

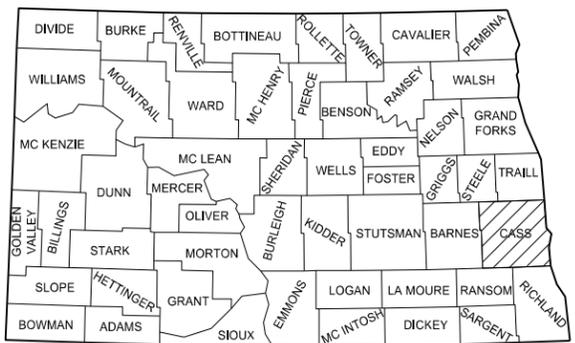
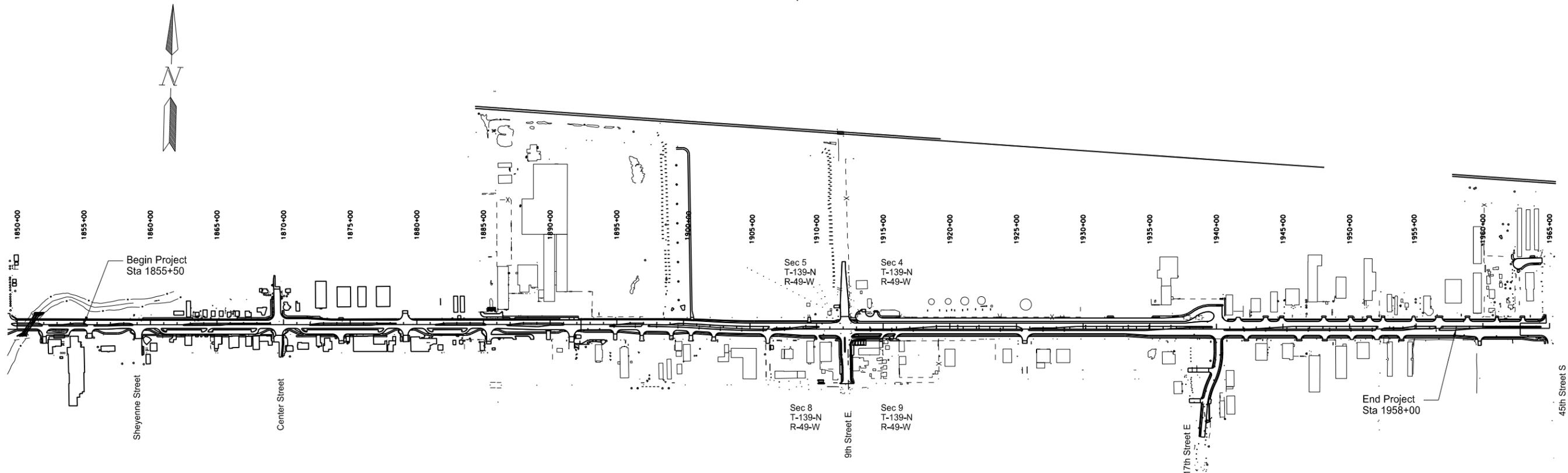
JOB # 37
NORTH DAKOTA
DEPARTMENT OF TRANSPORTATION

STATE	PROJECT NO.	PCN	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	20757	1	1

NHU-8-010(040)934
 Cass County
 US Highway 10/Main Avenue
 West Fargo, ND
 Landscape Enhancements

GOVERNING SPECIFICATIONS:
 2014 Standard Specifications adopted by the North Dakota
 Department of Transportation and the Supplemental Specifications
 effective on the date the project is advertised.

PROJECT NUMBER \ DESCRIPTION	NET MILES	GROSS MILES
NHU-8-010(040)934	2.178	2.178



STATE COUNTY MAP

DESIGNERS
 Brett O. Bailly, PE

APPROVED DATE 09/05/2014
 Robert Fode, PE /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 engineer under the laws of the state of ND.
 APPROVED DATE 08/15/2014
 Brett O. Bailly, PE /s/
 Moore Engineering, Inc.

This document was originally issued and sealed by
 Brett O. Bailly
 Registration Number
 PE- 6087,
 on 08/15/14 and the original document is stored at the
 North Dakota Department
 of Transportation

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
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NOTES

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GENERAL NOTES

100-P01 CLEANING: The Contractor shall be responsible for removing all debris from the existing roadway and pedestrian areas adjacent to the construction area at the end of each construction day.

704-P01 TRAFFIC CONTROL: The Contractor will be required to maintain traffic at all times. Traffic control devices list was created assuming contractor would have two crews working, one in each direction of travel. If Contractor elects to use only one crew, quantities will be reduced in half. No extra compensation will be allowed for relocation of traffic control devices due to work progression. The Contractor may alter traffic management as needed for construction operations, but any traffic control methods and devices must be in accordance with MUTCD Standards. Quantities for traffic control items shown on Summary of Quantities (Section 8, sheet 1) and Traffic Control Devices List (Section 100, sheet 1) were derived from NDDOT Standard Drawing D-704-23, Type P.

704-P02 CONTRACTOR EQUIPMENT BEACONS: The Contractor is required to have operating flashing amber beacons on all vehicles that are entering and exiting the work zone or shoulders of the roadways.

970-P01 PROJECT PERSONNEL: The Contractor shall be required to have an International Society of Arboriculture (ISA) certified arborist or other certified individual that is knowledgeable of plant materials and proper planting conditions on the project. Should any field conditions be deemed inappropriate for the specified plant materials, it is the Contractor's responsibility to submit a written proposal for appropriate plant substitutions.

The Contractor shall have within his/her company an individual who is a Certified Herbicide Applicator. All costs associated with 970-P01 to be included in the bid price of the trees.

970-P02 PLANT SIZES: Any plant material which does not meet the specified minimum size shall be rejected. If a Contractor is unable to locate sufficient plant material in specified sizes, negotiation for unit price adjustment shall be concluded prior to planting.

970-P03 PLANT ACCEPTANCE: Plant materials which lack proper proportions, have serious injuries to the bark or roots, broken branches, objectionable disfigurement, shriveled and/or dry roots, broken bails, insect pests, diseases, or which are not found to comply with the specifications in any way will be rejected. Rejected plant material shall be removed from the

project site within 48 hours and shall become the property of the Contractor.

970-P04 PLANTING AREA SCORING: The sides and bottom of planting beds and tree pits shall be scarified to remove any glazing affects caused by digging, incidental.

970-P05 SHRUB CONTAINERS: All containers are to be removed from shrubs and trees prior to planting. Containers shall be disposed of properly, incidental.

970-P06 PLANTING SOIL TYPE: The backfill shall be a suitable loam/clay mixture. When possible, use existing soil as backfill. In heavy clay soils, amendments may need to be added to improve soil mixture. Contractor to notify Project Engineer should this situation occur. Contractor to mix amendments prior to filling the hole to prevent stratification. The cost is included in the bid price of the trees.

970-P07 BACKFILL INSTALLATION: Each plant pit shall be backfilled with the approved planting soil placed in layers around the roots. Each layer shall be tamped carefully in a manner to avoid injury to the roots or disturbing the position of the tree. When approximately 2/3 to 3/4 of the planting pit has been backfilled, the hole shall be watered so as to settle the soil in and around all of the roots. After water has been absorbed, the planting pit shall be filled with the planting soil, tamped lightly to grade and watered thoroughly again. Any further settlement shall be brought to grade with additional planting soil. Contractor to ensure proper drainage and prevent any puddling of water around the plant material trunks and stems. All plant materials shall be watered within 2 hours of installation. Costs to be included in the bid price of the trees.

970-P08 TREE STAKING: Trees shall be staked immediately upon being planted and the staking shall be considered and organized as part of the planting process. Stakes shall be snug after settling has taken place. The Contractor shall be responsible for the removal of the stakes after (2) years or as determined by the Project Engineer or City Forestry. Contact the Project Engineer in advance for approval. The cost is included in the bid price of the trees.

970-P09 GUYING WIRE: The minimum size of wire used for guying shall be 12-gauge. Substitution requests for standard hose and wire guying will not be approved. Wire should be level from stake to tree tie. No part of any wire shall be in contact with any part of each tree. All excess wire shall be removed or wrapped in

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such a way as to eliminate any loose ends. The cost is included in the bid price of the trees.

970-P10 TREE TIES: Trees will be anchored to stakes by a 16" long polypropylene 1-1/2" strap. The cost is included in the bid price of the trees.

970-P11 MULCH: Mulch shall be shredded hardwood mulch. Chips shall not contain any twigs or foreign material. Mulch shall be required around every tree planted within 24 hours. It shall extend beyond the tree canopy or be 3-foot diameter, whichever is greater. Keep mulch 6" away from plant trunks and stems. The cost is included in the price of the trees.

The Contractor shall maintain a minimum eight feet (8') between the edge of the planting beds and any structures/elements not located within the planting beds. Structures/elements include, but are not limited to the top back of curb, traffic signal standards, light standards, fire hydrants, utility pedestals, etc.

970-P12 INITIAL ACCEPTANCE: Upon completion of installation of all plant materials, the Project Engineer and City Forester will make an inspection of all plant materials and planting areas for acceptability. Any establishment procedures that have not been performed shall be brought to the Contractor's attention for immediate correction. Upon the completion of any procedure corrections, a letter of initial acceptance shall be provided by the Project Engineer establishing the warranty and maintenance timeline for the project.

970-P13 WARRANTY/MAINTENANCE WATERING: Contractor is responsible for notifying the Project Engineer prior to scheduled watering. A detailed inspection form including work performed and watering dates shall be submitted to the Project Engineer. The cost is included in the bid price of the trees.

970-P14 PLANT ESTABLISHMENT PROCEDURES: The establishment procedures through the extent of the contract shall include additional pruning, protective measures against pests and diseases (including rabbit and/or rodent protection), watering as often as required by necessity or directed by the Project Engineer, cultivating, replacing mulch, keeping the stakes firm and guys adjusted, weeding with a pre-emergent weed control or other pre-approved means, and other establishment procedures as deemed necessary by the Project Engineer including removal of any dead plant material from the project. A detailed inspection form including work performed and work dates shall be submitted to the Project Engineer. The cost is included in the price of the trees or perennials as applicable.

970-P15 REPLACING PLANT MATERIALS: Any plant material that is 25% dead or more, as determined by Engineer or City Forester, shall be considered dead and must be replaced by the Contractor. Trees shall be considered dead when main leader has died back, or 25% of the crown is dead. Shrubs shall be considered dead when 25% of the branching is dead. Removal of designated plant material shall occur immediately; replacement shall occur immediately or as soon as possible per acceptable planting dates and weather conditions. No additional compensation will be made.

970-P16 PLANTING/REPLANTING DATES: Allowable planting dates for initial installation and for replacement plant materials shall be as follows below. Weather conditions may allow for the planting of the plant material to occur outside of these dates. One such possibility is the expansion of the fall planting window to begin September 1. Written approval from the Project Engineer will be required in all such instances.
Spring: April 15 – June 15
Fall: September 15 – October 15

970-P17 PROJECT INSPECTIONS: A minimum of two formal inspections shall occur each year of the warranty/maintenance period – one in the Spring and one in the Fall. The Contractor shall be notified of any unacceptable plant materials or site conditions which need to be corrected. It will be at the Project Engineer's discretion should any additional inspections be deemed necessary. The cost is included in the bid price of the trees.

970-P18 RETAINAGE: A 15% retainage on plant material and traffic control shall be in place for the warranty/maintenance period. One year from the initial acceptance of the plant materials and after a warranty/maintenance inspection, the retainage shall be distributed following the final acceptance of the plant materials.

970-P19 FINAL ACCEPTANCE: Upon completion of the warranty/maintenance period, the Project Engineer and City Forester will make an inspection of the plant material for acceptability. The inspection will normally be made during the week that the warranty/maintenance period terminates – in this case 1 year from the date of the initial acceptance. All items of maintenance shall have been performed on the plant material prior to inspection. Any items of maintenance that have not been performed may make a plant unacceptable. Any establishment procedures that have not been performed shall be brought to the Contractor's attention for immediate correction. Upon completion of any corrections, a letter of final acceptance shall

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be provided by the Project Engineer notifying the Contractor of the completion of the project and authorizing the release of the final retainage payment.

970-P20 LANDSCAPE EDGING: Edging around planting beds shall be interlocking concrete edgers, commonly called "bullet edgers". Edging shall be installed so that top of edger is at ground height to prevent lawnmower blade from striking edger. Color of edging shall be tan, beige, or light brown. Contractor to submit color sample for approval with shop drawings. Bullet Edger dimensions to be close to 4" D x 4" W x 12" L, each.

970-P21 LANDSCAPE FABRIC: Landscape fabric shall be placed at all locations where mulch is installed. Landscape fabric shall be a weed barrier fabric of a woven polypropylene geotextile. Fabrics shall meet the following specifications and are subject to Engineer approval:

1. 5 Year written warranty against ultraviolet deterioration
2. Water permeable.
3. Puncture strength of 300 PSI.
4. 15 mils thickness.

970-P22 BENCH: Bench shall include all labor, materials and equipment as necessary to furnish and install a park bench. Park benches shall be a Kirby Built Olympia park Bench ABC1700, 6' wide, cedar in color; Ravinia Park Bench KBC1700, 6' wide, cedar in color by Barco Products; or approved equal. Bench shall have a back. Contractor shall submit shop drawings prior to ordering.

970-P23 DECORATIVE CONCRETE PLANTER: Decorative concrete planter shall include all labor, materials and equipment as necessary to furnish and install a planter box. Planter boxes shall be a Kirby Built Olympia Planter Box APL2000, 28" diameter, 27" in height, cedar in color; Ravinia Planter KPL2000, 28" in diameter, 27" in height by Barco Products; or approved equal. Contractor shall submit shop drawings prior to ordering.

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ENVIRONMENTAL COMMITMENTS

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ENVIRONMENTAL COMMITMENTS (EC): The City of West Fargo and the North Dakota Department of Transportation have made environmental commitments to secure approval of this project. The environmental commitments are as follows:

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.
NO WETLANDS PRESENT							
TOTALS:			0.00			0.00	0.00

ESTIMATED QUANTITIES

SPEC	CODE	ITEM DESCRIPTION	SCIENTIFIC NAME	SIZE	COMMENT	UNIT	QUANTITY
103	0100	CONTRACT BOND	-	-	-	LSUM	1
702	0100	MOBILIZATION	-	-	-	LSUM	1
704	1000	TRAFFIC CONTROL SIGNS	-	-	-	UNIT	1264
704	1060	DELINEATOR DRUMS	-	-	-	EA	40
704	1067	TUBULAR MARKERS	-	-	-	EA	16
704	1086	SEQUENCING ARROW PANEL-TYPE B	-	-	-	EA	2
750	0115	SIDEWALK CONCRETE 4IN	-	-	-	SY	27.8
930	9551	CONCRETE MODULAR BLOCK RETAINING WALL	-	-	-	SF	240
970	0002	LANDSCAPE EDGING	-	-	-	LF	2584
970	0003	LANDSCAPE FABRIC	-	-	-	SY	1727.5
970	075	WOOD MULCH	-	-	-	SF	15547.5
970	0200	DECORATIVE CONCRETE PLANTER	-	-	-	EA	5
970	0300	BENCH	-	-	-	EA	5

TREES GROUP A

SPEC	CODE	ITEM DESCRIPTION	SCIENTIFIC NAME	SIZE	COMMENT	UNIT	QUANTITY
970	1001	AUTUMN BLAZE MAPLE	ACER X FREEMANII 'JEFFERSRED'	1.25"	CONTAINER	EA	2
970	1001	COMMON HACKBERRY	CELTIS OCCIDENTALIS	1.25"	CONTAINER	EA	14
970	1001	NORTHERN ACCLAIM HONEYLOCUST	GLEDITSIA TRIANCANTHOS 'HARVE'	1.25"	CONTAINER	EA	24
970	1001	PRAIRIE STATURE OAK	QUERCUS X BIMUNDORUM 'MIDWEST'	1.25"	CONTAINER	EA	7
970	1001	PRAIRIE EXPEDITION ELM	ULMUS AMERICANA 'LEWIS & CLARK'	1.25"	CONTAINER	EA	14

TREES GROUP B

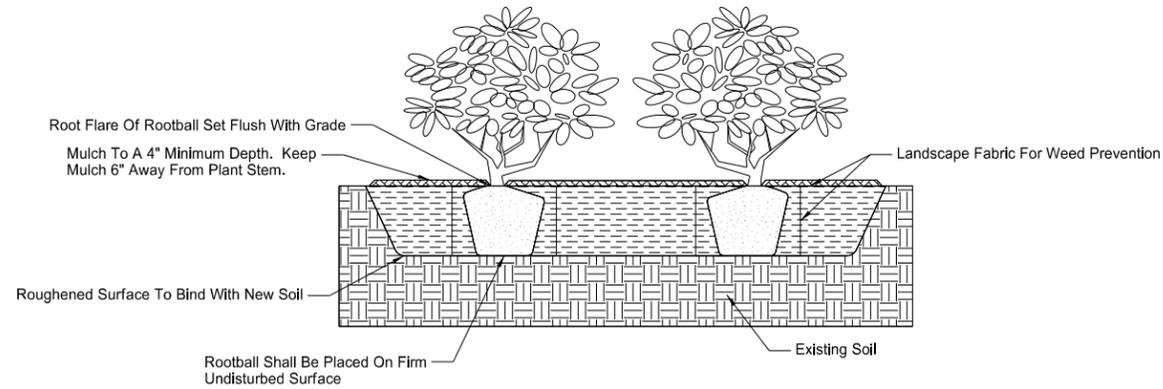
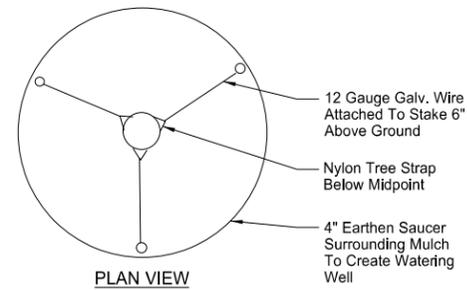
SPEC	CODE	ITEM DESCRIPTION	SCIENTIFIC NAME	SIZE	COMMENT	UNIT	QUANTITY
970	1002	AMUR MAPLE	ACER GINNALA	1.25"	CONTAINER	EA	21
970	1002	NORTHERN HERALD EASTERN REDBUD	CERCIS CANADENSIS 'PINK TRIM'	1.25"	CONTAINER	EA	11
970	1002	PRAIRIE FIRE CRABAPPLE	MALUS 'PRAIRE FIRE'	1.25"	CONTAINER	EA	22
970	1002	SPRING SNOW CRABAPPLE	MALUS 'SPRING SNOW'	1.25"	CONTAINER	EA	14
970	1002	PRAIRIE GEM PEAR	PYRUS USSURIENSIS 'MORDAK'	1.25"	CONTAINER	EA	10
970	1002	SHOWY MOUNTAIN ASH	SORBUS DECORA	1.25"	CONTAINER	EA	16
970	1002	JAPANESE TREE LILAC	SYRINGA RETICULATA	1.25"	CONTAINER	EA	11

PERENNIALS GROUP A

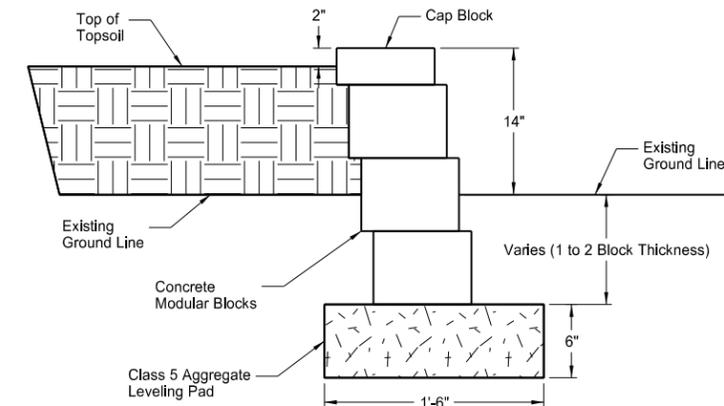
SPEC	CODE	ITEM DESCRIPTION	SCIENTIFIC NAME	SIZE	COMMENT	UNIT	QUANTITY
970	1030	EMERALD ELF AMUR MAPLE	ACER GINNALA 'EMERALD ELF'	1 GALLON	CONTAINER	EA	46
970	1030	PURPLE CONEFLOWER	ECHINACEA PURPUREA	1 GALLON	CONTAINER	EA	40
970	1030	STELLA D'ORO DAYLILY	HEMEROCALIS 'STELLA D'ORO	1 GALLON	CONTAINER	EA	448
970	1030	BLUE CHIP JUNIPER	JUNIPERUS HORIZONTALIS 'BLUE CHIP'	1 GALLON	CONTAINER	EA	46
970	1030	DWARF KOREAN LILAC	SYRINGA MEYERI 'PALIBIN	1 GALLON	CONTAINER	EA	92

Quantities

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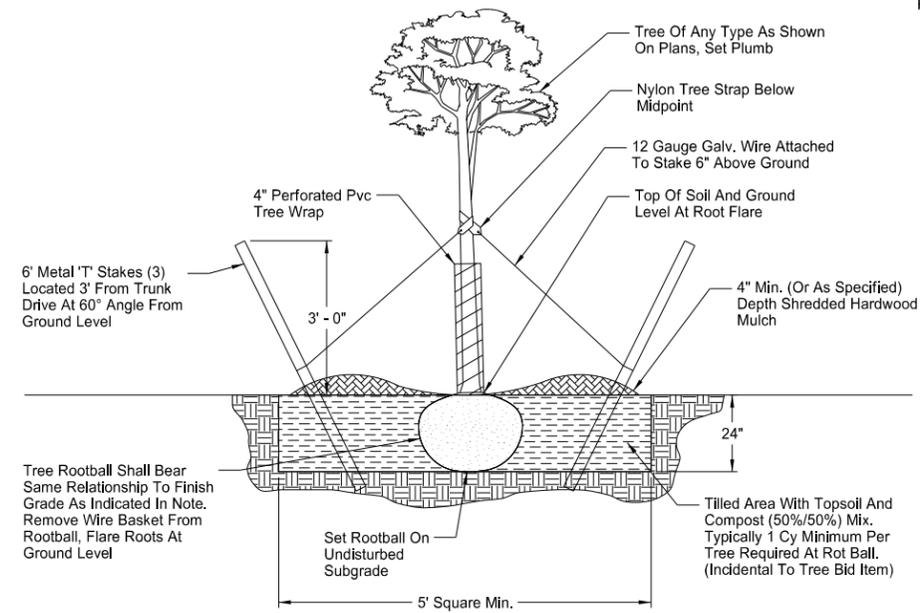


PERENNIAL PLANTING DETAIL
NO SCALE



Note: 1. Detail Applies to Planting Beds at Stations 1858+75 and 1859+75.
2. Modular block shall be Keystone Garden Wall, Rockwood Classic 6 Beveled, Versa-Lok standard - weathered, or approved equal. Color of block shall be tan, beige, or light brown. Contractor shall submit color sample for approval.
3. Aggregate leveling pad to be incidental to price of retaining wall.

