LETTING DATE FEB. 19, 2019

PCC PAVEMENT - GRADE AND REPLACE
NHSX-151-3(158)--3H-57
LINN Co.

INDEX OF SHEETS

No.	DESCRIPTION
A Sheets	**Title Sheets**
A.1	Title Sheet
A.2	Location Map Sheet
B Sheets	**Typical Cross Sections and Details**
B.1 - 9	Typical Cross Sections and Details
* B.10 - 11	Typical Cross Sections and Details
C Sheets	**Quantities and General Information**
C.1 - 25	Estimated Project Quantities & Tabulations
* C.26 - 30	Pollution Prevention Plan
CS Sheets	**Soils Tabulations**
CS.1	Soils Tabulations
D Sheets	**Mainline Plan and Profile Sheets**
* D.1	Plan & Profile Legend & Symbol Information Sheet
* D.2 - 7	U.S. Highway 151
E Sheets	**Side Roads Plan and Profile Sheets**
* E.1 - 8	Side Roads Plan and Profile Sheets
F Sheets	**Detour or Temporary Pavement Sheets**
* F.1	Detour Plan and Profile Sheets
G Sheets	**Survey Sheets**
G.1 - 4	Reference Ties and Bench Marks
G.5 - 6	Horizontal Control & Curve Data for all Alignments
G.7	Superelevation Data
H Sheets	**Right-of-Way Sheets (For Info. Only)**
* H.1 - 6	Right-of-Way Sheet (Mainline)
* HE.1 - 2	Right-of-Way Sheet (Side Roads)
J Sheets	**Traffic Control and Staging Sheets**
J.1	Traffic Control Plan and Staging Notes
* J.2	Traffic Control & Staging Legend & Symbol Info. Sheet
* J.3 - 7	Detour Plan and Key Map
* J.8 - 19	Details and Staging Typical Sections
* J.20 - 35	Staging Plans
* J.36 - 39	Pavement Markings
L Sheets	**Geometric, Staking and Jointing Sheets**
L.1	Sidewalk
L.2 - 5	Church Street
L.6	Union Pacific Bridge Approach
L.7 - 11	Prairie Avenue & Losey Avenue
L.12	Prairie Creek Bridge Approach
L.13 - 16	Stallman Drive
L.17	Drainage Ditch #1 Bridge Approach
L.18 - 22	Cemetery Road
M Sheets	**Storm Sewer Sheets**
M.1	Storm Sewer Tabulations
M.2 - 7	Storm Sewer Lgd. & Storm Sewer Plan and Profile Sheets
M.8	Sanitary Sewer Extension Plan and Profile Sheet
M.9 - 10	Water Main Casing Pipe Plan and Profile Sheet
Q Sheets	**Soils Sheets**
Q.1	Soils Legend & Symbol Information Sheet
Q.2 - 23	Soils Sheets - U.S. Highway 151
Q.24	Soils Sheets - Cast-in-Place Wall
T Sheets	**Earthwork Quantity Sheets**
T.1 - 9	Earthwork Quantity Sheets
U Sheets	**Special Details**
U.1 - 5	City of Cedar Rapids Sanitary Sewer Reconstruction
U.6 - 8	MSE Wall Situation Plans
V Sheets	**Culvert Situation Plans**
* V.1 - 19	Cast-in-Place Retaining Wall
* V.20 - 22	Culvert Situation Plans
W Sheets	**Mainline Cross Sections**
W.1	Cross Sections Legend & Symbol Information Sheet
W.2 - 58	Mainline Cross Sections
X Sheets	**Side Road Cross Sections**
X.1 - 5	Church Street Cross Sections
X.6 - 9	Prairie Avenue Cross Sections
X.10 - 12	Losey Avenue Cross Sections
X.13 - 14	Stallman Drive Cross Sections
X.15 - 19	Cemetery Road Cross Sections
	* Color Plan Sheets

IOWA DOT

Highway Division

PLANS OF PROPOSED IMPROVEMENT ON THE

PRIMARY ROAD SYSTEM

LINN COUNTY

PCC PAVEMENT - GRADE AND REPLACE

U.S. HIGHWAY 151 FROM SOUTH OF CHURCH STREET IN FAIRFAX TO SOUTH OF DEAN ROAD

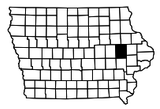
SCALES: As Noted

Refer to the Proposal Form for list of applicable specifications.

Value Engineering Saves. Refer to Article 1105.14 of the Specifications.

NO MILEAGE SUMMARY

For Project Location Map
Refer to Sheet A.2



REVISIONS

TOTAL 286
PROJECT IDENTIFICATION NUMBER
08-57-151-020
PROJECT NUMBER
NHSX-151-3(158)--3H-57
R.O.W. PROJECT NUMBER
NHSN-151-3(135)--2R-57
NHSN-151-3(147)--2R-57

U.S. HIGHWAY 151 DESIGN DATA URBAN		
2013 AADT	8,100	V.P.D.
2040 AADT	12,010	V.P.D.
2040 DHV	1,255	V.P.H.
TRUCKS	6	%
Total Design ESALs	--	

U.S. HIGHWAY 151 DESIGN DATA RURAL		
2013 AADT	13,500	V.P.D.
2040 AADT	19,800	V.P.D.
2040 DHV	1,830	V.P.H.
TRUCKS	6	%
Total Design ESALs	--	

INDEX OF SEALS

SHEET NO.	NAME	TYPE
A.1	Nathan E. Carhoff	Primary Signature Block
CS.1	Matthew D. Cushman	Geotechnical Design
U.1	Matthew J. Feuerhelm	Sanitary Sewer Design
V.1	Haiping Chen	Structural Design

ROADWAY DESIGN

LICENSED PROFESSIONAL ENGINEER
NATHAN E. CARHOFF
19699
IOWA

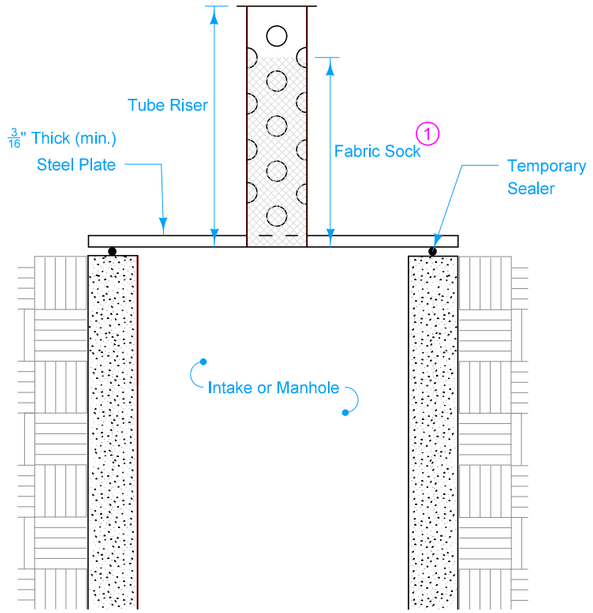
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Signature — 11/30/2018 Date

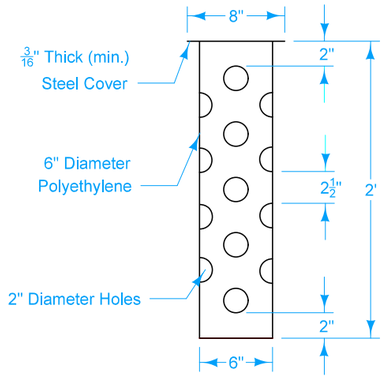
Nathan E. Carhoff
Printed or Typed Name

My license renewal date is December 31, 2019

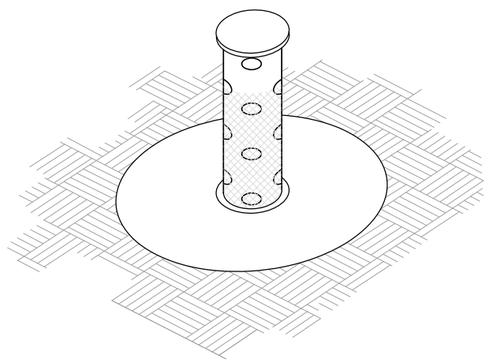
Pages or sheets covered by this seal: A.1-A.2, B.1-B.11, C.1-C.30, D.1-D.7, E.1-E.8, F.1, G.1-G.7, J.1-J.39, L.1-L.22, M.1-M.10, T.1-T.9, U.6-U.8, V.20-V.22, W.1-W.58, X.1-X.19



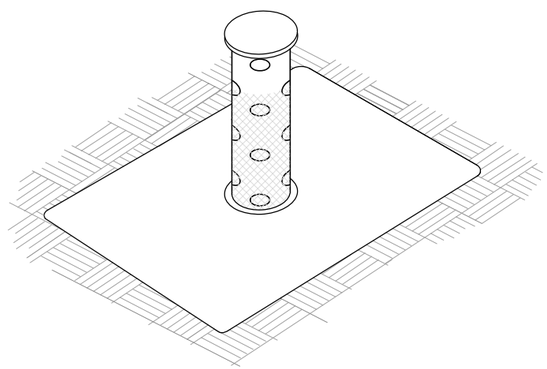
SECTION VIEW



TUBE RISER 2

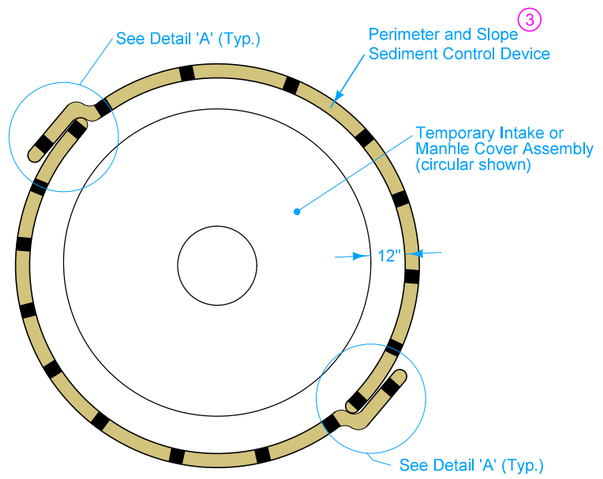


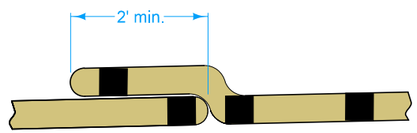
ISOMETRIC VIEW
(Circular)



ISOMETRIC VIEW
(Rectangular)

TEMPORARY INTAKE OR MANHOLE COVER ASSEMBLY





DETAIL 'A' 4
(Overlap Joint)

PERIMETER AND SLOPE SEDIMENT CONTROL

Method of Measurement for Temporary Intake or Manhole Cover Assembly will be by count.

Basis of Payment for Temporary Intake or Manhole Cover Assembly will be at the contract unit price for each device installed.

Method of Measurement for Maintenance of Temporary Intake or Manhole Cover Assembly will be by count.

Basis of Payment for Maintenance of Temporary Intake or Manhole Cover Assembly will be at the contract unit price for each occurance. Payment is full compensation for inspecting fabric sock and replacing when flow capicity has been reduced to 50%.

Method of Measurment for Removal of Temporary Intake or Manhole Cover Assembly will be by count.

Basis of Payment for Removal of Temporary Intake or Manhole Cover Assembly will be at the contract unit price for each device removed.

1. Wrap fabric sock around tube riser. Use fabric complying with Article 4196.01, B, 1 with a minimum flow rate of 90 gallons per minute per square foot. Ensure top of sock is below form grade elevation.
2. Tube riser may be such that it can be pushed down and pulled up.
3. Place Perimeter and Slope Sediment Control Devices around all intake or manhole wells. Use 20 inch diameter device.
4. Extra material required to install overlaps will not be included in the installation length.

Possible Contract Items:
- Temporary Intake or Manhole Cover Assembly
- Maintenance of Temporary Intake or Manhole Cover Assembly
- Removal of Temporary Intake or Manhole Cover Assembly
- Perimeter and Slope Sediment Control Device

Possible Tabulations:
- 100-11
- 100-19

IOWA DOT

REVISION
1 | 04-18-17

ROAD DESIGN DETAIL

570-5

SHEET 1 of 1

REVISIONS: Add bid items for maintenance and removal. Added basis of payment and method of measurement.

EROSION CONTROL FOR INTAKE OR MANHOLE WELL

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.10

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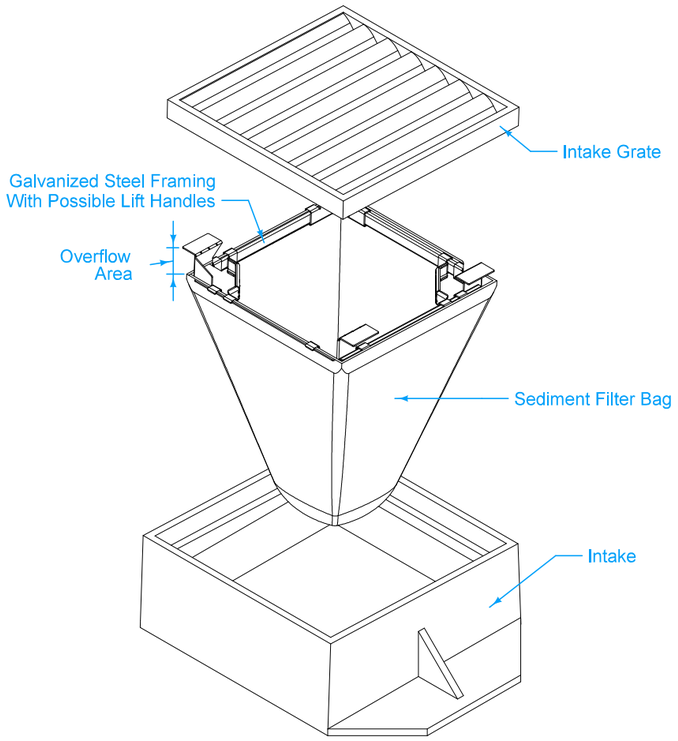
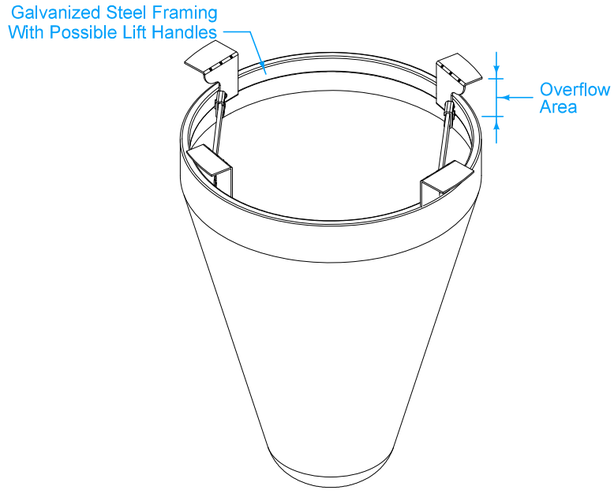


TYPICAL SEDIMENT FILTER BAG PLACEMENT



SEDIMENT FILTER BAG FOR CIRCULAR GRATE

Remove sediment filter bag upon stabilization of sediment sources.

Measurement for Grate Intake Sediment Filter Bag will be by count.

Basis of Payment for Grate Intake Sediment Filter Bag will be at the contract unit price for each device installed. Payment is full compensation for furnishing all equipment, labor, and materials required to install the Grate Intake Sediment Filter Bag as shown.

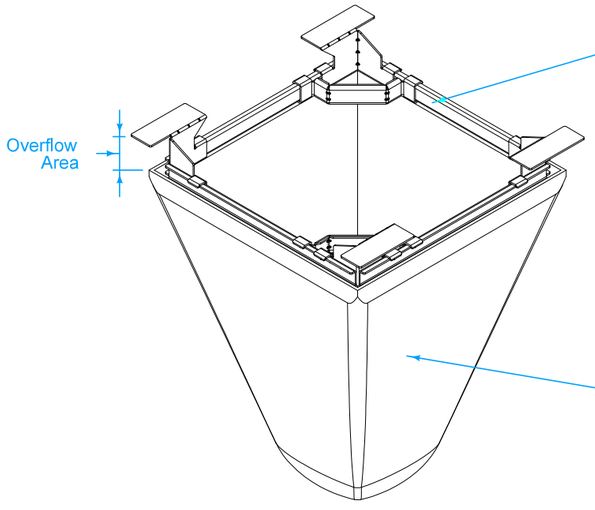
Method of Measurement for Maintenance of Grate Intake Sediment Filter Bag will be by count.

Basis of Payment for Maintenance of Grate Intake Sediment Filter Bag will be at the contract unit price for each occurence. Payment is full compensation for clean out and disposal of material when capacity reaches 50%, and for any other repair needed during the project.

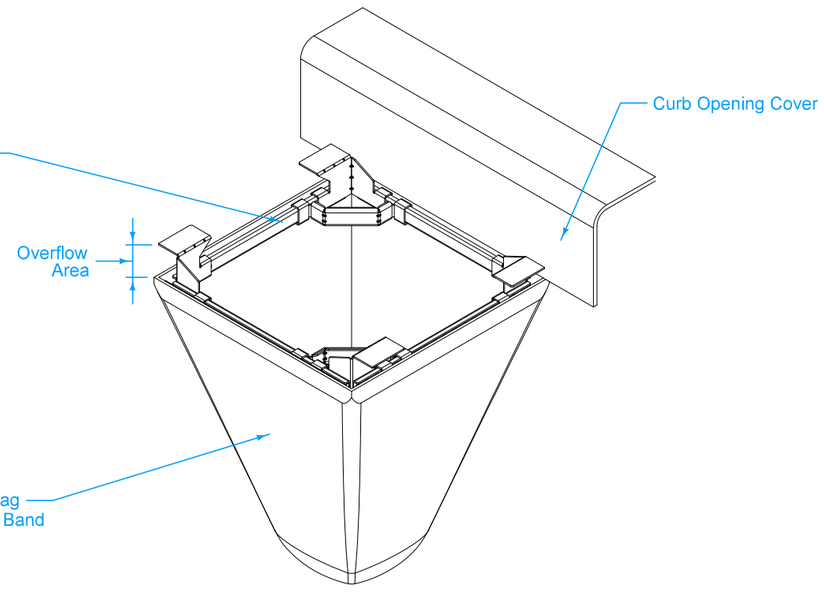
Measurement for Removal of Grate Intake Sediment Filter Bag will be by count.

Basis of Payment for Removal of Grate Intake Sediment Filter Bag will be at the contract unit price for each device removed. Payment is full compensation for all labor and equipment required for removal.

(1) Woven material meeting the requirements of Table 4196.01-1 of the Standard Specifications, except a maximum apparent opening size US Sieve No. 10 and a minimum flow rate of 145 gallons per minute per square foot.



SEDIMENT FILTER BAG FOR SQUARE
OR RECTANGULAR GRATE



SEDIMENT FILTER BAG FOR COMBINATION
GRATE WITH CURB OPENING

Possible Contract Items:
- Grate Intake Sediment Filter Bag
- Maintenance of Grate Intake Sediment Filter Bag
- Removal of Grate Intake Sediment Filter Bag

Possible Tabulation:
- 100-37

IOWA DOT

REVISION	
NEW	04-18-17

ROAD DESIGN DETAIL

570-7

SHEET 1 of 1

REVISIONS: NEW

GRATE INTAKE SEDIMENT FILTER BAG

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	B.11

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POLLUTION PREVENTION PLAN

This project is regulated by the requirements of the Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 OR an Iowa Department of Natural Resources (DNR) National Pollutant Discharge Elimination System (NPDES) individual storm water permit. The Contractor shall carry out the terms and conditions of this permit and the Pollution Prevention Plan (PPP).

This Base PPP includes information on Roles and Responsibilities, Project Site Description, Controls, Maintenance Procedures, Inspection Requirements, Non-Storm Water Controls, Potential Sources of Off Right-of-Way Pollution, and Definitions. This plan references other documents rather than repeating the information contained in the documents. A copy of this Base Pollution Prevention Plan, amended as needed per plan revisions or by contract modification, will be readily available for review.

All contractors shall conduct their operations in a manner that controls pollutants, minimizes erosion, and prevents sediments from entering waters of the state and leaving the highway right-of-way. The prime contractor shall be responsible for compliance and implementation of the PPP for their entire contract. This responsibility shall be further shared with subcontractors whose work is a source of potential pollution as defined in this PPP.

I. ROLES AND RESPONSIBILITES

A. Designer:
1. Prepares Base PPP included in the project plan.
2. Prepares Notice of Intent (NOI) submitted to Iowa DNR.
3. Is signature authority on the Base PPP.

B. Contractor:
1. Signs a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Designates a Water Pollution Control Manager (WPCM), who has the duties and responsibilities as defined in Specifications Section 2602.
3. Submits an Erosion Control Implementation Plan (ECIP) and ECIP updates according to Specifications Section 2602.
4. Installs and maintains appropriate controls. This work may be subcontracted.
5. Supervises and implements good housekeeping practices.
6. Conducts joint required inspections of the site with inspection staff. When Contractor is not mobilized on site, Contractor may delegate this responsibility to a trained or certified subcontractor. Contracting Authority also may waive joint inspection requirement durning winter shutdown. In both circumstances, WPCM (or trained or certified delegate from the Contractor) is still responsible to review and sign inspection reports.
7. Complies with training and certification requirements of Specifications Section 2602.

C. Subcontractors:
1. Sign a co-permittee certification statement adhering to the requirements of the NPDES permit and this PPP if responsible for sediment or erosion controls or involved in land disturbing activities. All co-permittees are legally required under the Clean Water Act and the Iowa Administrative Code to ensure compliance with the terms and conditions of this PPP.
2. Implement good housekeeping practices.

D. RCE/Project Engineer:
1. Is Project Storm Water Manager.
2. On projects where DOT is the Contracting Authority, is currrent with erosion control training or certification.
3. Takes actions necessary to ensure compliance with storm water requirements including, where appropriate, issuing stop work orders, and directing additional inspections at construction project sites that are experiencing problems with achieving permit compliance.
4. Orders the taking of measures to cease, correct, prevent, or minimize the consequences of non-compliance with the storm water requirements of the Applicable Permit.
5. Supervises all work necessary to meet storm water requirements at the Project, including work performed by contractors and subcontractors.
6. Requires employees, contractors, and subcontractors to take appropriate responsive action to comply with storm water requirements, including requiring any such person to cease or correct a violation of storm water requirements, and to order or recommend such other actions as necessary to meet storm water requirments.
7. Is familiar with the Project PPP and storm water site map.
8. On projects where DOT is Contracting Authority, is responsible for monitoring inspection reports on a monthly basis, to determine whether deficiencies identified in inspection reports were adequately and timely addressed, and if not, has the authority and responsibility to direct immediate actions to correct the deficiencies.
9. Is the point of contact for the Project for regulatory officials, Inspector, contractors, and subcontractors regarding storm water requirements.
10. Is signature authority on Notice of Discontinuation.

E. Inspector:
1. Updates PPP whenever there is a change in design, construction, operation, or maintenance which has a significant effect on the discharge of pollutants from the project.
2. Maintains an up-to-date record that identifies contractors and subcontractors as co-permittees.
3. Makes these plans available to the DNR upon their request.
4. Conducts joint required inspections of the site with the contractor/subcontractor.
5. Completes an inspection report after each inspection.
6. Is signature authority on storm water inspection reports.

II. PROJECT SITE DESCRIPTION

A. This Pollution Prevention Plan (PPP) is for the construction of U.S. 151 through Fairfax, including associated bridges.

B. This PPP covers approximately 28.1 acres with an estimated 25.1 acres being disturbed. The portion of the PPP covered by this contract has 25.1 acres disturbed.

C. The PPP is located in an area of one soil association Dinsdale-Klinger). The estimated weighted average runoff coefficient number for this PPP after completion will be 0.48.

D. Storm Water Site Map - Multiple sources of information comprise the base storm water site map including:
1. Drainage patterns – Plan and Profile sheets and Situation plans.
2. Proposed Slopes – Cross Sections.
3. Areas of Soil Disturbance – construction limits shown on Plan and Profile sheets.
4. Location of Structural Controls – Tabulations on C sheets.
5. Locations of Non-structural Controls – Tabulations on C sheets.
6. Locations of Stabilization Practices – generally within construction limits shown on Plan and Profile sheets.
7. Surface Waters (including wetlands) – Project Location Map and Plan and Profile sheets.
8. Locations where storm water is discharged – Plan and Profile sheets.

E. The base storm water site map is amended by contract modifications and progress payments (fieldbook entries) of completed erosion control work. Also, due to project phasing, erosion and sediment controls shown on project plans may not be installed until needed, based on site conditions. For example, silt fence ditch checks will typically not be installed until the ditch has been installed. Installed locations may also be modified from tabulation locations by field staff. Installed locations will be documented by fieldbook entries.

F. Runoff from this work will flow into Prairie Creek and two separate unnamed drainage ditches, Drainage Ditch No. 1 and Drainage Ditch No. 2. The unnamed drainage ditches discharge to Prairie Creek which discharges to the Cedar River.

III. CONTROLS

A. The contractor's ECIP specified in Article 2602.03 for accomplishment of storm water controls should clearly describe the intended sequence of major activities and for each activity define the control measure and the timing during the construction process that the measure will be implemented.

B. Preserve vegetation in areas not needed for construction.

C. Sections 2601 and 2602 of the Standard Specifications define requirements to implement erosion and sediment control measures. Actual quantities used and installed locations may vary from the Base PPP and amendment of the plan will be documented via fieldbook entries or by contract modification. Additional erosion and sediment control items may be required as determined by the inspector and/or contractor during storm water monitoring inspections. If the work involved is not applicable to any contract items, the work will be paid for according to Article 1109.03 paragraph B.

1. EROSION AND SEDIMENT CONTROLS

a. Stabilization Practices
1) Site plans will ensure that existing vegetation or natural buffers are preserved where attainable and disturbed portions of the site will be stabilized.
2) Initialize stabilization of disturbed areas immediately after clearing, grading, excavating, or other earth disturbing activities have:
a) Permanently ceased on any portion of the site, or
b) Temporarily ceased on any portion of the site and will not resume for a period exceeding 14 calendar days.
3) Staged permanent and/or temporary stabilizing seeding and mulching shall be completed as the disturbed areas are completed. Incomplete areas shall be stabilized according to paragraph III, C, 1, a, 2, b above.
4) Permanent and Temporary Stabilization practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation (105-4).
5) Preservation of existing vegetation within right-of-way or easements will act as vegetative buffer strips.
6) Preservation of topsoil: Bid items to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan. Additional information may be found in Tabulations in the C or T sheets of the plans or is referenced in Standard Specifications Section 2105.

b. Structural Practices
1) Structural practices will be implemented to divert flows from exposed soils and detain or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Additionally, structural practices may include: silt basins that provide 3600 cubic feet of storage per acre drained or equivalent sediment controls, outlet structures that withdraw water from surface when discharging basins, and controls to direct storm water to vegetated areas.
2) Structural practices to be used for this project are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the devices to be used on this project can be found on the B sheets of the plans or are referenced in the Standard Road Plans Tabulation (105-4).

c. Storm Water Management
1) Measures shall be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. This may include velocity dissipation devices at discharge locations and along length of outfall channel as necessary to provide a non-erosion velocity flow from structure to water course. If included with this project, these items are located in the Estimated Project Quantities (100-0A, 100-1A, or 100-1C) and Estimate Reference Information (100-4A) located on the C sheets of the plan, as well as all other item specific Tabulations. Typical drawings detailing construction of the practices to be used on this project are referenced in the Standard Road Plans Tabulation. The installation of these devices may be subject to Section 404 of the Clean Water Act.

