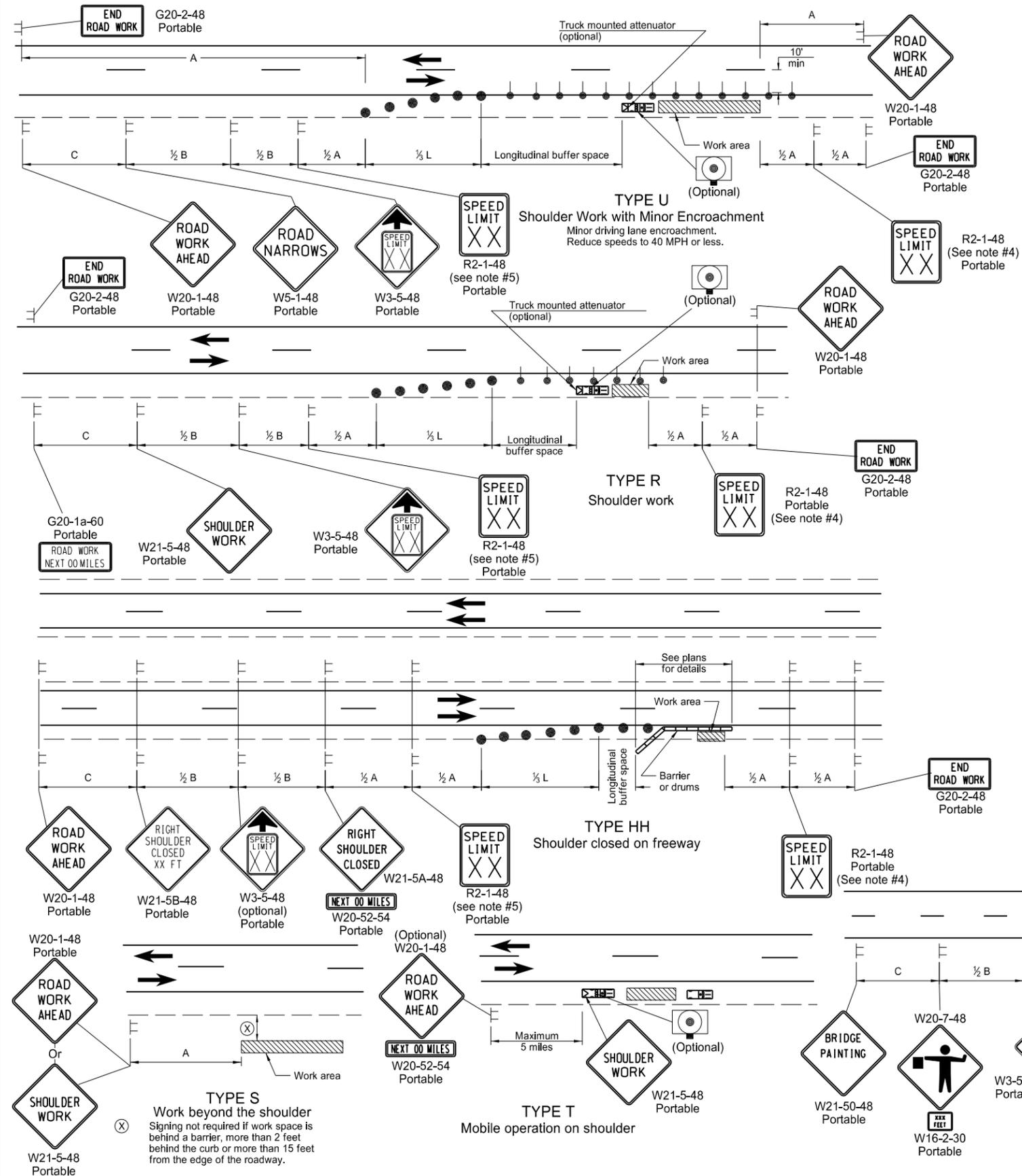
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
|--|-----------------|
| 10-4-13 | |
| REVISIONS | |
| DATE | CHANGE |
| 11-14-13 | Revised Note 6. |

This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/14/13 and the original document is stored at the North Dakota Department of Transportation

SHOULDER CLOSURES AND BRIDGE PAINTING LAYOUTS

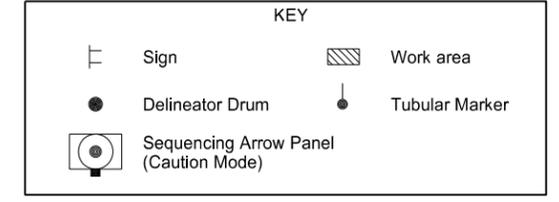
D-704-24



- Notes
- Variables
S = Numerical value of speed limit or 85th percentile.
W = The width of the taper.
L = Minimum length of taper, or S x W for freeways, expressways, and all other roads with speeds of 45 mph or greater, or W x S²/60 for urban, residential, and other streets with speeds of 40 mph or less.
 - Delineator drums used for tapering traffic shall be spaced at dimension "S".
Delineator drums or tubular markers 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 or less and 750 ADT or less).
Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph or less and 5000 ADT or less).
Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph or over 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 signs in accordance with the NDDOT Standard Specifications.

| 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 |

| ADVANCE WARNING SIGN SPACING | | | |
|---|----------------------------------|------|------|
| 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 |



| | |
|--|--------|
| NORTH DAKOTA DEPARTMENT OF TRANSPORTATION | |
| 9-27-13 | |
| REVISIONS | |
| DATE | CHANGE |
| | |

This document was originally issued and sealed by
 Roger Weigel
 Registration Number
 PE-2930,
 on 09/27/13 and the original document is stored at the
 North Dakota Department
 of Transportation