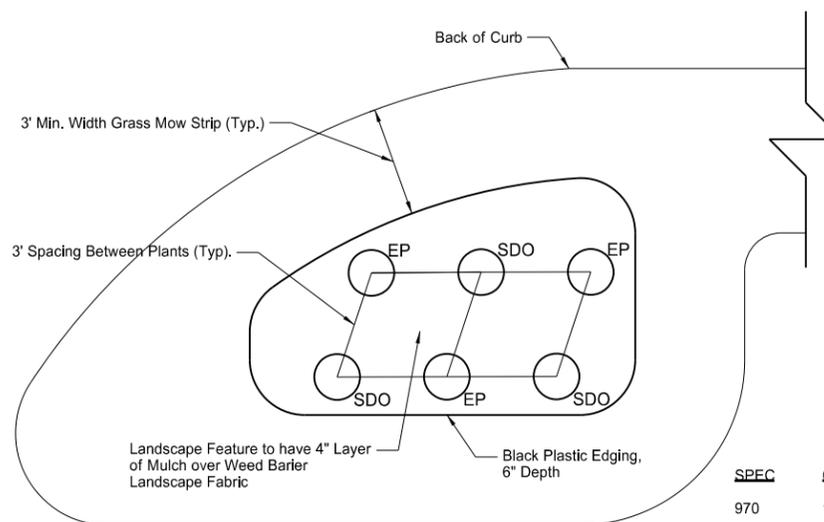
CONCRETE MODULAR BLOCK WALL SECTION
NO SCALE



Notes:

1. Remove Min. Top 2/3 Of Burlap From Rootball, Remove All Treated Green Burlap.
2. Remove All Wire Baskets.
3. After Tree Is Positioned In Place, Remove All Twine, Rope, Plastic, Rubber, And Wire Baskets.
4. Plant Rootball 2" Above Surrounding Grade in Clay Soil And At Grade In Sandy Soil.
5. All Items Included In "Tree" Item.
6. Spaded Tree Is An Acceptable Alternative. Mulch Ring Shall Exceed 1' Beyond Spaded Ring. Otherwise All Tree Requirements Shall Apply.
7. Soil Shall Be Free Of Construction Debris, Gravel And Other Waste.

TREE PLANTING DETAIL
NO SCALE



Detail applies to Stations 1861, 1865, 1868, 1869, 1872, 1877, 1887 and 1883.

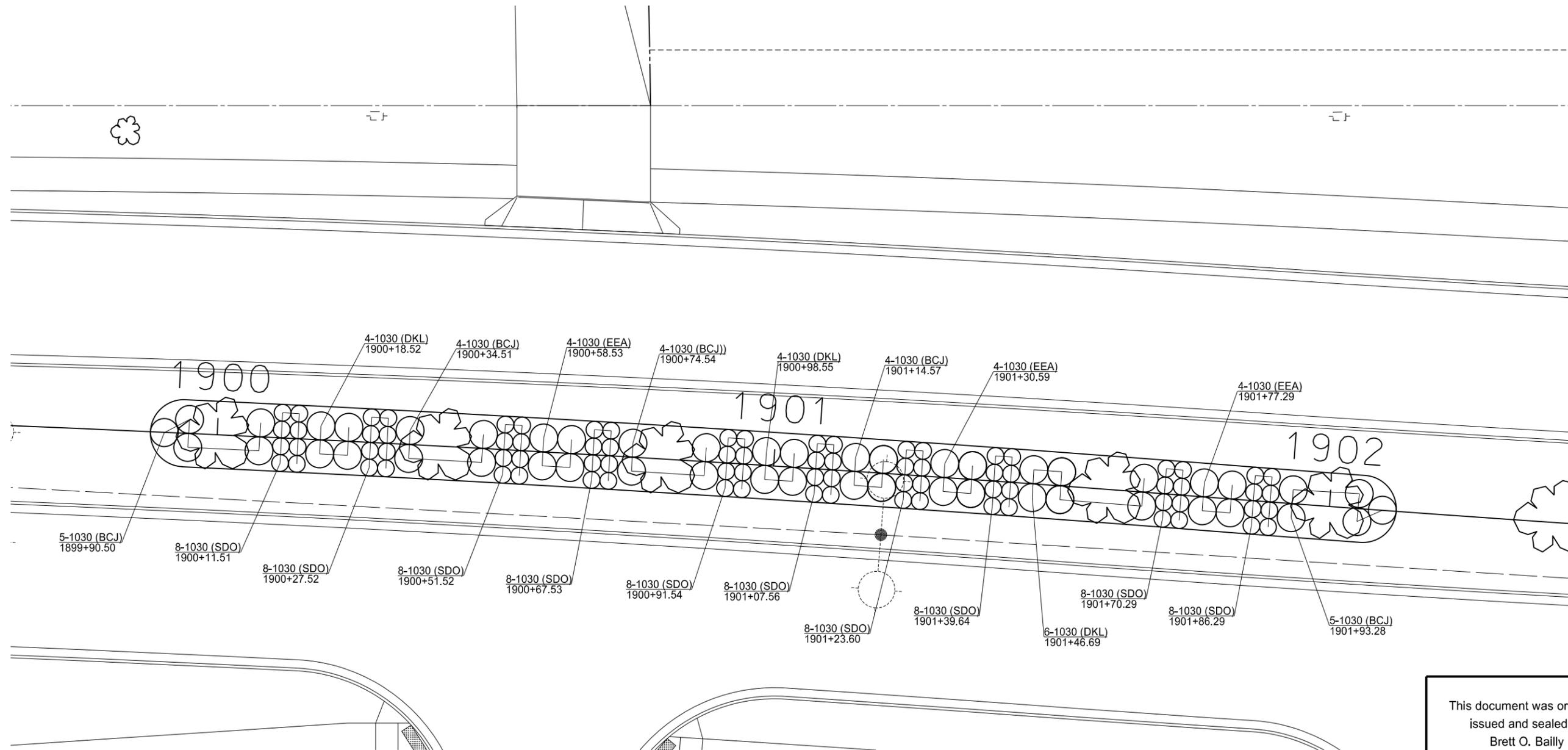
LANDSCAPE FEATURE DETAIL
NO SCALE

SPEC	CODE	DESCRIPTION
970	1030	Purple Coneflower (EP) Echinacea Purpurea
970	1030	Stella D'Oro Daylily (SDO) Hemerocallis Stella D'Oro

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US Highway 10/Main Ave
Landscaping Details

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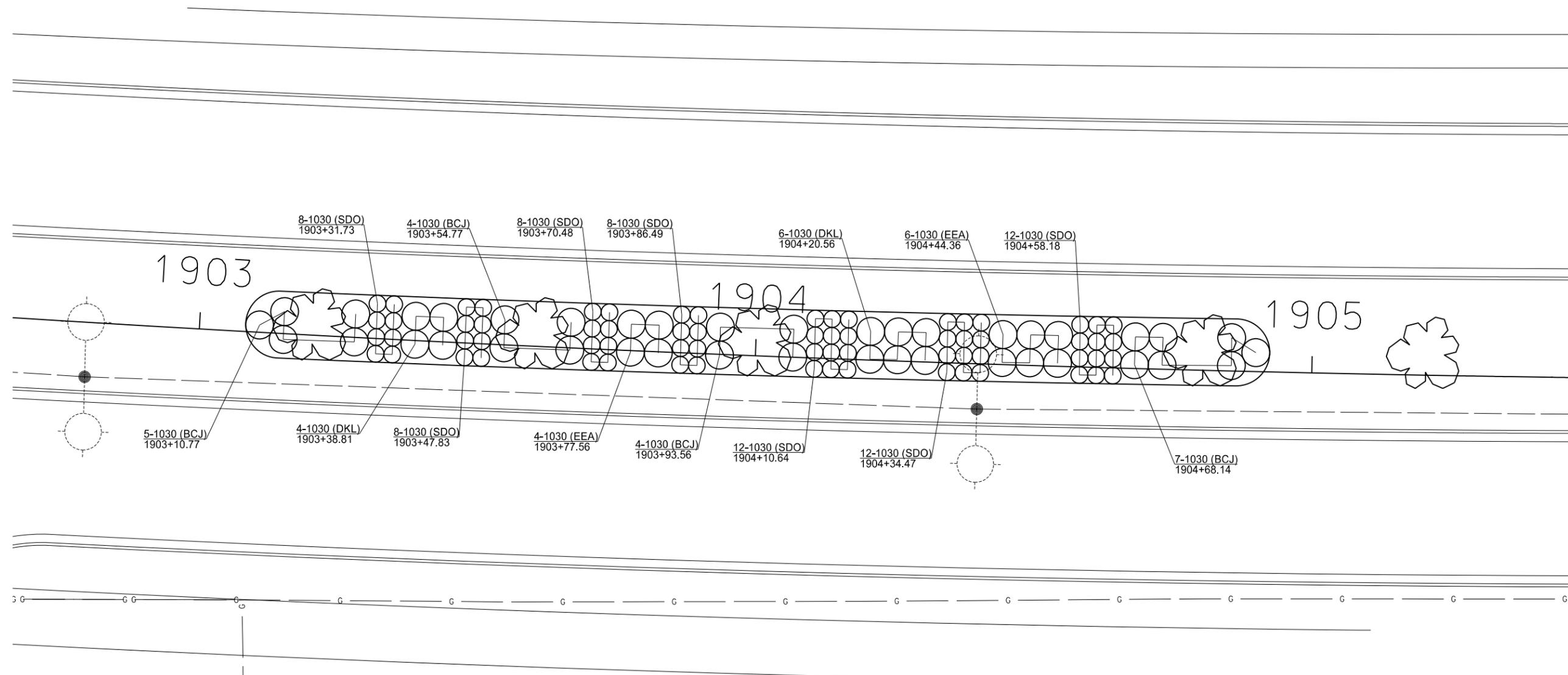


PLANT LIST

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	EMERALD ELF AMUR MAPLE (EEA) <i>ACER GINNALA 'EMERALD ELF'</i>	12	EA
970	1030	STELLA D'ORO DAY LILY (SDO) <i>HEMEROCALIS 'STELLA D'ORO'</i>	80	EA
970	1030	DWARF KOREAN LILAC (DKL) <i>SYRINGA MEYERI 'PALIBIN'</i>	10	EA
970	1030	BLUE CHIP JUNIPER (BCJ) <i>JUNIPERUS HORIZONTALIS 'BLUE CHIP'</i>	22	EA

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General Details
 US Highway 10/Main Ave
 Landscaping Median Detail

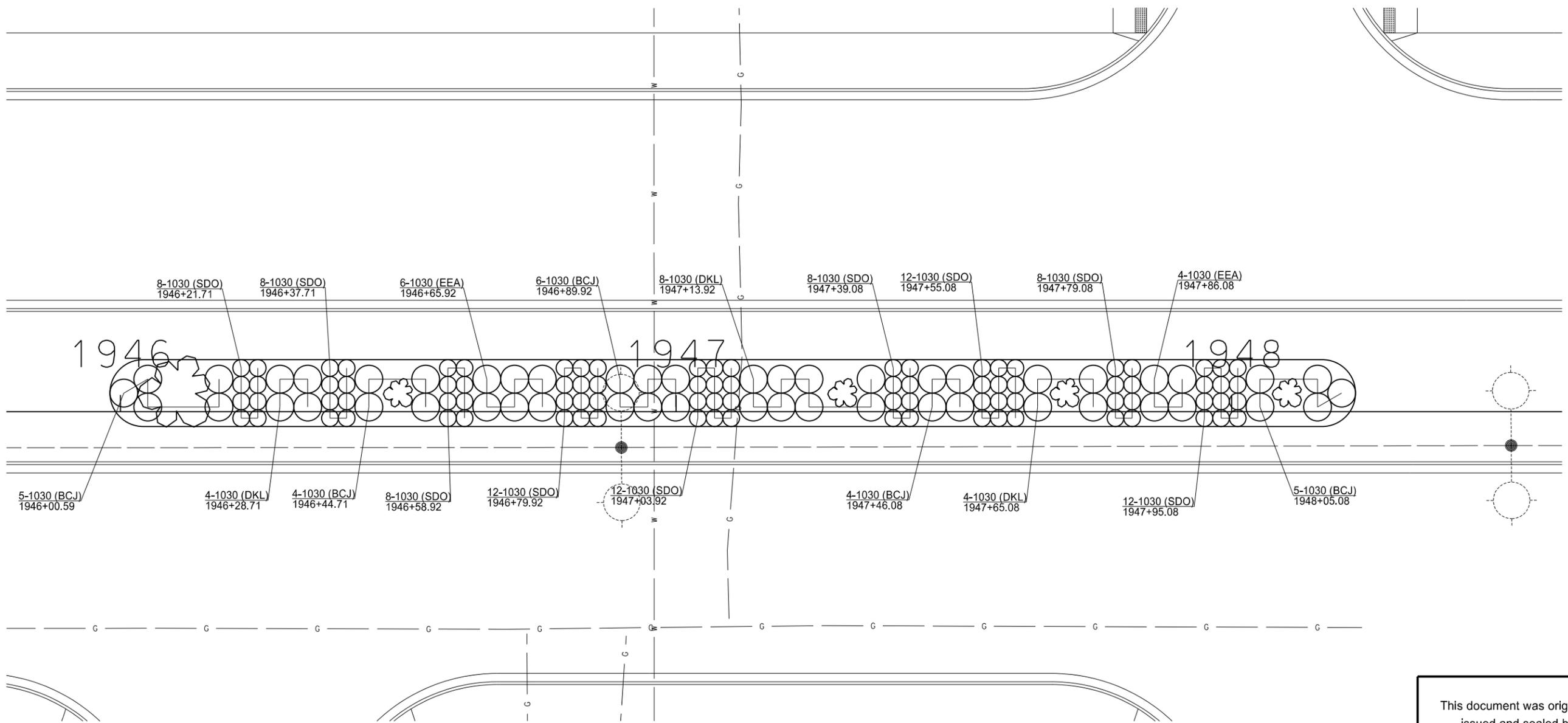


PLANT LIST

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	EMERALD ELF AMUR MAPLE (EEA) <i>ACER GINNALA 'EMERALD ELF'</i>	10	EA
970	1030	STELLA D'ORO DAY LILY (SDO) <i>HEMEROCALIS 'STELLA D'ORO'</i>	68	EA
970	1030	DWARF KOREAN LILAC (DKL) <i>SYRINGA MEYERI 'PALIBIN'</i>	10	EA
970	1030	BLUE CHIP JUNIPER (BCJ) <i>JUNIPERUS HORIZONTALIS 'BLUE CHIP'</i>	20	EA

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General Details
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 Landscape Median Detail

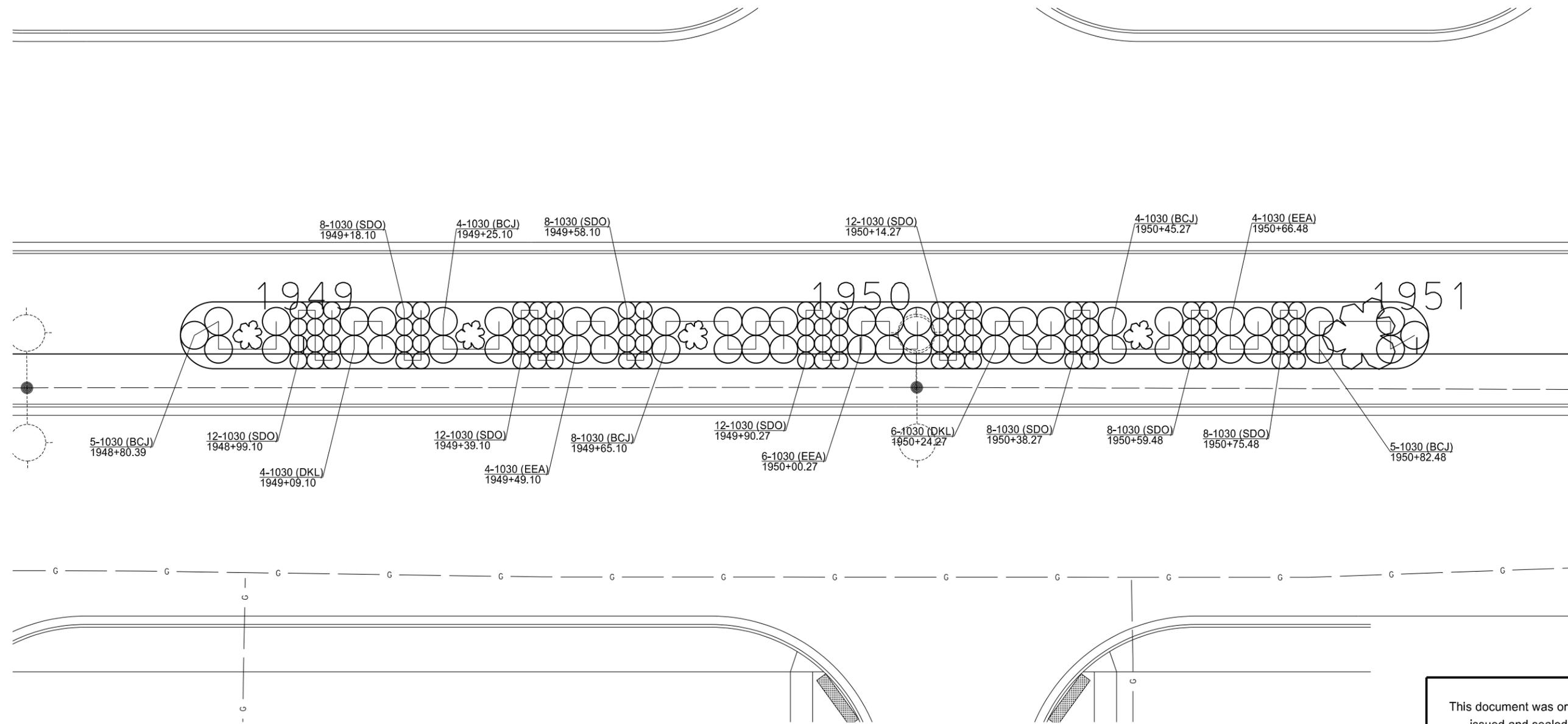


PLANT LIST

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	EMERALD ELF AMUR MAPLE (EEA) <i>ACER GINNALA 'EMERALD ELF'</i>	10	EA
970	1030	STELLA D'ORO DAYLILY (SDO) <i>HEMEROCALIS 'STELLA D'ORO'</i>	88	EA
970	1030	DWARF KOREAN LILAC (DKL) <i>SYRINGA MEYERI 'PALIBIN'</i>	16	EA
970	1030	BLUE CHIP JUNIPER (BCJ) <i>JUNIPERUS HORIZONTALIS 'BLUE CHIP'</i>	24	EA

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General Details
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 Landscape Median detail