2. OTHER CONTROLS

a. Contractor disposal of unused construction materials and construction material wastes shall comply with applicable state and local waste disposal, sanitary sewer, or septic system regulations. In the event of a conflict with other governmental laws, rules and regulations, the more restrictive laws, rules or regulations shall apply.
1) Vehicle Entrances and Exits - Construct and maintain entrances and exits to prevent tracking of sediments onto roadways.
2) Material Delivery, Storage and Use - Implement practices to prevent discharge of construction materials during delivery, storage, and use.
3) Stockpile Management - Install controls to reduce or eliminate pollution of storm water from stockpiles of soil and paving.
4) Waste Disposal - Do not discharge any materials, including building materials, into waters of the state, except as authorized by a Section 404 permit.
5) Spill Prevention and Control - Implement chemical spill and leak prevention and response procedures to contain and clean-up spills and prevent material discharges to the storm drain system and waters of the state.
6) Concrete Residuals and Washout Wastes - Waste shall not be discharged to a surface water and is not allowed to adversely affect a water of the state. Designate temporary concrete washout facilities for rinsing out concrete trucks. Provide directions to truck drivers where designated washout facilities are located. Designated washout areas should be located at least 50 feet away from storm drains, streams or other water bodies. Care should be taken to ensure these facilities do not overflow during storm events.
7) Concrete Grooving/Grinding Slurry – Do not discharge slurry to a waterbody or storm drain. Slurry may be applied on foreslopes or removed from the project.
8) Vehicle and Equipment Storage and Maintenance Areas - Perform on site fueling and maintenance in accordance with all environment laws such as proper storage of onside fuels and proper disposal of used engine oil or other fluids on site. Employ washing practices that prevent contamination of surface and ground water from wash water. Wash waters must be treated in a sediment basin or alternative control that provides equivalent or better treatment prior to discharge.
9) Litter Management - Ensure employees properly dispose of litter. Minimuze exposure of trash if exposure to precipitation or storm water would result in a discharge of pollutants.
10) Dewatering – Properly treat water to remove suspended sediment before it re-enters a waterbody or discharges off-site. Measures are also to be taken to prevent scour erosion at dewatering discharge point.

3. APPROVED STATE OR LOCAL PLANS
During the course of this construction, it is possible that situations will arise where unknown materials will be encountered. When such situations are encountered, they will be handled according to all federal, state, and local regulations in effect at the time.

POLLUTION PREVENTION PLAN

IV. MAINTENANCE PROCEDURES

The contractor is required to maintain all temporary erosion and sediment control measures in proper working order, including cleaning, repairing, or replacing them throughout the contract period. This shall begin when the features have lost 50% of their capacity.

V. INSPECTION REQUIREMENTS

A. Inspections shall be made jointly by the contractor and the contracting authority at least once every seven calendar days. Storm water monitoring inspections will include:
   1. Date of the inspection.
   2. Summary of the scope of the inspection.
   3. Name and qualifications of the personnel making the inspection.
   5. Review of erosion and sediment control measures within disturbed areas for the effectiveness in preventing impacts to receiving waters.
   6. Major observations related to the implementation of the PPP.
   7. Identification of corrective actions required to maintain or modify erosion and sediment control measures.

B. Include storm water monitoring inspection reports in the Amended PPP. Incorporate any additional erosion and sediment control measures determined as a result of the inspection. Immediately begin corrective actions on all deficiencies found within 3 calendar days of the inspection and complete within 7 calendar days following the inspection. If it is determined that making the corrections less than 72 hours after the inspection is impracticable, it should be documented why it is imparacticable and indicate an estimated date by which the corrections will be made.

VI. NON-STORM WATER DISCHARGES

This includes subsurface drains (i.e. longitudinal and standard subdrains) and slope drains. The velocity of the discharge from these features may be controlled by the use of headwalls or blocks, Class A stone, erosion stone or other appropriate materials. This also includes uncontaminated groundwater from dewatering operations, which will be controlled as discussed in Section III of the PPP.

VII. POTENTIAL SOURCES OF OFF RIGHT-OF-WAY (ROW) POLLUTION

Silts, sediment, and other forms of pollution may be transported onto highway right-of-way (ROW) as a result of a storm event. Potential sources of pollution located outside highway ROW are beyond the control of this PPP. Pollution within highway ROW will be conveyed and controlled per this PPP.

VIII. DEFINITIONS

A. Base PPP - Initial Pollution Prevention Plan.
B. Amended PPP - May include Plan Revisions or Contract Modifications for new items, storm water monitoring inspection reports, and fieldbook entries made by the inspector.
C. IDR - Inspector's Daily Report - this contains the inspector's daily diary and bid item postings.
D. Controls - Methods, practices, or measures to minimize or prevent erosion, control sedimentation, control storm water, or minimize contaminants from other types of waste or materials. Also called Best Management Practices (BMPs).
E. Signature Authority - Representative authorized to sign various storm water documents.

CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Nathan Carhoff
Signature

Nathan Carhoff
Printed or Typed Name

Tom Storey
Signature

Tom Storey
Printed or Typed Name

100-22
04-21-15

ROLLED EROSION CONTROL

Refer to EC-101, EC-103 and EC-104

Location				(L)	(W)	Turf Reinforcement Mat (TRM) (EC-104)				Slope Protection (EC-103)	Special Ditch Control (EC-101)	Remarks
Road Identification	Begin Station	End Station	Side	FT	FT	Type 1 Squares	Type 2 Squares	Type 3 Squares	Type 4 Squares	Squares	Squares	
U.S. Highway 151	850+50.30	856+20.00	LT	570	120					594		
U.S. Highway 151	858+07.00	860+50.00	LT	243	75					152		
U.S. Highway 151	858+44.00	862+00.00	RT	356	40					109		
U.S. Highway 151	864+65.00	866+05.00	LT	140	60					85		
U.S. Highway 151	868+33.00	874+00.00	LT	567	50					253		
U.S. Highway 151	974+75.00	984+80.00	LT	1005	30					252		
U.S. Highway 151	977+80.00	981+40.00	RT	360	30					94		
		Totals:								1539		

STA 845+05.45
BEGIN PCC WIDENING LT.

STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING

STA 843+88.58
BEGIN PCC WIDENING RT.

STA 843+47.28
BEGIN PROJECT

U.S. Hwy. 151

STA 850+01.96
Construct 100 LF of Stabilized
Construction Entrance
Stage 2

Bridge End Drain DR-401

Church Street

STA 850+01.96
Construct 100 LF of Stabilized
Construction Entrance
Stage 2

EROSION CONTROL LEGEND

- Proposed Silt Fence
- Proposed Ditch Check
- Proposed Inlet Protection
- Urban Seeding
- Rural Seeding
- Native Seeding

0 FEET 50

Prairie Creek

STA 863+92.13
Construct 100 LF of Stabilized
Construction Entrance
Stage 2

STA 864+64.13
Construct 100 LF of Stabilized
Construction Entrance
Stage 2

Bridge End Drain DR-401

Bridge End Drain DR-401

U.S. Hwy. 151

Losey Avenue

Prairie Avenue

Refer to Structural
Drawings for Slope
Protection at
Structures

Bridge End Drain DR-401

STA 863+92.13
Construct 100 LF of Stabilized
Construction Entrance
Stage 2 and 3

0 FEET 50

POLLUTION PREVENTION PLAN

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	C.28

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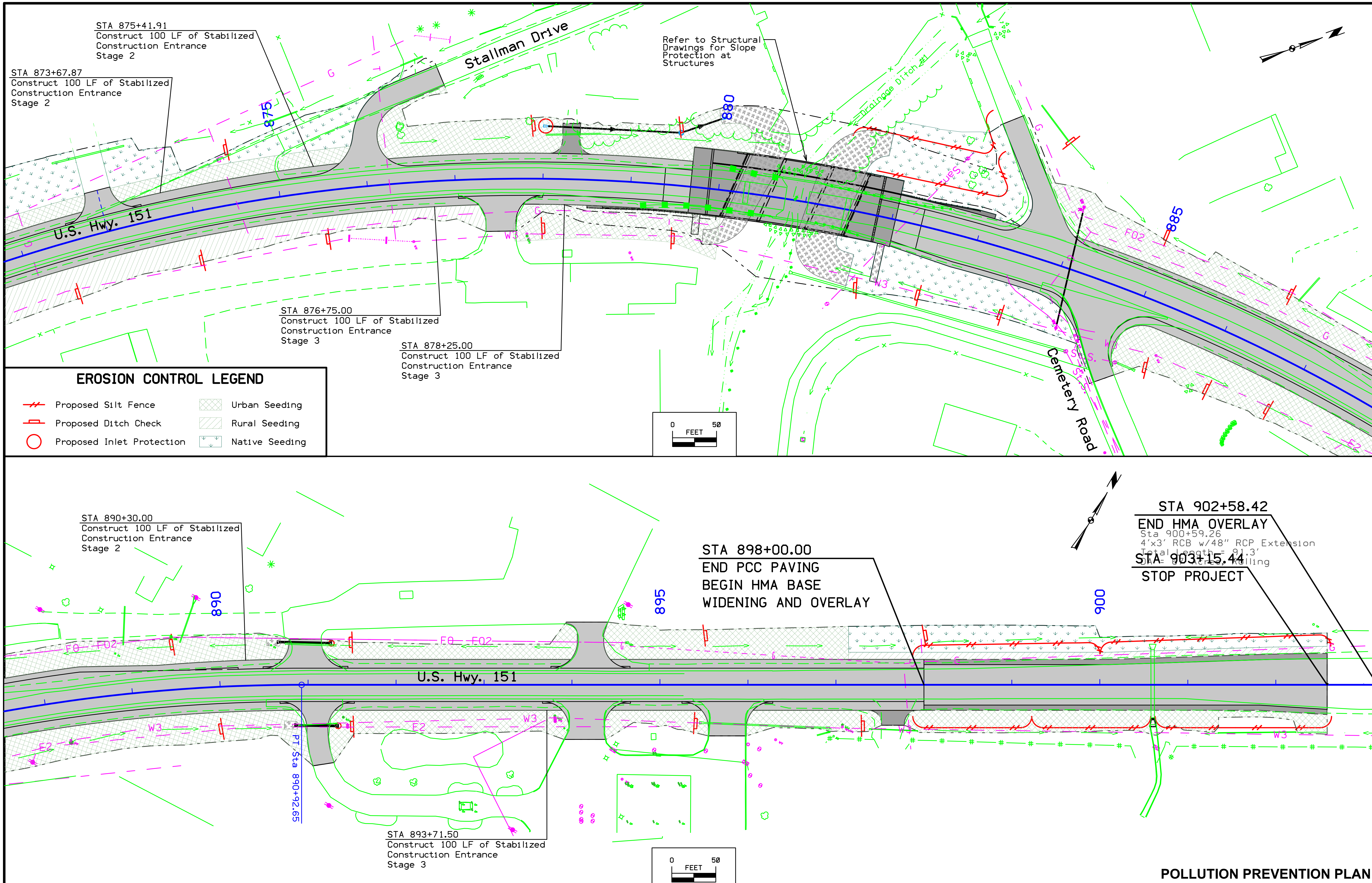
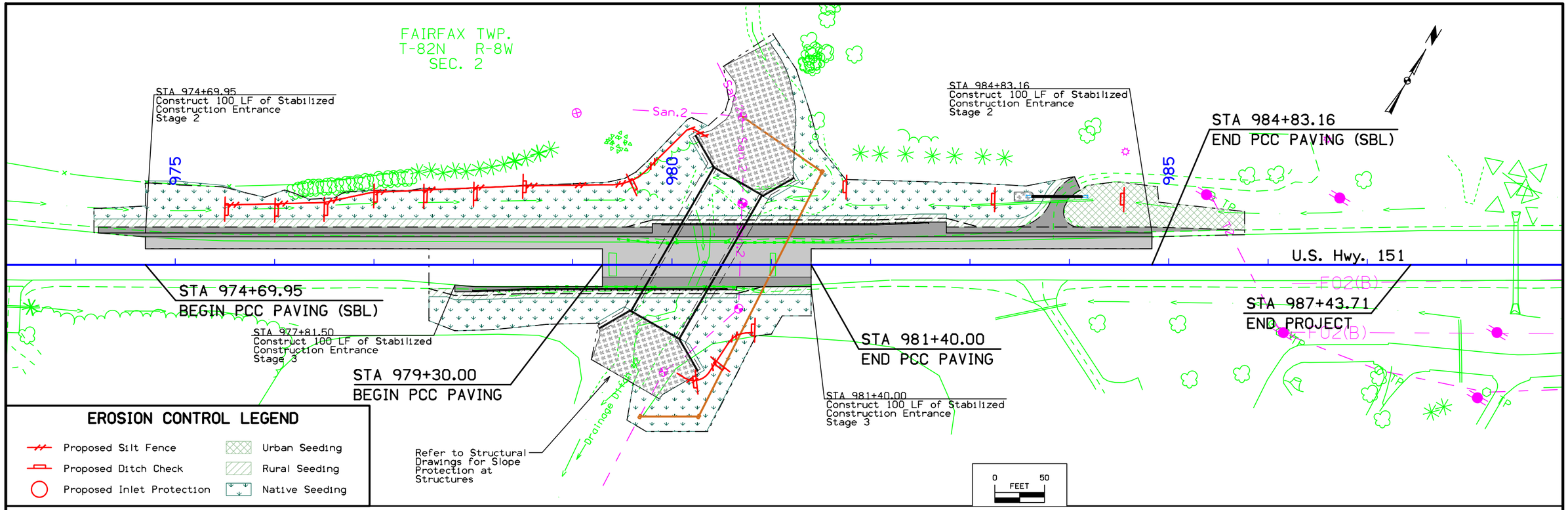

STA 875+41.91
Construct 100 LF of Stabilized
Construction Entrance
Stage 2
STA 873+67.87
Construct 100 LF of Stabilized
Construction Entrance
Stage 2
Stallman Drive
Refer to Structural
Drawings for Slope
Protection at
Structures
Drainage Ditch #1
875
880
885
U.S. Hwy. 151
Cemetery Road
STA 876+75.00
Construct 100 LF of Stabilized
Construction Entrance
Stage 3
STA 878+25.00
Construct 100 LF of Stabilized
Construction Entrance
Stage 3
EROSION CONTROL LEGEND
Proposed Silt Fence
Proposed Ditch Check
Proposed Inlet Protection
Urban Seeding
Rural Seeding
Native Seeding
0 50
FEET
STA 890+30.00
Construct 100 LF of Stabilized
Construction Entrance
Stage 2
890
895
900
U.S. Hwy. 151
PT Sta 890+92.65
STA 898+00.00
END PCC PAVING
BEGIN HMA BASE
WIDENING AND OVERLAY
STA 902+58.42
END HMA OVERLAY
Sta 900+59.26
4'x3' RCB w/48" RCP Extension
STA 903+15.44
STOP PROJECT
STA 893+71.50
Construct 100 LF of Stabilized
Construction Entrance
Stage 3
0 50
FEET

POLLUTION PREVENTION PLAN

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	C.29



EROSION CONTROL LEGEND

- Proposed Silt Fence
- Proposed Ditch Check
- Proposed Inlet Protection
- Urban Seeding
- Rural Seeding
- Native Seeding

POLLUTION PREVENTION PLAN

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	C.30

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SURVEY SYMBOLS

- CP Control Point
- BM Bench Mark
- PPA Power Pole Co. 1
- PLG Location of General Photo
- IN Storm Sewer Intake
- SI Sign
- LC Lot Corner
- BB Billboard
- WV Water Valve
- WH WHD Water Hydrant
- TP TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electric Riser Pole
- SL Speed Limit Sign
- MH Utility Access (Manhole)
- MIS Miscellaneous
- MM Mile Marker Post
- WEL Well
- LUM Luminaire
- GP Guard Post (Less Than 4 Posts)
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FLG Flag Poles
- FHD Fire Hydrants
- STP Stump
- OUT Tile Outlet
- INB Storm Sewer Beehive Intake
- S Soil Sampling Site (Wetlands)
- TVP TV Pedestal
- SP Stream Profile
- TW Top of Water
- BLD Building or Foundation
- LIN Miscellaneous Line
- ST Spiral Point
- RET Retaining Walls
- BRG Bridge
- TLNR Tree Line Right
- TLNL Tree Line Left
- CON Concrete or A/C Slab
- CUL Culvert
- FCL Chain Link and Security Fence
- GDL Guard Rail Steel
- BL Topo Breakline
- FWD Wood Fence
- D Centerline Draw or Stream (Down)
- DU Centerline Draw or Stream (Up)
- FW Wire Fence
- PIP Pipe Culvert
- RRR Railroad Rail
- CU Back of Curb
- ENU Edge Unpaved Entrance & Parking
- ENP Edge Paved Entrance & Park Lot
- EP Edge of Paved Roads (ML or SR)
- GU Gutter In Front of Curb
- SNP Unpaved Shoulder
- BNK Stream Bank
- EG Edge of Gravel Road
- EW Edge of Water
- ENT Centerline BL of Entrance
- SH Paved Shoulder
- RIP Rip-Rap
- TRL Trail
- SWK Sidewalk
- TV Satelite TV Dish
- TR Telephone Riser Pole
- TSB Telephone Switch Box
- UV Underground Utility Vault
- VS Channel Cross Section
- BLS Bridge Low Steel

- G(C) – GL1C Gas Line Co. 1 - Quality C
- GL1D Gas Line Co. 1 - Quality D
- Default_Chain Default Chain Feature
- WL3D Water Line Co. 3 - Quality D
- SA1D Sanitary Sewer Co. 1- Quality D
- T(C) – TL1C Telephone Line Co. 1 - Quality C
- St.S.(C) ST1C Storm Sewer Co. 1 - Quality C
- ST Spiral Point
- San.(C) SA1C Sanitary Sewer Co. 1- Quality C
- SA2D Sanitary Sewer Co. 2 - Quality D

UTILITY LEGEND

- PPA Alliant Energy
- TPD Telephone Pedestal
- WV Water Valve
- WHD Water Hydrant
- PR Electic Riser Pole
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- TVP TV Pedestal
- GLA MidAmerican Energy
- ELB Linn County Rural Electric Cooperative
- FOA South Slope Phone Internet Television
- FOB Mediacom
- FO3(C)– FOC Sprint/Nextel
- San.(C) SA1C City of Fairfax
- SA1D City of Fairfax
- SA2D City of Cedar Rapids
- TLA South Slope Phone Internet Television
- TLB Centurylink
- TVA Underground TV Cable Co. 1
- Water Line City of Cedar
- Water Line City of Cedar Rapids
- Water Line City of Fairfax

PLAN VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Magenta	(5)	Existing Utilities
SHADING	**Design Color No.**	
Yellow	(4)	Highlight for Critical Notes or Features
Red	(3)	Delineates Restricted Areas
Lavender	(9)	Temporary Pavement Shading
Gray, Light	(48)	Proposed Pavement Shading
Gray, Med	(80)	Proposed Granular Shading
Gray, Dark	(112)	Proposed Grade and Pave Shading "In conjunction with a paving project"
Brown, Light	(236)	Grading Shading
Tan	(8)	Proposed Sidewalk Shading
Blue, Light	(230)	Proposed Sidewalk Landing Shading
Pink	(11)	Proposed Sidewalk Ramp Shading

PROFILE VIEW COLOR LEGEND OF PLAN AND PROFILE SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Ground Line Profile
Blue	(1)	Proposed Profile and Annotation
Magenta	(5)	Existing Utilities
Blue, Light	(230)	Proposed Ditch Grades, Left
Black	(0)	Proposed Ditch Grades, Median
Rust	(14)	Proposed Ditch Grades, Right

- Reference Point / Station — Survey Line
- Section Corner
- Ground Line Intercept
- Saw Cut
- Guardrail
- Trench Drain
- HighTension Cable Guardrail
- Sheet Pile
- Pavement Removal
- Clearing & Grubbing Area

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing Right of Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Easement (Temporary)
- Easement
- C/A Access Control
- Property Line

PLAN AND PROFILE LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES D, E, F, & K)

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.1

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

STA 845+05.45
BEGIN PCC WIDENING LT.

STA 843+88.58
BEGIN PCC WIDENING RT.

STA 843+47.28
BEGIN PROJECT

STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING

STA 849+34.97 (HWY 151) =
STA 1849+34.97 (CHURCH STREET)

PT Sta 840+20.65

U.S. Hwy. 151

45:1 Taper

Relocate Monument (By Others)

+34.00 Prop. Type "C" Ent.

+93.00 Prop. Type "B" Ent.

+91.50 Prop. Type "C" Ent.

+97.50 Prop. Type "B" Ent.

+44.00 Prop. Type "C" Ent.

+60.50 Prop. Type "B" Ent.

Do Not Disturb Sign, Protect Fence

Church Street

Curve Data
Δ = 66° 14' 42.26" (LT)
T = 623.05
L = 1,104.08
R = 954.93
E = 185.28

0 50 FEET

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Manhole to Grade
③ Adjust Hydrant to Grade
④ Protect Existing Intake
⑤ Relocate Utility Pole (By Others)
⑥ Water Main Casing pipe, Refer to M Sheets
⑦ Sanitary Sewer, Refer to M Sheets

Existing Ground

Profile Grade

846+93.00 Prop. Type "B" Ent. Lt.
+1.164%
2" Drop Curb
-2.000%

845+34.00 Prop. Type "C" Ent. Lt.
-2.000%
+6.676%
2" Drop Curb

846+44.00 Prop. Type "C" Ent. Rt.
-2.000%
+2.000%
+9.318%
2" Drop Curb

STA 848+30.33
ELEV = 760.54
MATCH EXISTING

844+91.50 Prop. Type "C" Ent. Rt.
+1.500%
2" Drop Curb
+4.516%

845+97.50 Prop. Type "B" Ent. Rt.
-2.000%
+1.500%
+8.296%
2" Drop Curb

847+60.50 Prop. Type "B" Ent. Rt.
2" Drop Curb
-2.000%
+1.500%
+11.482%

762.62

-2.752%

+6.000%
+80
757.80

4.50% RT Ditch Grade

VPI +95.000 +00
Elv 755.74 756.90
Len 500.00 ft
K = 57

No Ditch
Ent.
No Ditch
Ent.
No Ditch
Side Rd.
No Ditch
Ditch Grade

Lt
Rt

838	839	840	841	842	843	844	845	846	847	848	849	850
788.09	787.25	786.39	785.50	784.61	783.74	782.90	782.09	781.24	780.34	779.47	778.60	777.78	777.02	776.29	775.58	774.87	774.17	773.48	772.79	772.12	771.45	770.75	770.05	769.37	768.69	768.01	767.32	766.64	765.95	765.26	764.56	763.84	763.11	762.39	761.86	761.32	760.95	760.70	760.49	760.51	760.53	760.66	760.79	760.92	761.11	761.30	761.52	761.78	762.05	762.37	762.81	763.07	763.61	763.88	764.56

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.2

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Sta. 852+26.00
Install 42"x170' 3000D RCP
F.L. = Lt. 752.04
Rt. 754.30

Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° skew
(Removal By Others)

FAIRFAX TWP.
T-82N R-8W
SEC. 16

FAIRFAX TWP.
T-82N R-8W
SEC. 9

Union Pacific Railroad

Keyed Notes
① Adjust Water Valves to Grade

STA 864+19.80 (HWY 151) =
STA 2864+19.80 (PRARIE AVENUE)

+19.80 Prop. Type "C" Granular Ent.

Remove Existing Retaining Wall

Proposed MSE Wall No. 3

+19.80 Prop. Type "C" Paved Ent.

15:1 Taper

U.S. Hwy. 151

Proposed MSE Wall No. 1

Sta 857+32.60
204'-0" x 40'-0"
Pretensioned Prestressed Concrete
Beam Bridge with 4° Skew (R.A.)
(By Others)

Proposed MSE Wall No. 2

Losey Avenue

Protect Fence

Remove Existing Retaining Wall

Sta 852+26.00
3'x2' RCB w/36" RCP Extension
Total Length = 169.8'
DA = 11.97 Acres, Rolling
(Remove)

Prairie Avenue

0 50 FEET

+5.390% +0.500% +1.955% +1.700% 10' V.C. 10' V.C. 770 760 864+19.80 Prop. Type "C" Paved Ent. Lt.

VPI +32.600
Elv 806.00
Len 750.00 ft
K = 62
SSD = 367'

+6.000% -6.000% Profile Grade Existing Ground

+2.000% +15.000% +1.955% +0.500% 10' V.C. 770 760 750 864+19.80 Prop. Type "C" Granular Ent. Lt.

VPI +50.000
Elv 762.96
Len 450.00 ft
K = 82

-6.000% -0.500%

+00 756.90 +6.000% -1.15% RT Ditch Grade +26 754.30 +1.07% RT Ditch Grade -0.26% LT Ditch Grade +50 752.50 +25 751.01

+00 758.30 +2.40% Ditch Grade +50 759.50

+00 756.25 +0.25% LT Ditch Grade +00 756.75 +3.00% LT Ditch Grade +00 759.75 +1.20% LT Ditch Grade +00 762.15 +2.72% +25 762.83

+50 748.30 -3.50% LT Ditch Grade

Lt: No Ditch | Ditch Grade | Bridge | Ditch Grade | Entrance | Ditch Grade

Rt: Ditch Grade | Bridge | U.A.C. Ex. Ditch | No Ditch | Side Road

850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865
763.88 764.56	764.80 765.55	765.83 766.64	766.97 767.90	768.22 769.21	769.58 770.62	771.04 772.02	772.54 773.47	774.04 774.92	775.54 776.32	777.04 777.70	778.54 779.04	780.04 780.47	781.54 781.85	783.04 783.10	784.52 784.55	785.90 785.41	787.18 786.42	788.36 787.28	789.44 788.11	790.42 788.86	791.30 789.55	792.08 790.19	792.76 790.65	793.34 791.10	793.82 791.56	794.20 791.91	794.48 792.62	794.66 793.30	794.75 793.72	794.73 794.02	794.61 794.31	794.39 794.78	794.07 795.21	793.65 795.64	793.13 796.12	792.51 796.09	791.79 797.23	790.97 796.29	790.05 795.34	789.03 794.27	787.91 793.19	786.69 792.06	785.37 790.90	783.95 789.75	782.46 788.61	780.96 787.39	779.46 786.18	777.96 785.01	776.46 783.85	774.99 782.69	773.61 781.54	772.30 780.37	771.07 779.19	769.91 778.01	768.83 776.83	767.83 775.64	766.90 774.44	766.05 773.31	765.28 772.28	764.58 771.30

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.3

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Keyed Notes

① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Hydrant to Grade

Prairie Creek

Sta 867+41.69
209'-0" x 40'-0"
Pretensioned Prestressed Concrete
Beam Bridge with 30° Skew (R.A.)
(By Others)

Sta 867+44.52
160'-0"x30'-0" Continuous I-Beam
Bridge with 0° skew (Removal By Others)

U.A.C.

+00.00 Prop. Type "B" Ent.

+31.00 Prop. Type "C" Ent.

+50.00 Prop. Type "B" Ent.

Stallman Drive

U.S. Hwy. 151

865 870 875 880

FO G W3

44' 48' 44'

PC Sta 870+29.88

STA 876+00.00 (HWY 151) =
STA 4876+00.00 (STALLMAN DRIVE)

Curve Data
Δ = 61° 52' 59.64" (RT)
T = 1,144.91
L = 2,062.78
R = 1,909.86
E = 316.88
e = 4.2%
I = 120'
x = 57'

Proposed Cast-in-Place Concrete Wall. Refer to U Sheets.

FAIRFAX TWP.
T-82N R-8W
SEC. 9

0 50 FEET

795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

Existing Ground

Profile Grade

-0.500%

-0.500%

+1.000%

-3.800% +4.200% +0.566%

878+31.00 Prop. Type "C" Ent. Lt.

760 750

+25 750.66 -3.30% RT Ditch Grade LT Ditch Grade

+00 748.19 -1.87% RT Ditch Grade

+90 746.50

+30 742.00

+25 745.92

+50 746.00 +1.36% RT

+00 747.81 +3.62% Ditch Grade

+50 748.81 +2.00% Grade

+0.30% LT Ditch Grade

+76.20 745.00

+50 747.50

3.800% 1.500%

Unpaved Section 13.000%

873+00.00 Prop. Type "B" Ent. Lt.