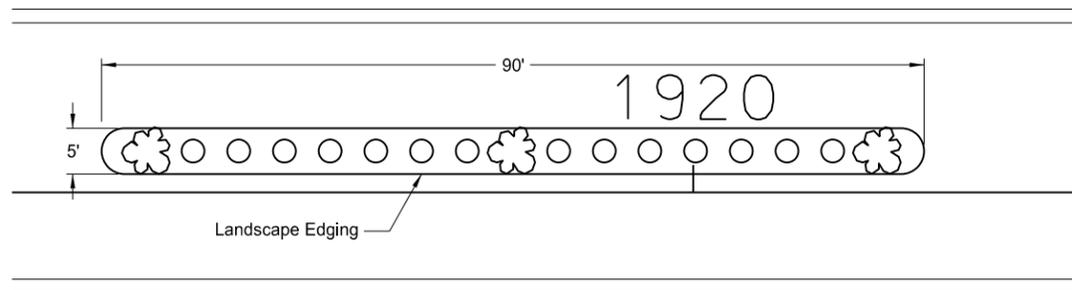
PLANT LIST

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	EMERALD ELF AMUR MAPLE (EEA) <i>ACER GINNALA 'EMERALD ELF'</i>	14	EA
970	1030	STELLA D'ORO DAY LILY (SDO) <i>HEMEROCALIS 'STELLA D'ORO'</i>	88	EA
970	1030	DWARF KOREAN LILAC (DKL) <i>SYRINGA MEYERI 'PALIBIN'</i>	10	EA
970	1030	BLUE CHIP JUNIPER (BCJ) <i>JUNIPERUS HORIZONTALIS 'BLUE CHIP'</i>	26	EA

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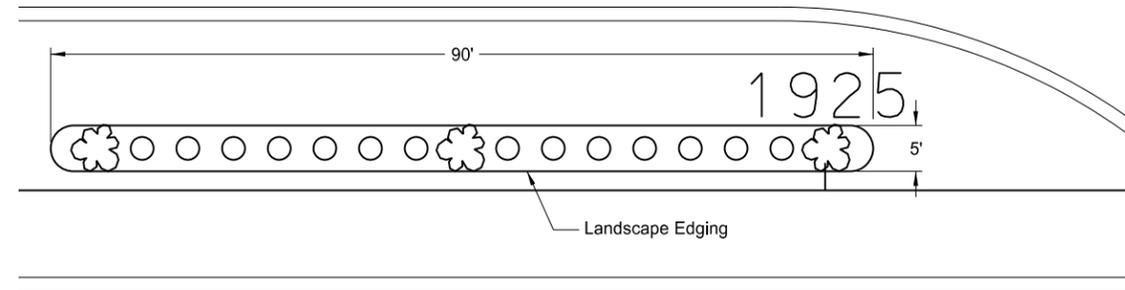
General Details
 US Highway 10/Main Ave
 Landscape Median Detail

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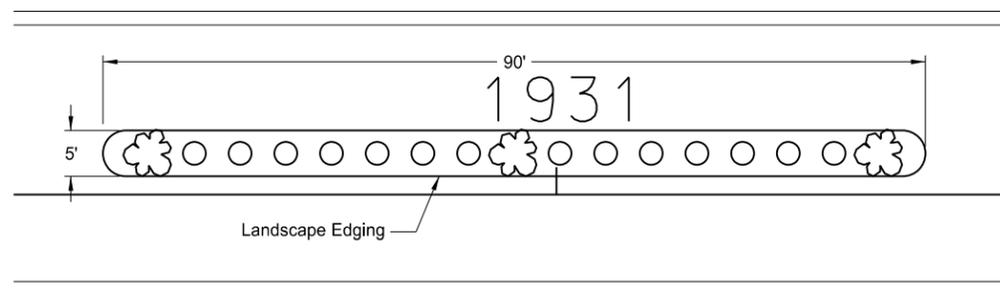
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	STELLA D'ORO HEMEROCALIS 'STELLA D'ORO	14	EA

Landscape Median Details Sta 1920+00



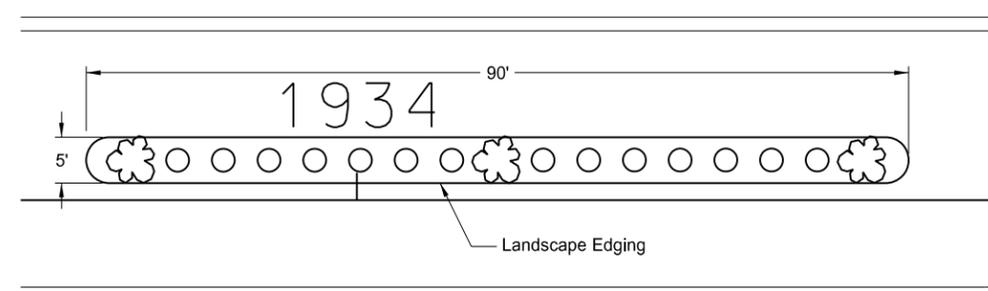
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	STELLA D'ORO HEMEROCALIS 'STELLA D'ORO	14	EA

Landscape Median Details Sta 1925+00



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	STELLA D'ORO HEMEROCALIS 'STELLA D'ORO	14	EA

Landscape Median Details Sta 1931+00

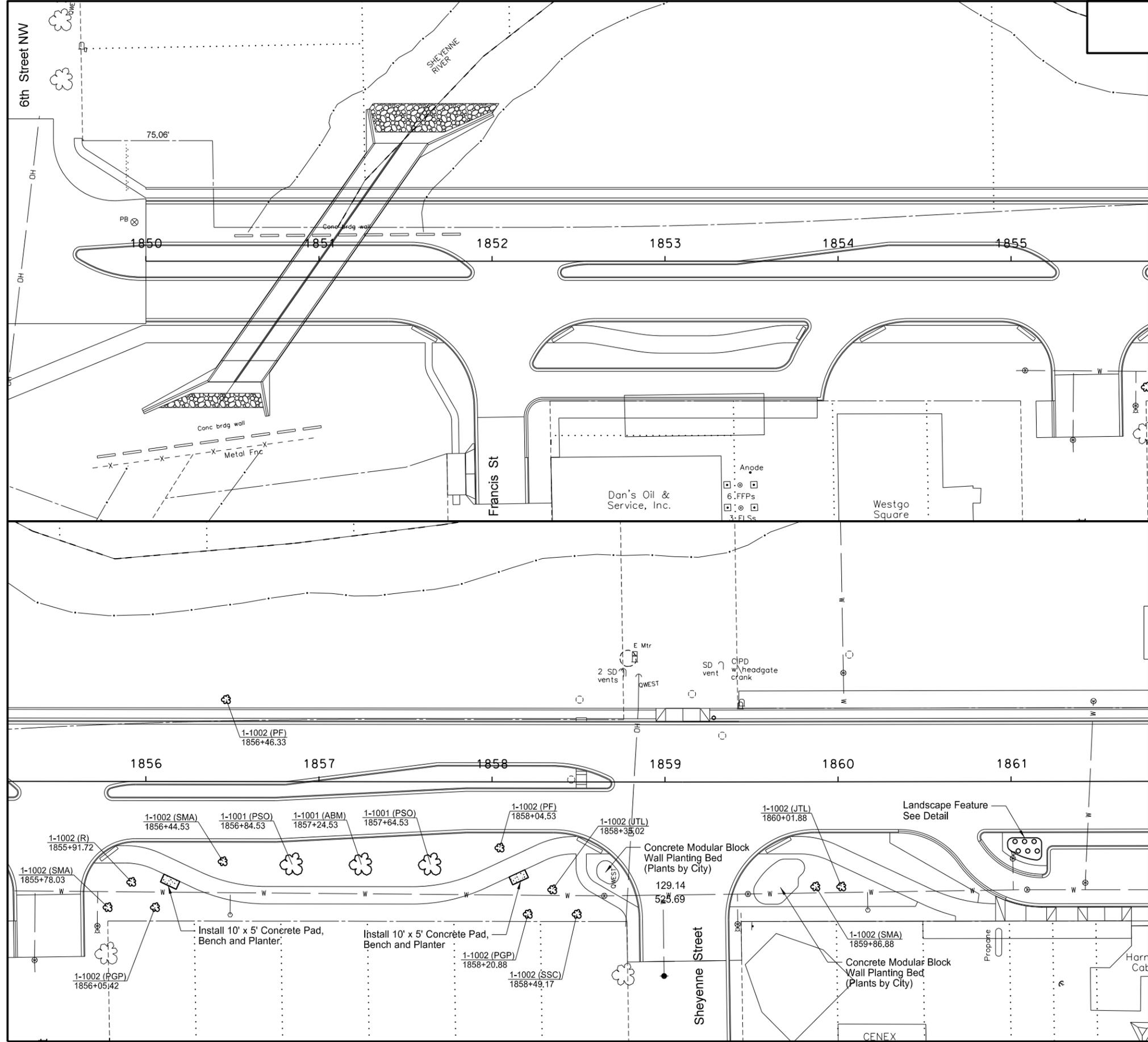


SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1030	STELLA D'ORO HEMEROCALIS 'STELLA D'ORO	14	EA

Landscape Median Details Sta 1934+00

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General Details
US Highway 10/Main Ave
Landscape Median Details



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
750	0115	SIDEWALK CONCRETE 4IN	11.1	SY
930	9551	CONCRETE MODULAR BLOCK RETAINING WALL	240	SF
970	0002	LANDSCAPE EDGING	60	LF
970	0003	LANDSCAPE FABRIC	22.7	SY
970	0075	WOOD MULCH	203.9	SF
970	0200	DECORATIVE CONCRETE PLANTER	2	EA
970	0300	BENCH	2	EA
970	1001	TREES GROUP A	3	EA
970	1002	TREE GROUP B	11	EA
970	1030	PERENNIALS GROUP A	6	EA

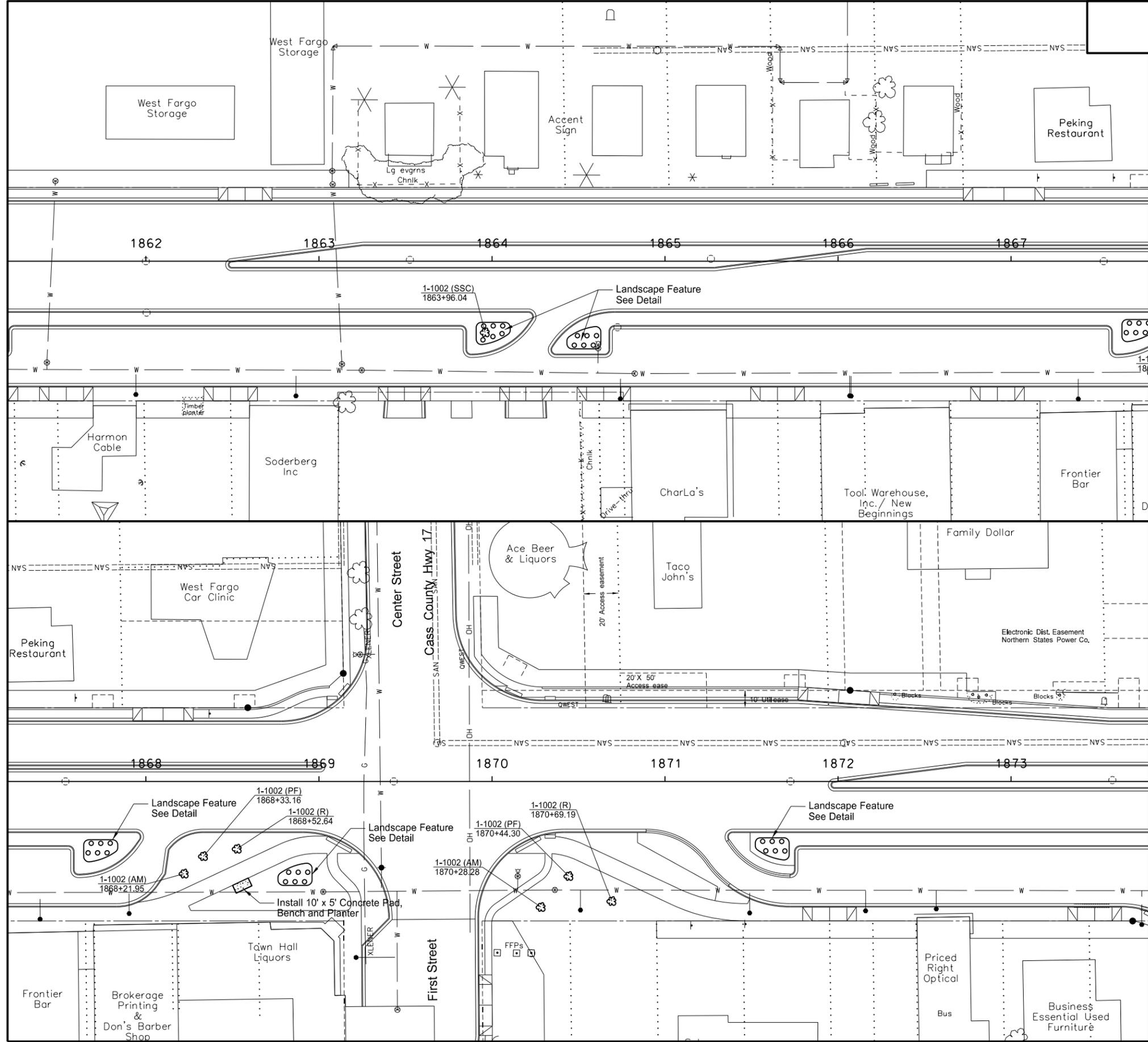
LEGEND:

- Trees Group A**
- ABM Autumn Blaze Maple
 - HB Common Hackberry
 - HL NorthernAcclaim Honeylocust
 - PSO Prairie Stature Oak
 - PEE Prairie Expedition Elm
- Trees Group B**
- AM Amur Maple
 - R Northern Herald Eastern Redbud
 - PF Prairie Fire Crabapple
 - SSC Spring Snow Crabapple
 - PGP Prairie Gem Pear
 - SMA Showy Mountain Ash
 - JTL Japanese Tree Lilac

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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1850+00 to Sta 1855+50
 Sta 1855+50 to Sta 1861+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	2



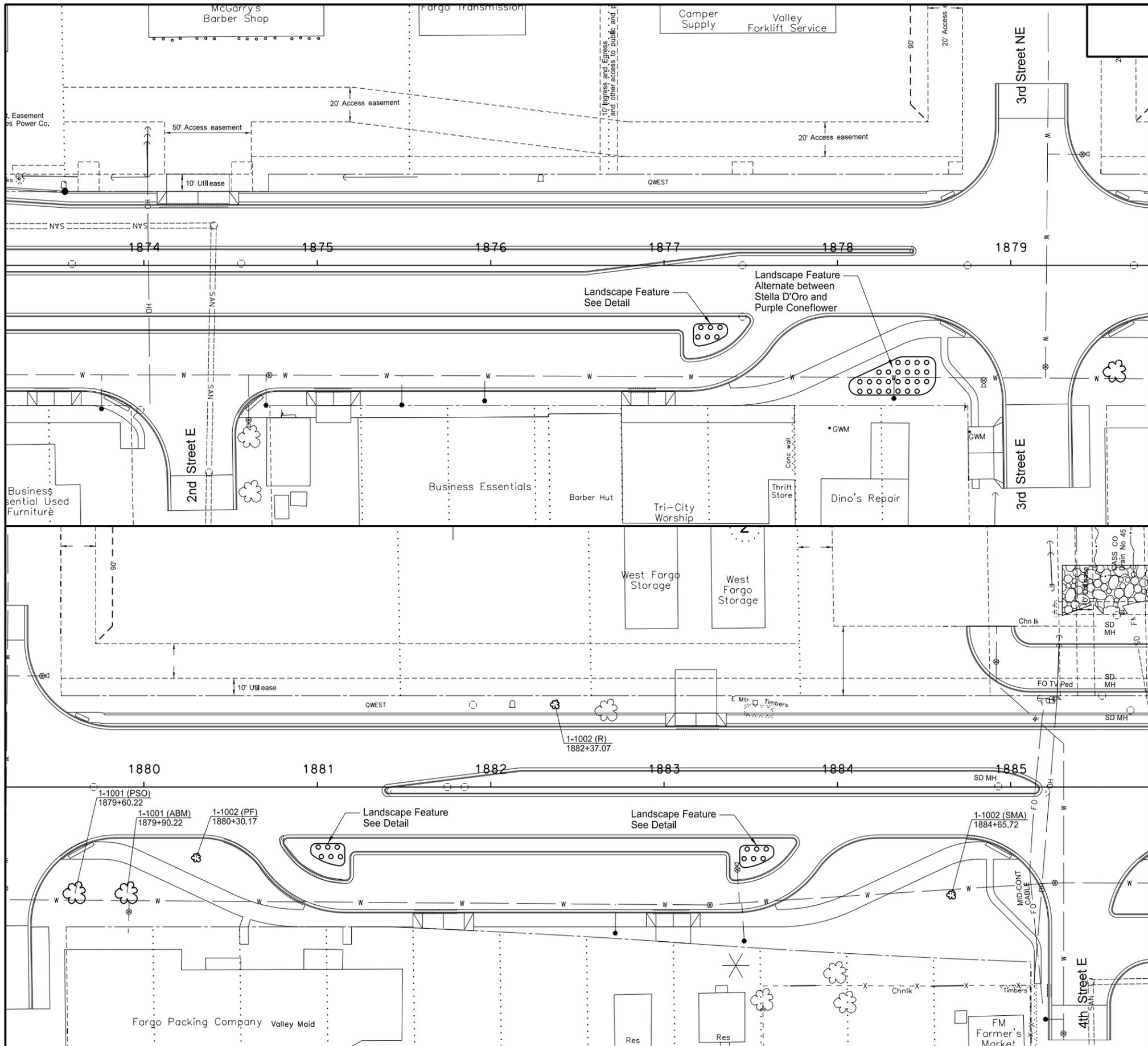
SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
750	0115	SIDEWALK CONCRETE 4IN	5.6	SY
970	0002	LANDSCAPE EDGING	300	LF
970	0003	LANDSCAPE FABRIC	113.3	SY
970	0075	WOOD MULCH	1019.5	SF
970	0200	DECORATIVE CONCRETE PLANTER	2	EA
970	0300	BENCH	1	EA
970	1002	TREE GROUP B	7	EA
970	1030	PERENNIALS GROUP A	30	EA

LEGEND:

- Trees Group A**
- ABM Autumn Blaze Maple
 - HB Common Hackberry
 - HL NorthernAcclaim Honeylocust
 - PSO Prairie Stature Oak
 - PEE Prairie Expedition Elm
- Trees Group B**
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1861+50 to Sta 1867+50
 Sta 1867+50 to Sta 1873+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	3

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	0002	LANDSCAPE EDGING	310	LF
970	0003	LANDSCAPE FABRIC	163.9	SY
970	0075	WOOD MULCH	1474.5	SF
970	1002	TREE GROUP A	2	EA
970	1002	TREE GROUP B	3	EA
970	1030	PERENNIALS GROUP A	43	EA

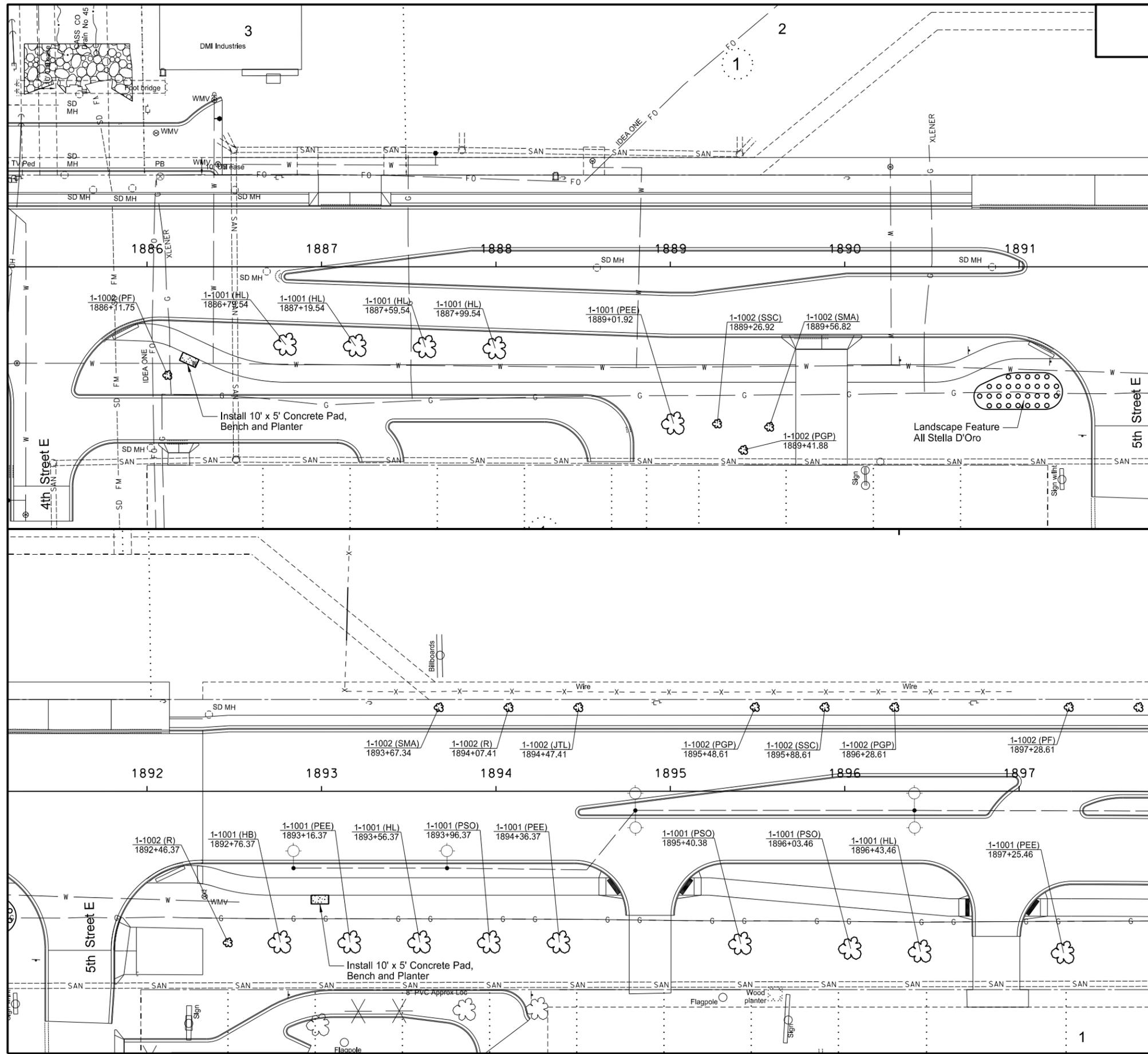
LEGEND:

- Trees Group A**
- ABM Autumn Blaze Maple
 - HB Common Hackberry
 - HL Northern Acclaim Honeylocust
 - PSO Prairie Stature Oak
 - PEE Prairie Expedition Elm
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1873+50 to Sta 1879+50
 Sta 1879+50 to Sta 1885+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	4



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
750	0115	SIDEWALK CONCRETE 4IN	11.1	SY
970	0002	LANDSCAPE EDGING	140	LF
970	0003	LANDSCAPE FABRIC	101.8	SY
970	0075	WOOD MULCH	915.9	SF
970	0200	DECORATIVE CONCRETE PLANTER	2	EA
970	0300	BENCH	2	EA
970	1001	TREES GROUP A	14	EA
970	1002	TREE GROUP B	12	EA
970	1030	PERENNIALS GROUP A	29	EA

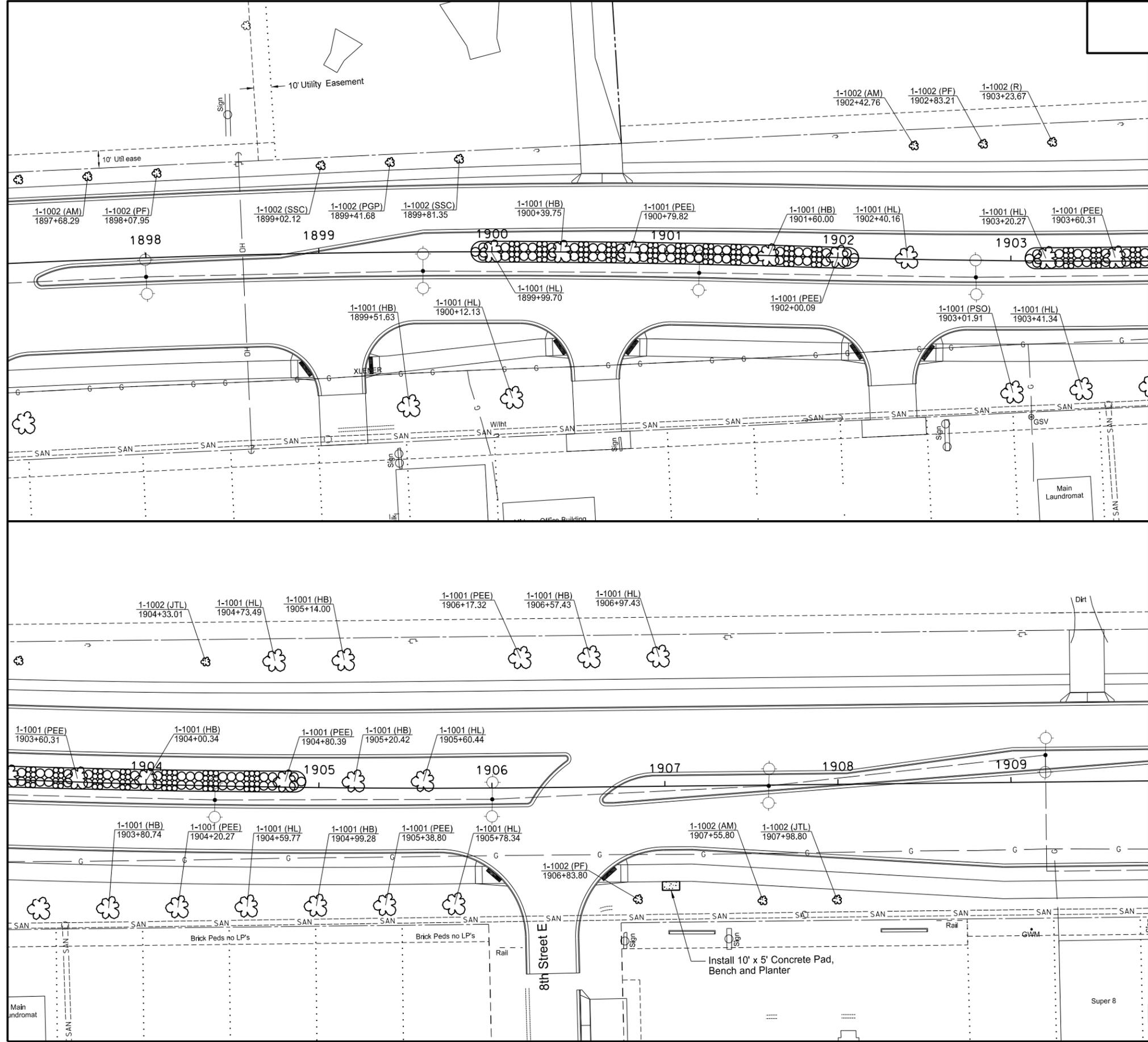
LEGEND:

- Trees Group A**
- ABM Autumn Blaze Maple
 - HB Common Hackberry
 - HL NorthernAcclaim Honeylocust
 - PSO Prairie Stature Oak
 - PEE Prairie Expedition Elm
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1885+50 to Sta 1891+50
 Sta 1891+50 to Sta 1897+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	5



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	0002	LANDSCAPE EDGING	844	LF
970	0003	LANDSCAPE FABRIC	537.2	SY
970	0075	WOOD MULCH	4834.6	SF
970	1001	TREES GROUP A	27	EA
970	1002	TREE GROUP B	12	EA

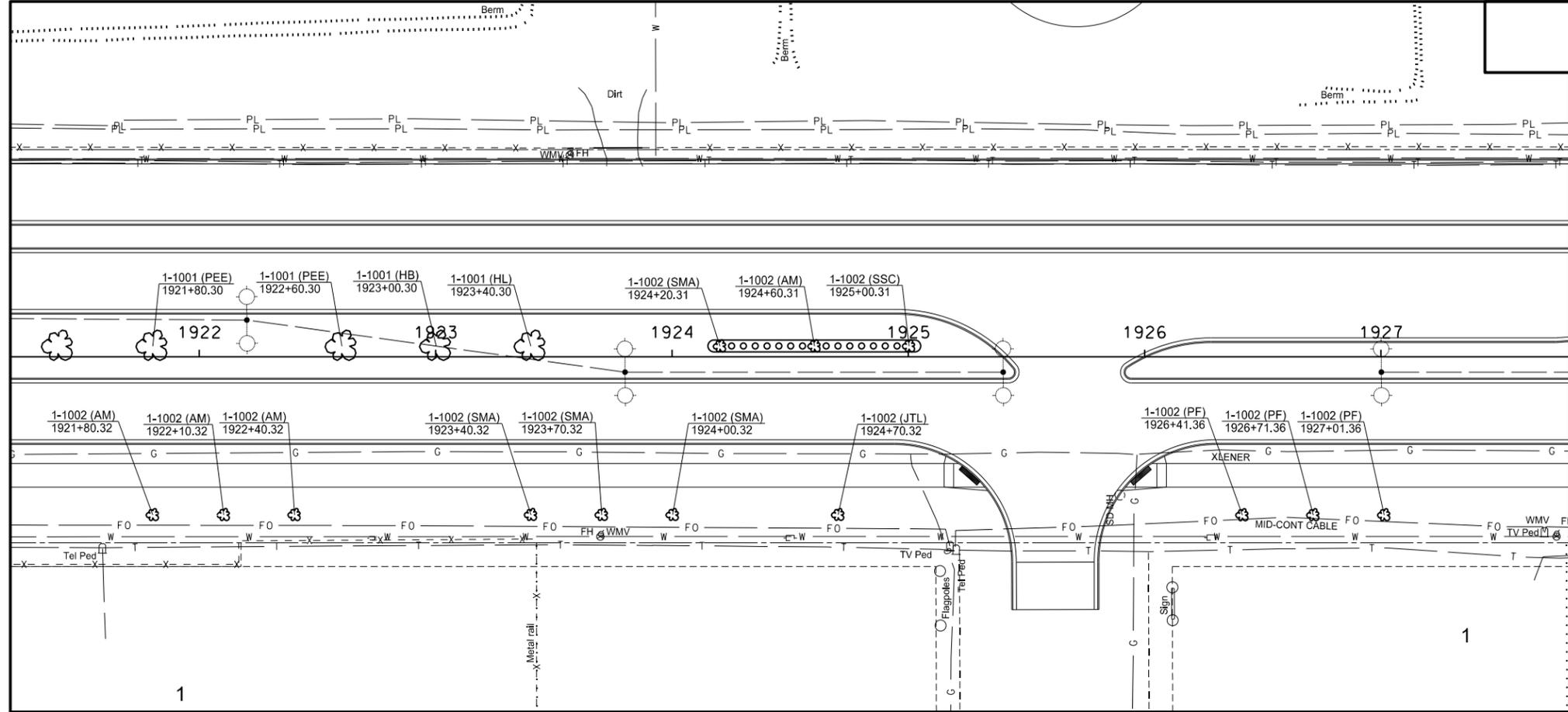
LEGEND:

- Trees Group A**
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 - PSO Prairie Stature Oak
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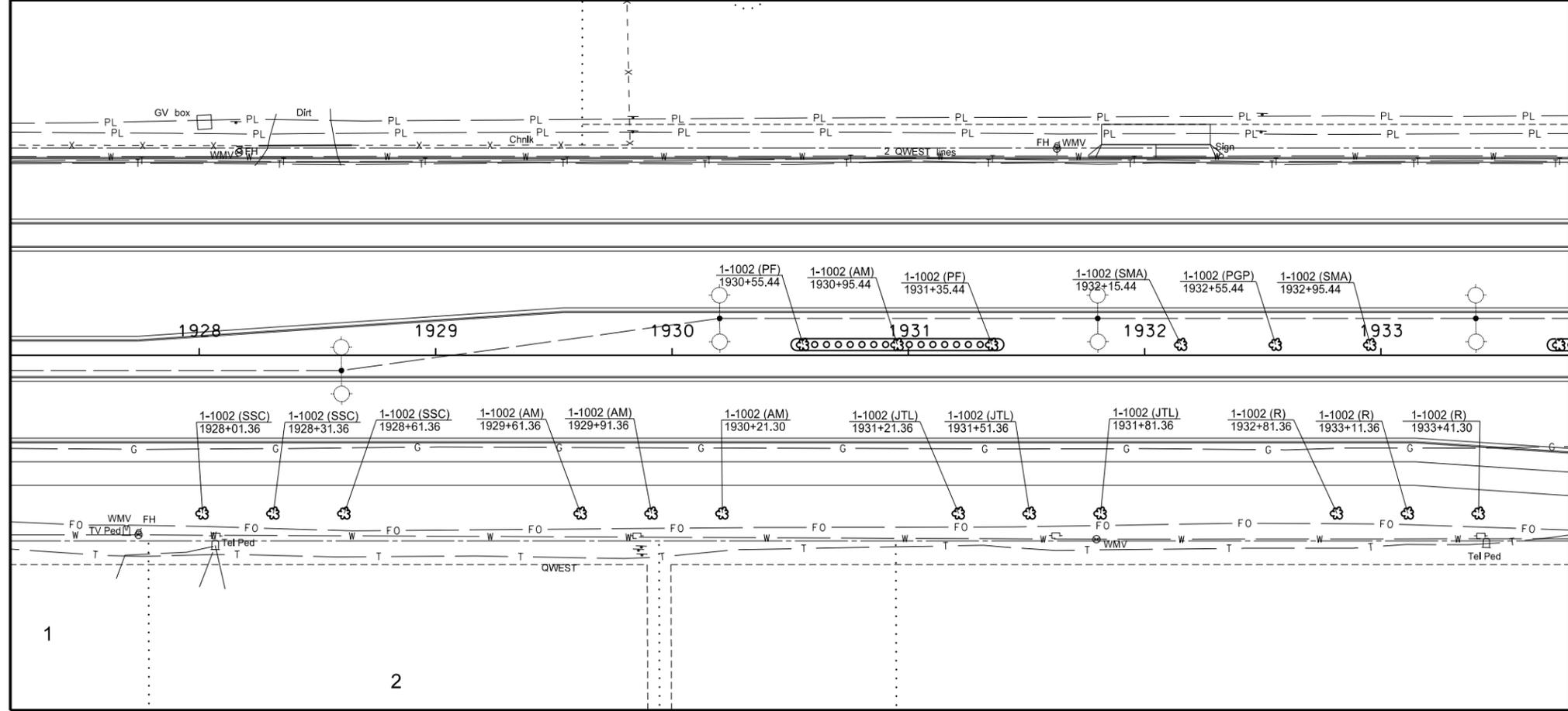
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1897+50 to Sta 1903+50
 Sta 1903+50 to Sta 1909+50

STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	7



SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	0002	LANDSCAPE EDGING	372	LF
970	0003	LANDSCAPE FABRIC	98.8	SY
970	0075	WOOD MULCH	889.3	SF
970	1001	TREES GROUP A	4	EA
970	1002	TREE GROUP B	31	EA

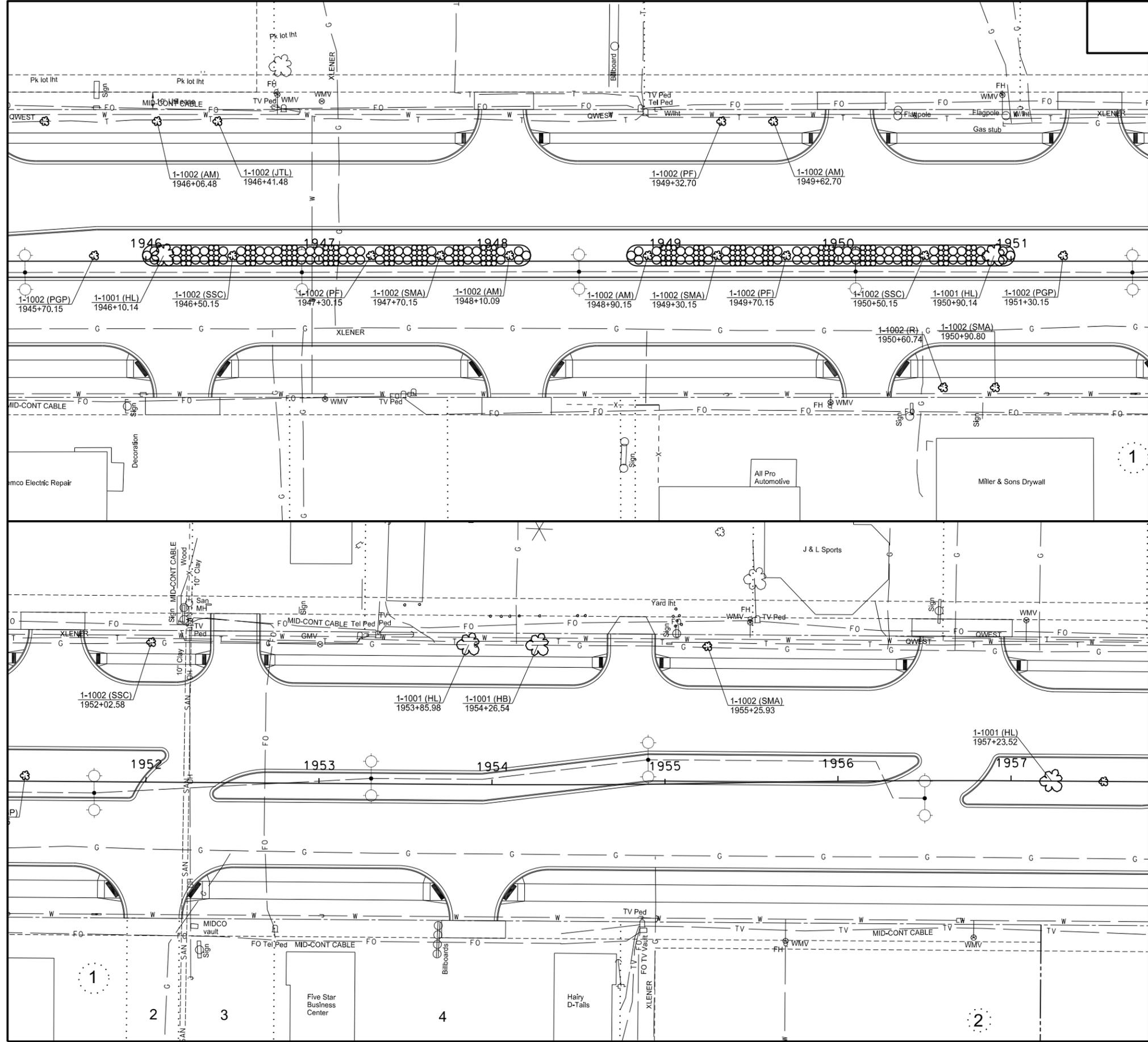


LEGEND:

- Trees Group A**
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 - PSO Prairie Stature Oak
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1921+50 to Sta 1927+50
 Sta 1927+50 to Sta 1933+50



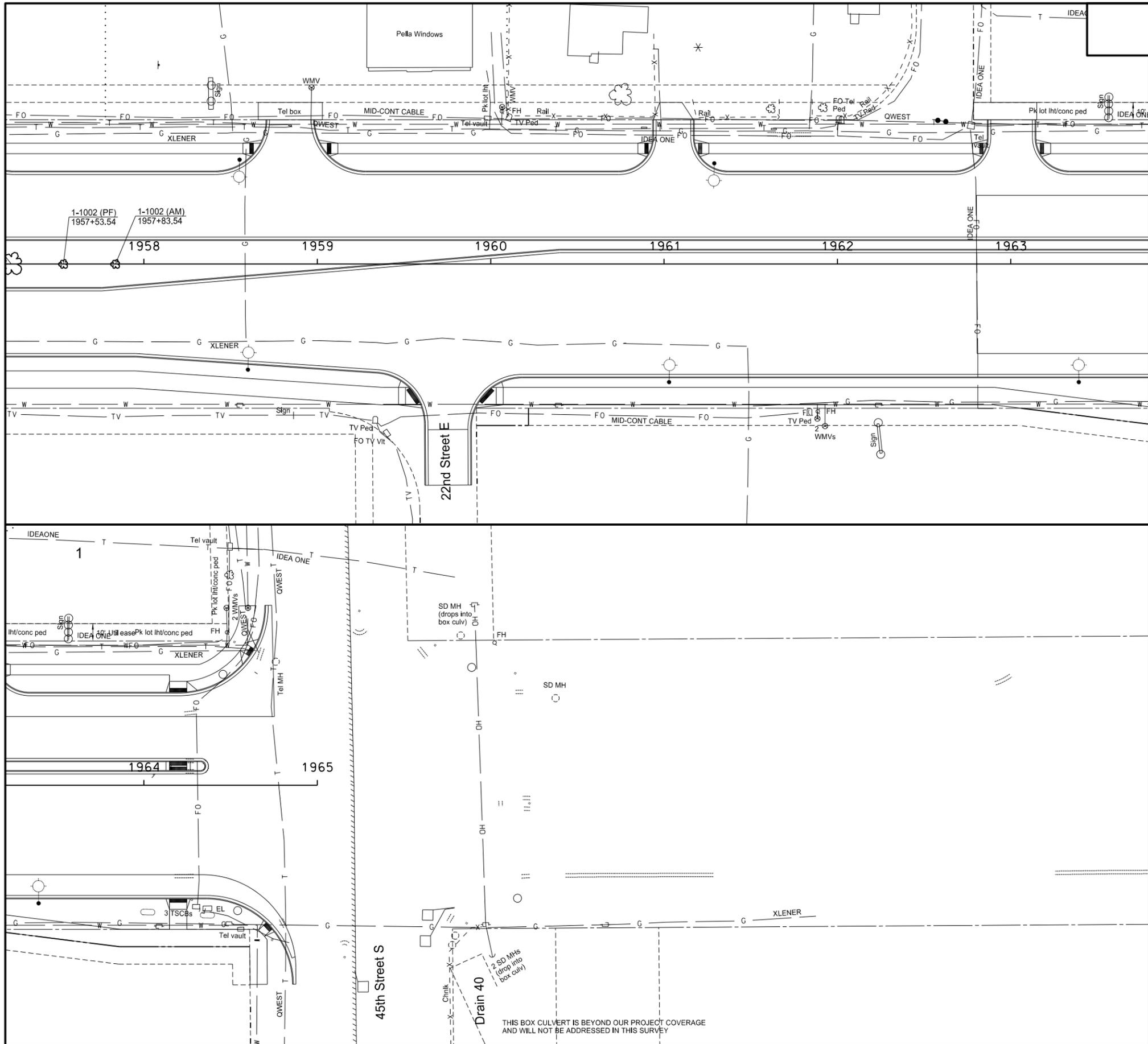
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924	0002	LANDSCAPE EDGING	186	LF
970	0003	LANDSCAPE FABRIC	591	SY
970	0075	WOOD MULCH	5319	SF
970	1001	TREES GROUP A	5	EA
970	1002	TREE GROUP B	18	EA