VPI +50.000
Elv 757.46
Len 150.00 ft
K = 100

+50 756.60 -0.20% LT Ditch Grade

+00 756.30

+50 759.00 1.50% LT Ditch Grade

+50 757.50 -7.00% LT

+00 754.00

-4.200% -4.200% -5.593%

877+50.00 Prop. Type "B" Ent. Rt.

Lt: Ditch Grade | Bridge | Ditch Grade | Entrance | U.A.C. Existing Ditch | Side Road | Ditch Grade | Entrance | Ditch Grade

Rt: No Ditch | Ditch Grade | Bridge | Ditch Grade | U.A.C. Existing Ditch | Entrance | No Ditch

764.58 763.96 763.41 762.94 762.55 762.23 761.99 761.83 761.71 761.58 761.46 761.33 761.21 761.08 760.96 760.83 760.71 760.58 760.46 760.33 760.21 760.08 759.96 759.83 759.71 759.58 759.46 759.33 759.21 759.08 758.96 758.83 758.71 758.58 758.46 758.33 758.21 758.08 757.96 757.83 757.74 757.83 757.99 758.21 758.46 758.71 758.96 759.21 759.46 759.71 759.96 760.21 760.46 760.71 760.96 761.21 761.46 761.71 761.96

865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880

FILE NO.	ENGLISH	DESIGN TEAM SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER D.4

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Curve Data
Δ = 61° 52′ 59.64″ (RT)
T = 1,144.91
L = 2,062.78
R = 1,909.86
E = 316.88
e = 4.2%
I = 120′
x = 57

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade
⑤ Water Main Casing Pipe, Refer to M Sheets

Sta 880+89.90
24′-0″x44′-0″ I-Beam
and PPC Beam Bridge
with 0° skew
(Removal By Others)

STA 884+13.63 (HWY 151) =
STA 5884+13.63 (CEMETERY ROAD)

Sta 880+85.25
140′-0″ x 58′-0″
Continuous Concrete Slab
Bridge with 15° Skew (L.A.)
(By Others)

Cemetery Road

U.S. Hwy. 151

15:1 Taper

Protect Well

Remove Pipe

Remove Pipe

Do Not Disturb Sign

+96.75 Prop. Type "B" Ent.

+21.00 Prop. Type "B" Ent.

+10.00 Prop. Type "B" Ent.

+18.50 Prop. Type "B" Ent.

Sta 890+92.65

50′

38′

0 FEET 50

FAIRFAX TWP.
T-82N R-8W
SEC. 9

VPI +85.250
Elv 762.81
Len 150.00 ft
K = 94
SSD = 490′

+1.000% -0.600%

+40 752.50
+80 748.00
+00 754.00
3.75% Ditch Grade
11.25%
7.25% RDG
+00 748.00
+40 750.90
+1.00% RT Ditch Grade

+00 754.34
+75 753.25
-0.600%

+25 751.66
+1.60% RT Ditch Grade

+00 754.46
+0.20% LT Ditch Grade
+0.25% RT Ditch Grade

Profile Grade
Existing Ground

VPI +50.000
Elv 758.22
Len 150.00 ft
K = 187

+65 755.38
+90 755.72
+30 755.84
+35 756.10
+0.200%
+0.30% RT Ditch Grade
+0.30% LT Ditch Grade

+75 756.58
+80 756.84
+50 758.24
-1.85% RT D.G.

-2.797%
+4.000%
+3.000%
-0.853%
890+96.75
Prop. Type "B"
Ent. Lt.

+2.000%
+4.000%
+4.000%
-1.692%
894+21.00
Prop. Type "B"
Joint Ent. Lt.

891+10.00
Prop. Type "B"
Ent. Rt.
-2.333%
-4.000%
+5.097%
-1.500%

894+18.50
Prop. Type "B"
Ent. Rt.
-2.000%
-4.000%
-2.000%
+5.374%

Lt: Ditch Grade | Bridge | U.A.C. Existing Ditch | Side Road | Ditch Grade | Ent. | Ditch Grade | Entrance
Rt: No Ditch | Bridge | Ditch Grade | Side Road | Ditch Grade | Ent. | Ditch Grade | Ent. | D.G.

880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895
761.96 / 759.89	762.19 / 759.85	762.37 / 759.83	762.48 / 759.85	762.53 / 760.76	762.50 / 759.91	762.41 / 759.98	762.27 / 760.03	762.12 / 760.10	761.97 / 760.18	761.82 / 760.27	761.67 / 760.34	761.52 / 760.39	761.37 / 760.45	761.22 / 760.50	761.07 / 760.53	760.92 / 760.56	760.77 / 760.56	760.62 / 760.61	760.47 / 760.67	760.32 / 760.73	760.17 / 760.77	760.02 / 760.79	759.87 / 760.80	759.72 / 760.78	759.57 / 760.75	759.42 / 760.71	759.27 / 760.70	759.12 / 760.67	758.97 / 760.64	758.82 / 760.59	758.67 / 760.58	758.54 / 760.57	758.44 / 760.54	758.37 / 760.51	758.34 / 760.46	758.34 / 760.40	758.37 / 760.35	758.42 / 760.28	758.47 / 760.28	758.52 / 760.27	758.57 / 760.25	758.62 / 760.21	758.67 / 760.15	758.72 / 760.08	758.77 / 760.01	758.82 / 759.94	758.87 / 759.89	758.92 / 759.84	758.97 / 759.80	759.02 / 759.77	759.07 / 759.74	759.12 / 759.72	759.17 / 759.73	759.22 / 759.74	759.27 / 759.75	759.32 / 759.73	759.37 / 759.74	759.42 / 759.74	759.47 / 759.72	759.52 / 759.71

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.5

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Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Hydrant to Grade

FAIRFAX TWP.
T-82N R-8W
SEC. 9

STA 898+00.00
END PCC PAVING
BEGIN HMA BASE
WIDENING AND OVERLAY

Sta 900+59.26
4'x3' RCB w/48" RCP Extension
Total Length = 91.3'
DA = 67 Acres, Rolling
(Extend)

STA 902+58.42
END HMA BASE WIDENING
AND OVERLAY

STA 903+15.44
SUSPEND PROJECT

U.S. Hwy. 151

80th Street

38'

+76.54 Prop. Type "B" Ent.

+64.90 Prop. Type "C" Ent.

U.A.C.

U.A.C.

Do Not Disturb Sign
Protect Gas Shut-off Valve

Sta. 900+60.27 U.S. Hwy. 151
Install 48"x2' 2000D RCP
Lt. U.A.C
F.L. = Other 753.30
Rt. 753.22

0 FEET 50

VPI +75.000
Elv 760.27
Len 150.00 ft
K = 257
SSD = 1213'

STA 900+00.00
ELEV = 759.79
MATCH EXISTING

Profile Grade

-1.85%
+45
756.48
-0.88%
RT D.G.
-0.30% LT Ditch Grade
+29
757.70
+86
757.20
+00
755.70
-0.384%
-0.384%
+00
754.20

Existing Ground

895+76.54
Prop. Type "B"
Ent. Rt.
-2.000%
-4.000%
+6.983%
-2.000%

897+64.90
Prop. Type "C"
Ent. Rt.
-2.000%
-4.000%
-7.321%

Ditch Grade

Lt
Rt
U.A.C. Ex. Ditch D.G.
Ent.
Ditch Grade
U.A.C. Ex. Ditch
Ent.
U.A.C. Ex. Ditch

759.52 759.57 759.62 759.67 759.72 759.77 759.82 759.87 759.92 759.97 760.02 760.07 760.12 760.16 760.17 760.16 760.13 760.07 759.98 759.89 759.79 759.75 759.72 759.70 759.70 759.72 759.73 759.76 759.80 759.81 759.83 759.87 759.96 760.07 760.29 760.53 760.78 761.10 761.46 761.85 762.25 762.68 763.09 763.47 763.89 764.30 764.71 765.11 765.51 766.00 766.45 766.86 767.25 767.65 768.07 768.48 768.88 769.27 769.67 770.10 770.57

759.71 759.71 759.86 759.86 759.81 759.82 759.83 759.83 759.82 759.83 759.83 759.83 759.85 759.87 759.89 759.90 759.88 759.87 759.85 759.83 759.79

895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.6

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FAIRFAX TWP.
T-82N R-8W
SEC. 2

Sta 980+18.65
36'-0"x44'-0" I-Beam and
PPC Beam Bridge with
30° skew (L.A.)
(Removal By Others)

Protect Trees and Fence

Protect Tile Outlet

+85.00 Prop. Type "C" Ent.

Remove Pipe

STA 984+83.16
END PCC PAVING (SBL)

U.S. Hwy. 151

STA 971+42.45
RESUME PROJECT

STA 974+69.95
BEGIN PCC PAVING (SBL)

STA 979+30.00
BEGIN PCC PAVING

STA 981+40.00
END PCC PAVING

U.A.C.

STA 987+43.71
END PROJECT

+75.00 U.A.C. Type "C" Ent.

Sta 980+18.00
Construct 55'-0" x 13'-9 1/4" x 168'-0"
Conspan Precast Arch with 30°
Skew (L.A.)
(By Others)

0 FEET 50

Existing Ground

STA 979+30.00
ELEV = 779.40
MATCH EXISTING

VPI +50.000
Elv 778.56
ex = 0.29'
K = 139
Len 180.00 ft

Profile Grade

STA 981+40.00
ELEV = 779.10
MATCH EXISTING

983+85.00
Prop. Type "C"
Ent. Lt.

-4.000%
-1.983%

+50 781.10
-1.10% LT Ditch Grade
+50 780.00
-2.00% LT Ditch Grade
+50 778.00
-5.00% LT Ditch Grade
+00 775.50
-3.00% LT Ditch Grade
+50 774.00
-2.00% LT Ditch Grade
+50 772.00
-1.00% LT Ditch Grade
+00 770.50
-0.700%
+05.65 766.95
-6.87% RT Ditch Grade
+50 770.00
-1.63% LT Ditch Grade
+30.60 770.00
+2.36% RT Ditch Grade
+92.38 771.00
+0.598%
+23.12 771.22
+0.67% LT Ditch Grade
+00 772.40
+6.25% LT Ditch Grade
+56.52 775.93
+18.68 777.19
+2.7% LT Ditch Grade
+88.53 779.10

Ditch Grade | Culvert | Ditch Grade | Entrance | D.G.

Lt

Rt

U.A.C. Existing Ditch | Culvert | Ditch Grade | U.A.C. Existing Ditch

788.03 787.73 787.42 787.08 786.73 786.38 786.02 785.65 785.28 784.91 784.55 784.17 783.77 783.39 783.02 782.65 782.28 781.91 781.57 781.22 780.90 780.58 780.33 780.08 779.89 779.72 779.57 779.43 779.26 779.33 779.09 779.30 778.97 775.32 778.89 764.19 778.85 778.90 778.86 779.07 778.92 779.33 779.01 779.17 779.17 779.34 779.53 780.10 780.34 780.58 780.91 781.24 781.70 782.20 782.75 783.29 783.83 784.34 784.84 785.34 785.84 786.33 786.83 787.33 787.84 788.35 788.85 789.35

973 974 975 976 977 978 979 980 981 982 983 984 985 986 987

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	D.7

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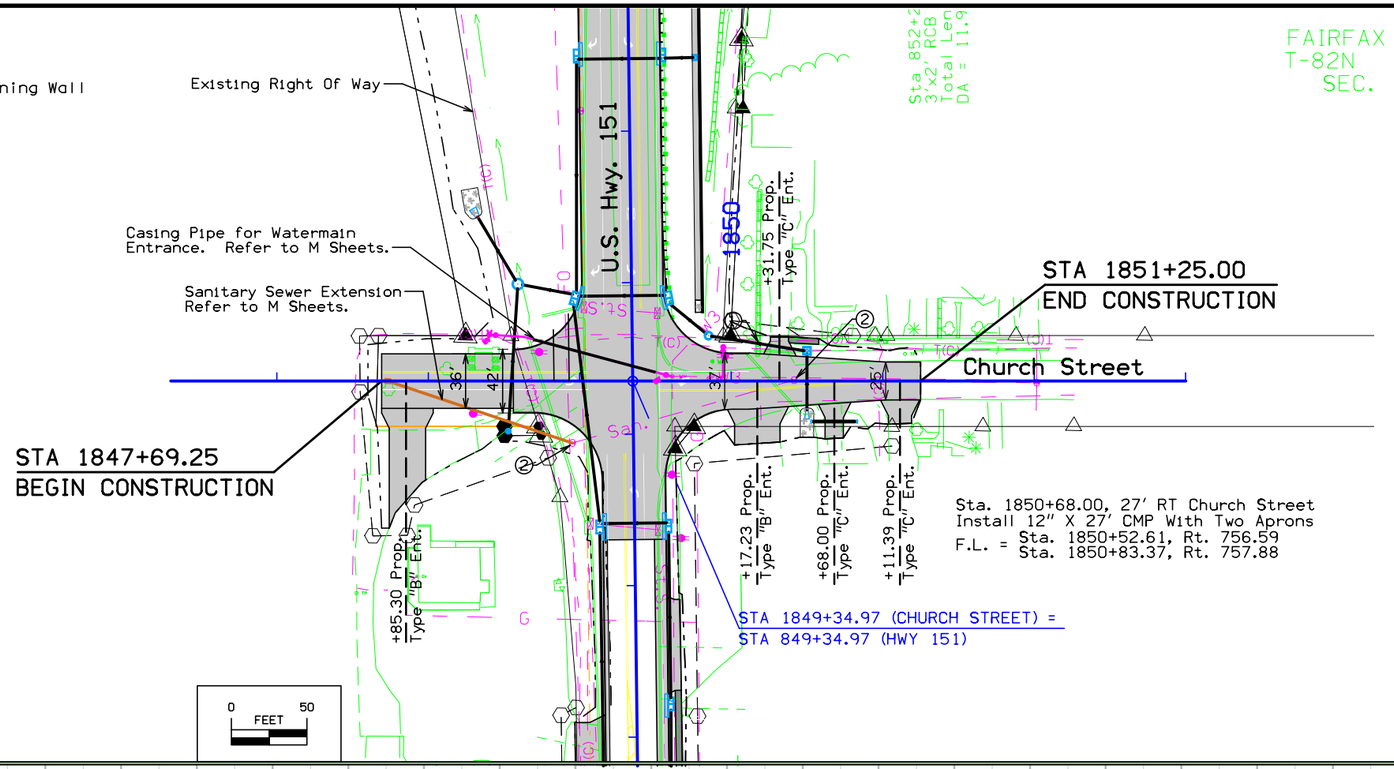
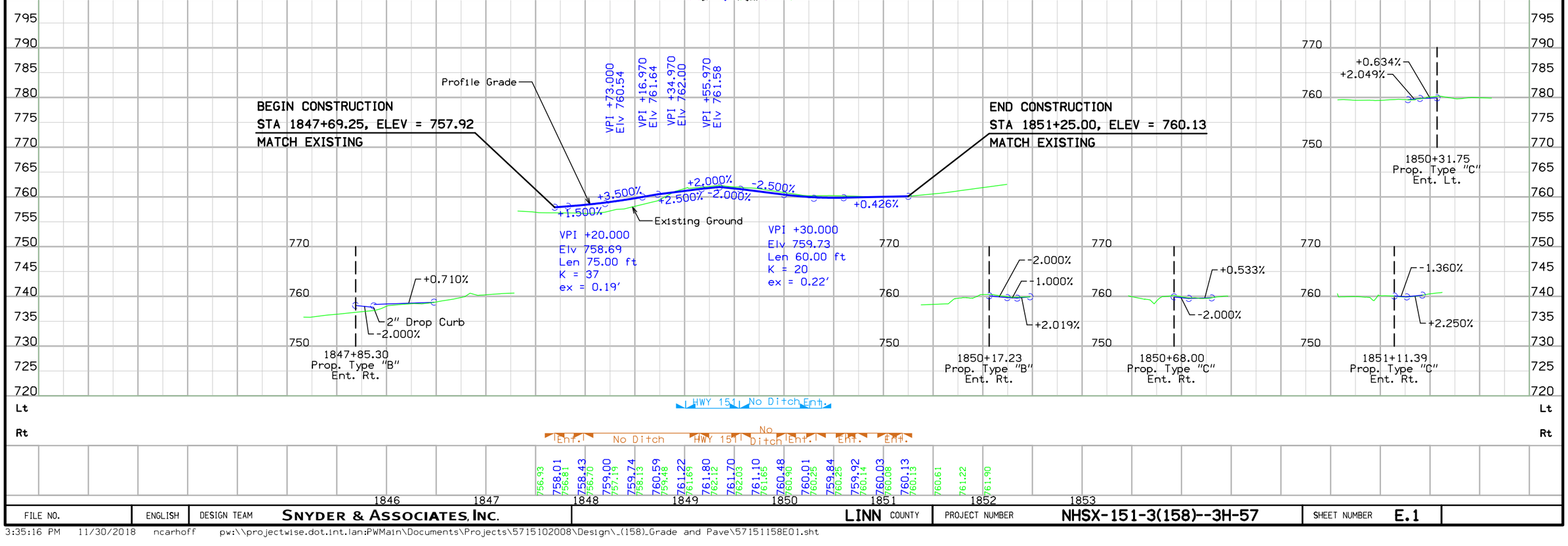
Keyed Notes

① Remove 15 LF Existing BLock Retaining Wall

② Adjust Manhole to Grade



CHURCH STREET



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.1

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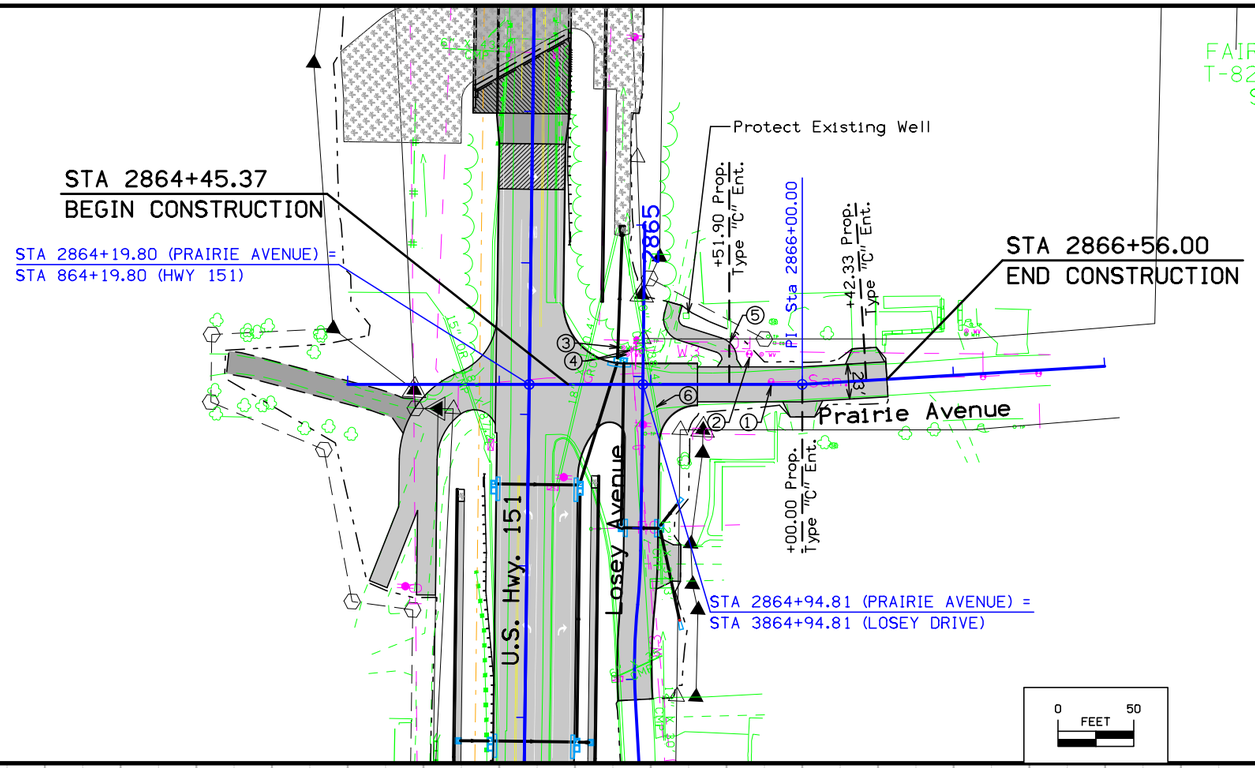
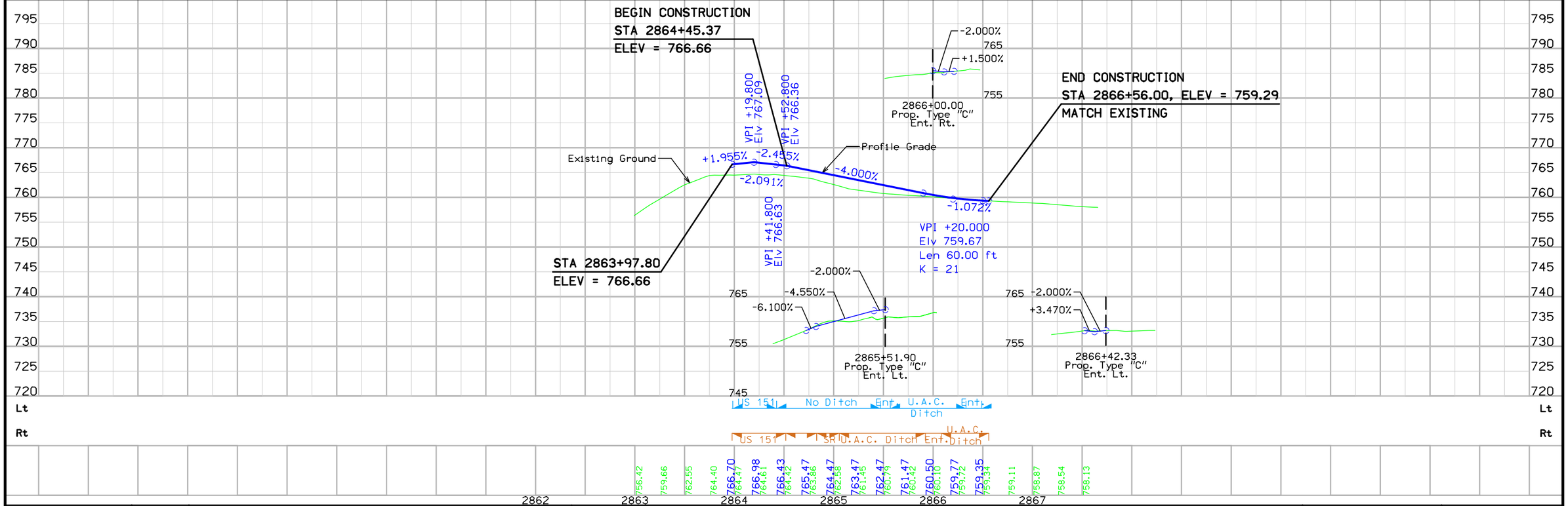
Keyed Notes

① Adjust Manhole to Grade.
② Remove Abandoned Meter Pit.
③ Relocate Hydrant.
④ Adjust Valve to Grade.
⑤ Refer to Sheet L.7 for Geometric Details of Driveway.
⑥ Remove Pipe



FAIRFAX TWP.
T-82N R-8W
SEC. 9

PRAIRIE AVENUE



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.2

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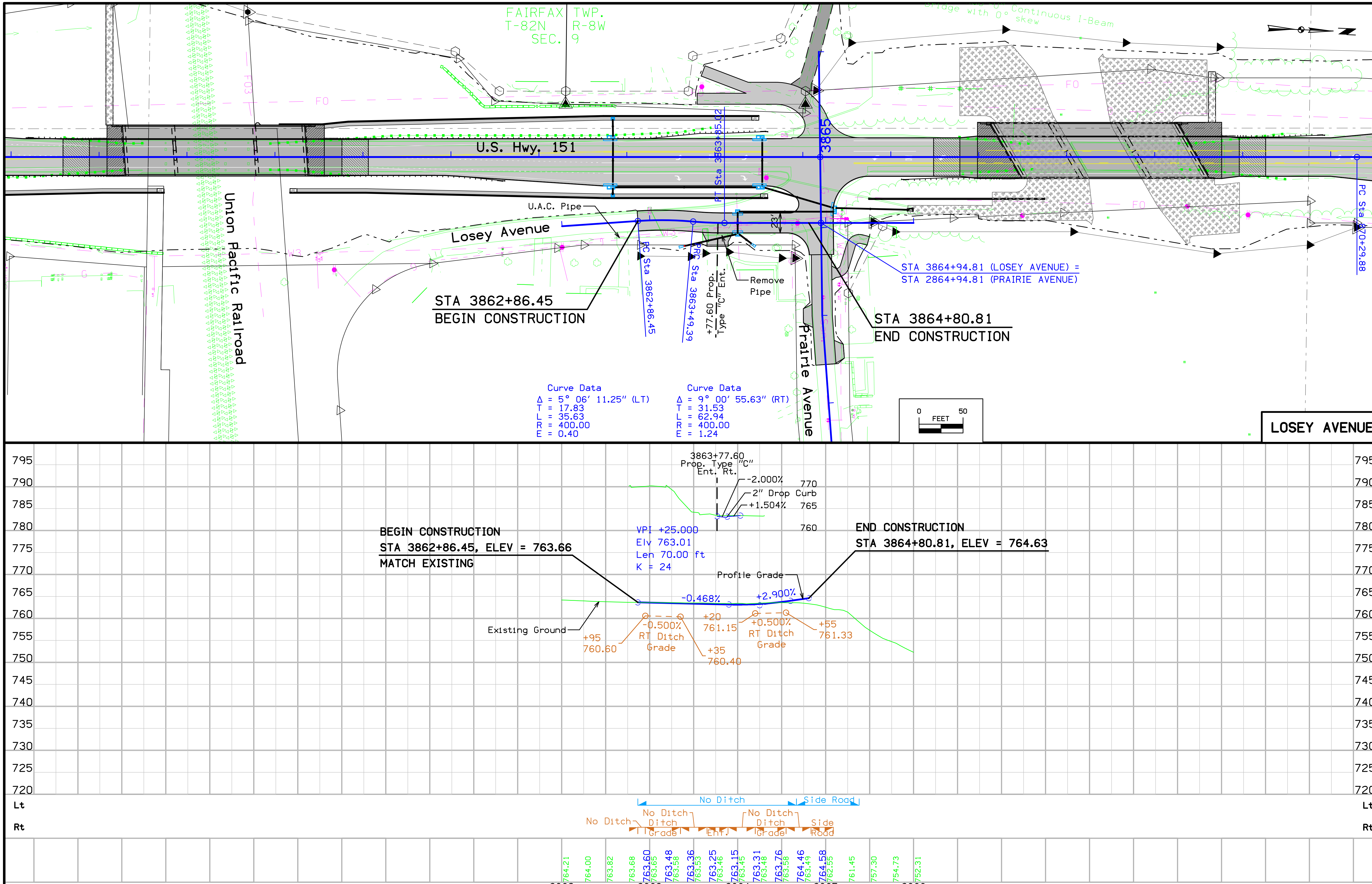

FAIRFAX TWP.
T-82N R-8W
SEC. 9
U.S. Hwy. 151
Union Pacific Railroad
Losey Avenue
Prairie Avenue
U.A.C. Pipe
Remove Pipe
STA 3862+86.45
BEGIN CONSTRUCTION
STA 3864+80.81
END CONSTRUCTION
STA 3864+94.81 (LOSEY AVENUE) =
STA 2864+94.81 (PRAIRIE AVENUE)
PC Sta 3862+86.45
PRC Sta 3863+49.39
PT Sta 3863+85.12
+77.60 Prop. Type "C" Ent.
PC Sta 3870+29.88
Curve Data
Δ = 5° 06' 11.25" (LT)
T = 17.83
L = 35.63
R = 400.00
E = 0.40
Curve Data
Δ = 9° 00' 55.63" (RT)
T = 31.53
L = 62.94
R = 400.00
E = 1.24
0 50
FEET
LOSEY AVENUE
3863+77.60
Prop. Type "C"
Ent. Rt.
-2.000%
2" Drop Curb
+1.504%
BEGIN CONSTRUCTION
STA 3862+86.45, ELEV = 763.66
MATCH EXISTING
VPI +25.000
Elv 763.01
Len 70.00 ft
K = 24
END CONSTRUCTION
STA 3864+80.81, ELEV = 764.63
Profile Grade
-0.468%
+2.900%
Existing Ground
+95
760.60
-0.500%
RT Ditch
Grade
+20
761.15
+35
760.40
+0.500%
RT Ditch
Grade
+55
761.33
No Ditch
Side Road
No Ditch
Ditch
Grade
Ent.
Side
Road
3862
3863
3864
3865
3866

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.3

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FAIRFAX TWP.
T-82N R-8W
SEC. 9

Stallman Drive

U.S. Hwy. 151

STA 4874+25.00
BEGIN CONSTRUCTION

STA 4875+81.00
END CONSTRUCTION

U.A.C.

+49.94 Exist. Ent. (U.A.C.) (Protect)

25'

PC Sta 4874+79.34

PT Sta 4875+23.63

PT Sta 4875+55.65

4875

STA 4876+00.00 (STALLMAN DRIVE) =
STA 876+00.00 (HWY 151)

Curve Data
Δ = 72° 52' 18.32" (LT)
T = 44.29
L = 76.31
R = 60.00
E = 14.58

875

Remove

0 FEET 50

STALLMAN DRIVE

BEGIN CONSTRUCTION
STA 4874+25.00, ELEV = 759.79
MATCH EXISTING

END CONSTRUCTION
STA 4875+81.00, ELEV = 758.79

Profile Grade

Existing Ground

1.500%

+0.626%

-2.200%

-4.200%

VPI +90.000
Elv 758.81
Len 100.00 ft
K = 47

VPI +60.000
Elv 759.25
Len 40.00 ft
K = 14
SSD = 255'

795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

Lt

Rt

U.A.C.

Ent.

U.A.C. U.A.C. U.A.C. U.S. HWY. 151

760.74 760.69 760.43 760.24 760.05 759.79 759.79 759.42 759.45 759.17 759.11 759.04 758.65 759.05 757.87 759.15 757.09 758.91 759.15 757.99 759.43 757.81 754.06 752.82 752.84

4873 4874 4875 4876 4877 4879

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.4

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FAIRFAX TWP.
T-82N R-8W
SEC. 9

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Hydrant to Grade
③ Protect Storm Sewer Structure
④ Adjust Manhole to Grade

Casing Pipe for Water Main Extension, Refer to M Sheets

+52.72 Exist. Ent. (U.A.C.)

U.A.C.

Existing Right Of Way

5880

5885

5890

U.S. Hwy. 151

PI Sta 5884+32.27

PC Sta 5884+77.29

PT Sta 5885+77.84

PI Sta 5886+39.38

Curve Data
Δ = 9° 36' 05.14" (LT)
T = 50.39
L = 100.55
R = 600.00
E = 2.11
e = Normal Crown

Cemetery Road

25'

STA 5882+30.00
BEGIN CONSTRUCTION

STA 5885+42.00
END CONSTRUCTION

PI Sta 5885+27.68

STA 5884+13.63 (CEMETERY ROAD) =
STA 884+13.63 (HWY 151)

0 50
FEET

CEMETERY ROAD

795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

VPI +40.000
Elv 761.27
Len 30.00 ft
K = 12

VPI +70.40
Elv 761.76
VPI +86.06
Elv 761.75
VPI +11.00
Elv 760.85
VPI +32.12
Elv 759.95
VPI +51.34
Elv 759.40

BEGIN CONSTRUCTION
STA 5882+30.00, ELEV = 758.62
MATCH EXISTING

Profile Grade

END CONSTRUCTION
STA 5885+42.00, ELEV = 756.90
MATCH EXISTING

+1.10% +3.500% +1.000% -3.609% -2.862% +1.149% -4.261% -2.761%

Existing Ground

VPI +80.000
Elv 759.17
Len 90.00 ft
K = 38

Ent. U.A.C. | No Ditch | U.S. HWY. 51 | No Ditch

Lt

Rt

No Ditch | U.S. HWY. 151 | No Ditch

759.08 758.64 758.29 757.99 746.97 757.75 757.70 758.01 758.30 758.58 758.87 758.81 759.32 758.99 759.95 759.29 760.74 759.69 761.36 760.15 761.62 760.60 761.25 761.01 760.25 760.21 759.44 759.46 758.75 758.74 758.06 758.10 757.37 757.58 757.08 756.68 756.40 756.20 756.13 756.15 756.44 756.30 756.36 756.45

5880 5881 5882 5883 5884 5885 5886 5887 5888 5889

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.5

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POT Sta 7899+06.04

7900

7905

7910

POT Sta 7913+19.08

STA. 7906+60.44 (80TH STREET) =
STA. 909+10.37 (HWY 151)

+00.00 Prop. Type "C" Ent.

62°1'31.52"

117°58'28.48"

U.A.C.

80th Street

FAIRFAX TWP.
T-82N R-8W
SEC. 16

0 50
FEET

80TH STREET

Existing Ground

7910+00.00
Prop. Type "C"
Ent. Lt.

-2.800%
-10.800%
+0.80%

780
770

20' V.C.
20' V.C.

795 790 785 780 775 770 765 760 755 750 745 740 735 730 725 720

Lt

Rt

759.12 759.38 759.63 759.88 759.98 760.34 760.83 761.41 761.97 762.70 763.74 764.98 766.48 767.61 768.82 768.53 769.23 769.77 770.63 772.10 773.73 775.59 777.68 780.02 782.21 784.55 786.90 789.17

7900 7905 7910

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.6

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FAIRFAX TWP.
T-82N R-8W
SEC. 3

Sta. 6957+40.00
Install 42"x74' 2000D RCP
F.L. = Lt. 772.40
Rt. 773.30

STA 6957+25.00
BEGIN CONSTRUCTION

Existing Right Of Way

PI Sta 6956+71.71

6955

Beverly Road

PC Sta 6954+49.20

STA 6957+55.00
END CONSTRUCTION

30'

24'

100°0'0.01"

79°59'59.99"

PT Sta 6958+65.65

U.S. Hwy. 151

U.A.C.

STA 6958+89.23 (BEVERLY ROAD) =
STA 958+89.23 (HWY 151)

F02(B)

E2

Prairie View Drive

U.A.C.

Curve Data
Δ = 49° 58' 30.00" (RT)
T = 222.52
L = 416.45
R = 477.46
E = 49.31

0 50
FEET

BEVERLY ROAD

815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740

END CONSTRUCTION
STA 6957+55.00, ELEV = 781.89
MATCH EXISTING

781.21
781.89
+2.300%

Existing Ground
Profile Grade

BEGIN CONSTRUCTION
STA 6957+25.00, ELEV = 781.21
MATCH EXISTING

Lt U.A.C. Ex. Ditch

Rt U.A.C. Ex. Ditch

781.21 781.78

6951 6952 6953 6954 6955 6956 6957 6958 6959

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.7

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FAIRFAX TWP.
T-82N R-8W
SEC. 2

Existing Right Of Way

Curve Data
Δ = 101° 12′ 47.17″ (LT)
T = 79.15
L = 114.82
R = 65.00
E = 37.42

STA 8980+18.00 (DRAINAGE DITCH #2) =
STA 980+18.00 (HWY 151)

STA 8981+50.00
END STREAM
REALIGNMENT

STA 8977+75.00
BEGIN STREAM
REALIGNMENT

Drainage Ditch #2

8980

8975

120°00′

U.S. Hwy. 151

Curve Data
Δ = 67° 47′ 47.16″ (RT)
T = 43.68
L = 76.91
R = 65.00
E = 13.31
e = Normal Crown

Sta 980+18.00
Construct 55′-0″ x 13′-9 1/4″ x 168′-0″
Conspan Precast Arch with 30°Skew (L.A.)
(By Others)

0 FEET 50

DRAINAGE DITCH #2

STA 8977+75.00, ELEV = 764.42
MATCH EXISTING

STA 8981+50.00, ELEV = 762.61
MATCH EXISTING

VPI +20.460
Elv 763.60

VPI +88.460
Elv 762.92

Existing Ground

Profile Grade

-0.564%

-0.405%

-0.500%

815 810 805 800 795 790 785 780 775 770 765 760 755 750 745 740 735 730

764.75 764.42 764.42 764.28 764.07 764.14 765.88 764.00 766.85 763.86 769.01 763.72 765.40 763.58 763.33 763.48 769.61 763.38 765.65 763.28 764.49 763.18 764.75 763.08 763.70 762.97 764.16 762.86 765.12 762.74 764.47 762.61 763.06

8977 8978 8979 8980 8981 8982 8983

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	E.8

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FAIRFAX TWP.
T-82N R-8W
SEC. 2

STA 1978+59.07
Begin Runaround

STA 1981+48.08
End Runaround

STA 1976+78.38 Runaround
STA 976+78.38 U.S. 151

STA 1984+18.94 Runaround
STA 984+07.88 U.S. 151

Protect Tile Outlet

1980

U.S. Hwy. 151

Curve Data
Δ = 19° 15′ 45.67″ (LT)
T = 84.85
L = 168.10
R = 500.00
E = 7.15

Curve Data
Δ = 29° 50′ 23.42″ (RT)
T = 135.89
L = 265.61
R = 510.00
E = 17.79

Curve Data
Δ = 10° 34′ 37.75″ (LT)
T = 46.28
L = 92.30
R = 500.00
E = 2.14

0 50
FEET

STA 1978+59.07
ELEV = 779.16
MATCH PROPOSED PAVEMENT

STA 1981+48.08
ELEV = 778.50
MATCH PROPOSED PAVEMENT

Profile Grade

VPI +50.000
Elv 777.06
K = 70
Len 180.00 ft

-1.100%

-1.100%

+1.469%

Existing Ground

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER F.1

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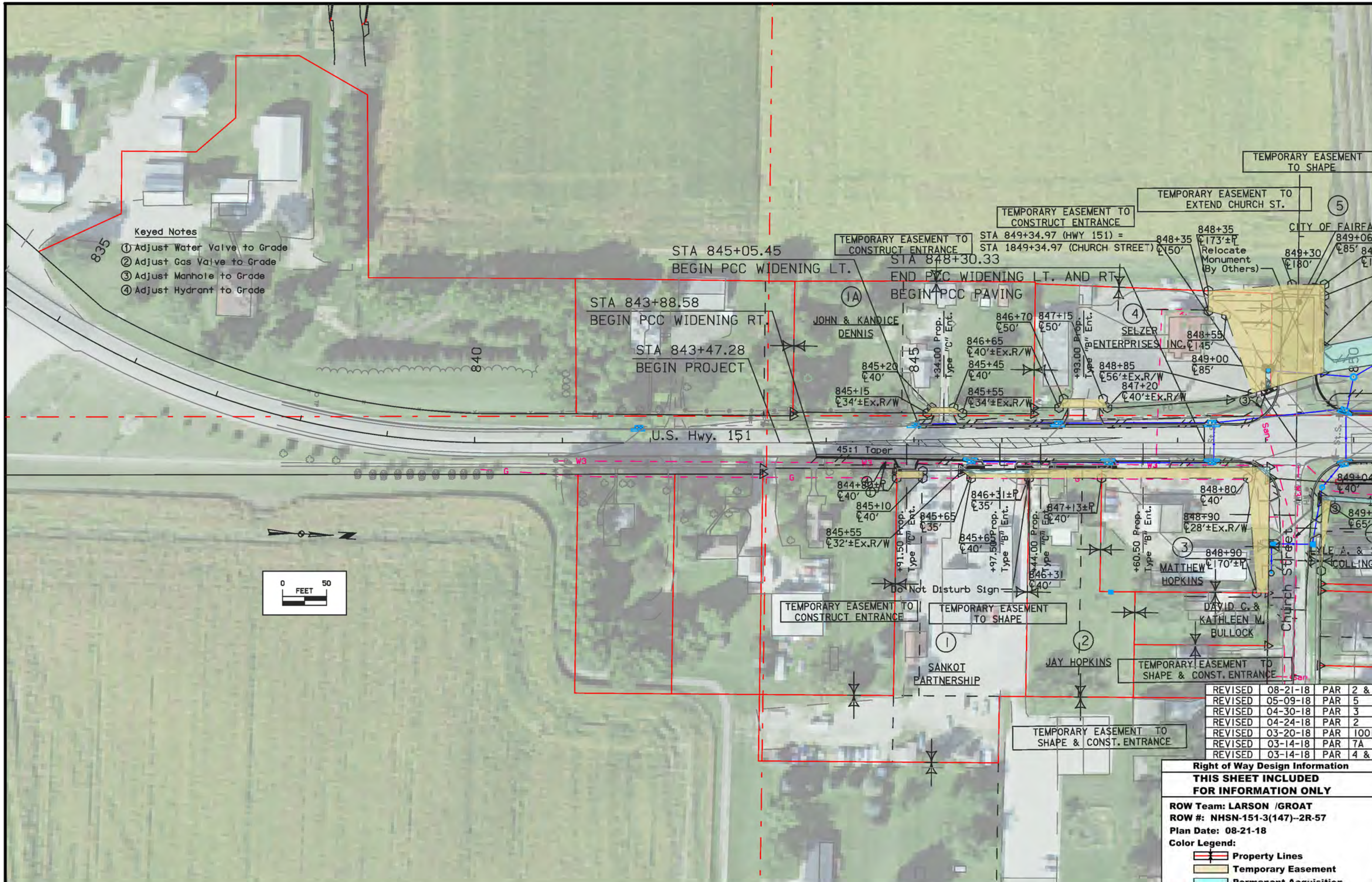

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade
835
840
845
850
STA 845+05.45
BEGIN PCC WIDENING LT.
STA 843+88.58
BEGIN PCC WIDENING RT.
STA 843+47.28
BEGIN PROJECT
STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING
STA 849+34.97 (HWY 151) =
STA 1849+34.97 (CHURCH STREET)
TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE
TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE
TEMPORARY EASEMENT TO EXTEND CHURCH ST.
TEMPORARY EASEMENT TO SHAPE
CITY OF FAIRFAX
JOHN & KANDICE DENNIS
SELZER ENTERPRISES, INC.
Relocate Monument (By Others)
U.S. Hwy. 151
45:1 Taper
Do Not Disturb Sign
TEMPORARY EASEMENT TO CONSTRUCT ENTRANCE
TEMPORARY EASEMENT TO SHAPE
SANKOT PARTNERSHIP
JAY HOPKINS
MATTHEW HOPKINS
DAVID C. & KATHLEEN M. BULLOCK
TEMPORARY EASEMENT TO SHAPE & CONST. ENTRANCE
TEMPORARY EASEMENT TO SHAPE & CONST. ENTRANCE
Church Street
0 FEET 50

REVISED	08-21-18	PAR	2 & 3
REVISED	05-09-18	PAR	5
REVISED	04-30-18	PAR	3
REVISED	04-24-18	PAR	2
REVISED	03-20-18	PAR	1001
REVISED	03-14-18	PAR	7A
REVISED	03-14-18	PAR	4 & 5

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 08-21-18
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER H.1

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(5)
F FAIRFAX
849+06±P
℄85'
849+67
℄180'
849+67(Prop. Cor.)
℄167'±Prop. Cor.
849+66±Ex.R/W
℄110'

(7A)
BELLON-AFRICA
FAMILY FARMS LC.
Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° skew

853+90
℄190'

856+14±Ex.R/W
℄220'

(8R)
UNION PACIFIC
RAILROAD CO

Union Pacific Railroad

FAIRFAX TWP.
T-82N R-8W
SEC. 18

857+69±Ex.R/W
℄165'

(9)
KATHLEEN M MCNAMARA

TEMPORARY EASEMENT
TO SHAPE

DAVID T MCNAMARA &
KATHLEEN M MCNAMARA
(14)

TEMPORARY EASEMENT TO
SHAPE & CONST. ENTRANCE

TEMPORARY EAS
CONSTRUCT EN

(10)
DAVID T MCNAMARA

860+05
℄120'

862+75
℄115'

862+70
℄75'±Prop.R/W

860+55
℄75'±Prop.R/W

861+31±P
℄75'

+19.80 Prop.
Type "C" Ent.

863+75
℄135'

864+05±P
℄210'

864+50
℄210'

864+55
℄130'

864+03±P
℄60'

U.S. Hwy. 151

849+64±Ex.R/W
℄65'

(6)
LE A. & SHERRY K.
COLLINGWOOD

851+60
℄75'±Ex.R/W

851+14±P
℄75'

(7)
CHRISTOPHER N.
SANKOT

852+55.00
℄84'±Ex.R/W

TEMPORARY EASEMENT
TO SHAPE

0 FEET 50

Losey Avenue

JEFFREY JA
GUCKENBERGER

(12)
AMY JO JORDAN

Prairie Avenue

89°15'34.61"

40°14'25.39"

864+80
℄74'±Ex.R
JUL

REVISED	09-13-18	PAR	8R
REVISED	02-22-18	PAR	8R

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 09-13-18
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.2

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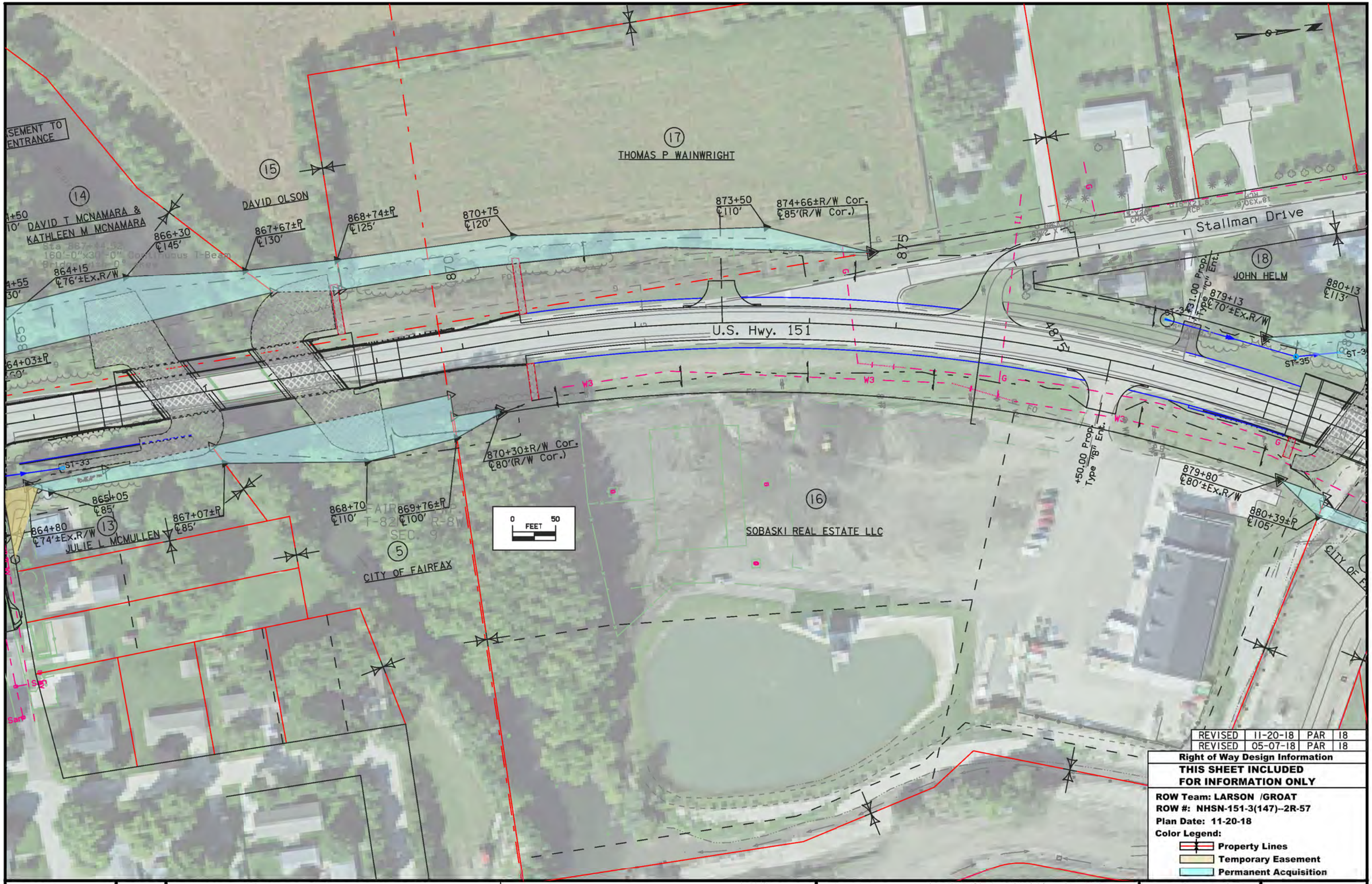

REVISED	11-20-18	PAR	18
REVISED	05-07-18	PAR	18

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 11-20-18
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.3

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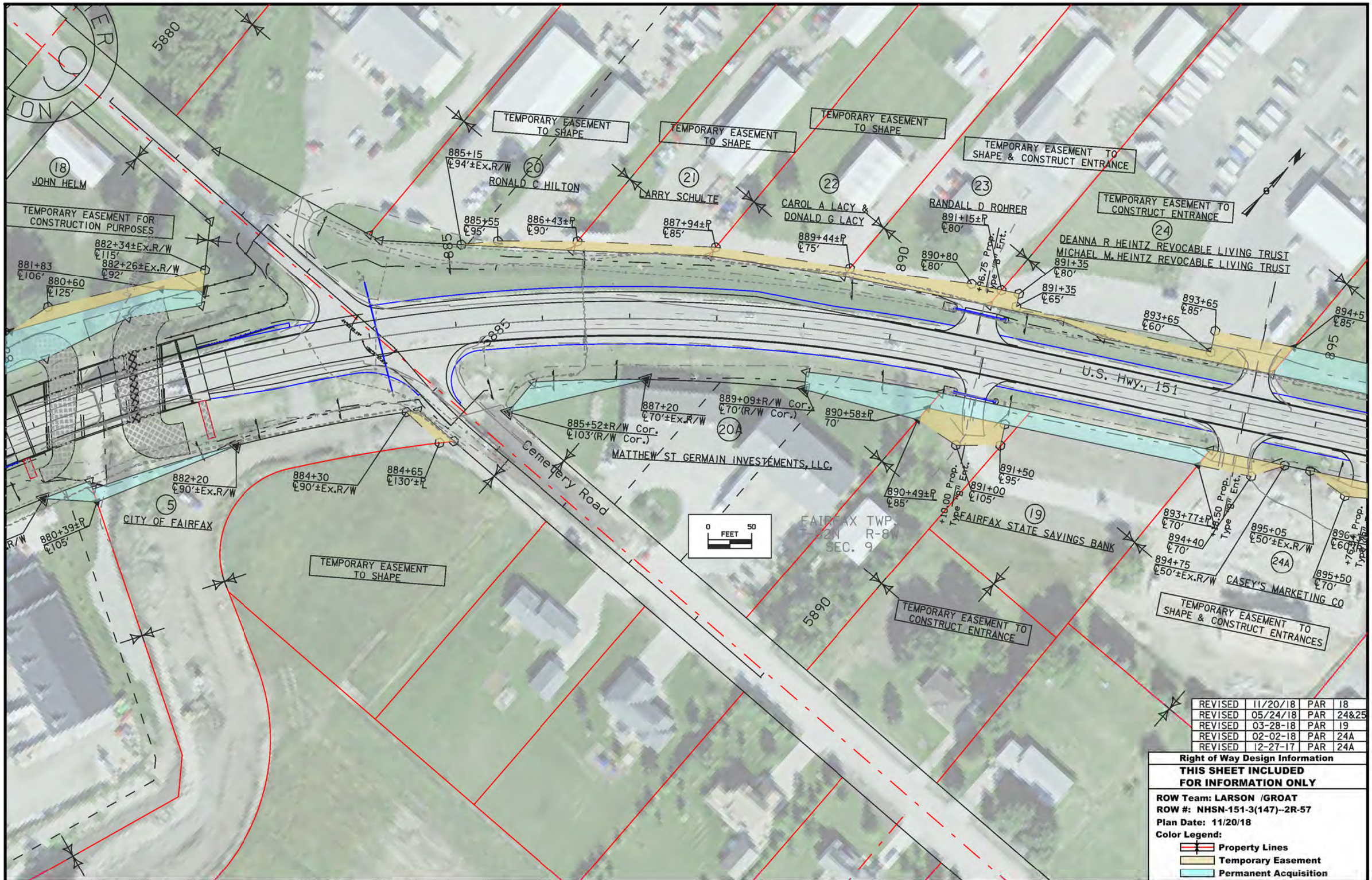

REVISED	11/20/18	PAR	18
REVISED	05/24/18	PAR	24&25
REVISED	03-28-18	PAR	19
REVISED	02-02-18	PAR	24A
REVISED	12-27-17	PAR	24A

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 11/20/18
Color Legend:
- **Property Lines**
- **Temporary Easement**
- **Permanent Acquisition**

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.4

8:49:55 AM 11/30/2018 ncuva pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\ROW\57151158H2.sht

STA 898+00.00
END PCC PAVING
BEGIN HMA BASE
WIDENING AND OVERLAY

894+57±R/W
℄85'

895

900

900+36±R/W Cor.
℄80'(R/W Cor.)

(25) FAIRFAX TWP.
T-82N R-8W
SEC. 9

VERNA BOLAND &
WILLIAM E BOLAND JR

Sta 900+59.26
4'x3' RCB w/48" RCP Extension
Total Length = 91.3'
DA = 67 Acres, Rolling

STA 902+58.42
END HMA BASE WIDENING
AND OVERLAY

STA 903+15.44
SUSPEND PROJECT

905

STA. 7906+60.44 (80TH STREET) =
STA. 909+10.37 (HWY 151)

+00.00 Prop.
Type "C" Ent. 7910

910

U.S. Hwy. 151

W3

896+39±R/W Cor.
℄60'(R/W Cor.)

MELODY R VANCE

895+50
℄70'

MARKETING CO

MENT TO
ENTRANCES

Sta. 900+60.27 U.S. Hwy. 151
Install 48"x2' 2000D RCP
Lt. U.A.C
F.L. = Other 753.30
Rt. 753.22

0 FEET 50

7905

62°31'52"

117°58'28.48"

80th Street

U.A.C.

REVISED	08-29-18	PAR	25
REVISED	02-02-18	PAR	26
REVISED	02-02-18	PAR	24A
REVISED	12-27-17	PAR	24A

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 08-29-18
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER H.5

9:52:23 AM 11/30/2018 ncuva pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\ROW\57151158H2.sht

STA 974+70.00
RESUME PROJECT

975

980

979+45
℄90'±Ex.R/W

980+60
℄150'±Prop. R/W

980+40
℄215'

980+30
℄165'

980+95
℄245'

980+70
℄165'

FAIRFAX TWP.
T-82N R-8W
SEC. 2

(28)
HAWKS RIDGE
HOMEOWNERS ASSOC.

981+15±R
℄135'

981+14±R
℄125'

981+27±R
℄200'

981+50
℄155'

981+30
℄120'

981+45
℄90'±Ex.R/W

982+50
℄130'
(Remove)

981+70
℄90'±Ex.R/W

981+80
℄90'±Ex.R/W

+85.00 Prop. Type "C" Ent.

(30)
SHARON A WACHA &
STANLEY R WACHA

984+07±Ex.R/W
℄90'

984+90
℄90'

985

TEMPORARY EASEMENT TO
SHAPE & CONSTRUCT ENT.

STA 984+83.16
END PROJECT

U.S. Hwy. 151

977+75
℄80'

978+85
℄80'

978+95
℄100'

979+50
℄140'

979+50
℄160'

(29)
IRVIN I MARTINSON RESIDUARY TRUST &
MARCELLA MARTINSON REVOCABLE TRUST

980+18.00
Construct 55'-0" x 13'-9 1/4" x 168'-0"
Conspan Precast Arch with 30°
Skew (L.A.)