LEGEND:

- Trees Group A**
- ABM Autumn Blaze Maple
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 - PEE Prairie Expedition Elm
- Trees Group B**
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1945+50 to Sta 1951+50
 Sta 1951+50 to Sta 1957+50



STATE	PROJECT NO.	SECTION NO.	SHEET NO.
ND	NHU-8-010(040)934	85	10

SPEC	CODE	DESCRIPTION	QUANTITY	UNIT
970	1002	TREE GROUP B	2	EA

LEGEND:

- Trees Group A**
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 - HL NorthernAcclaim Honeylocust
 - PSO Prairie Stature Oak
 - PEE Prairie Expedition Elm
- Trees Group B**
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 - R Northern Herald Eastern Redbud
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US Highway 10/Main Ave
 Landscaping Plans
 Sta 1957+50 to Sta 1963+50
 Sta 1963+50 to Sta 1965+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

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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		

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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	Tv	television	WC	witness corner
Rsd	raised	SC	slow curing	Temp	temperature	WGS	World Geodetic System
RTP	random traverse point	SS	slow setting	Temp	temporary	Z	zenith
Rge or R	range	Sm	small	TBM	temporary bench mark		
RC	rapid curing	S	South	T	tesla		
Rec	record	SE	South East	T	thinwall tube sample		
Rcy	recycle	SW	South West	T/mi	tons per mile		
RPCC	recycled Portland cement concrete	SB	Southbound	Ts	topsoil		
Ref	reference	Sp	spaces	Twp or T	township		
R Mkr	reference marker	Spcl	special	Traf	traffic		
RM	reference monument	SA	special assembly	TSCB	traffic signal control box		
Refl	reflectorized	SP	special provisions	Tr	trail		
RCB	reinforced concrete box	G	specific gravity	Transf	transformer		
RCES	reinforced concrete end section	Spk	spike	TB	transit book		
RCP	reinforced concrete pipe	SC	spiral to curve	Trans	transition		
RCPS	reinforced concrete pipe sewer	ST	spiral to tangent	TT	transmission tower		
Reinf	reinforcement	SB	split barrel sample	Trans	transverse		
Res	reservation	SH	sprinkler head	Trav	traverse		
Ret	retaining	SV	sprinkler valve	TP	traverse point		
Rev	reverse	Sq	square	Trtd	treated		
Rt	right	SF	square feet	Trmt	treatment		
R/W	right of way	Km2	square kilometer	Qc	triaxial compression		
Riv	river	M2	square meter	TERO	tribal employment rights ordinance		
Rd	road	SY	square yard	Tpl	triple		
Rdbd	road bed	Stk	stake	TP	turning point		
Rdwy	roadway	Std	standard	Typ	typical		
RWIS	Roadway Weather Information System	N	standard penetration test	Qu	unconfined compressive strength		
Rk	rock	Std Specs	Standard Specifications	Ugrnd	underground		
Rt	route	Sta	station	USC&G	US Coast & Geodetic Survey		
Salv	salvage(d)	Sta Yd	station yards	USGS	US Geologic Survey		
Sd	sand	Stm L	steam line	Util	utility		
Sdy Cl	sandy clay	SEC	steel encased concrete	VG	valley gutter		
Sdy Cl Lm	sandy clay loam	SSD	stopping sight distance	Vap	vapor		
Sdy Fl	sandy fill	SD	storm drain	Vert	vertical		
Sdy Lm	sandy loam	St	street	VC	vertical curve		
San	sanitary sewer line	SPP	structural plate pipe	VCP	vitrified clay pipe		
Sc	scoria	SPPA	structural plate pipe arch	V	volt		
Sec	seconds	Str	structure	Vol	volume		
Sec	section	Subd	subdivision	Wkwy	walkway		
SL	section line	Sub	subgrade	W	water content		
Sep	separation	Sub Prep	subgrade preparation	WGV	water gate valve		
Seq	sequence	Ss	subsoil	WL	water line		
Serv	service	SE	superelevation	WM	water main		
Sh	shale	SS	supplement specification	WMV	water main valve		
Sht	sheet	Supp	supplemental	W Mtr	water meter		
Shtng	sheeting	Surf	surfacing	WSV	water service valve		
Shldr	shoulder	Surv	survey	WW	water well		
Sw	sidewalk	Sym	symmetrical	W	watt		
S	siemens	SI	Systems International	Wrng	wearing		
SD	sight distance	Tan	tangent	Wb	weber		
SN	sign number	T	tangent (semi)	WIM	Weigh In Motion		
				W	West		

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07-01-14	
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DATE	CHANGE

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NDDOT UTILITY COMPANY AND ORGANIZATION ABBREVIATIONS

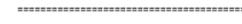
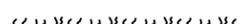
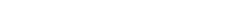
D-101-10

702COM	702 Communications	GT PLNS NAT GAS	Great Plains Natural Gas Company	RED RIV TEL	Red River Rural Telephone
ACCENT	Accent Communications	HALS TEL	Halstad Telephone Company	RESVTN TEL	Reservation Telephone
AGASSIZ WU	Agassiz Water Users Incorporated	IDEA1	Idea1	ROBRTS TEL	Roberts Company Telephone
AGC	Associated General Contractors of America	INT-COMM TEL	Inter-Community Telephone Company	R-RIDER ELEC	Roughrider Electric Coop
All PI	Alliance Pipeline	KANEB PL	Kaneb Pipeline Company	RRVW	Red River Valley & Western Railroad
ALL SEAS WU	All Seasons Water Users Association	KEM ELEC	Kem Electric Cooperative Incorporated	RSR ELEC	R.S.R. Electric Cooperative
AMOCO PI	Amoco Pipeline Company	KOCH GATH SYS	Koch Gathering Systems Incorporated	S E W U	South East Water Users Incorporated
AMRDA HESS	Amerada Hess Corporation	LKHD PL	Lakehead Pipeline Company	SCOTT CABLE	Scott Cable Television Dickinson
AT&T	AT&T Corporation	LNGDN RWU	Langdon Rural Water Users Incorporated	SHERDN ELEC	Sheridan Electric Cooperative
B PAW	Bear Paw Energy Incorporated	LWR YELL R ELEC	Lower Yellowstone Rural Electric	SHEYN VLY ELEC	Sheyenne Valley Electric Cooperative
BAKER ELEC	Baker Electric	MCKNZ CON	McKenzie Consolidated Telcom	SKYTECH	Skyland Technologies Incorporated
BASIN ELEC	Basin Electric Cooperative Incorporated	MCKNZ ELEC	McKenzie Electric Cooperative	SLOPE ELEC	Slope Electric Cooperative Incorporated
BEK TEL	Bek Communications Cooperative	MCKNZ WRD	McKenzie County Water Resource District	SOURIS RIV TELCOM	Souris River Telecommunications
BELLE PL	Belle Fourche Pipeline Company	MCLEOD	McLeod USA	ST WAT COMM	State Water Commission
BLM	Bureau of Land Management	MCLN ELEC	McLean Electric Cooperative	STATE LN WATER	State Line Water Cooperative
BNSF	Burlington Northern Santa Fe Railway	MCLN-SHRDN R WAT	McLean-Sheridan Rural Water	STER ENG	Sterling Energy
BOEING	Boeing	MDU	Montana-dakota Utilities	STUT RWU	Stutsman Rural Water Users
BRNS RWD	Barnes Rural Water District	MID-CONT CABLE	Mid-Continent Cable	SW PL PRJ	Southwest Pipeline Project
BURK-DIV ELEC	Burke-Divide Electric Cooperative	MIDSTATE TEL	Midstate Telephone Company	T M C	Turtle Mountain Communications
BURL WU	Burleigh Water Users	MINOT CABLE	Minot Cable Television	TCI	TCI of North Dakota
Cable One	Cable One	MINOT TEL	Minot Telephone Company	TESORO GHG PLNS PL	Tesoro High Plains Pipeline
CABLE SERV	Cable Services	MISS W W S	Missouri West Water System	TRI-CNTY WU	Tri-County Water Users Incorporated
CAP ELEC	Capital Electric Cooperative Incorporat	MNKOTA PWR	Minnkota Power	TRL CO RWU	Traill County Rural Water Users
CASS CO ELEC	Cass County Electric Cooperative	MOR-GRAN-SOU ELEC	Mor-gran-sou Electric Cooperative	UNTD TEL	United Telephone
CASS RWU	Cass Rural Water Users Incorporated	MOUNT-WILLI ELEC	Mountrail-williams Electric Cooperative	UPPR SOUR WUA	Upper Souris Water Users Association
CAV ELEC	Cavalier Rural Electric Cooperative	MRE LBTY TEL	Moore & Liberty Telephone	US SPRINT	U.S. Sprint
CBLCOM	Cablecom Of Fargo	MUNICIPAL	City Water And Sewer	USAF MSL CABLE	U.S.A.F. Missile Cable
CENEX PL	Cenex Pipeline	MUNICIPAL	City Of '.....'	USFWS	US Fish and Wildlife Service
CENT PL WATER DIST	Central Pipe Line Water District	N CENT ELEC	North Central Electric Cooperative	USW COMM	U.S. West Communications
CENT PWR ELEC	Central Power Electric Cooperative	N VALL W DIST	North Valley Water District	VRNDRY ELEC	Verendrye Electric Cooperative
COE	Corps of Engineers	ND PKS & REC	North Dakota Parks And Recreation	W RIV TEL	West River Telephone Incorporated
CONS TEL	Consolidated Telephone	ND TEL	North Dakota Telephone Company	WEB	W. E. B. Water Development Association
CONT RES	Continental Resource Inc	NDDOT	North Dakota Department of Transportation	WILLI RWA	Williams Rural Water Association
CPR	Canadian Pacific Railway	NDSU SOIL SCI DEPT	NDSU Soil Science Department	WILSTN BAS PL	Williston Basin Interstate Pipeline Company
D O E	Department Of Energy	NEMONT TEL	Nemont Telephone	WLSH RWD	Walsh Water Rural Water District
DAK CARR	Dakota Carrier Network	NODAK R ELEC	Nodak Rural Electric Cooperative	WOLVRTN TEL	Wolverton Telephone
DAK CENT TEL	Dakota Central Telephone	NOON FRMS TEL	Noonan Farmers Telephone Company	XLENER	Xcel Energy
DAK RWD	Dakota Rural Water District	NPR	Northern Plains Railroad	YSVR	Yellowstone Valley Railroad
DGC	Dakota Gasification Company	NSP	Northern States Power		
DICKEY R NET	Dickey Rural Networks	NTH PRAIR RW	Northern Prairie Rural Water Association		
DICKEY RWU	Dickey Rural Water Users Association	NTHN BRDR PL	Northern Border Pipeline		
DICKEY TEL	Dickey Telephone	NTHN PLNS ELEC	Northern Plains Electric Cooperative Incorporated		
DNRR	Dakota Northern Railroad	NTHWSTRN REF	Northwestern Refinery Company		
DOME PL	Dome Pipeline Company	NW COMM	Northwest Communication Cooperation		
DVELEC	Dakota Valley Electric Cooperative	ONEOK	Oneok gas		
DVMW	Dakota, Missouri Valley & Western	OSHA	Occupational Safety and Health Administration		
ENBRDG	Enbridge Pipelines Incorporated	OTTR TL PWR	Otter Tail Power Company		
ENVENTIS	Enventis Telephone	P L E M	Prairielands Energy Marketing		
FALK MNG	Falkirk Mining Company	POLAR COM	Polar Communications		
FHWA	Federal Highway Administration	PVT ELEC	Private Electric		
G FKS-TRL WD	Grand Forks-traill Water District	QWEST	Qwest Communications		
GETTY TRD & TRAN	Getty Trading & Transportation	R&T W SUPPLY	R & T Water Supply Association		
GLDN W ELEC	Golden West Electric Cooperative	RAMSEY R SEW	Ramsey Rural Sewer Association		
GRGS CO TEL	Griggs County Telephone	RAMSEY RW	Ramsey Rural Water Association		
		RAMSEY UTIL	Ramsey County Rural Utilities		

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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)		

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Symbols

	North Arrow (Half Scale)		Attenuation Device		Existing Railroad Battery Box		Existing Delineator Type E
	Truck Mounted Attenuator		Diamond Grade Delineator Type A		Existing Bush or Shrub		Existing EFB Misc
	Type I Barricade		Diamond Grade Delineator Type B		Existing Gas Cap or Stub		Existing Flashing Beacon
	Type II Barricade		Diamond Grade Delineator Type C		Existing Sanitary Cap or Stub		Existing Pipe Mounted Flasher
	Type III Barricade		Diamond Grade Delineator Type D		Existing Storm Drain Cap or Stub		Existing Pad Mounted Feed Point
	Catch Basin		Diamond Grade Delineator Type E		Existing Water Cap or Stub		Existing Pipe Mounted Feed Point with Pad
	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		

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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		

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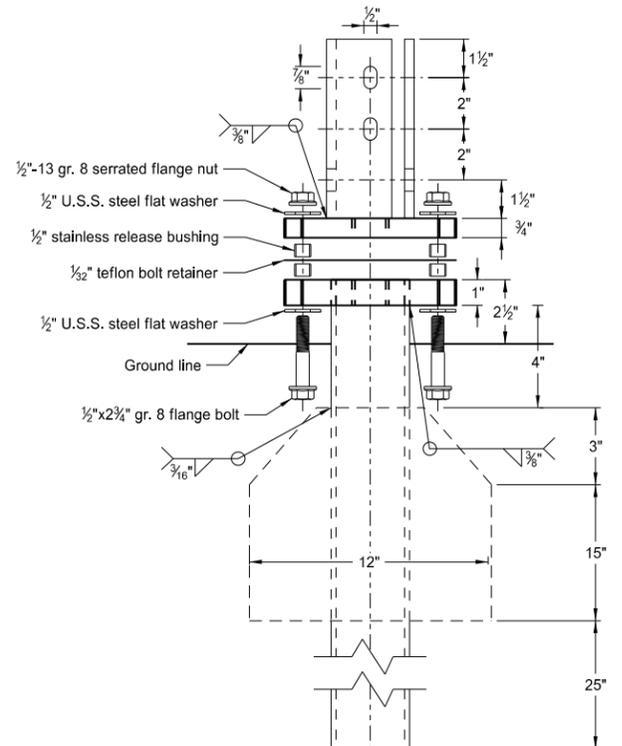
Symbols

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
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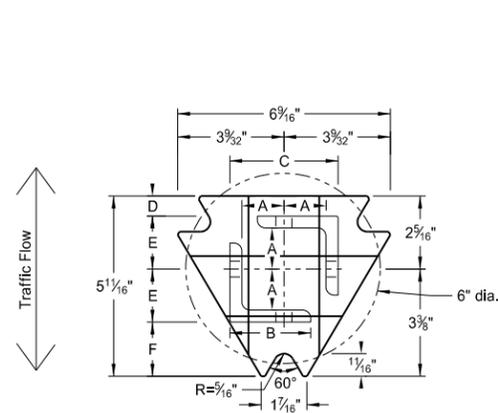
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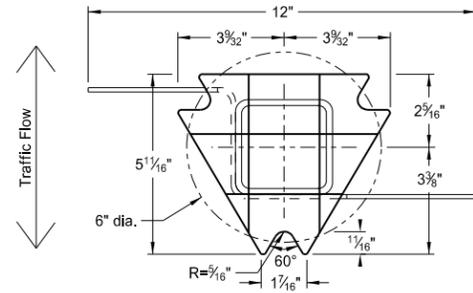


Multi-Directional Slip Base Assembly

Perforated Tube



Top Post Receiver
Plate - ASTM A572 grade 50
Angle Receiver - 2 1/2"x2 1/2"x3/8" 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

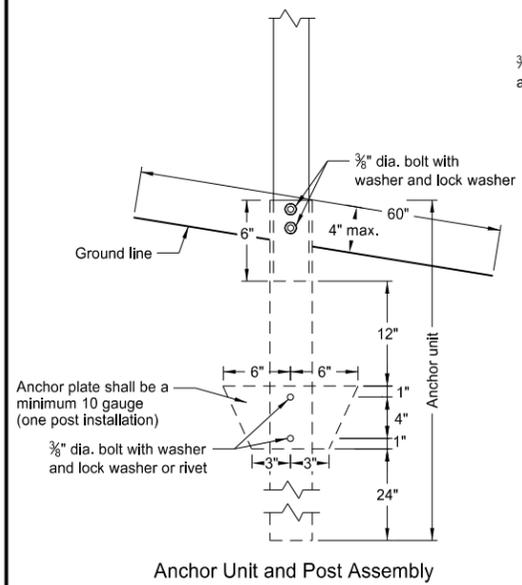
Notes:

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.

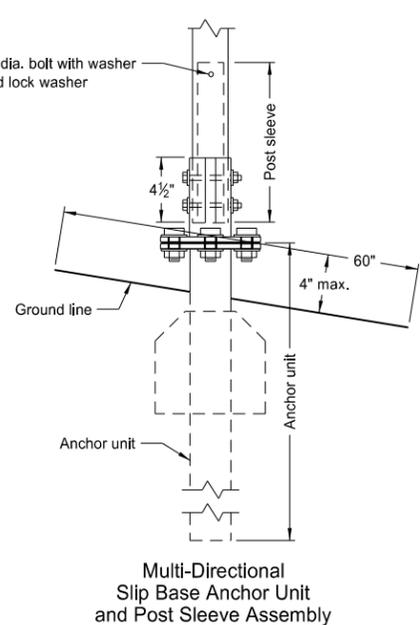
Telescoping Perforated Tube						
Number of Posts	Post Size in.	Wall Thickness Gauge	Sleeve Size in.	Wall Thickness Gauge	Slip Base	Anchor Size without Slip Base in.
1	2	12			No	2 1/4
1	2 1/4	12			No	2 1/2
1	2 1/2	12			(A)	3
1	2 1/2	10			Yes	
1	2 1/4	12	2	12	Yes	
1	2 1/2	12	2 1/4	12	Yes	
2	2	12			No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

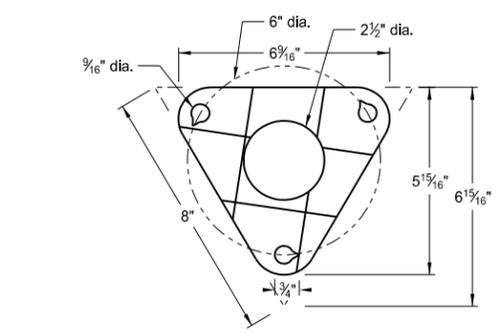
Top Post Receiver Data Table						
Square Post Sizes (B)	A	B	C	D	E	F
2 3/16"x10 ga.	1 9/64"	2 1/2"	3 1/32"	2 5/32"	1 33/64"	1 1/8"
2 1/2"x10 ga.	1 9/32"	2 1/2"	3 5/16"	5/8"	1 21/32"	1 3/4"



Anchor Unit and Post Assembly



Multi-Directional Slip Base Anchor Unit and Post Sleeve Assembly



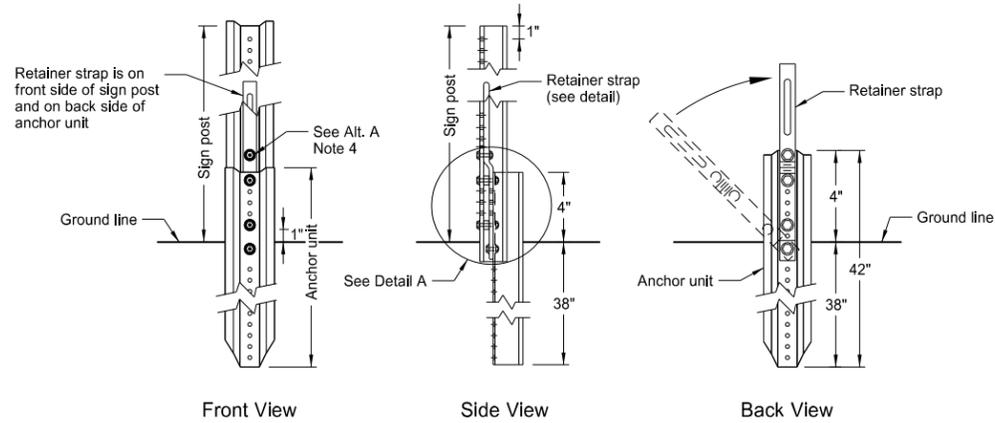
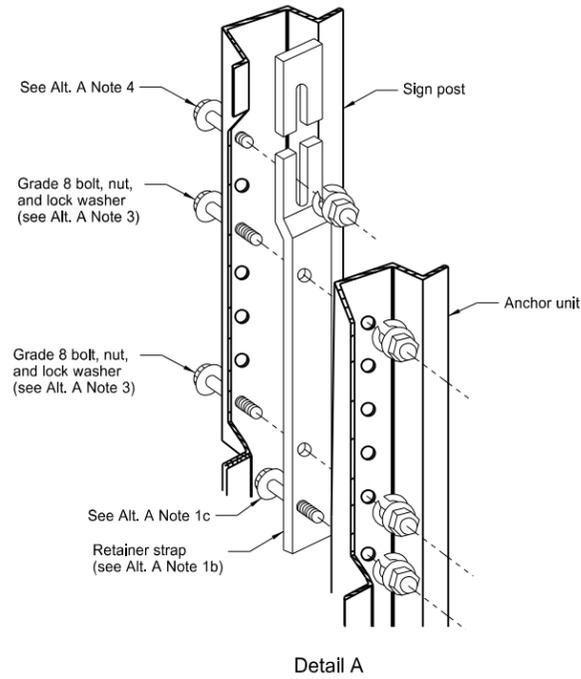
Bolt Retainer for Base Connection
Bolt Retainer - 1/32" Reprocessed Teflon

- (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"x10 ga. may be inserted into 2 1/2"x10 ga. for additional wind load.