981+05
℄70'±Ex.R/W

980+80
℄70'±Ex.R/W

980+45
℄135'

980+30
℄165'

TEMPORARY EASEMENT TO
SHAPE & CONSTRUCT
SANITARY SEWER

979+70
℄190'

979+70
℄230'

980+20
℄150'

980+15
℄230'

980+00
℄142'±Prop.R/W

+75.00 Prop. Type "C" Ent.

RICHARD & ROBERTA
REID

0 50
FEET

REVISED	02-08-18	PAR	28&30

Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(135)--2R-57
Plan Date: 04-26-18
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	H.6

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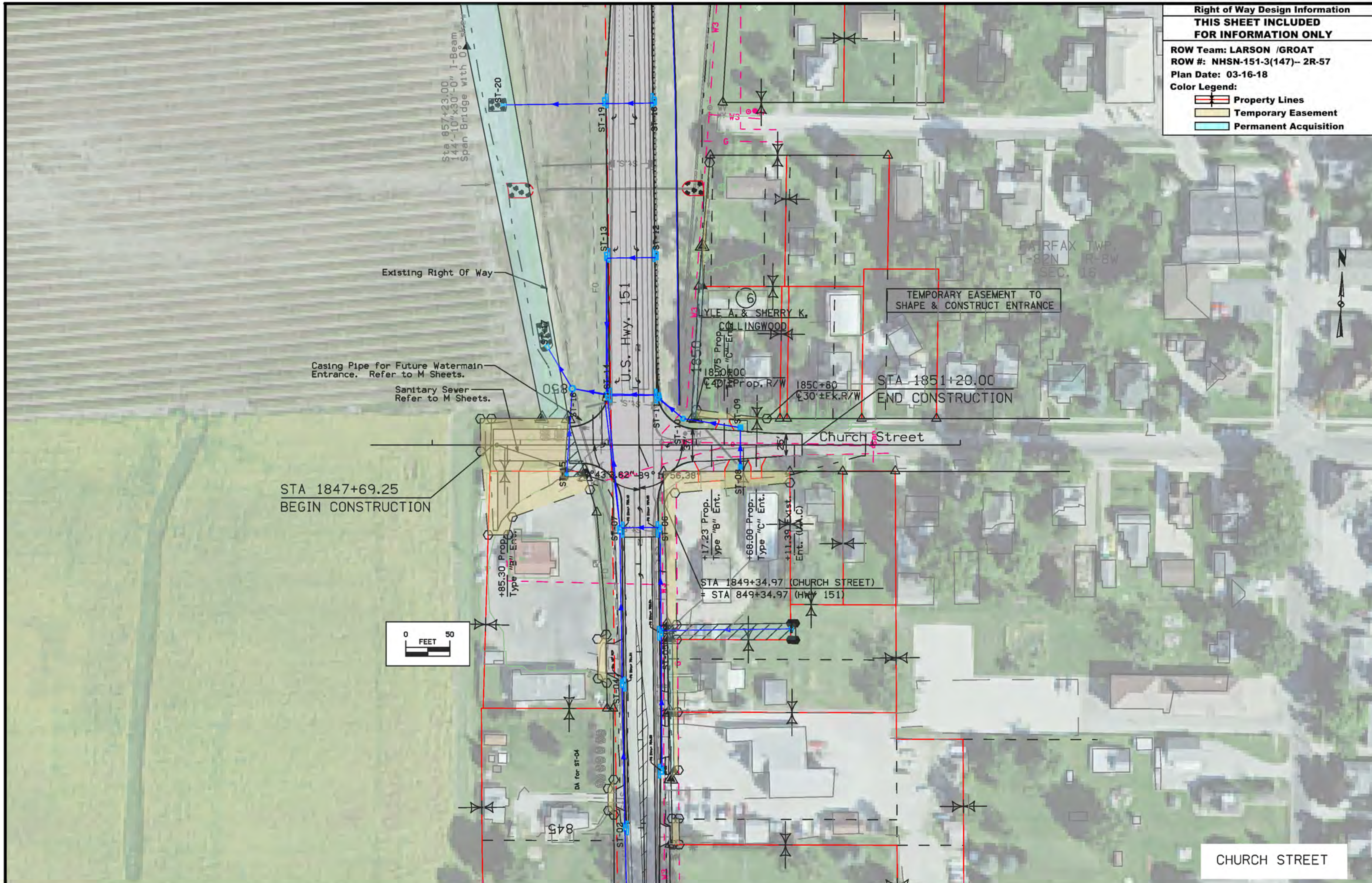
Right of Way Design Information
THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)-- 2R-57
Plan Date: 03-16-18
Color Legend:
- Property Lines
- Temporary Easement
- Permanent Acquisition



Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° Skew
Existing Right Of Way
Casing Pipe for Future Watermain Entrance. Refer to M Sheets.
Sanitary Sewer Refer to M Sheets.
STA 1847+69.25
BEGIN CONSTRUCTION
U.S. Hwy. 151
LYLE A. & SHERRY K. COLLINGWOOD
6
TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE
FAIRFAX TWP.
T-82N R-8W
SEC. 16
1850+00
40' Prop. R/W
1850+60
30'± Ex. R/W
STA 1851+20.00
END CONSTRUCTION
Church Street
+17.23 Prop. Type "B" Ent.
+68.00 Prop. Type "C" Ent.
+11.39 Exist Ent. (AA.C)
+85.30 Prop. Type "B" Ent.
STA 1849+34.97 (CHURCH STREET)
= STA 849+34.97 (Hwy 151)
850
845
DA for ST-04
0 FEET 50
CHURCH STREET

FILE NO.	ENGLISH	DESIGN TEAM SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER HE.1

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Right of Way Design Information

THIS SHEET INCLUDED FOR INFORMATION ONLY

ROW Team: LARSON /GROAT
ROW #: NHSN-151-3(147)--2R-57
Plan Date: 04-03-18
Color Legend:

- Property Lines
- Temporary Easement
- Permanent Acquisition

REVISED	04-03-18	PAR	12

STA 2864+19.80 (PRAIRIE AVENUE)
= STA 864+19.80 (HWY 151)

(13) JULIE L. MCMULLEN

Protect Existing Well

TEMPORARY EASEMENT TO SHAPE & CONSTRUCT ENTRANCE

FAIRFAX TWP.
T-82N R-8W
SEC. 9

2865+00±Prop.R/W

2865+30±Prop.R/W

89°15'34.61"

Prairie Avenue

3864+65±PI
℄40'
3864+50
℄40'
3863+90
℄39'

STA 2864+99.34 (PRAIRIE AVENUE)
3863+65 = STA 3864+99.34 (LOSEY DRIVE)

(12) AMY JO JORDAN

3862+86±PI
℄40'
3863+50
℄40'

U.S. Hwy. 151

Losey Avenue

0 FEET 50

PRAIRIE AVENUE

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	HE.2

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CROSS SECTION VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Med	(237)	Future Proposed Pavement Shading

CROSS SECTION VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

	Pavement Removal		Proposed Granular Shoulder
	Proposed Granular Subbase		Temporary Shoulder
	Proposed Special Backfill		Existing Shoulder Strengthening
	Temporary Barrier Rail		Permanent Barrier Rail
			Channelizing Device

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Magenta	(5)	Pavement Marking Call Outs
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)	Pavement Markings, Yellow
Off White	(254)	Pavement Markings, White
Violet	(15)	Temporary barrier rail, Unpinned
Flush Orange	(228)	Temporary barrier rail, Pinned

SHADING	Design Color No.	
Green, Light	(225)	Existing Pavement Shading
Gray, Light	(48)	Previously Constructed Pavement Shading
Gray, Med	(80)	Proposed Granular Surface Shading
Gray, Med	(80)	Previously Constructed Granular Surface Shading
Blue, Light	(230)	Proposed Pavement Shading
Lavender	(9)	Temporary Pavement Shading
Brown, Light	(236)	Proposed Grading Limits Shading
Pink, Dark	(13)	Proposed MSE or CIP Wall Shading
Red	(3)	Proposed Bridge Shading and Sign Trusses
Black w/Gray, Light Fill	(0,48)	Previously Constructed Structure

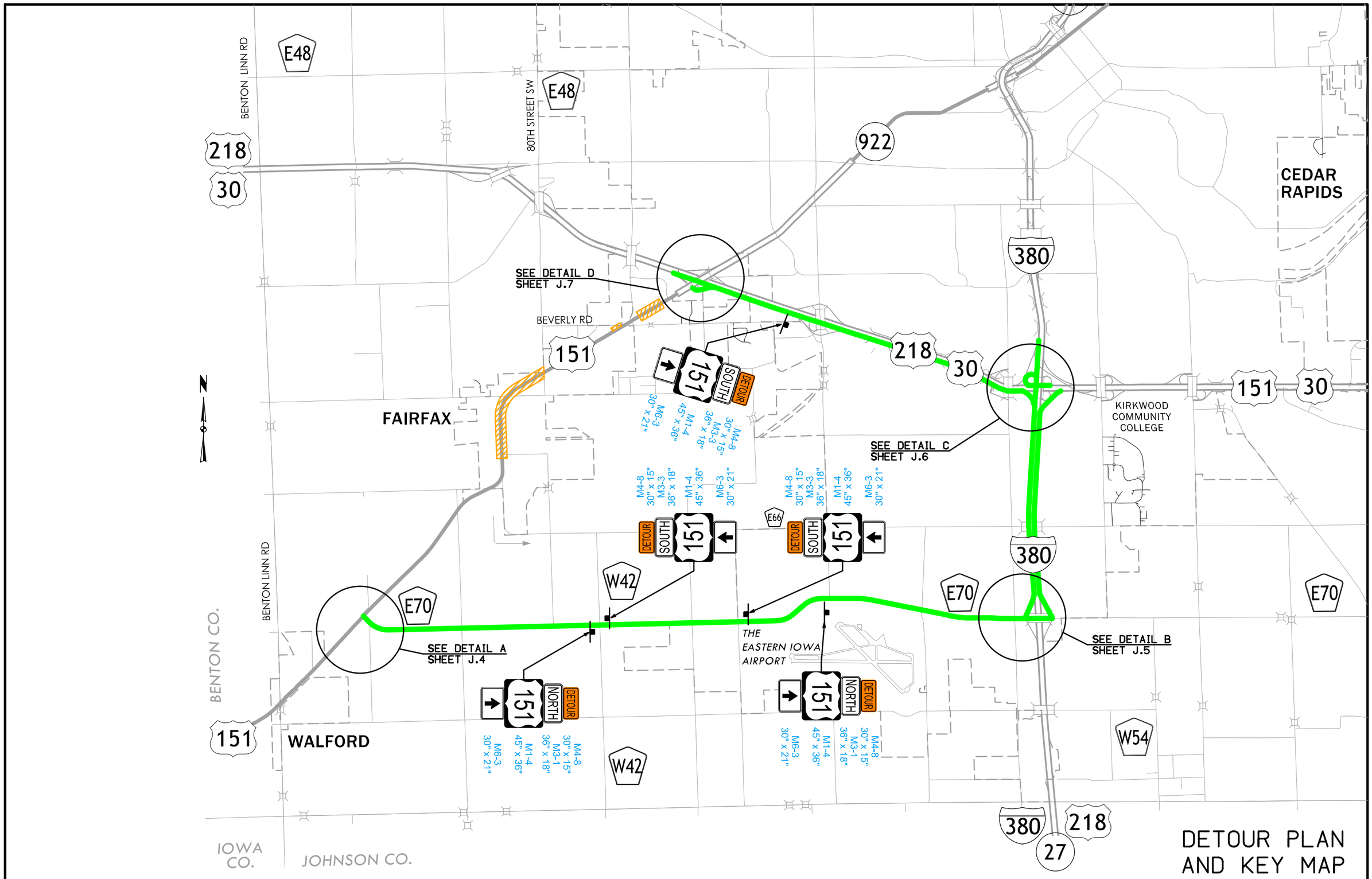
PLAN VIEW PATTERN AND SYMBOL LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

●	Channelizing Device		Crash Cushion (Temp or Perm)
✕	Drum		Traffic Signal
◘	Temporary Lane Separator		Flagger
◆	Tubular Marker		Temporary Floodlighting
♦	Channelizer Marker		Existing Traffic Sign
△	Concrete Barrier Marker		Proposed Traffic Sign
ς	Delineator		Type III Barricade
	Temporary Barrier Rail		Type A Warning Light
	Pavement Removal		Type B High Intensity Flashing Warning Light
	Sand Barrel Layout		Direction of Traffic
	Portable Changeable Message Sign		Safety Closure
	Work Area	1	Lane Identification
	Detour Route		

NOTE: Device spacing according to Standard Road Plans unless specifically dimensioned.

TRAFFIC CONTROL AND STAGING LEGEND AND SYMBOL INFORMATION SHEET

(COVERS SHEET SERIES J)



DETOUR PLAN AND KEY MAP

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.3

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BENTON LINN RD

R11-3a
60" x 30"
M4-10
48" x 18"
ROAD CLOSED
4 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR

M4-8a
24" x 18"
M3-3
36" x 18"
M1-4
45" x 36"
151
SOUTH
DETOUR

M4-8
30" x 15"
M3-3
36" x 18"
M1-4
45" x 36"
M6-1L
30" x 21"
DETOUR
SOUTH
151

M4-8
30" x 15"
M3-3
36" x 18"
M1-4
45" x 36"
M5-1L
21" x 15"
DETOUR
SOUTH
151

1000'
500'
1000'

E70

M4-8
30" x 15"
M1-4
45" x 36"
M6-1R
30" x 21"
DETOUR
151

M4-8
30" x 15"
M1-4
45" x 36"
M5-1R
21" x 15"
DETOUR
151

M4-8
30" x 15"
M3-1
36" x 18"
M1-4
45" x 36"
DETOUR
151
NORTH

DETOUR AHEAD

W20-2
48" x 48"

ROAD CLOSED AHEAD

W20-3
48" x 48"

151

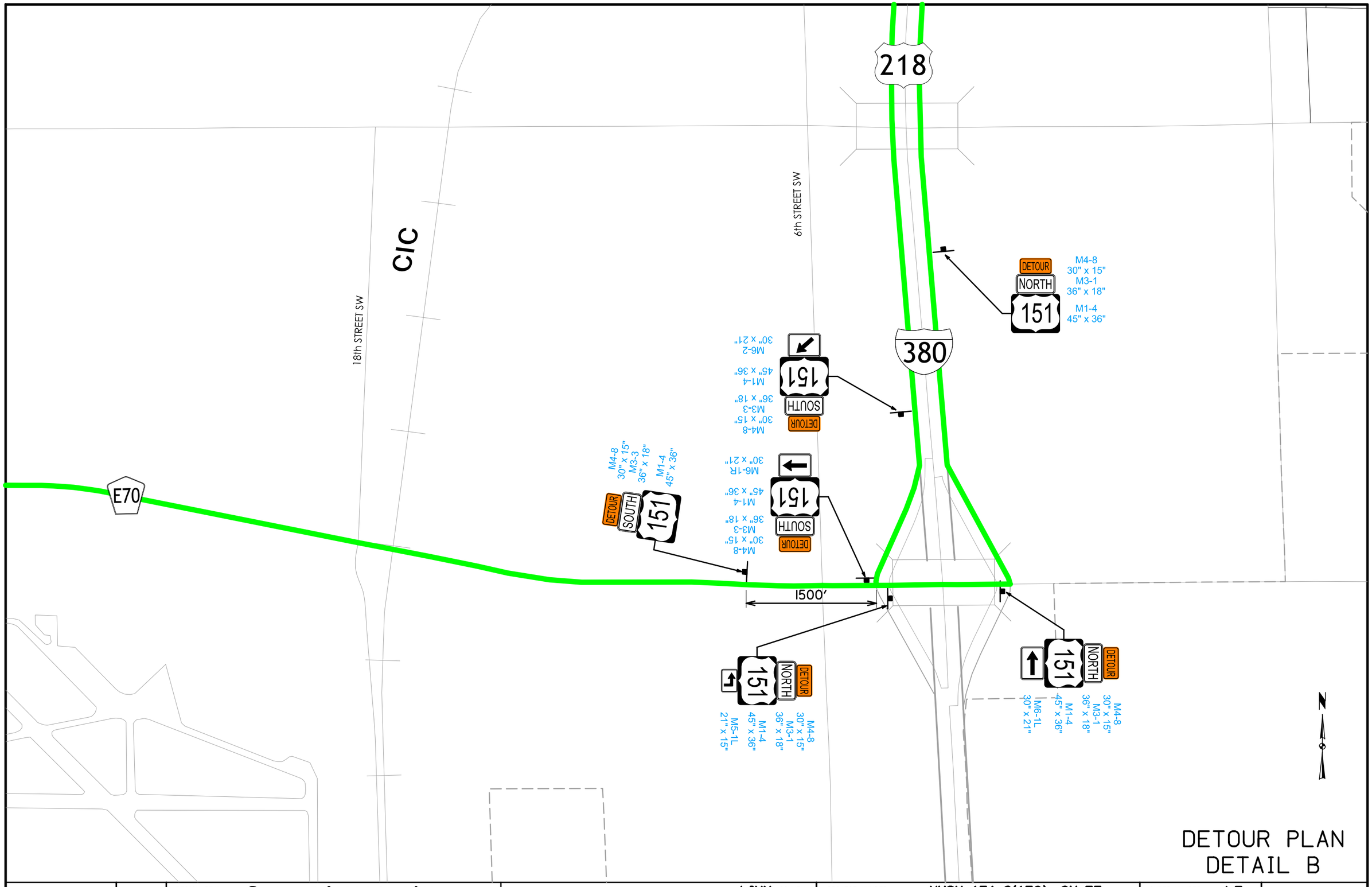
WALFORD

N

DETOUR PLAN
DETAIL A

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.4

8:52:58 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



DETOUR PLAN
DETAIL B

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.5

8:52:59 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

Cover Conflicting Route Signing on Existing Overhead Truss Sign

SPECIAL SIGN 120" x 84"

151 CLOSED SOUTH OF 30 FOLLOW DETOUR

380

UP

CIC

BOWLING STREET SW

C STREET SW

SPECIAL SIGN 120" x 84"

151 CLOSED SOUTH OF 30 FOLLOW DETOUR

30 151

KIRKWOOD COMMUNITY COLLEGE

218

M6-3 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"

151 SOUTH DETOUR

M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-2 30" x 21"

DETOUR SOUTH 151

151 SOUTH DETOUR

M6-2 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"

151 NORTH END DETOUR

M4-8a 24" x 18"
M3-1 36" x 18"
M1-4 45" x 36"

DETOUR NORTH 151

M4-8 30" x 15"
M3-1 36" x 18"
M1-4 45" x 36"
M6-2 30" x 21"

218

380

151 SOUTH DETOUR

M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"

N

DETOUR PLAN DETAIL C

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.6

8:53:01 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

218

30

922

151

STONEY POINT ROAD NW

BEVERLY ROAD

BEVERLY ROAD

Cover Conflicting Route Signing on Existing Sign

Cover Conflicting Route Signing on Existing Sign

Cover Conflicting Route Signing on Existing Sign

Cover Conflicting Route Signing on Existing Sign

FOLLOW DETOUR
151 SOUTH OF 30 CLOSED
SPECIAL SIGN 120" x 84"

FOLLOW DETOUR
151 SOUTH OF 30 CLOSED
SPECIAL SIGN 120" x 84"

ROAD CLOSED 1/2 MILES AHEAD
LOCAL TRAFFIC ONLY
DETOUR
R11-3a 60" x 30"
M4-10 48" x 18"

151 SOUTH DETOUR
M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-1L 30" x 21"

151 SOUTH DETOUR
M6-3 30" x 21"
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"

151 SOUTH DETOUR
M4-8 30" x 15"
M3-3 36" x 18"
M1-4 45" x 36"
M6-1L 21" x 15"

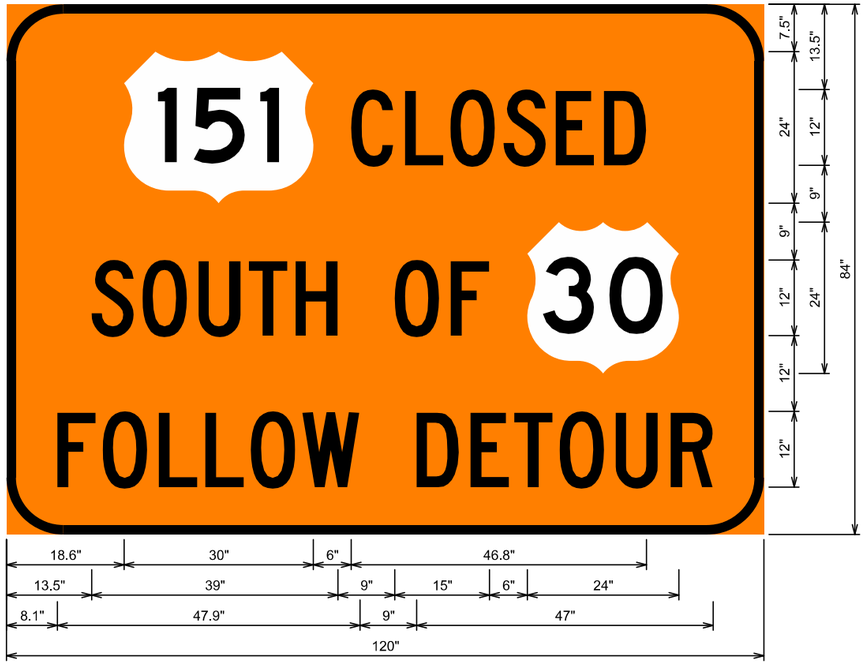
151 SOUTH DETOUR
M1-4 45" x 36"
M3-3 36" x 18"
M4-8 30" x 15"

N

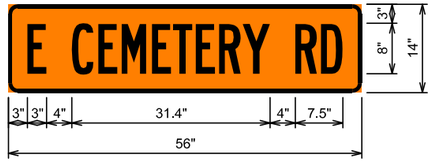
DETOUR PLAN
DETAIL D

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.7

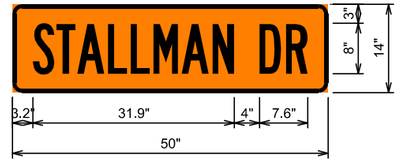
8:53:02 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



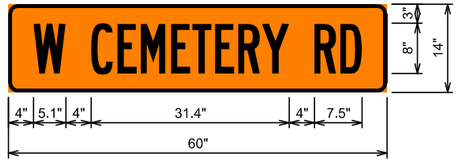
9.0" Radius, 1.5" Border, Black on Orange:
[CLOSED] C 2K 75 Spacing; [SOUTH OF] C 2K 75 Spacing; [FOLLOW DETOUR] C 2K 75 Spacing



1.5" Radius, 0.6" Border, Black on Orange:
[E CEMETERY RD] B 2K 50 Spacing

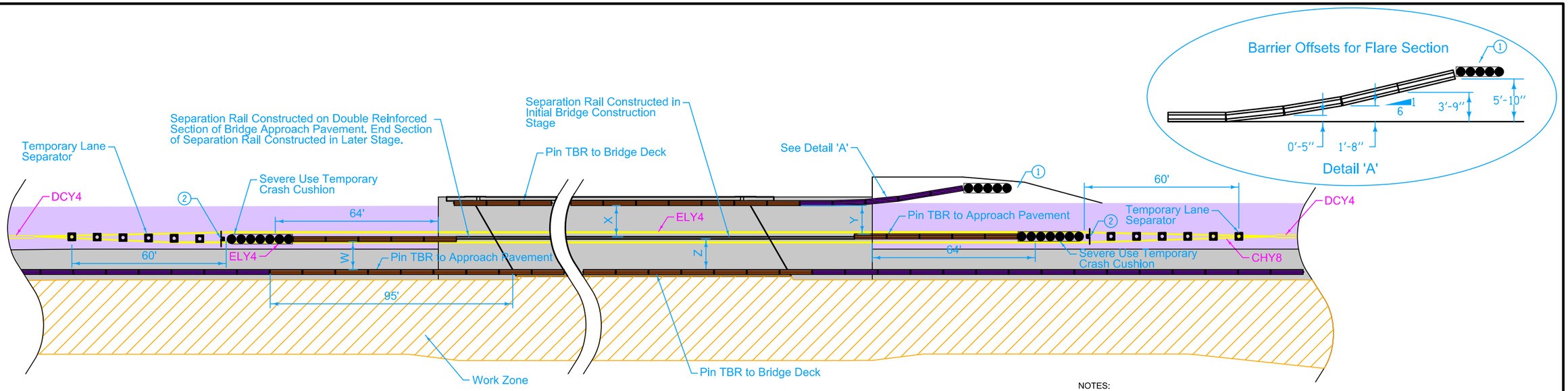


1.5" Radius, 0.6" Border, Black on Orange:
[STALLMAN DR] B 2K 50 Spacing



1.5" Radius, 0.6" Border, Black on Orange:
[W CEMETERY RD] B 2K 50 Spacing

SPECIAL DETOUR SIGN DETAILS



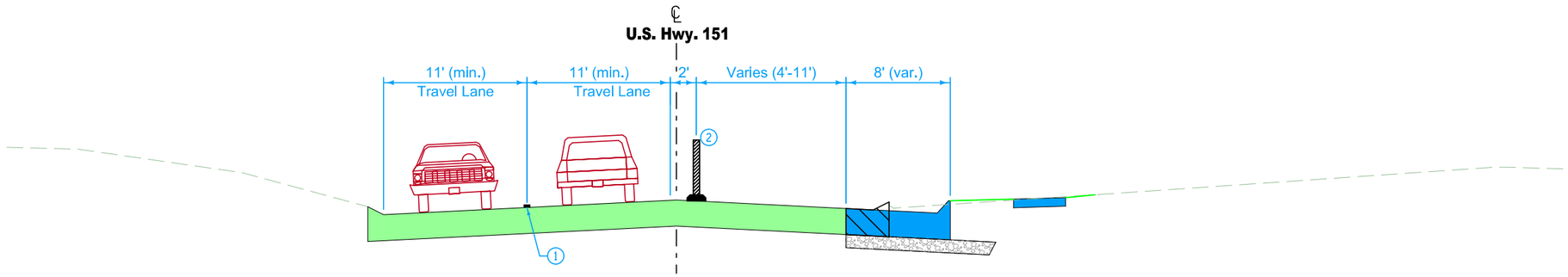
Construction Stage	Location	W	X	Y	Z	Remarks
Stage 3A/3B	Prairie Creek	10'-10"	12'-3"	11'-2"	12'-0"	Refer to Structual Drawings for Bridge Staging Details
	Drainage Ditch No. 1	11'-4"	12'-4"	11'-5"	12'-4"	Refer to Structual Drawings for Bridge Staging Details

NOTES:
1. Refer to Standard Road Plan BA-500 For GradingDetails.
2. R4-7C Sign.

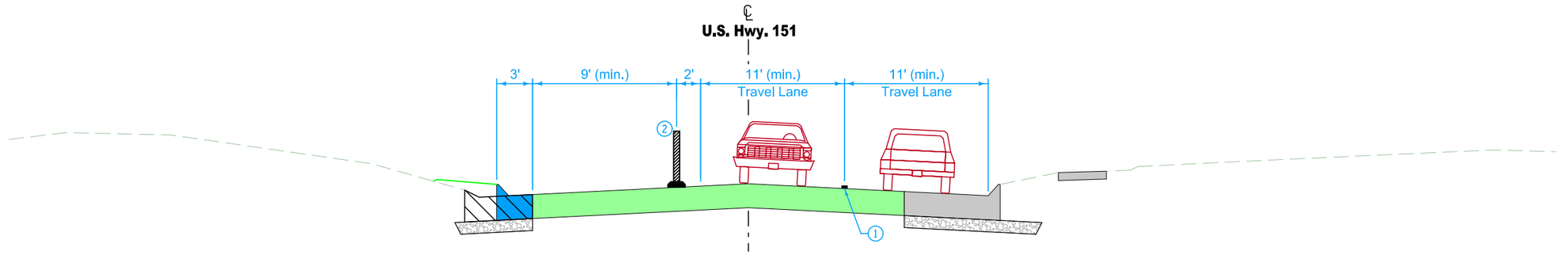
TEMPORARY BARRIER RAIL AT BRIDGE

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.8

8:53:04 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1A
STA 843+88 TO 848+30
SHOWN IN DIRECTION OF STATIONING



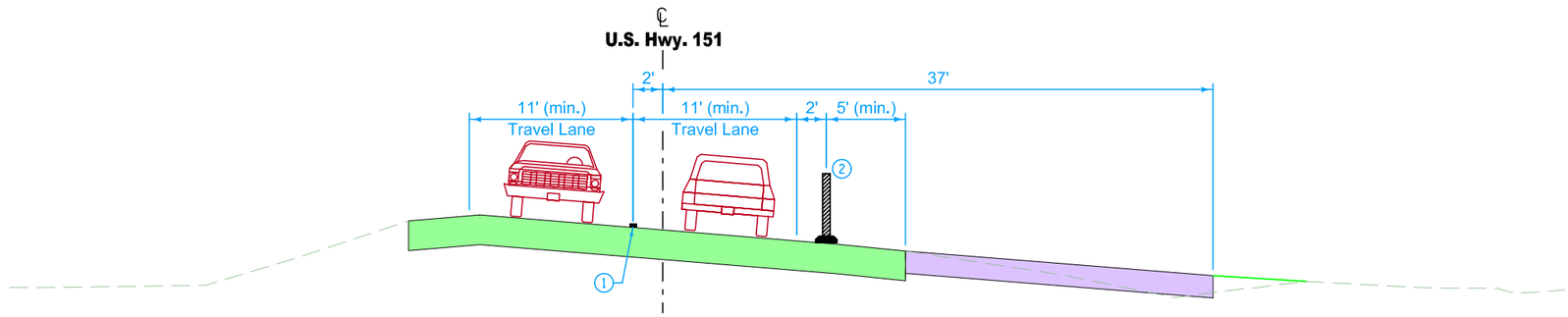
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1B
STA 845+05 TO 848+30
SHOWN IN DIRECTION OF STATIONING

NOTES:
1. Temporary Pavement Markings
2. 42" Channelizer

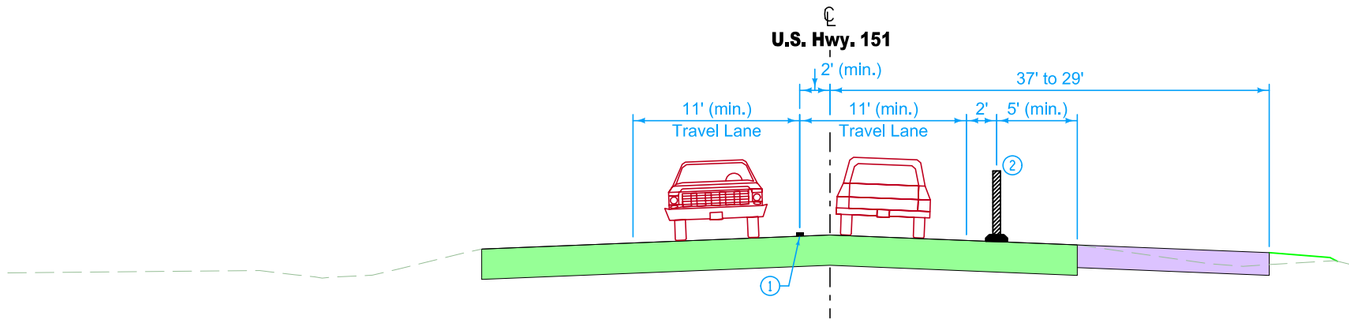
STAGING AT CHURCH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.9

8:53:06 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

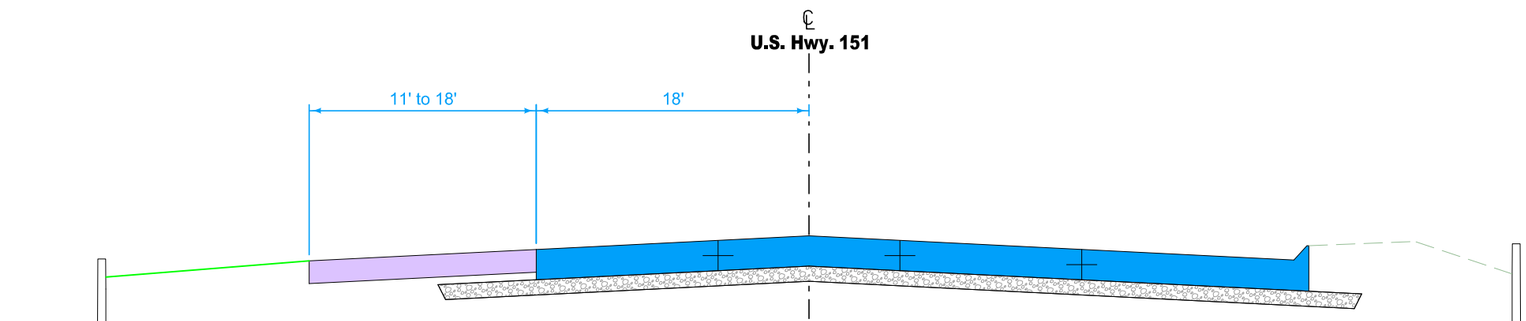


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1C
STA 864+70 TO 898+00



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1C
STA 898+00 TO 902+85

NOTES:
1. Temporary Pavement Markings
2. 42" Channelizer
3. Section of roadway to be closed while under construction, no temporary pavement markings needed

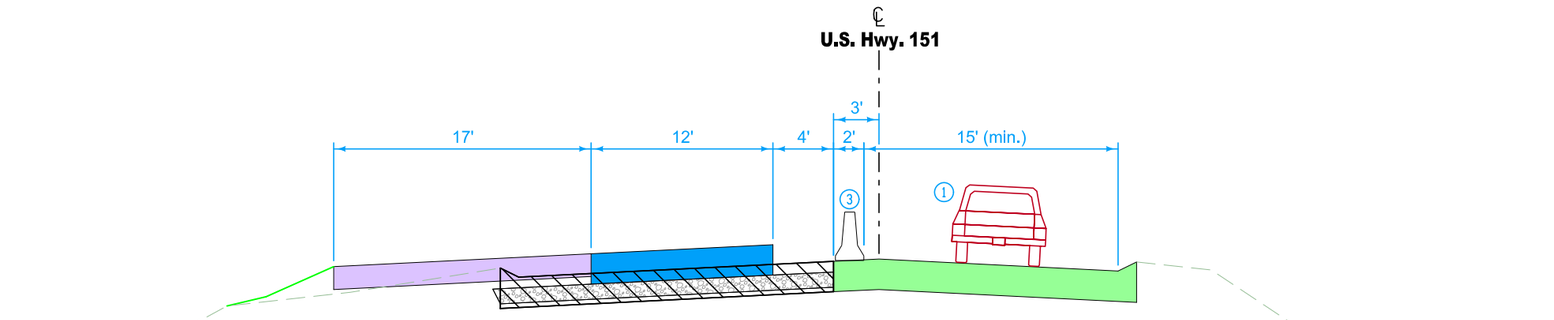


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 860+20 TO 863+92

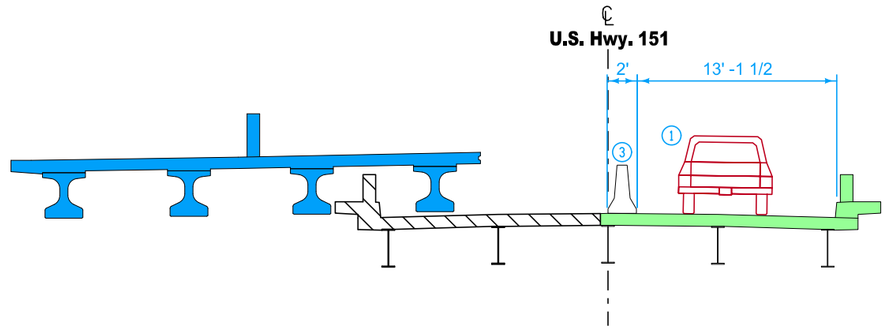
STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.10

8:53:07 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 863+92 TO 870+70



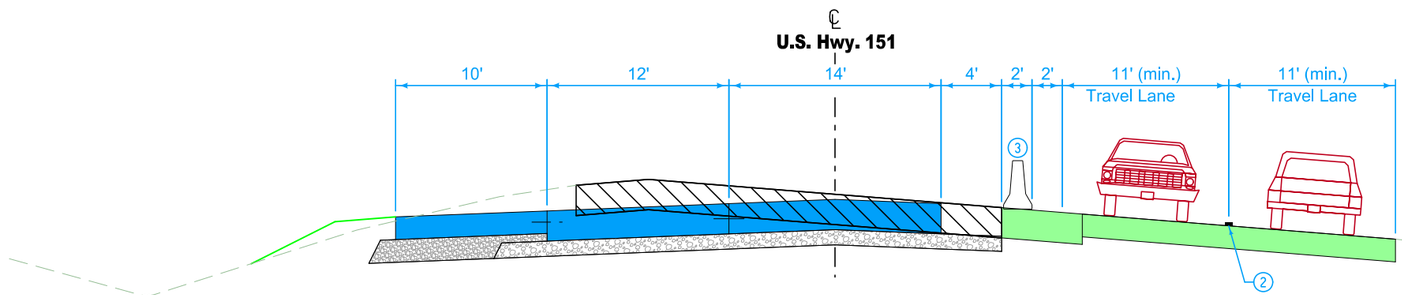
STAGE 2A:

Shift traffic to two lane traffic on the east side of existing bridge. Remove west half of existing bridge and construct west portion of bridge and separation rail.

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57

NOTES:

1. Traffic Lane to be Alternating Traffic by use of Temporary Traffic Signals
2. Temporary Pavement Markings
3. Temporary Barrier Rail, Anchored Across Bridge

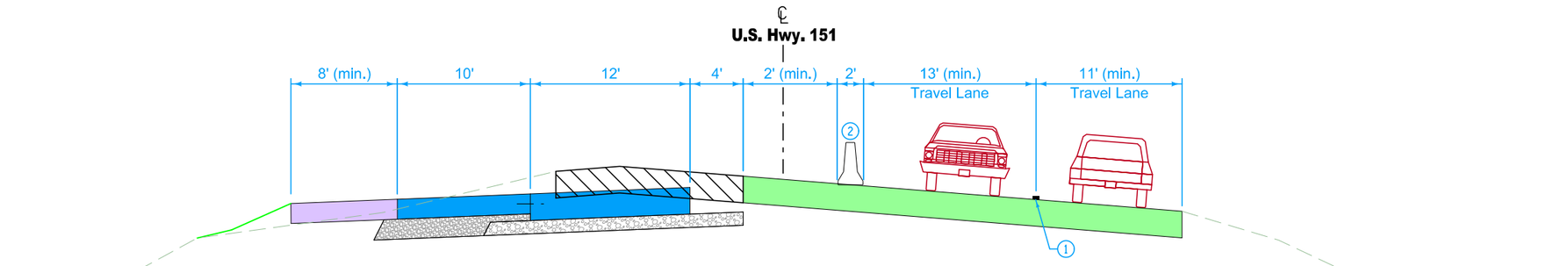


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 870+70 TO 876+99

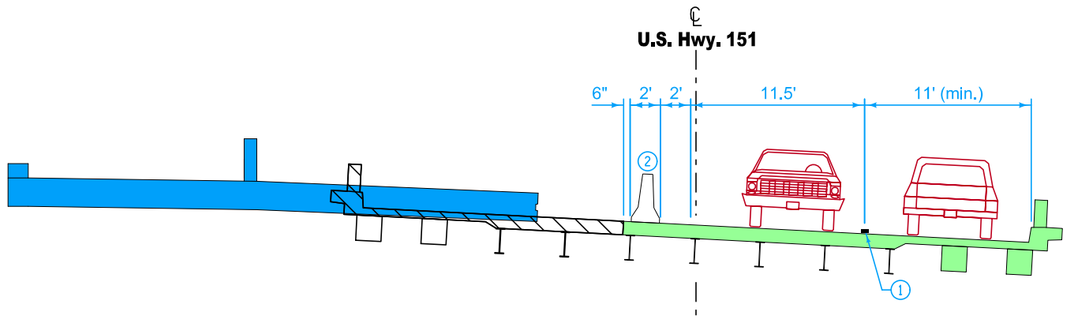
STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.11

8:53:09 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 876+99 TO 884+26



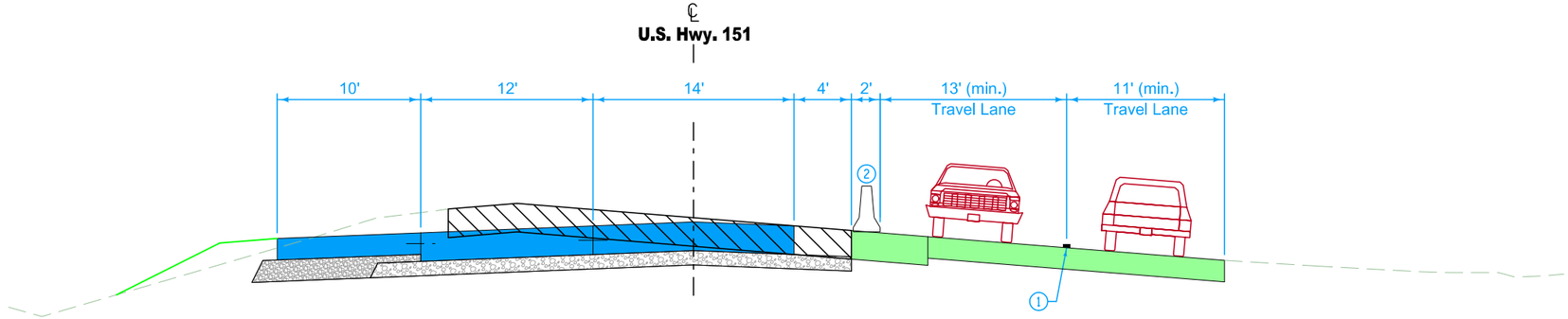
TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57

STAGE 2A:

Shift traffic to two lane traffic on the east side of existing bridge. Remove west half of existing bridge and construct west portion of bridge and separation rail.

NOTES:

1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2A
STA 884+26 TO 898+00

STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.12

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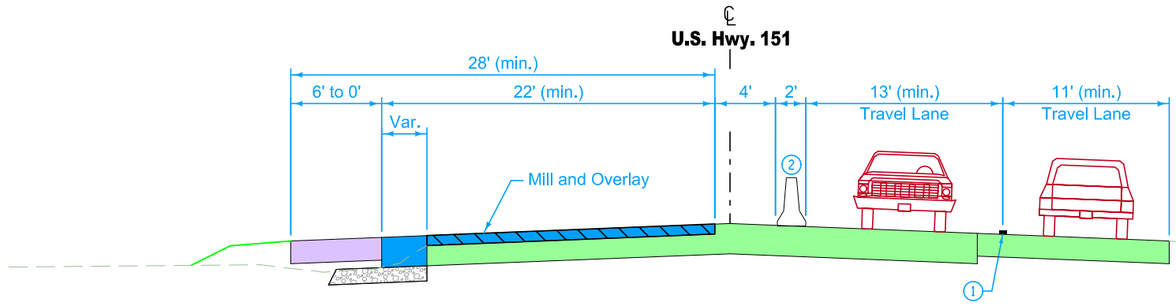
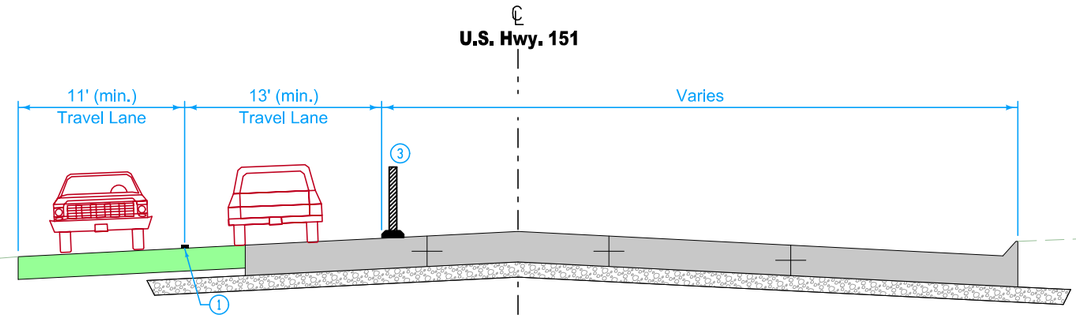
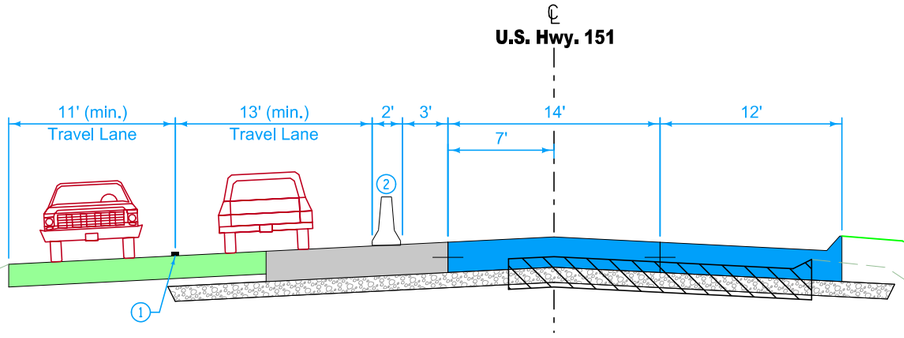


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2B
STA 898+00 TO 902+58



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 860+20 TO 863+92



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 863+92 TO 870+70

NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail
3. 42" Channelizer

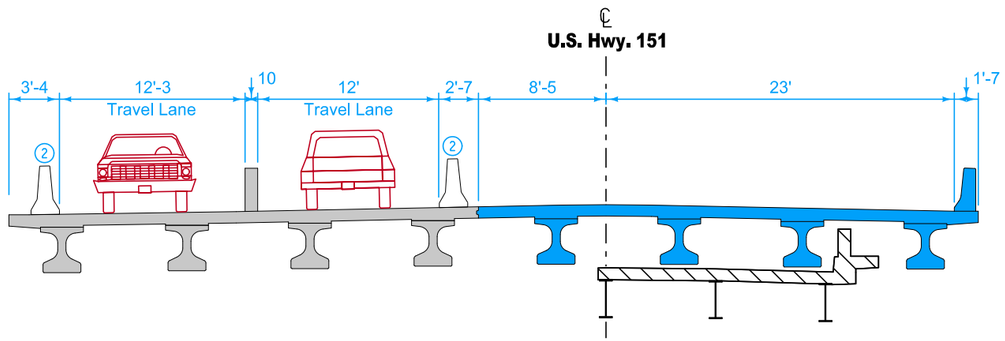
STAGING PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.13

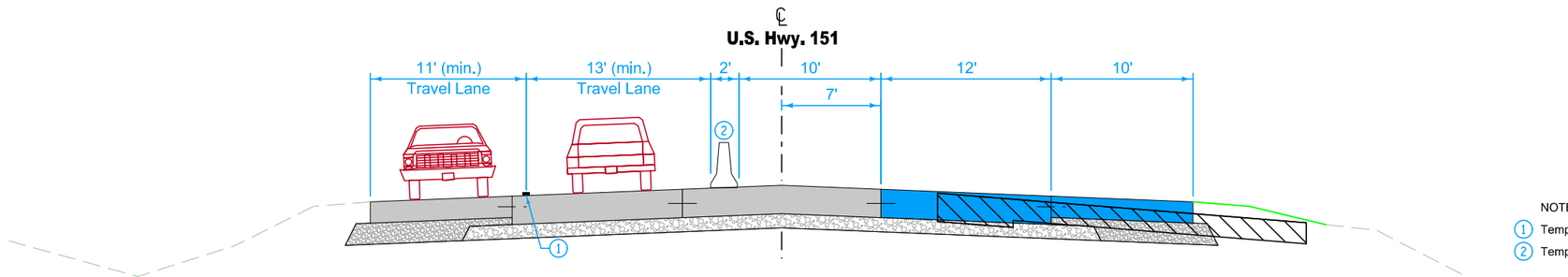
8:53:13 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

STAGE 3A:

Shift traffic to two lane traffic on the newly constructed west portion of bridge. Remove remaining half of existing bridge and construct east portion of bridge.

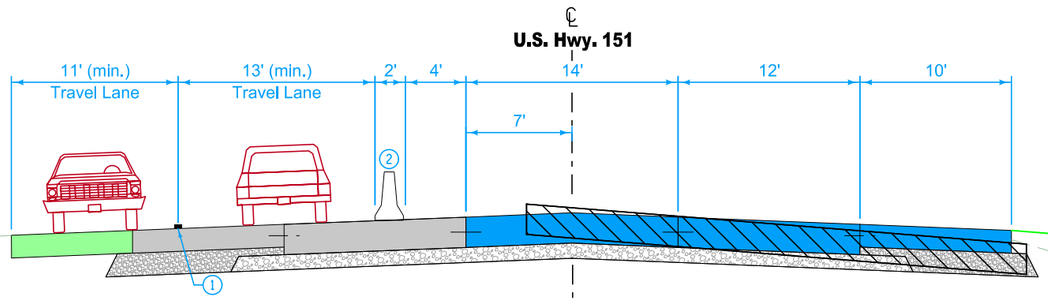


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57



NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3a
STA 870+70 TO 876+99



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 876+99 TO 884+26

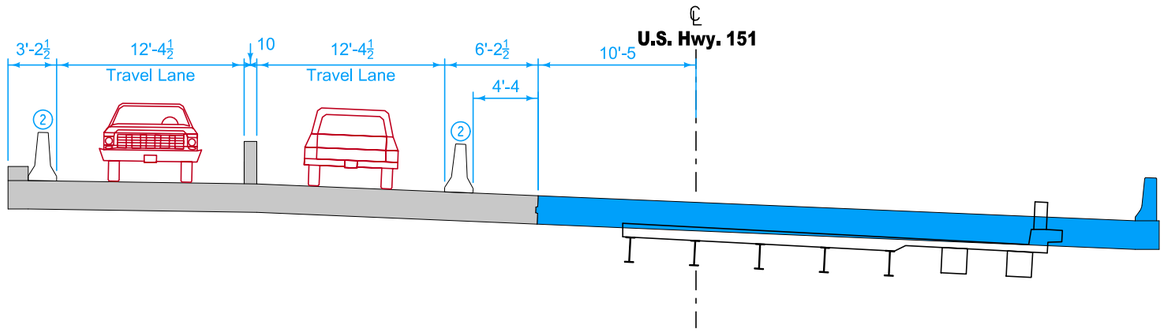
STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.14

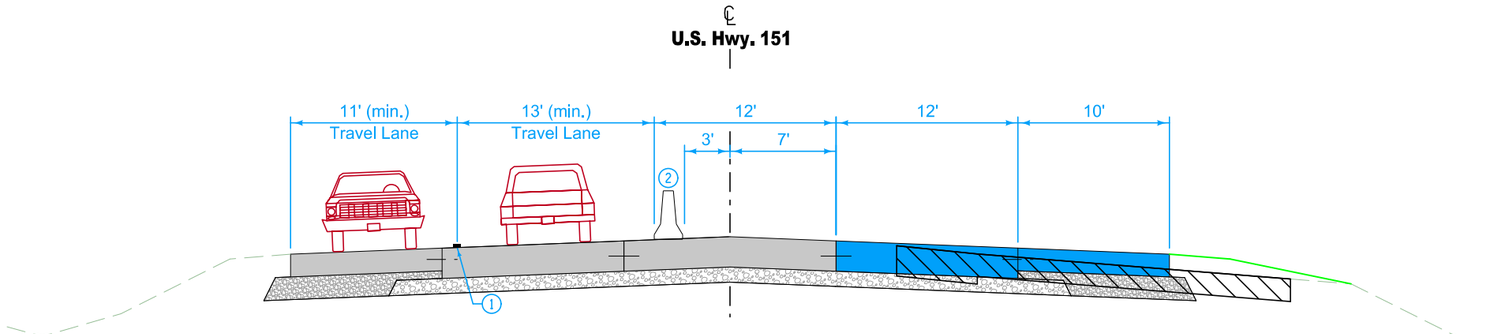
8:53:26 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

STAGE 3A:

Shift traffic to two lane traffic on the west side of bridge. Remove east half of existing bridge and construct east portion of bridge, place temporary barrier rail.