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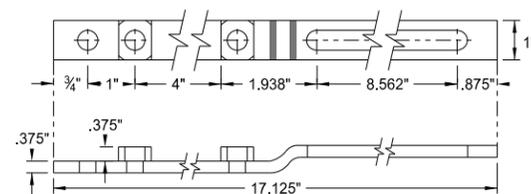
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U-Channel Post

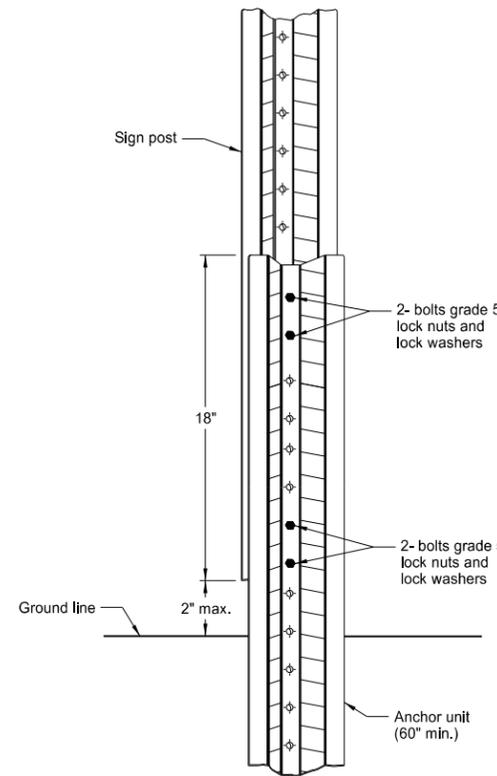


Breakaway U-Channel Detail Alternate A

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

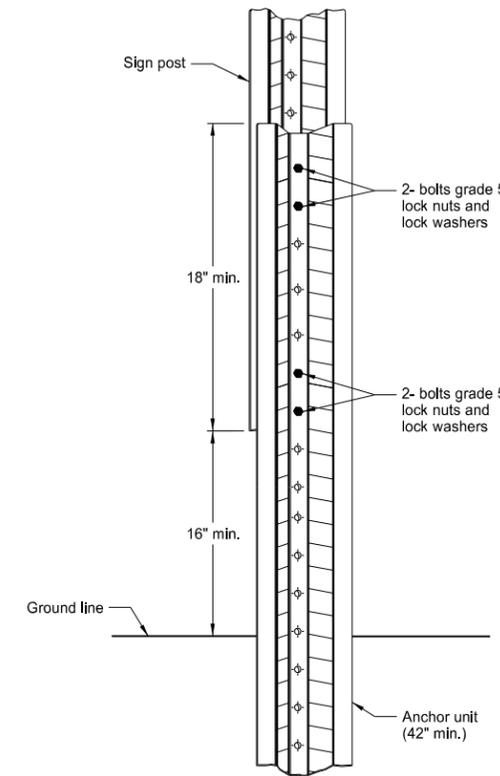


Retainer Strap Detail



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:

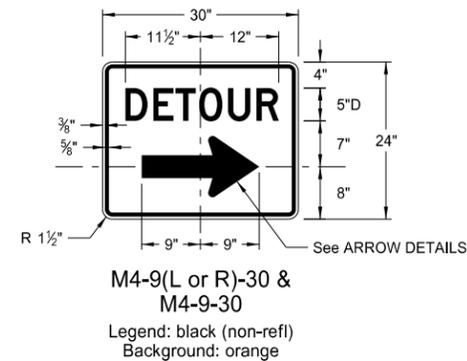
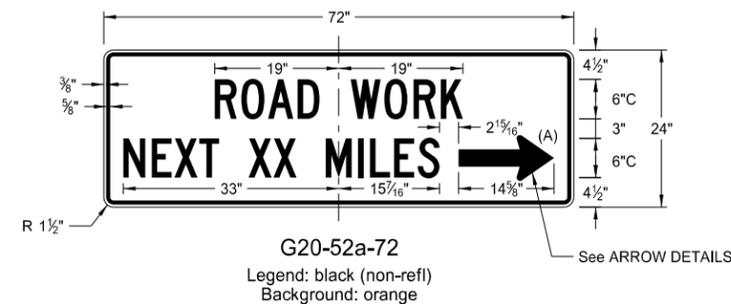
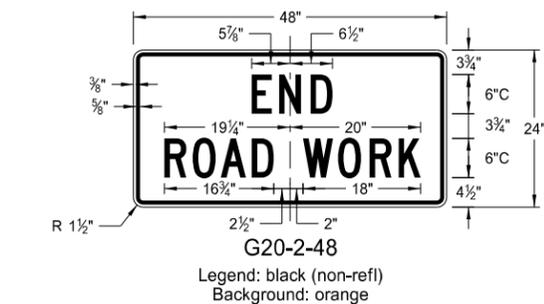
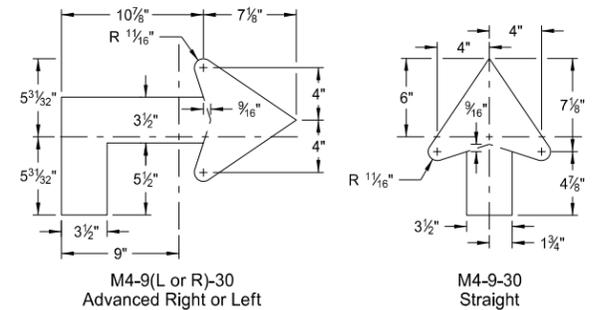
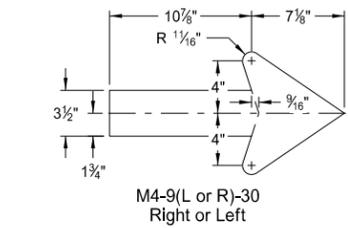
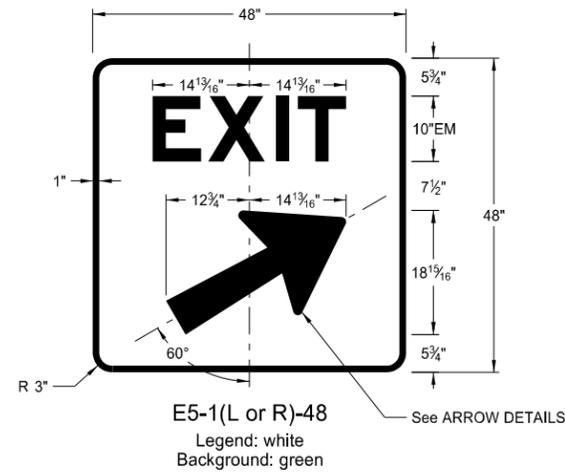
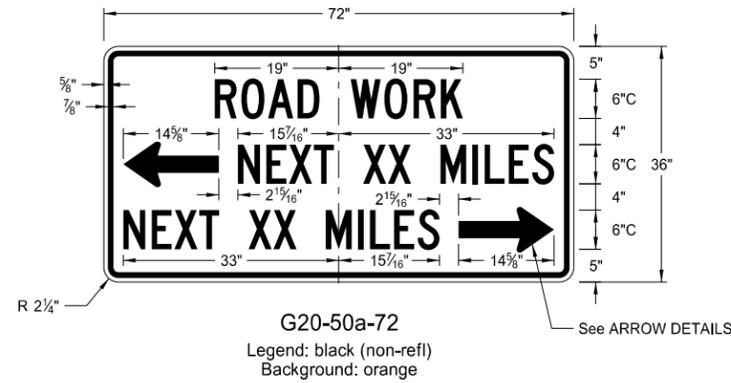
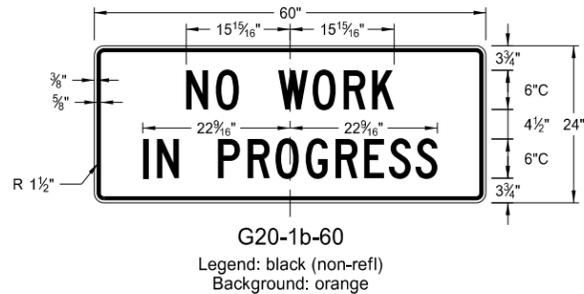
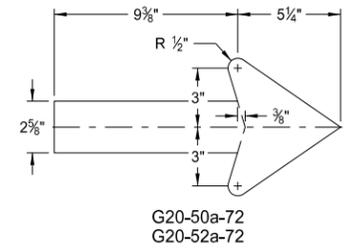
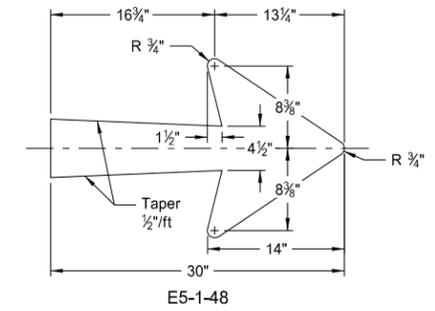
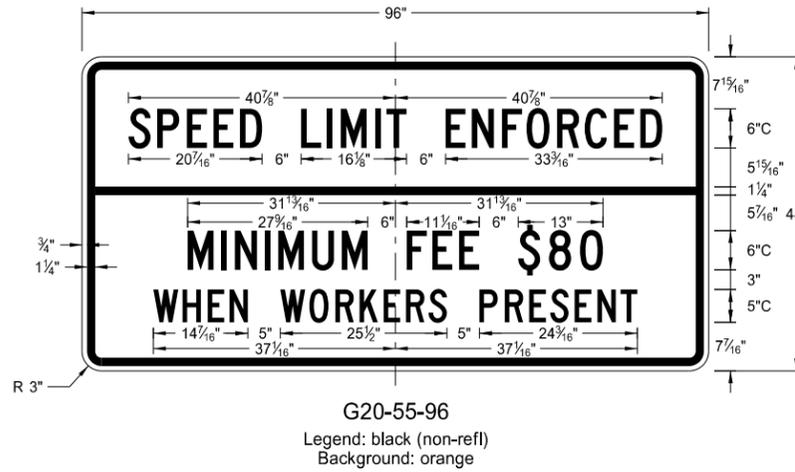
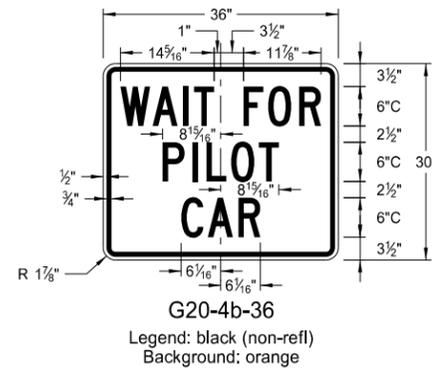
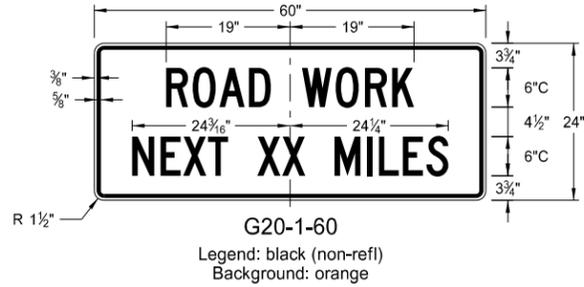
1. a) Drive anchor unit to within 12" of ground level.
b) Proper assembly established by lining up the bottom hole of retainer strap with the 6th hole from the top of the anchor unit.
c) Assemble strap to back of anchor unit using 5/16"x2" bolt, lock washer and nut.
d) Rotate strap 90° to left.
2. a) 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.

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CONSTRUCTION SIGN DETAILS
 TERMINAL AND GUIDE SIGNS

D-704-9



ARROW DETAILS

NOTES:

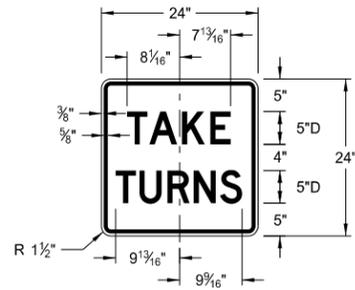
(A) Arrow may be right or left of the legend to indicate construction to the right or left.

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

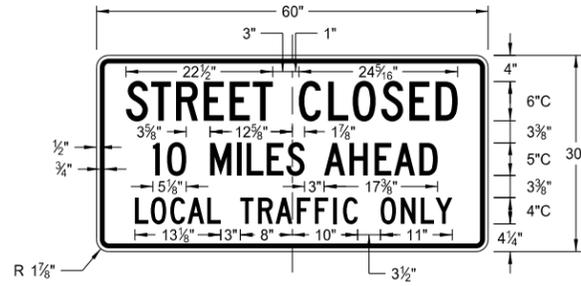
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CONSTRUCTION SIGN DETAILS
REGULATORY SIGNS

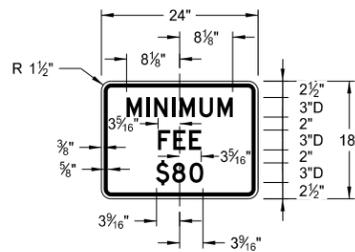
D-704-10



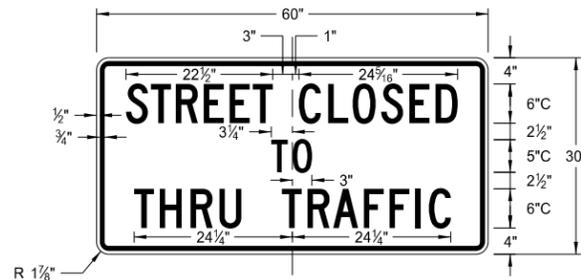
R1-50-24
Legend: black (non-refl)
Background: white



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

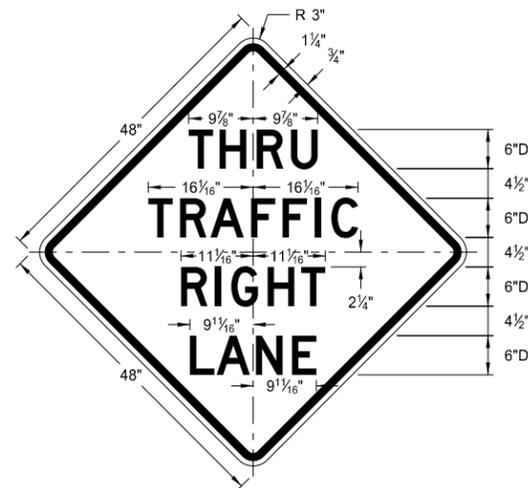
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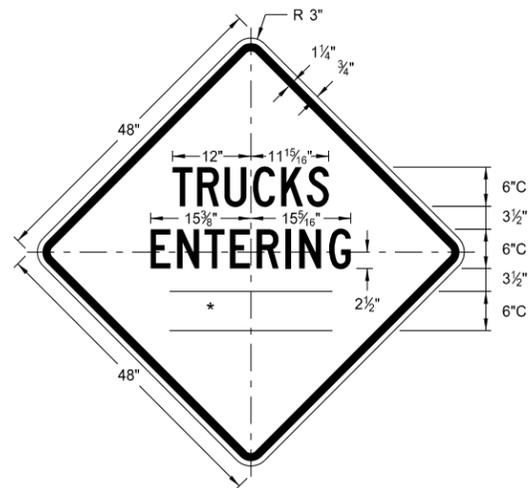
CONSTRUCTION SIGN DETAILS
WARNING SIGNS

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

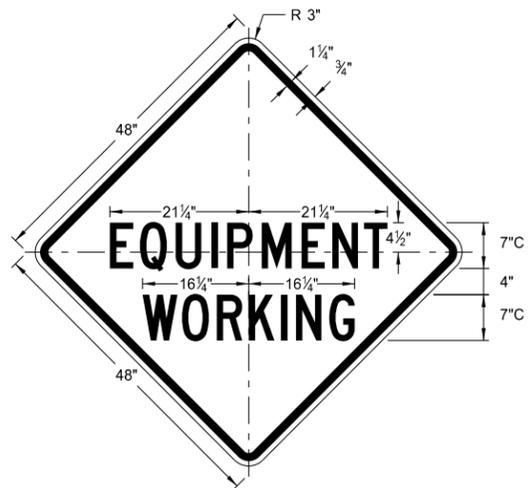
* DISTANCE MESSAGES



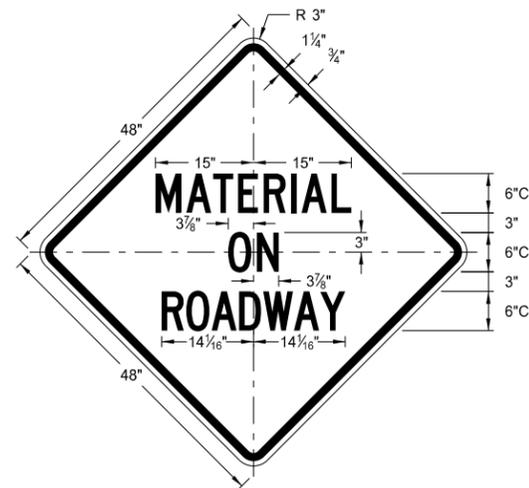
W5-8-48
Legend: black (non-refl)
Background: orange



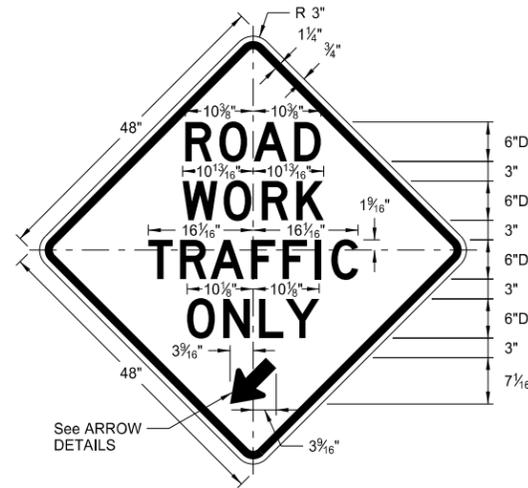
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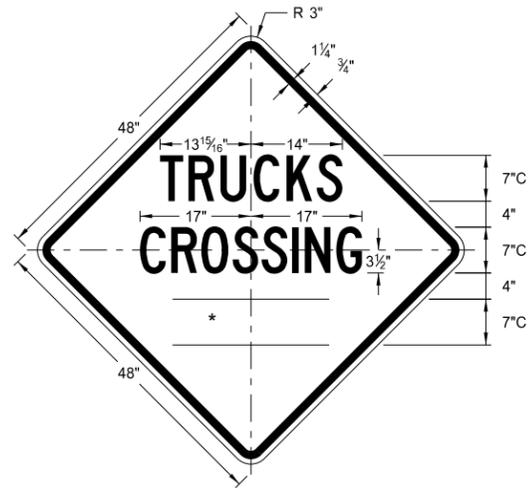
W20-51-48
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Background: orange



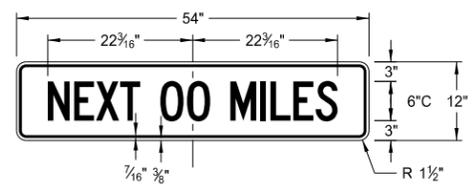
W21-51-48
Legend: black (non-refl)
Background: orange



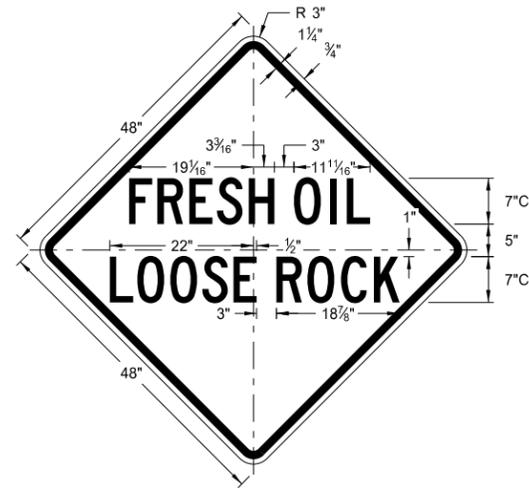
W5-9-48
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Background: orange



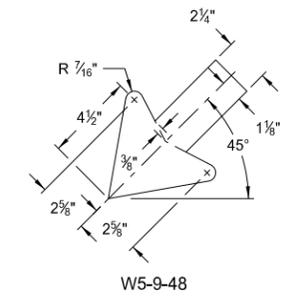
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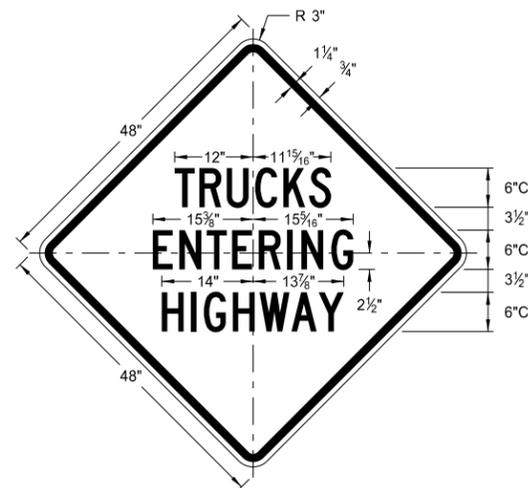
W20-52-54
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Background: orange



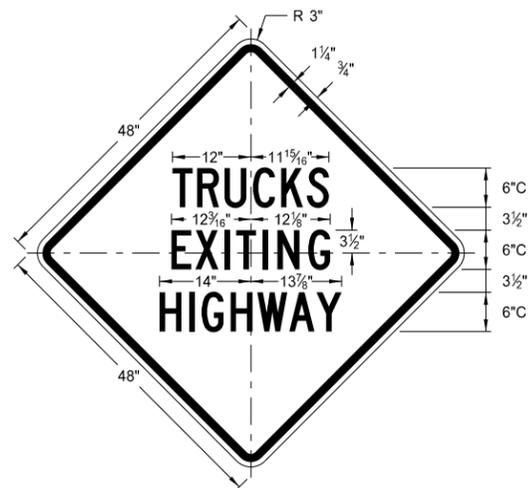
W22-8-48
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Background: orange



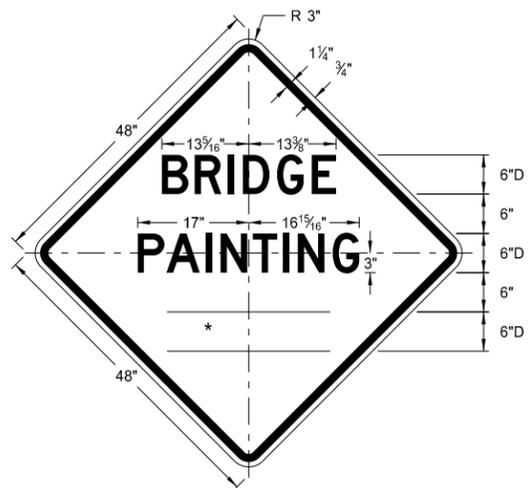
W5-9-48
ARROW DETAILS



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



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

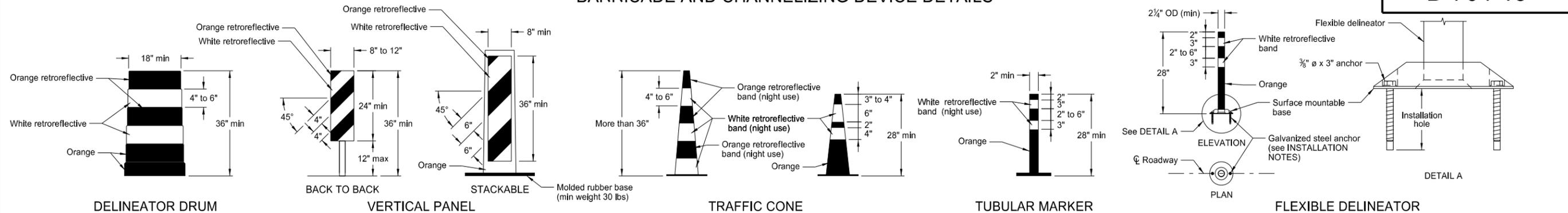


W21-50-48
Legend: black (non-refl)
Background: orange

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BARRICADE AND CHANNELIZING DEVICE DETAILS



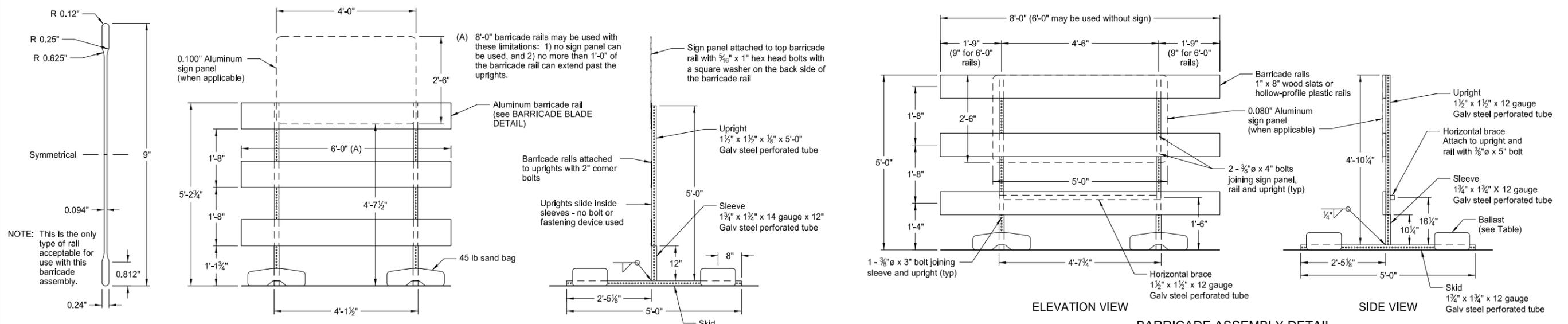
- INSTALLATION NOTES:**
1. Drill installation holes to diameter and depth as required by manufacturer's specifications.
 2. For removal, remove anchors and fill installation hole with an epoxy designed to bond to pavement surface.
 3. In lieu of bolted down base, the contractor may use an 8" x 8" butyl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

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.



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".

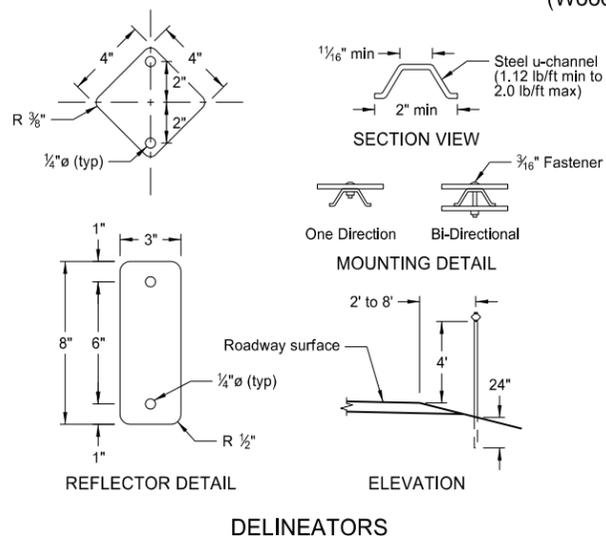
MINIMUM BALLAST
(For each side of barricade support)

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.

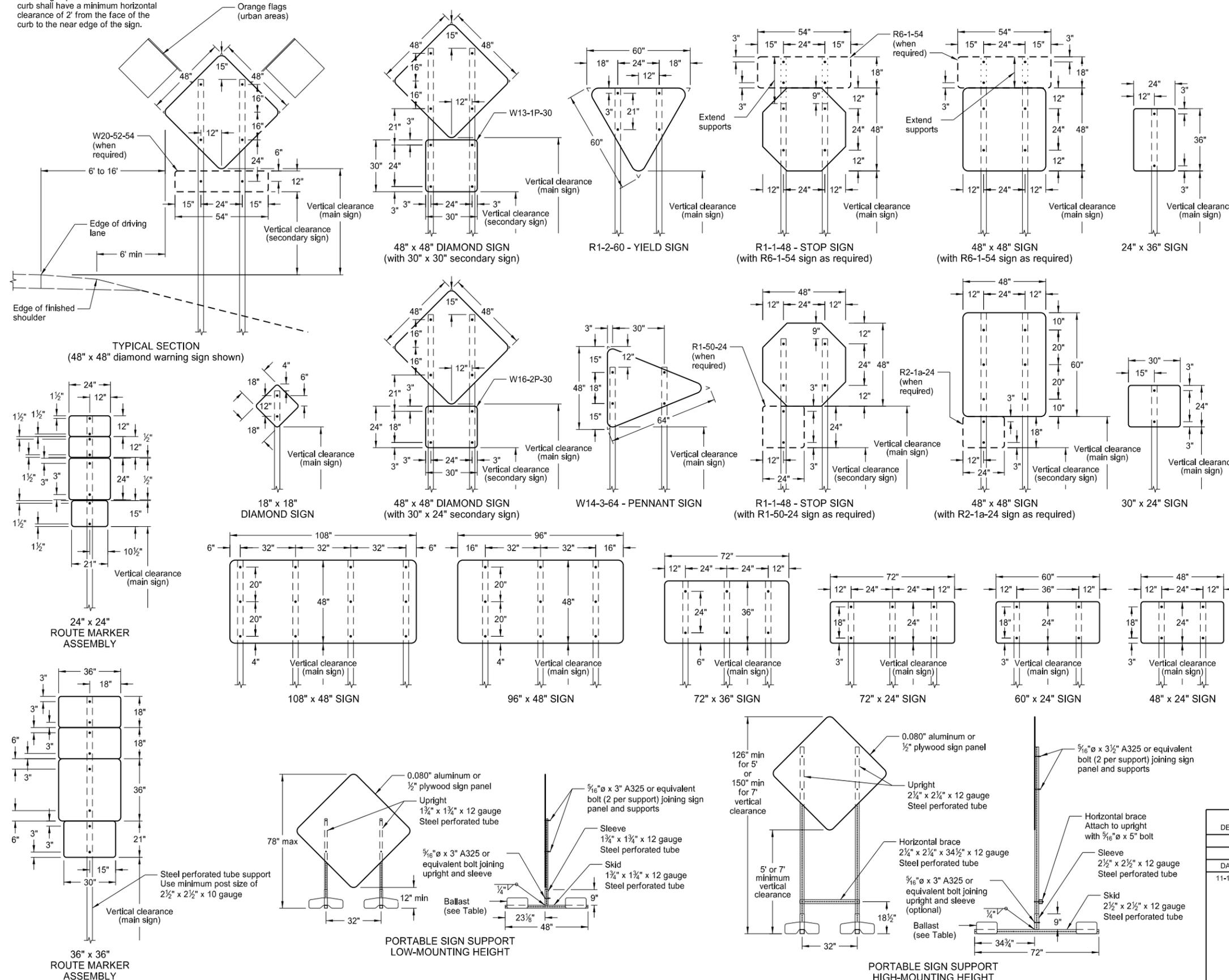
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10-3-13	
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CONSTRUCTION SIGN PUNCHING AND MOUNTING DETAILS

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.



- 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

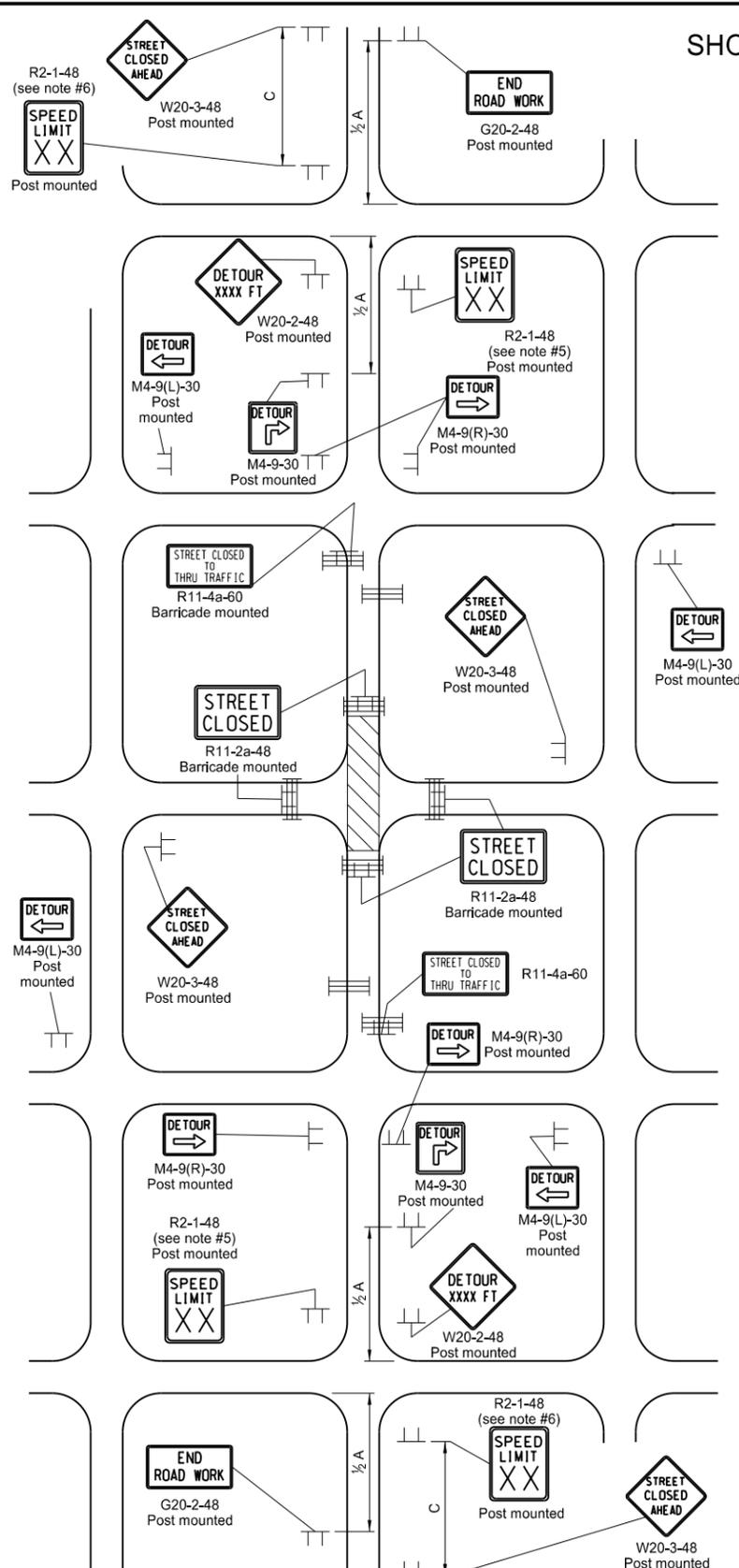
Note: The number of sandbags are based on a wind speed of 55 MPH. The sandbags are assumed to be placed at or near the ends of the skids.

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

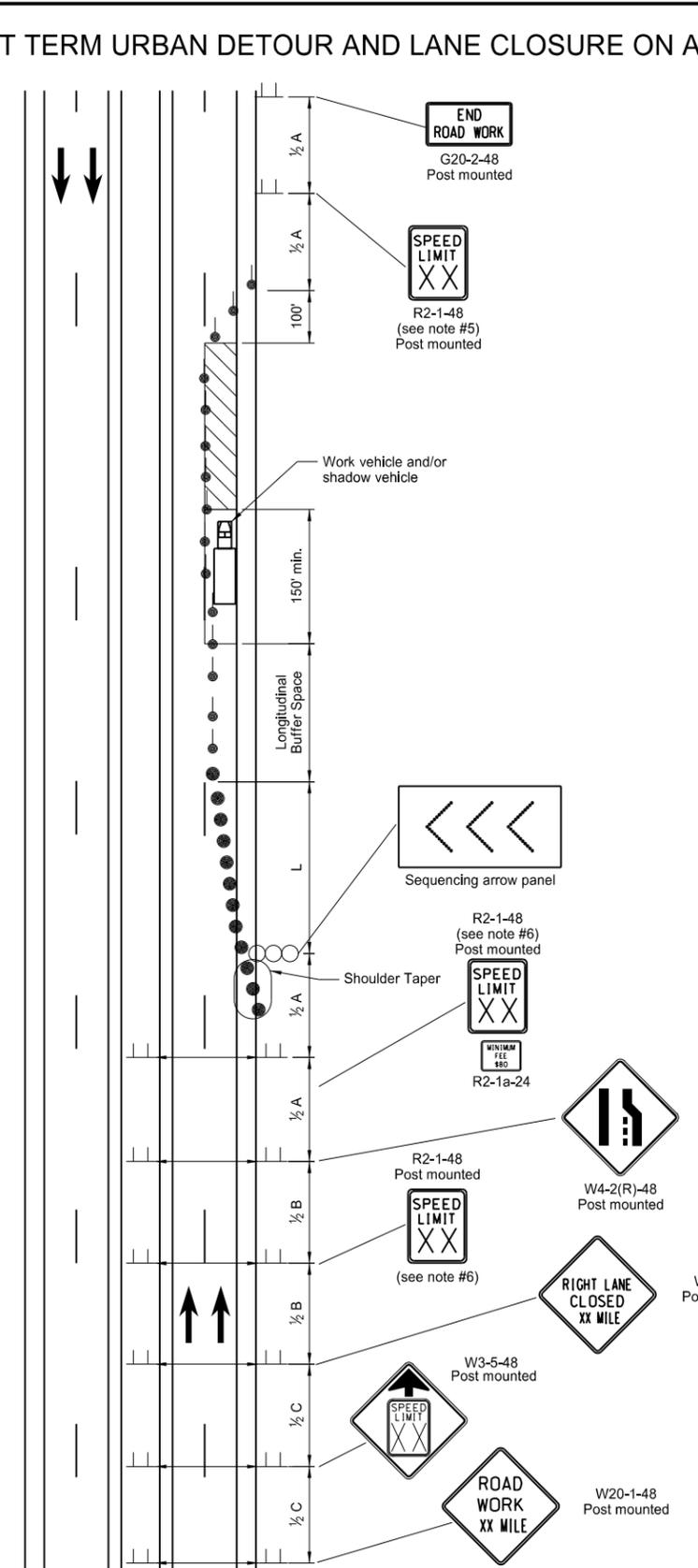
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SHORT TERM URBAN DETOUR AND LANE CLOSURE ON A DIVIDED HIGHWAY LAYOUTS

D-704-23



TYPE Q
DETOUR FOR A CLOSED STREET
 Where city streets are used for detouring traffic.
 Urban projects do not require the G20-55-96 and R2-1a-24 signs.



TYPE P
STATIONARY LANE CLOSURE ON A DIVIDED HIGHWAY
 4 lane divided roadway where 1/2 of roadway is closed.
 Short-term (more than 1 hour within a single daylight period.)