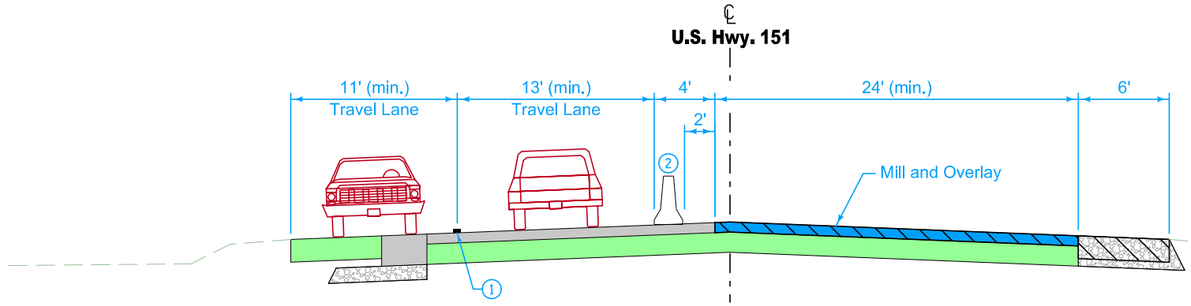


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3A
STA 884+26 TO 898+00

NOTES:
1. Temporary Pavement Markings
2. Temporary Barrier Rail, Anchored Across Bridge

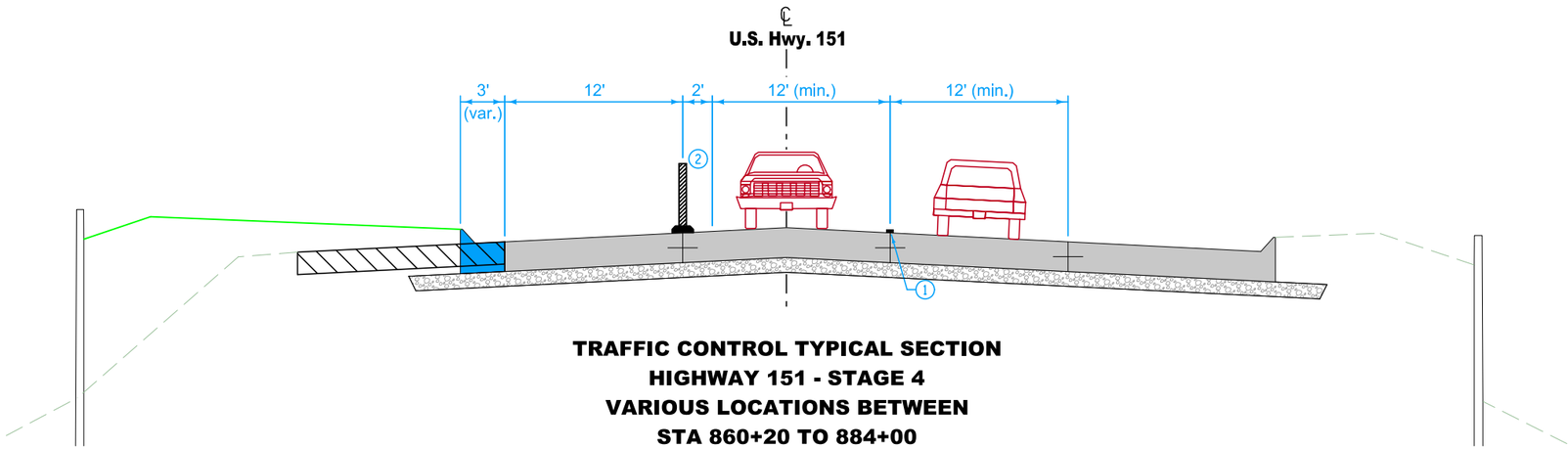


TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3B
STA 898+00 TO 902+58

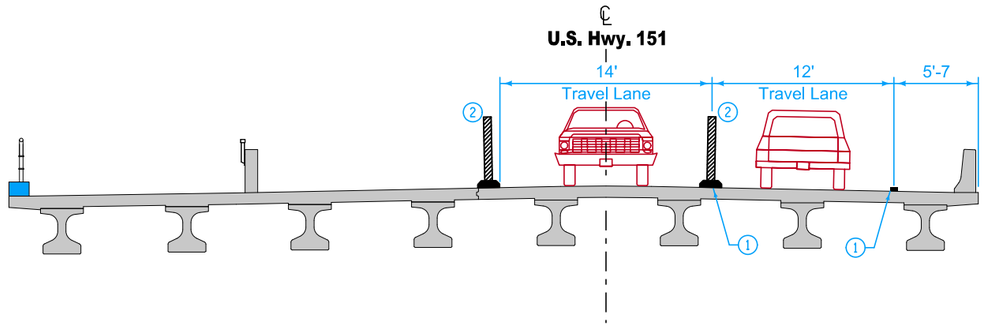
STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.15

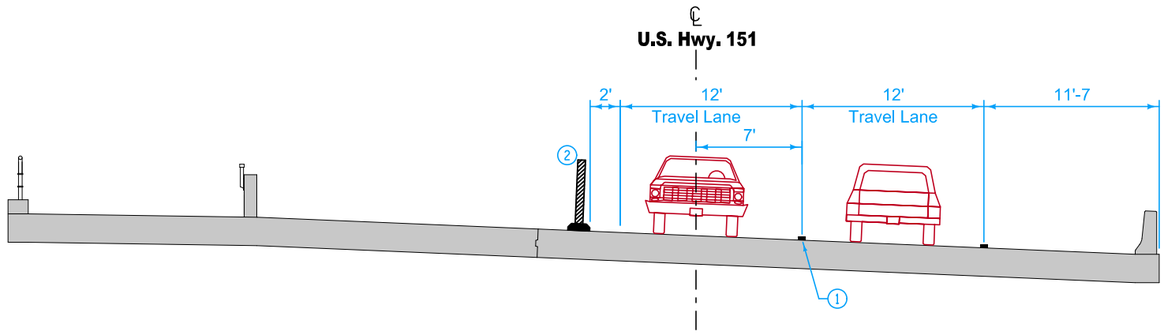
8:53:28 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
VARIOUS LOCATIONS BETWEEN
STA 860+20 TO 884+00



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
PRAIRIE CREEK BRIDGE
BRF-151-3(142)–38-57



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
DRAINAGE DITCH NO. 1 BRIDGE
BRF-151-3(152)–38-57

NOTES:
1. Temporary pavement markings
2. 42" Channelizer

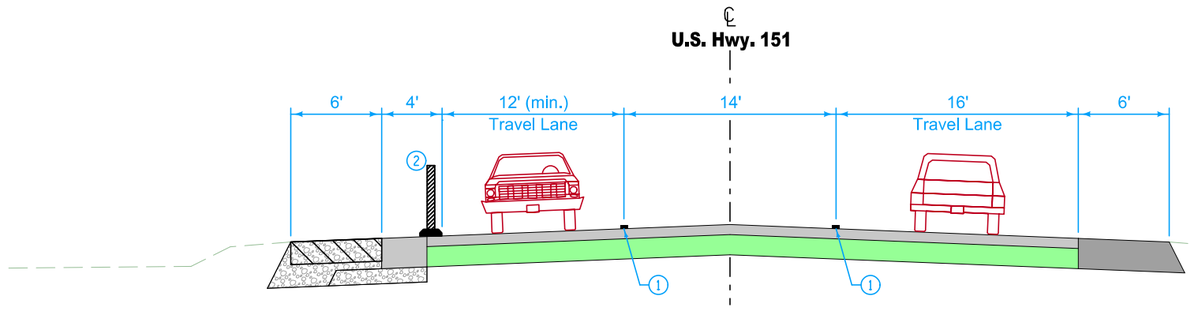
STAGE 4:

Shift traffic to east portion of bridge. Remove temporary barrier rail. Place aluminum pedestrian and bicycle railings.

STAGING
PRAIRIE AVE. TO 80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.16

8:53:30 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 4
STA 898+00 TO 902+58

NOTES:
1. Temporary pavement markings
2. 42" Channelizer

STAGING
PRAIRIE AVE. TO
80TH STREET

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.17

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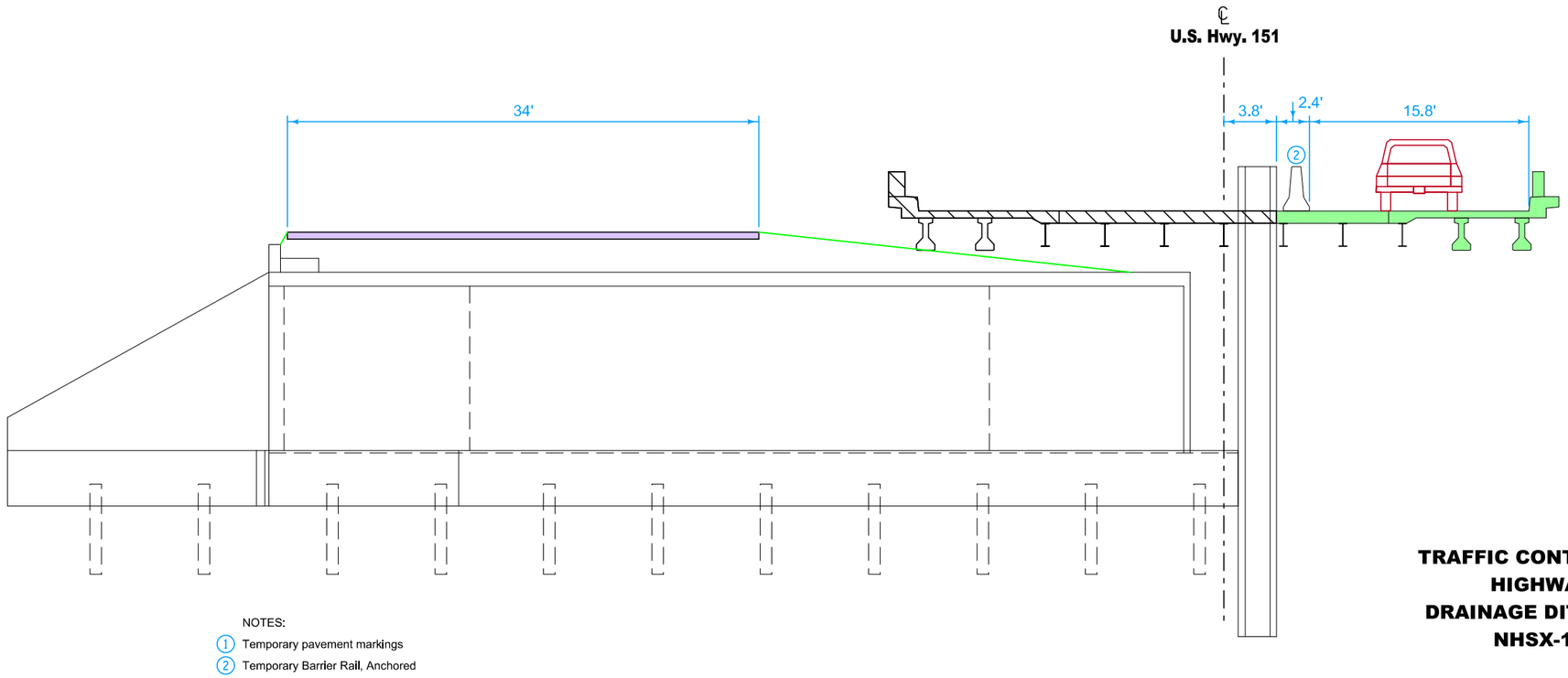
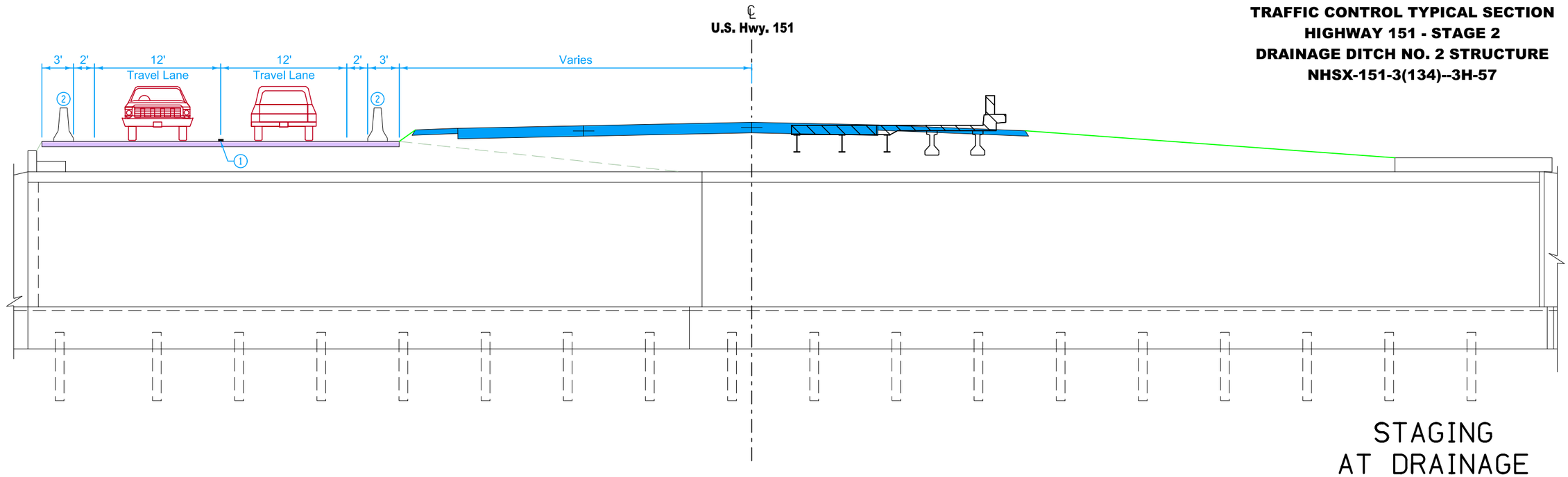


NOTES:

① Temporary pavement markings

② Temporary Barrier Rail, Anchored

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 1
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57



TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 2
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57

STAGING AT DRAINAGE DITCH NO. 2

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.18

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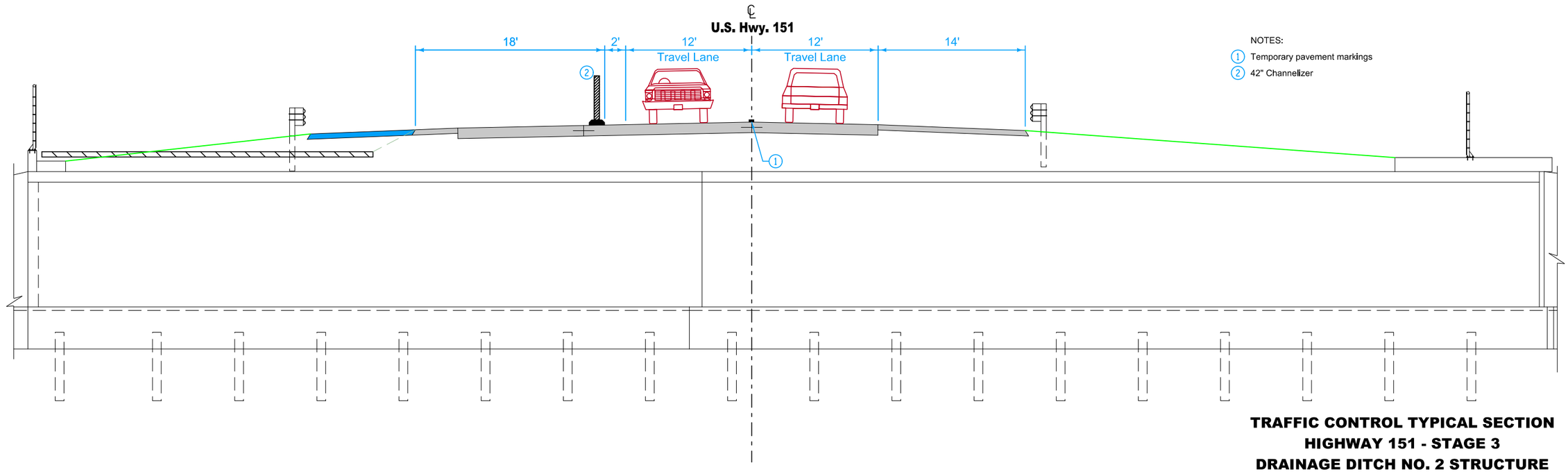

TRAFFIC CONTROL TYPICAL SECTION
HIGHWAY 151 - STAGE 3
DRAINAGE DITCH NO. 2 STRUCTURE
NHSX-151-3(134)--3H-57

STAGING
AT DRAINAGE
DITCH NO. 2

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.19

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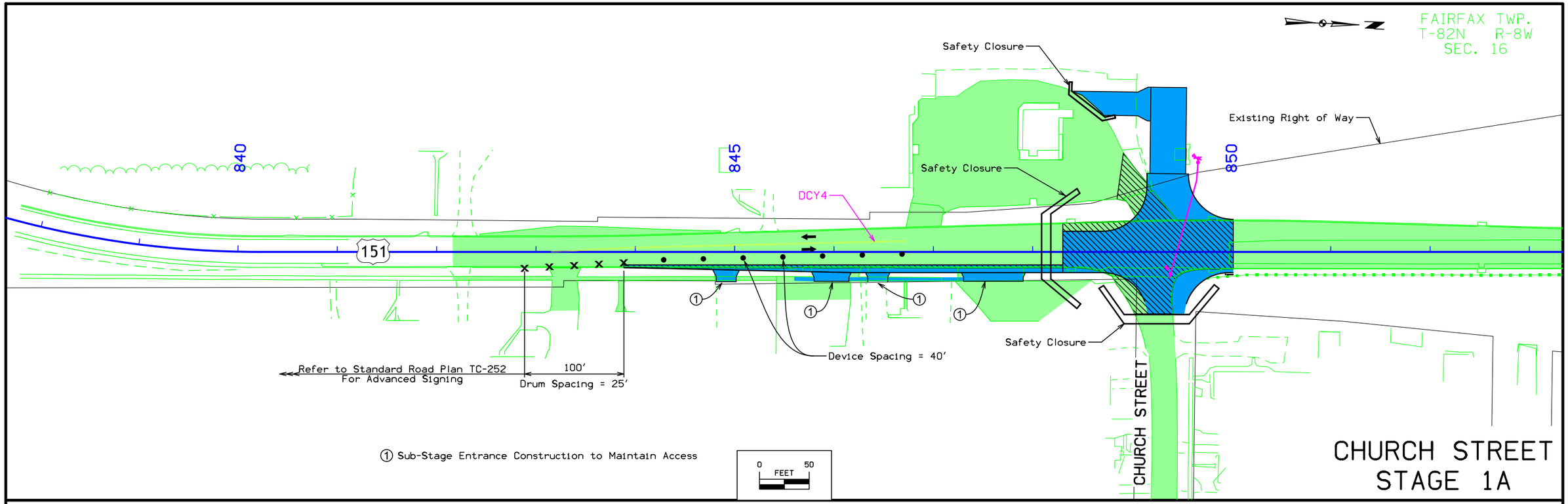

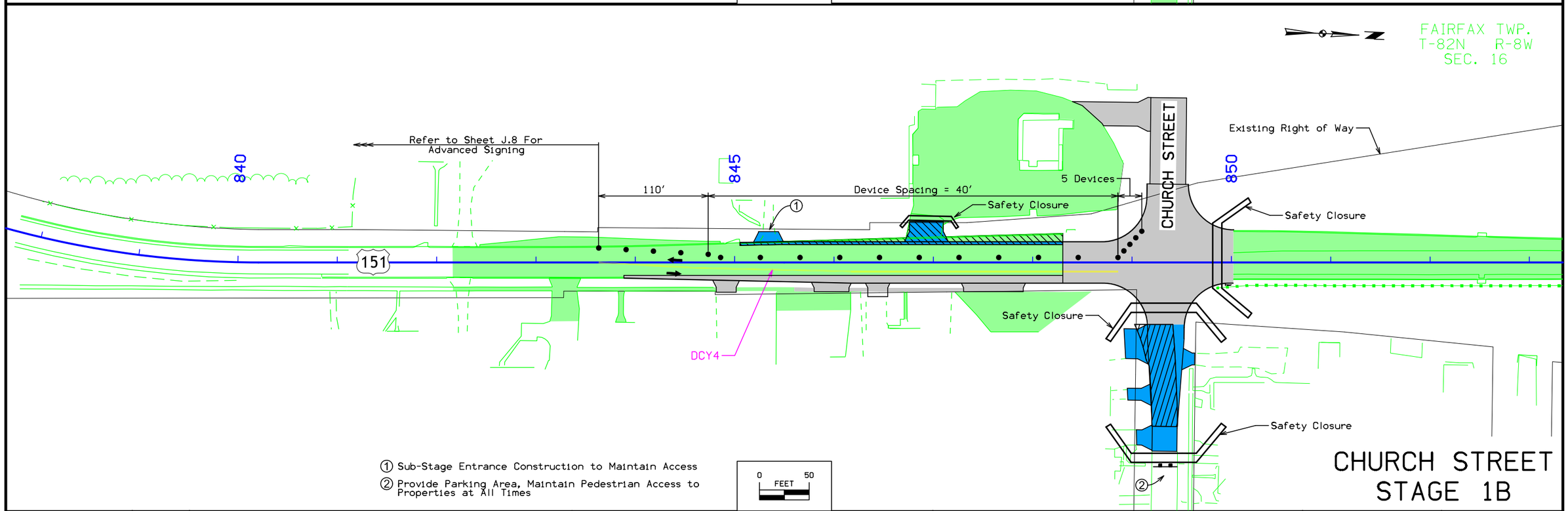

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.20

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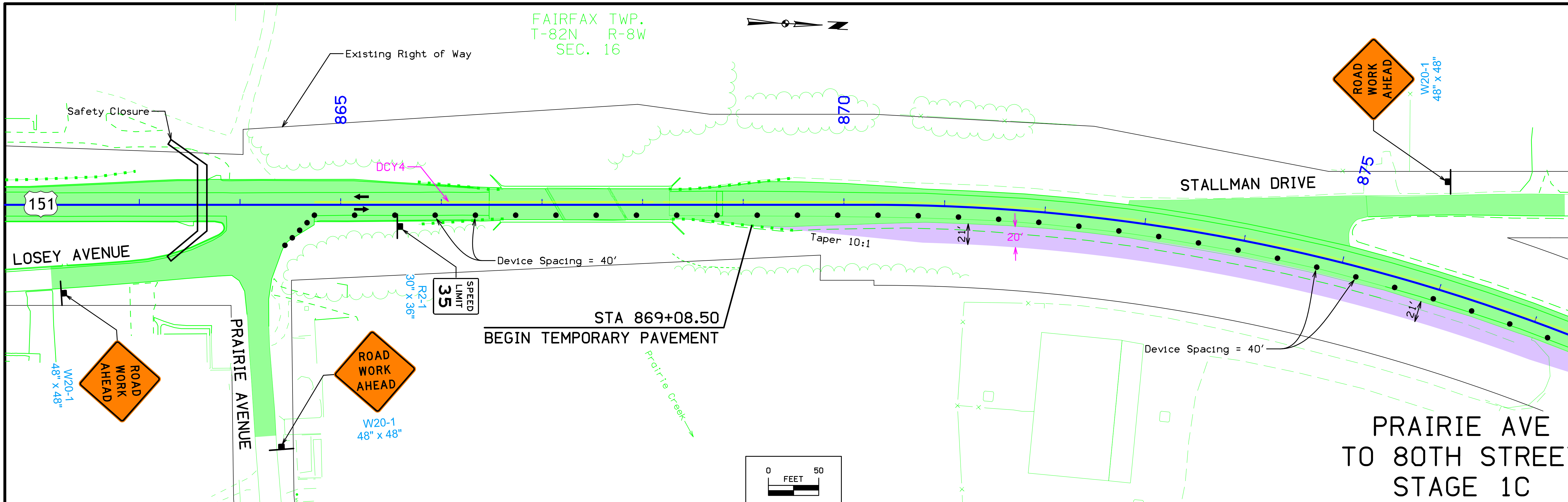

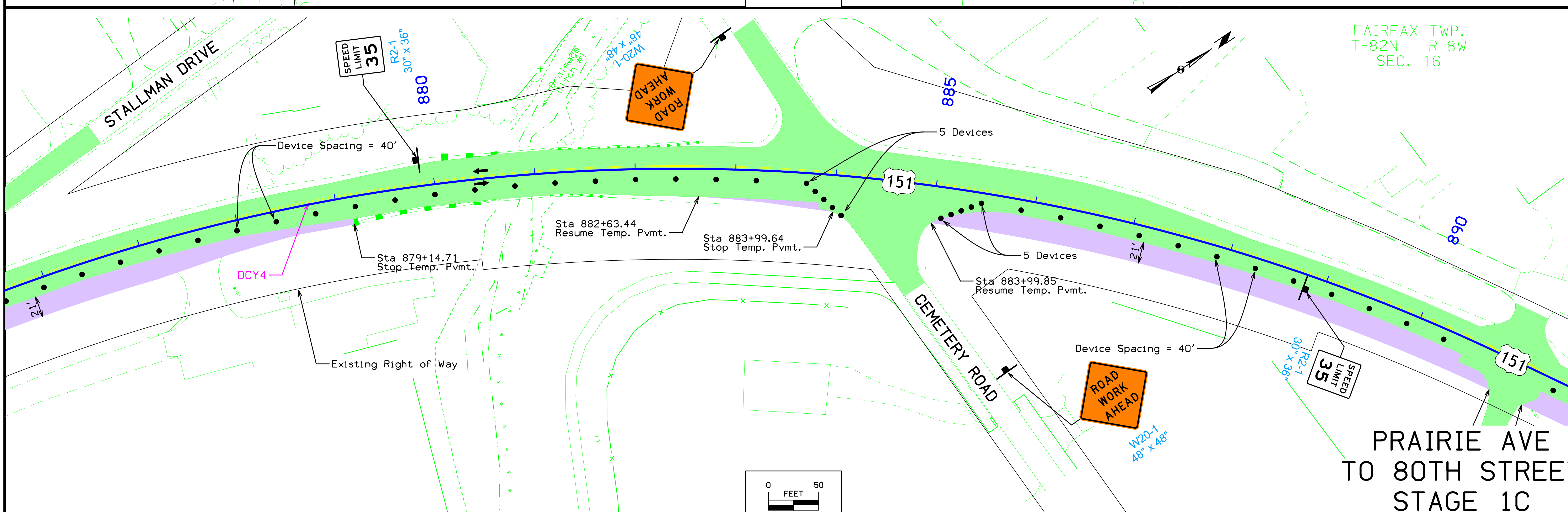

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.21

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

890 895 900 905

DCY4 CHY8

Existing Right of Way

151

21′ 21′ 20′

Taper 20:1

Sta 891+27.79
Resume Temp. Pvmt.

Device Spacing = 40′

Sta 890+92.18
Stop Temp. Pvmt.

Sta 893+96.76
Stop Temp. Pvmt.
Remove Ex. Curb

Sta 894+37.55
Resume Temp. Pvmt.
Remove Ex. Curb

Sta 895+56.49
Stop Temp. Pvmt.
Remove Ex. Curb

Sta 895+98.24
Resume Temp. Pvmt.
Remove Ex. Curb

Device Spacing = 40′

STA 902+84.49
END TEMPORARY PAVEMENT

0 FEET 50

PRAIRIE AVE TO 80TH STREET STAGE 1C

80TH STREET SW

910

300′

500′ 500′ 500′

W1-4L 48" x 48"

SPEED LIMIT 35

R2-1 30" x 36"

W3-5 48" x 48"

925

ROAD WORK AHEAD

W20-1 48" x 48"

151

Existing Right of Way

Note:
Signs North/East of 80TH Street to Remain in Place Through Stage 3B. Following Stage 2B, W1-4L Sign Can be Removed.

0 FEET 50

PRAIRIE AVE TO 80TH STREET STAGE 1C

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.22

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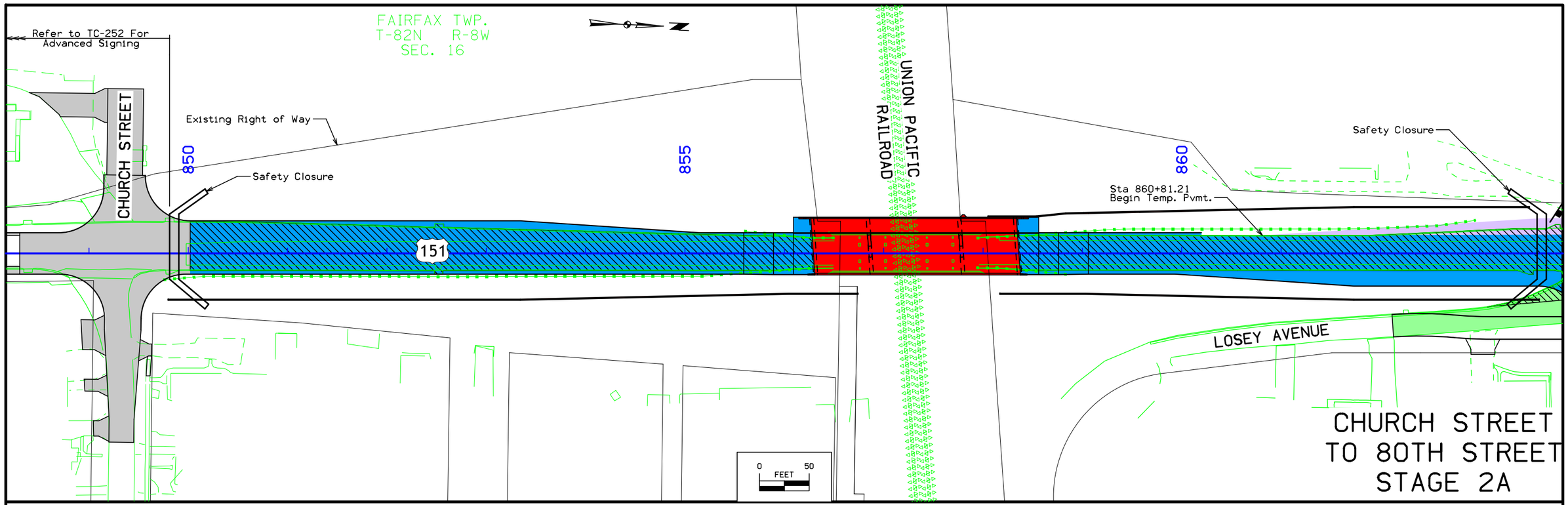

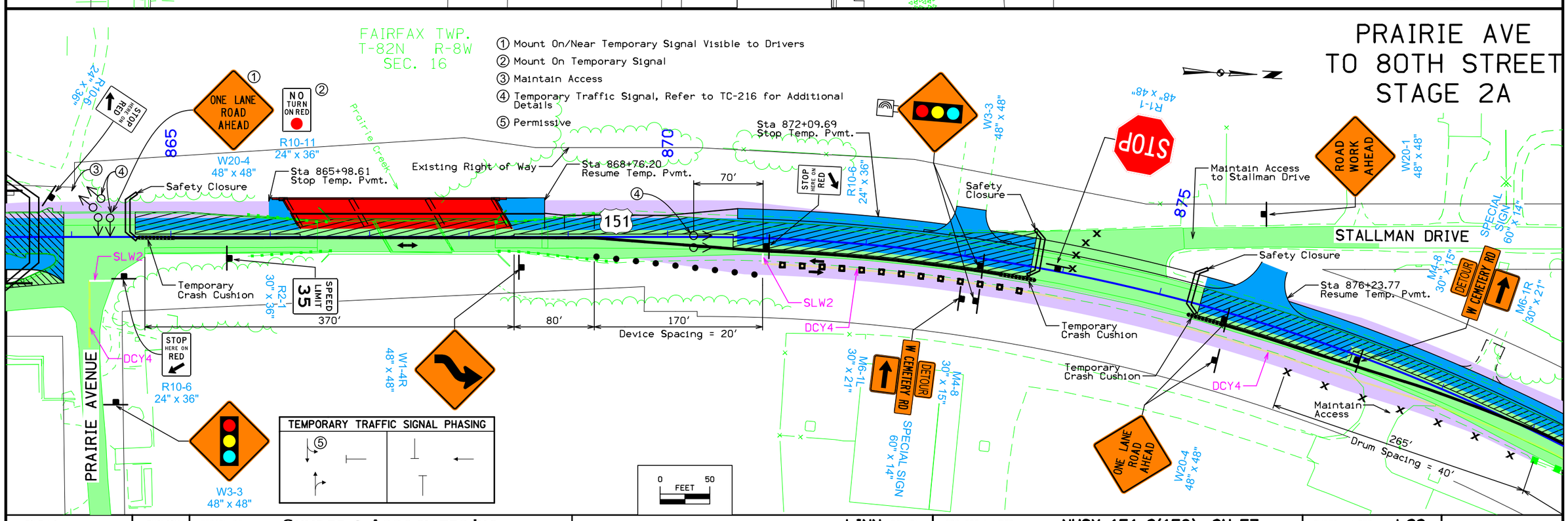

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.23

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CHURCH STREET TO 80TH STREET STAGE 2A

FAIRFAX TWP.
T-82N R-8W
SEC. 16

Refer to TC-252 For Advanced Signing

Safety Closure

Sta 883+46.75
End Temp. Pvmt.