- Notes
- Variables
 - S = Numerical value of speed limit or 85th percentile.
 - W = The width of taper
 - L = Minimum length of taper, or $S \times W$ for freeways, expressways, and all other roads with speeds of 45 mph or greater, or $W \times S^2 / 60$ for urban, residential, and other streets with speeds of 40 mph or less.
 - Barricades placed on roadway shall be on a moveable assembly. Signs placed on the roadway shall be placed on skid mounted assemblies.
 - Delinicator drums used for tapering traffic shall be spaced at dimension "S". Delinicator drums or tubular markers used for tangents shall be spaced at 2 times "S".
 - Sequencing Arrow Panels
 - Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room the panel should be moved closer to the work area so that it can be placed on the roadway surface.
 - 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.
 - Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the engineer.
 - Intersection control for Type Q may have to be changed on detour. The Engineer in the field shall determine what control is necessary.
 - Where necessary, safe speed to be determined by the Engineer. When parking is present, signs shall be placed so they are entirely visible above parked vehicles or placed at the edge of the parking area so they are visible to oncoming traffic. These signs may be skid mounted when placed on the roadway surface.
 - 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

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

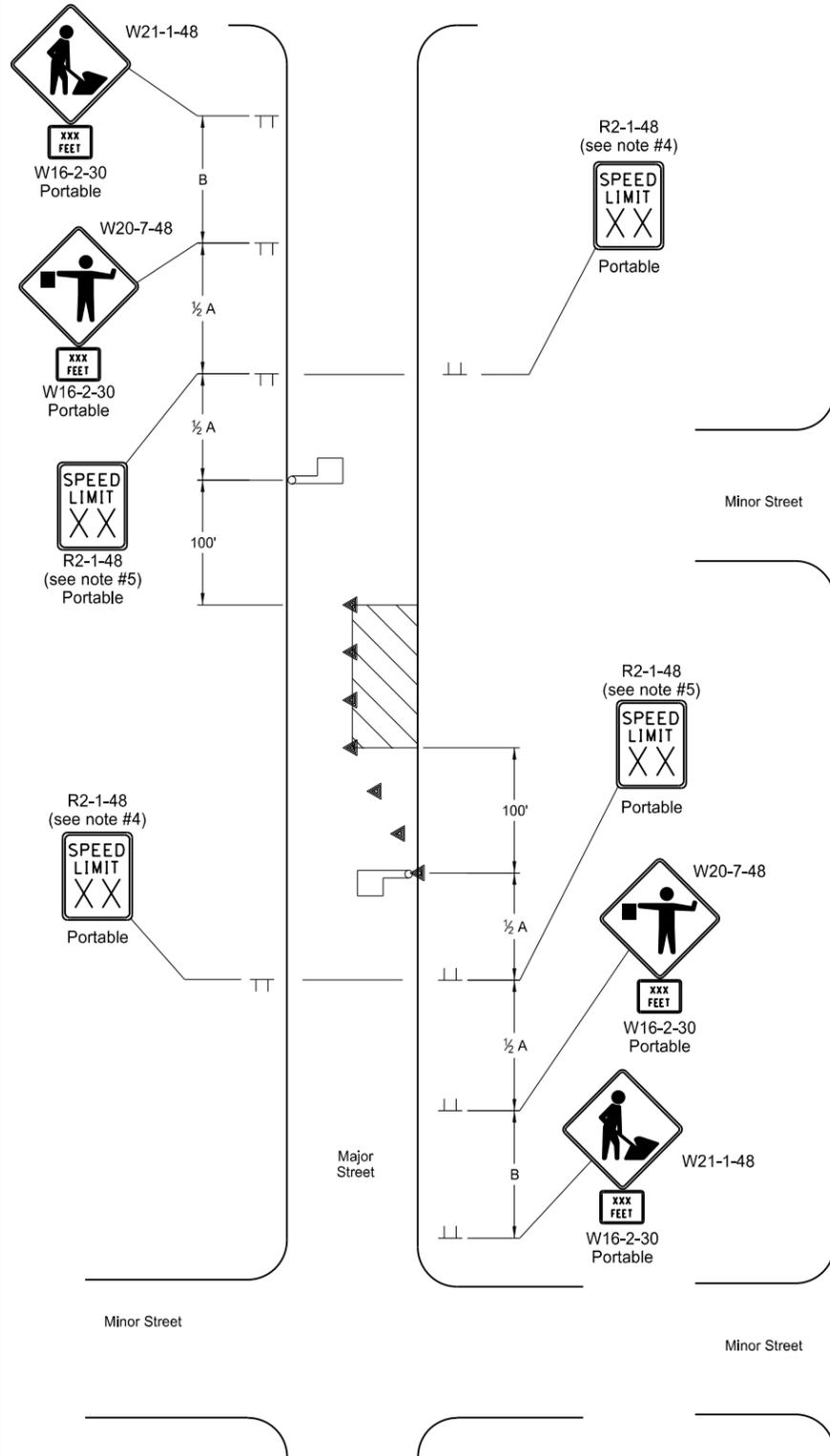
KEY	
	Type III barricade
	Sign
	Delineator Drum
	Work area
	Sequencing arrow panel
	Tubular Markers

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9-27-13	
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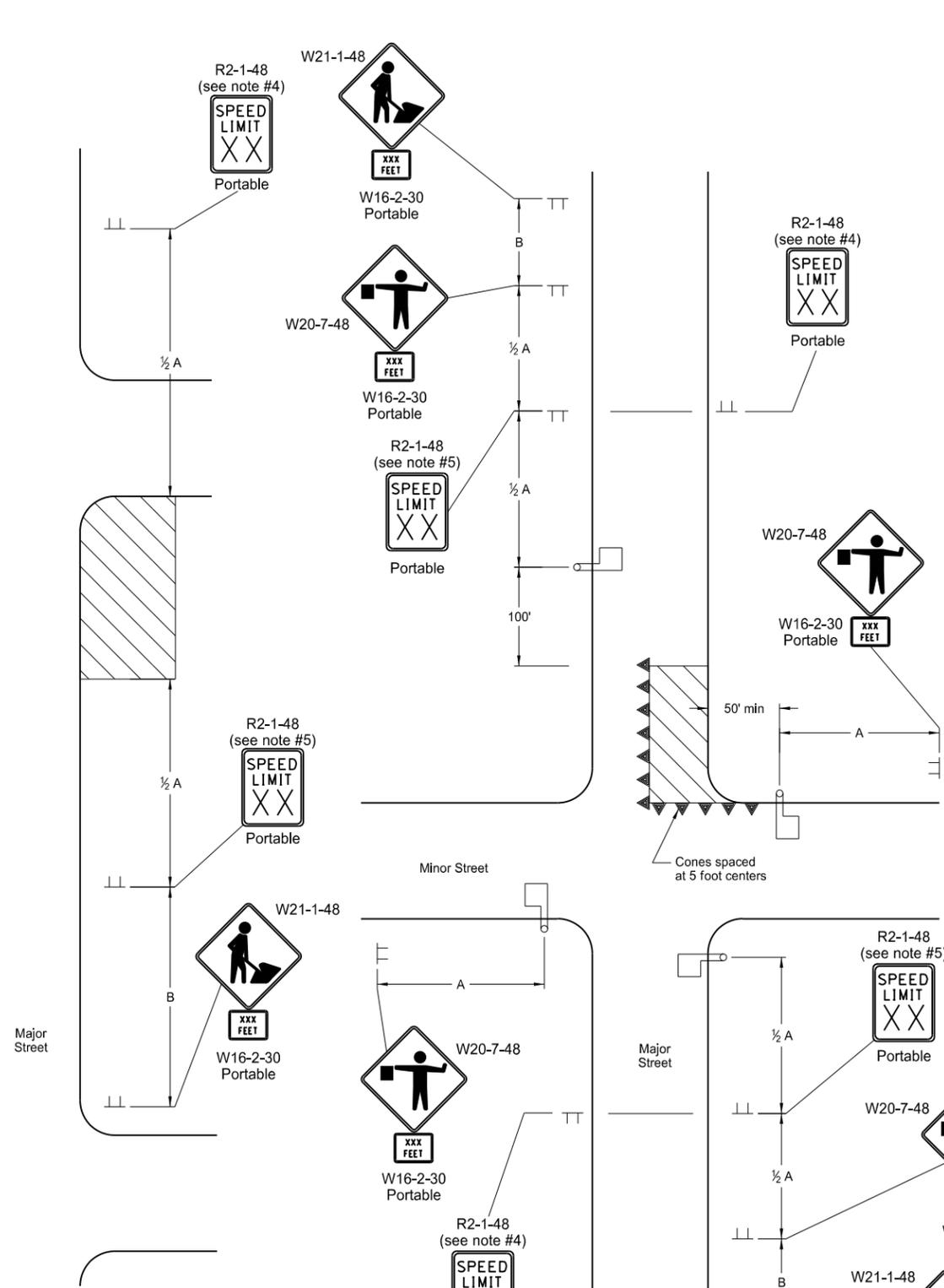
LANE CLOSURES ON URBAN STREETS LAYOUTS

D-704-25



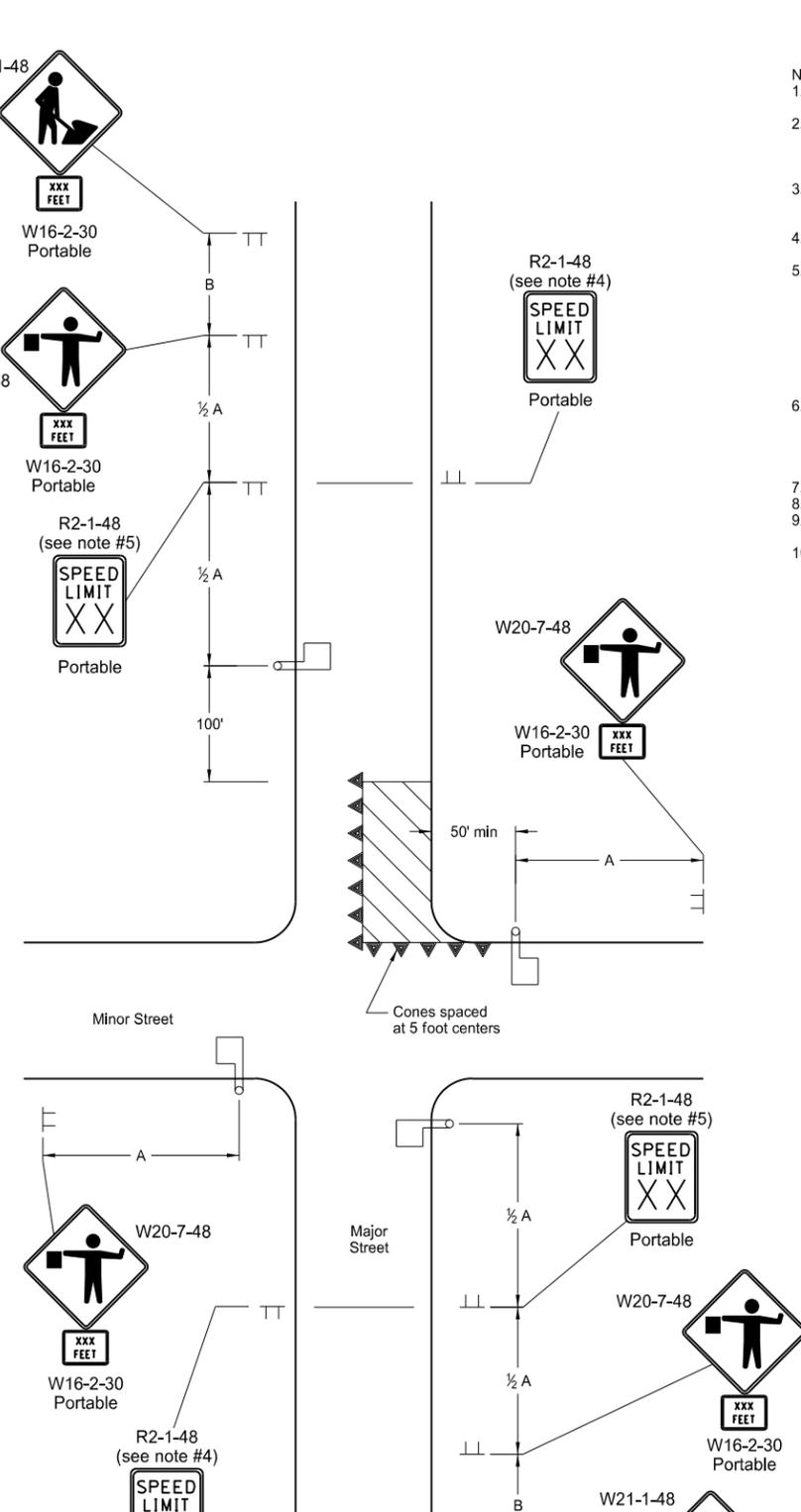
TYPE V
LANE CLOSURE ON URBAN STREET

When portion of roadway is closed to traffic only during daylight hours (mid block location).



TYPE W
WORK BEYOND CURB ON URBAN STREET

When work area is outside of driving lane and no closure is necessary

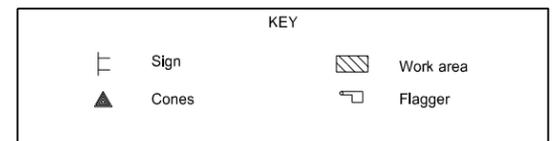


TYPE X
LANE CLOSURE NEAR INTERSECTION ON URBAN STREET

When portion of roadway is closed to traffic only during daylight hours (end block location).

- Notes
1. For Type V: The contractor will be allowed to work only on one side of the roadway at a time so as not to block off any more than one lane of traffic.
 2. When parking is present, the signs shall be placed so they are entirely visible above the parked vehicles or placed at the edge of the parking area so they are visible to oncoming traffic. These signs may be skid mounted when placed on the roadway surface.
 3. Delineator cones used for tapering traffic shall be placed at 3 equal spaces. Delineator cones for tangents shall be spaced at dimension "S". "S" = the numerical value of speed limit.
 4. The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
 5. 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.
 6. 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.
 7. Existing speed limit signs within a reduced speed zone shall be covered.
 8. Where necessary, safe speed to be determined by the Engineer.
 9. The contractor has the option of using portable sign supports in lieu of post mounted signs in accordance with the NDDOT Standard Specifications.
 10. Urban projects do not need the G20-55-96 and R2-1a-24 signs.

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



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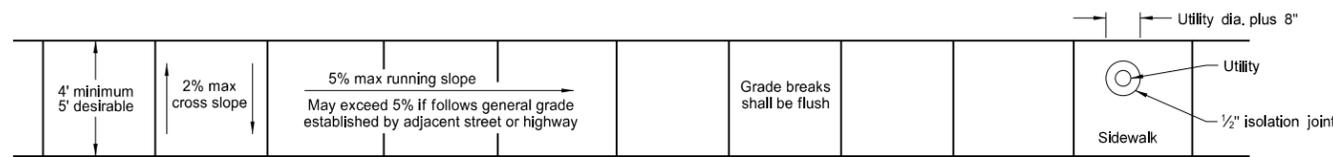
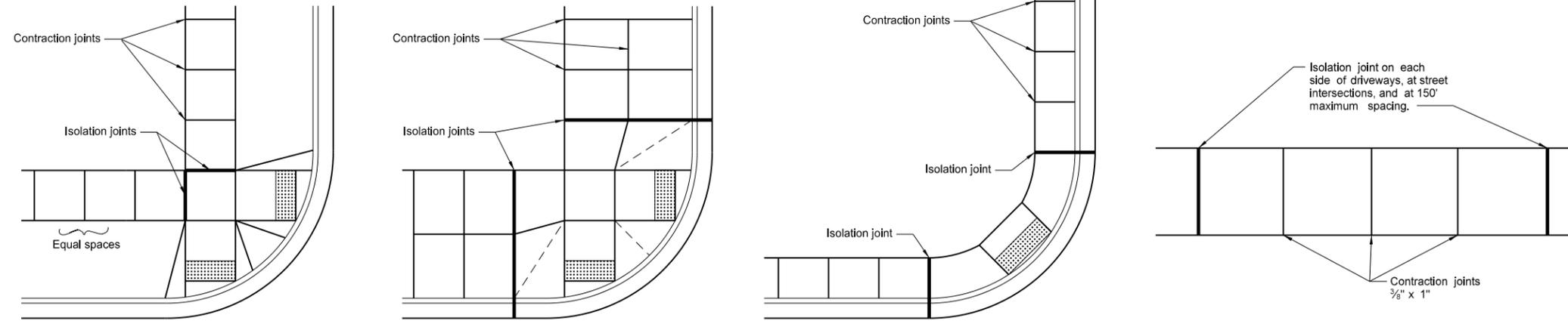
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SIDEWALK

D-750-2

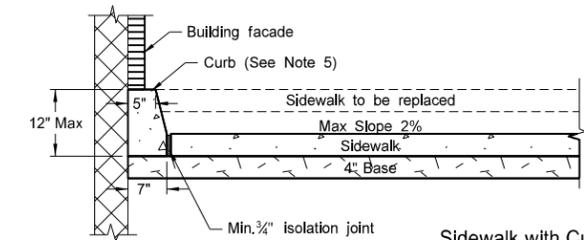
NOTES:

1. Curb ramp and detectable warning panel layouts are for informational purposes only. See Standard Drawing D-750-3 for curb ramp and detectable warning panel details.
2. Joint Spacing: Transverse contraction joint spacing shall vary from 4' to 6' to create approximate square panels. Longitudinal contraction joints shall be used where the sidewalk width is 8' or greater, and shall be spaced at half the sidewalk width. The contraction joints may be sawed or a grooved joint, and shall be a minimum of 1/3 the depth of the concrete. When the sidewalk is adjacent to the curb & gutter, the sidewalk joint spacing shall be varied to match up with the curb & gutter joints. Isolation joints should also be used between separately poured concretes, or between old and new concrete. The cost for all labor, equipment, and material necessary to construct contraction and isolation joints shall be included in the price bid for sidewalk concrete.
3. 4" sidewalk concrete thickness to be used unless otherwise specified in the plans.
4. 4" base material thickness to be used unless otherwise specified in the plans. All labor and materials necessary to place the base material shall be included in the price bid for "Salvage Base Course" or "Aggregate Base Course CL 5."
5. Landscaping is preferred to modify existing ground slope changes as needed. If not possible, such as adjacent buildings, a vertical curb may be used as shown in the detail below. The curb will be paid for at the unit price bid for the item "Curb - Type I" per lineal foot.

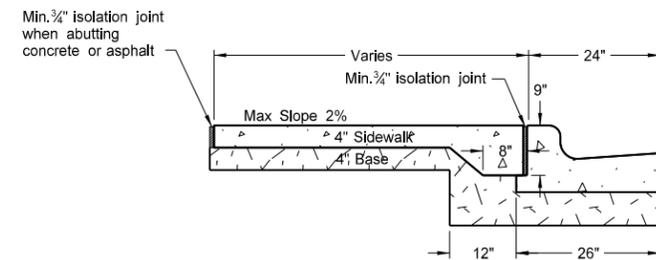


Sidewalk Width and Grade

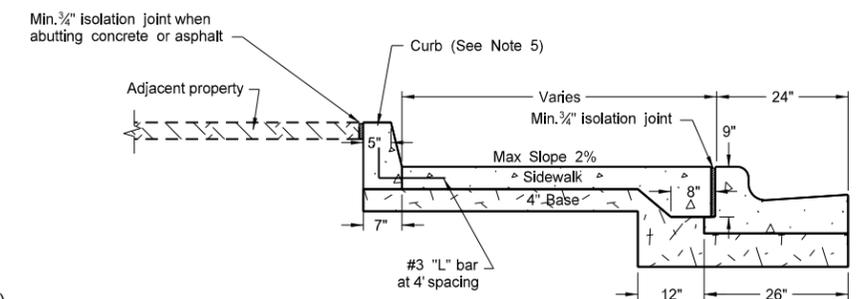
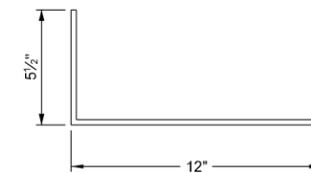
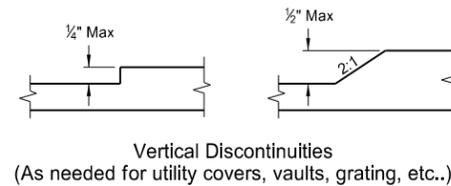
Utility Blockout



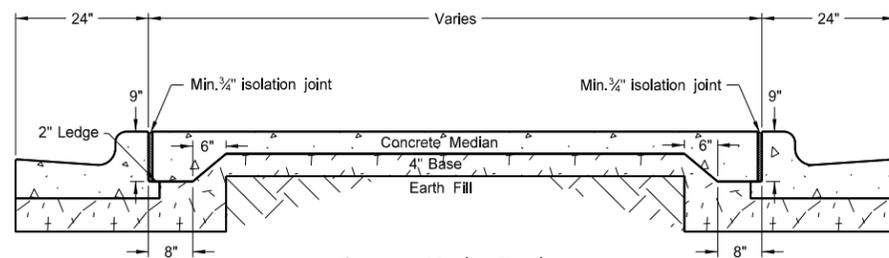
Sidewalk with Curb Detail (Building face application)



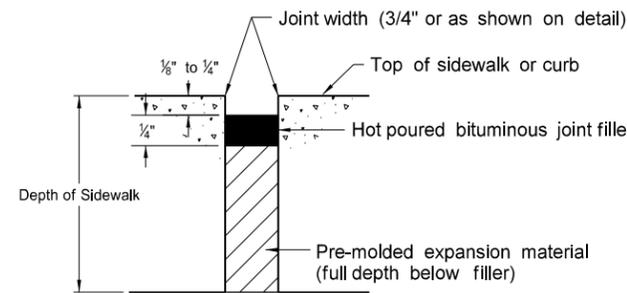
Sidewalk Detail (Installed adjacent to curb and gutter)



Sidewalk with Curb Detail (Adjacent property application)



Concrete Median Detail



Typical Isolation Joint Seal (longitudinal and transverse)

NORTH DAKOTA	
DEPARTMENT OF TRANSPORTATION	
11-26-13	
REVISIONS	
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This document was originally issued and sealed by Roger Weigel, Registration Number PE-2930, on 11/26/13 and the original document is stored at the North Dakota Department of Transportation