Sta 882+04.00
Resume Temp. Pvmt.

Sta 879+68.00
Stop Temp. Pvmt.

Drainage Ditch #1

880 885 890

SPEED LIMIT 35
R2-1 30" x 36"

SPECIAL SIGN 60" x 14"
M4-8 30" x 15"
DETOUR W CEMETERY RD
M6-3 30" x 21"

Existing Right of Way

151

Maintain Access

Safety Closure

Safety Closure

Safety Closure

DCY4

280'

210'
Device Spacing = 40'

ROAD WORK AHEAD
W20-1 48" x 48"

SPEED LIMIT 35
R2-1 30" x 36"

Temporary Crash Cushion

Temporary Crash Cushion

CEMETERY ROAD

M4-8 30" x 15"
DETOUR W CEMETERY RD
M6-1L 30" x 21"
SPECIAL SIGN 60" x 14"

0 50 FEET

FAIRFAX TWP.
T-82N R-8W
SEC. 16

530'
Drum Spacing = 40'

Refer to Stage 1C For Signs North/East of 80th Street

895 900 905 910

Safety Closure

Sand Barrels

Existing Right of Way

DCY4

ELW4

CHY8

Device Spacing = 40'

R4-7C 36" x 48"

80TH STREET SW

151

50'
5 Devices

160'

305'
Drum Spacing = 40'

DCY4

ELW4

0 50 FEET

CHURCH STREET TO 80TH STREET STAGE 2A

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.24

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

Refer to TC-252 For Advanced Signing

CHURCH STREET

Existing Right of Way

Safety Closure

850

855

UNION PACIFIC RAILROAD

860

Safety Closure

151

LOSEY AVENUE

0 FEET 50

CHURCH STREET TO 80TH STREET STAGE 2B

FAIRFAX TWP.
T-82N R-8W
SEC. 16

① Mount On/Near Temporary Signal Visible to Drivers.
② Mount On Temporary Signal.
③ Maintain Access. Provide Temporary Pavement Wedge Between Existing and Proposed Pavement Elevations.
④ Temporary Traffic Signal, Refer to TC-216 for Additional Details.
⑤ Permissive

CHURCH STREET TO 80TH STREET STAGE 2B

R10-5 24" x 36"
STOP HERE ON RED

① ONE LANE ROAD AHEAD

② NO TURN ON RED
R10-11 24" x 36"

W20-4 48" x 48"

③ ④

Safety Closure

865

870

Prairie Creek

70'

STOP HERE ON RED
R10-6 24" x 36"

W3-3 48" x 48"

Existing Right of Way

Maintain Access

875

Refer to TC-252 For Advanced Signing

STALLMAN DRIVE

Safety Closure

SLW2

30" x 36"
R2-1
SPEED LIMIT 35

370'

80'

170'

Device Spacing = 20'

SLW2

DCY4

STOP HERE ON RED
R10-6 24" x 36"

DCY4

W1-4R 48" x 48"

30" x 21"
M6-3
STALLMAN DR
DETOUR
30" x 15"
M4-8
SPECIAL SIGN 50" x 14"

PRAIRIE AVENUE

W3-3 48" x 48"

TEMPORARY TRAFFIC SIGNAL PHASING

⑤

ONE LANE ROAD AHEAD
W20-4 48" x 48"

265'
Maintain Access

Drum Spacing = 40'

0 FEET 50

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.25

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CHURCH STREET TO 80TH STREET STAGE 2B

FAIRFAX TWP.
T-82N R-8W
SEC. 16

W20-1 48" x 48"
ROAD WORK AHEAD
Maintain Access to Cemetery Rd
R1-1 48" x 48"
STOP
Safety Closure
Drainage Ditch #1
SPEED LIMIT 35
R2-1 30" x 36"
880
885
M4-8 30" x 15"
DETOUR
STALLMAN DR
SPECIAL SIGN 50" x 14"
M6-1R 30" x 21"
Existing Right of Way
151
890
Safety Closure
Maintain Access
Safety Closure
Temporary Crash Cushion
210'
Device Spacing = 40'
DCY4
280'
Temporary Crash Cushion
DCY4
M6-1L 30" x 21"
M4-8 30" x 15"
SPECIAL SIGN 50" x 14"
M4-8 30" x 15"
DETOUR
STALLMAN DR
SPECIAL SIGN 50" x 14"
M6-3 30" x 21"
CEMETERY ROAD
ROAD WORK AHEAD
W20-1 48" x 48"
R2-1 30" x 36"
SPEED LIMIT 35
Temporary Crash Cushion
Temporary Crash Cushion
0 FEET 50

FAIRFAX TWP.
T-82N R-8W
SEC. 16

530'
Drum Spacing = 40'
Refer to Stage 1C For Signs North/East of 80th Street
R4-7C 36" x 48"
895
Existing Right of Way
Sta 898+00.00
Begin Temp. Pvmt.
900
Sta 901+97.45
End Temp. Pvmt.
Safety Closure
Sand Barrels
905
910
DCY4
ELW4
CHY8
Device Spacing = 40'
151
DCY4
ELW4
50'
5 Devices
140'
305'
Drum Spacing = 40'
80TH STREET SW
0 FEET 50

CHURCH STREET TO 80TH STREET STAGE 2B

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.26

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

Refer to TC-228 For Advanced Signing

W1-4L 48" x 48"

315′ 680′ 140′

860 865 870

Maintain Driveway Access

Existing Right of Way

Temporary Crash Cushion

Temporary ① Crash Cushion

CHY8 DCY4

151

Temporary Crash Cushion

Safety Closure

Device Spacing = 40′

R2-1 30" x 36"

SPEED LIMIT 35

LOSEY AVENUE

① Safety Closure

R4-7C 36" x 48"

PRAIRIE AVENUE

Prairie Creek

① Refer to Sheet J.8 for Additional Detail.

② Provide Parking Area, Maintain Pedestrian Access to Properties at All Times

Safety Closure ②

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

FAIRFAX TWP.
T-82N R-8W
SEC. 16

140′ 145′ 100′ 315′ 100′

STALLMAN DRIVE

SPEED LIMIT 35 R2-1 30" x 36"

Temporary Crash Cushion

Temporary Crash ① Cushion

Temporary Crash Cushion

Temporary Crash Cushion ①

CHY8 DCY4

875 880 885

Drainage Ditch #1

ROAD WORK AHEAD W20-1 48" x 48"

151

Safety Closure

Maintain Access

R4-7C 36" x 48"

R4-7C 36" x 48"

E CEMETERY RD DETOUR M6-3 30" x 21" M4-8 30" x 15"

SPECIAL SIGN 56" x 14"

Refer to TC-252 For Advanced Signing

CEMETERY ROAD

Safety Closure

R2-1 30" x 36" SPEED LIMIT 35

Existing Right of Way

① Refer to Sheet J.8 for Additional Detail.

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.27

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

140'
Drum Spacing = 35'

890

Temporary
Crash Cushion

895

Temporary
Crash Cushion

DCY4

Existing Right of Way

900

DCY4

151

Safety Closure
Maintain Access

Safety Closure

Safety Closure

Safety Closure

SPEED LIMIT 35
R2-1
30" x 36"

W1-4R
48" x 48"

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

FAIRFAX TWP.
T-82N R-8W
SEC. 16

80TH STREET SW

SPECIAL SIGN
56" x 14"

M4-8
30" x 15"

DETOUR

E CEMETERY RD

M6-1L
30" x 21"

905

910

915

DCY4

Temporary
Crash Cushion

CHY8

151

Safety
Closure

240'
Device Spacing = 40'

5 Devices

W1-4R
48" x 48"

M6-1R
30" x 21"

E CEMETERY RD

DETOUR

M4-8
30" x 15"

SPECIAL SIGN
56" x 14"

Note:
Refer to Stage 1C for Signs North/East of 80TH Street.
Remove W1-4L Sign.

0 FEET 50

UPRR TO 80TH STREET STAGE 3A

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.28

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

Refer to TC-228 For Advanced Signing

315′ 680′ 140′

860 865 870

Temporary Crash Cushion

Maintain Driveway Access

Existing Right of Way

W14-1L 48" x 48"

Temporary ① Crash Cushion

CHY8 DCY4

151

5 Devices

Device Spacing = 40′

Temporary Crash Cushion

Safety Closure

LOSEY AVENUE

PRAIRIE AVENUE

R2-1 30" x 36" SPEED LIMIT 35

R4-7C 36" x 48"

① Refer to Detail on Sheet J.8 for Additional Detail.

0 FEET 50

Prairie Creek

UPRR TO 80TH STREET STAGE 3B

FAIRFAX TWP.
T-82N R-8W
SEC. 16

W20-1 48" x 48" ROAD WORK AHEAD

140′ 145′ 100′ 315′ 100′

STALLMAN DRIVE

Temporary Crash Cushion

R2-1 30" x 36" SPEED LIMIT 35

880

Drainage Ditch #1

Temporary Crash Cushion ①

Temporary Crash Cushion

Temporary Crash Cushion ①

CHY8 DCY4

885

548

151

Safety Closure

Temporary Crash Cushion

R4-7C 36" x 48"

Safety Closure

Existing Right of Way

STOP

R1-1 48" x 48"

W20-1 48" x 48" ROAD WORK AHEAD

CEMETERY ROAD

① Sub-Stage Entrance Construction to Maintain Access.

0 FEET 50

UPRR TO 80TH STREET STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.29

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

890 895 900

Existing Right of Way

Temporary Crash Cushion

Temporary Crash Cushion

Temporary Crash Cushion

DCY4

DCY4

151

Safety Closure

Safety Closure

Safety Closure

Safety Closure

Safety Closure

SPEED LIMIT 35

R2-1
30" x 36"

0 FEET 50

UPRR TO 80TH STREET STAGE 3B

W1-4R
48" x 48"

FAIRFAX TWP.
T-82N R-8W
SEC. 16

905 910 915

80TH STREET SW

DCY4

Temporary Crash Cushion

CHY8

151

Safety Closure

240'
Device Spacing = 40'

5 Devices

Refer to Stage 1C For Signs North/East of 80th Street, Remove W1-4L Sign.

0 FEET 50

UPRR TO 80TH STREET STAGE 3B

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.30

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

Refer to TC-228 For Advanced Signing

280'
Device Spacing = 40'

Existing Right of Way

860

865

870

Device Spacing = 40'

5 Devices

151

Device Spacing = 40'

Device Spacing = 20'

5 Devices

Device Spacing = 20'

SPEED LIMIT 35
R2-1
30" x 36"

LOSEY AVENUE

ROAD WORK AHEAD
W20-1
48" x 48"

PRAIRIE AVENUE

Prairie Creek

SPEED LIMIT 35
R2-1
30" x 36"

① Sub-Stage Entrance Construction to Maintain Access
② Construct Separation Barrier End Section

0 FEET 50

UPRR TO 80TH STREET STAGE 4

FAIRFAX TWP.
T-82N R-8W
SEC. 16

ROAD WORK AHEAD
W20-1
48" x 48"

STALLMAN DRIVE

Existing Right of Way

SPEED LIMIT 35
R2-1
30" x 36"

880

ROAD WORK AHEAD
W20-1
48" x 48"

① Device Spacing = 40'

5 Devices

875

5 Devices

Device Spacing = 20'

5 Devices

151

100'
5 Devices

885

Device Spacing = 40'

Device Spacing = 20'

CEMETERY ROAD

SPEED LIMIT 35
R2-1
30" x 36"

ROAD WORK AHEAD
W20-1
48" x 48"

① Construct Separation Barrier End Section

0 FEET 50

UPRR TO 80TH STREET STAGE 4

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.31

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FAIRFAX TWP.
T-82N R-8W
SEC. 16

Device Spacing = 40′
240′
Drum Spacing = 40′
100′
5 Devices
Device Spacing = 40′
Device Spacing = 20′
890
895
900
Existing Right of Way
151
W1-4L
48" x 48"
440′
Device Spacing = 40′
SPEED LIMIT 35
R2-1
30" x 36"

0 FEET 50

UPRR TO 80TH STREET STAGE 4

FAIRFAX TWP.
T-82N R-8W
SEC. 16

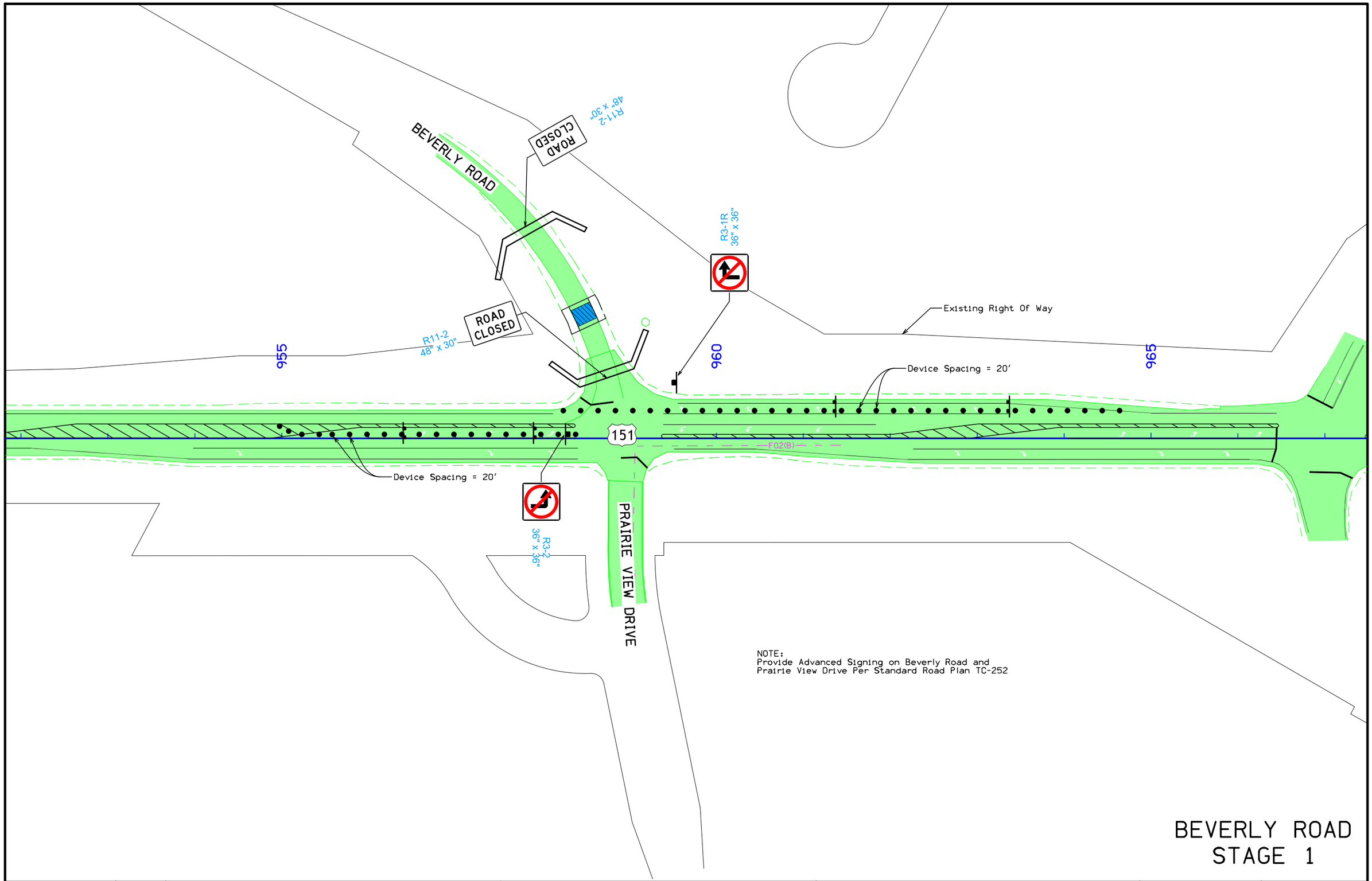
440′
Device Spacing = 40′
100′
5 Devices
250′
Existing Right of Way
905
SHOULDER DROP OFF
W8-9A
48" x 48"
SPEED LIMIT 35
R2-1
30" x 36"
500′
500′
80TH STREET SW
910
151
SPEED LIMIT 35
W3-5
48" x 48"
ROAD WORK AHEAD
W20-1
48" x 48"
END ROAD WORK
G20-2A
48" x 24"

0 FEET 50

UPRR TO 80TH STREET STAGE 4

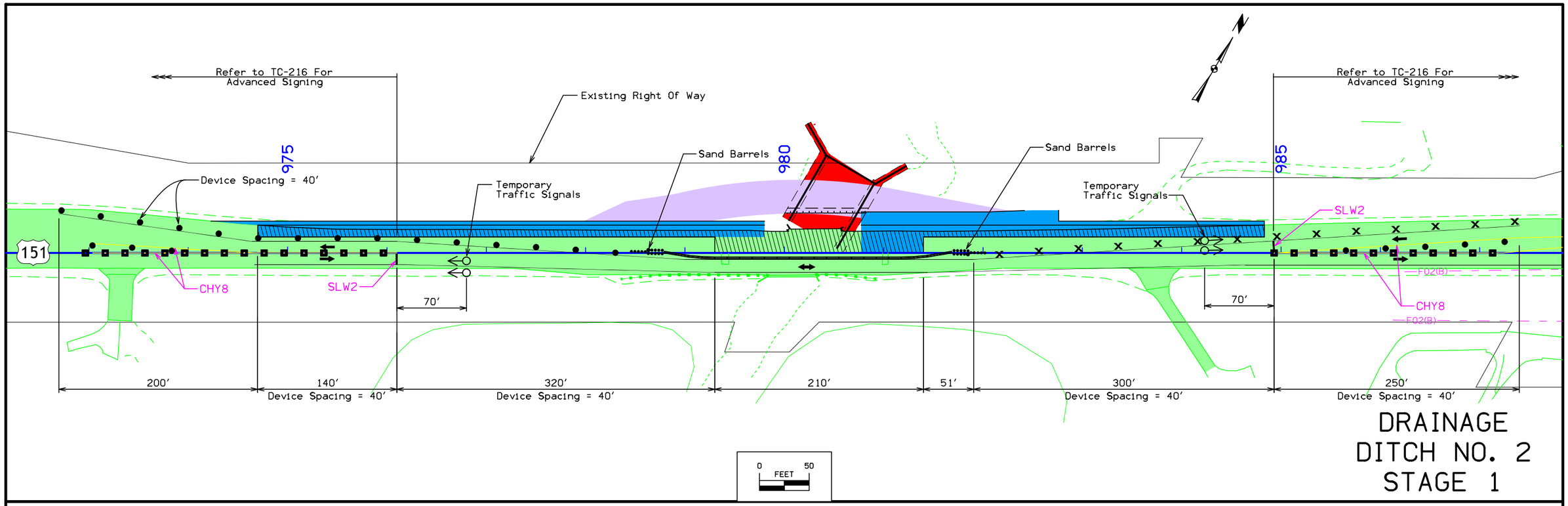
FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.32

8:53:59 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

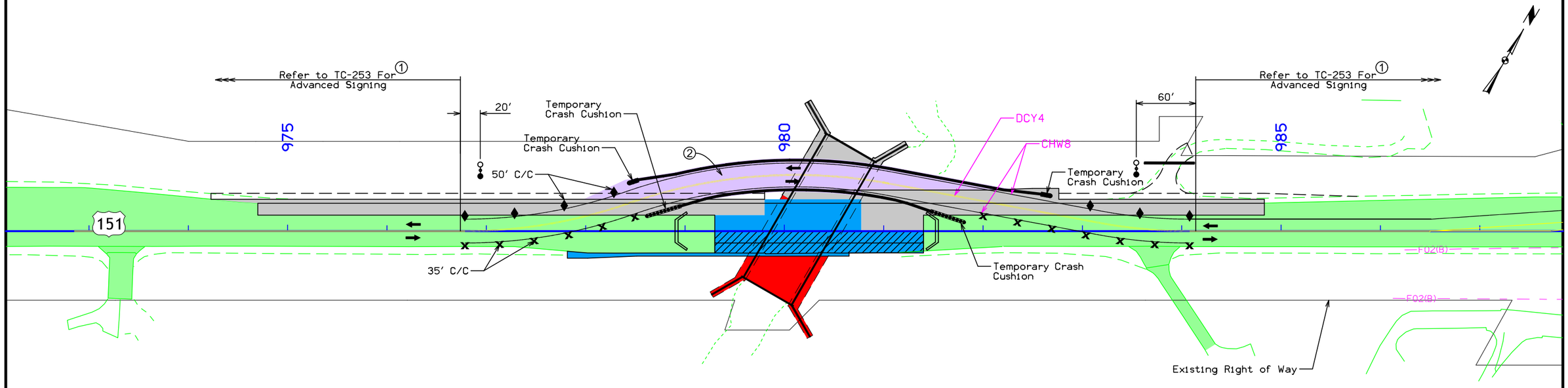


FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.33

8:54:01 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



DRAINAGE DITCH NO. 2 STAGE 1

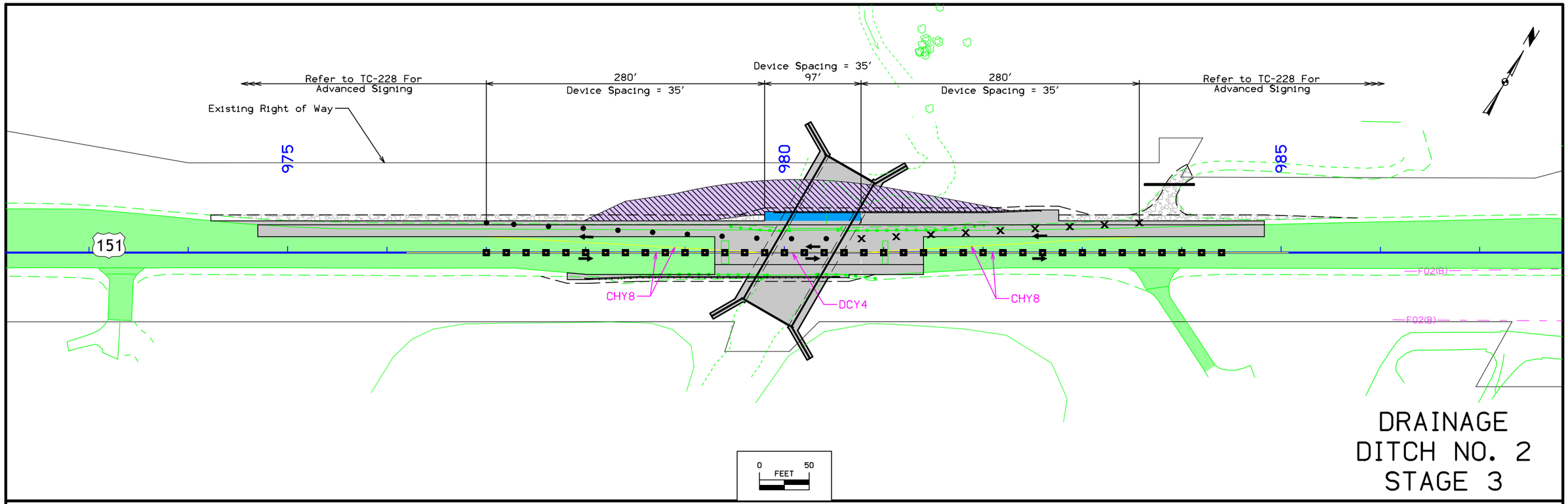


① Replace W1-4L Sign Shown in TC-253 with W24-1 Sign (48" x 48").
② Refer to Sheet F.1 for Additional Details of Temporary Pavement.

DRAINAGE DITCH NO. 2 STAGE 2

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.34

8:54:03 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht



FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.35

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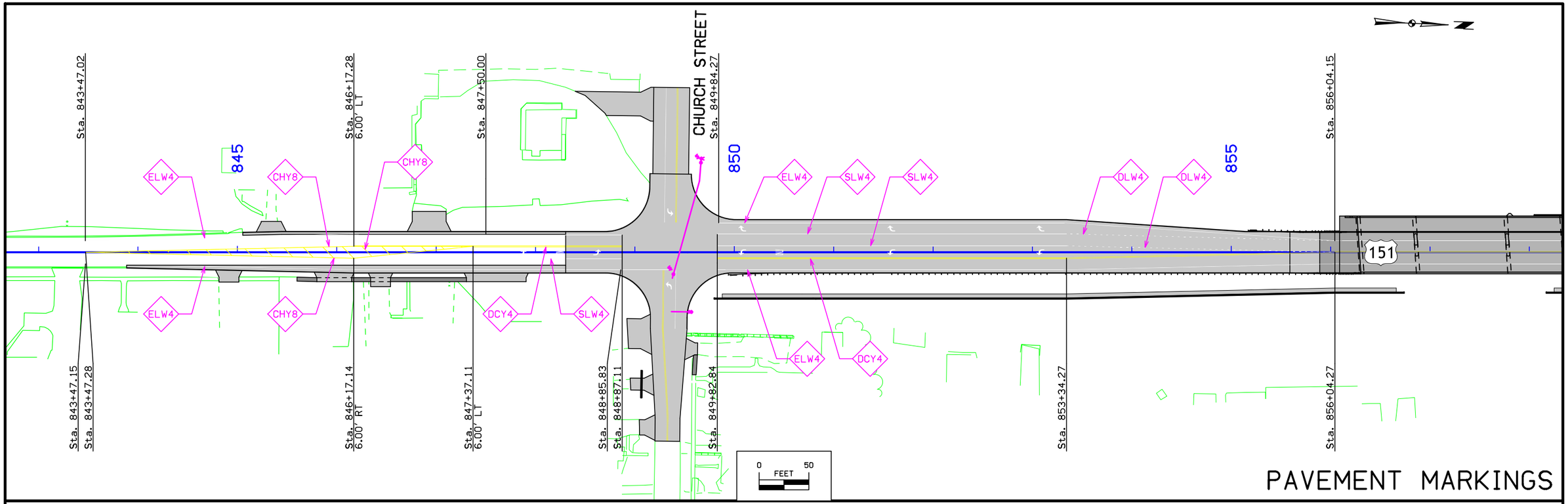
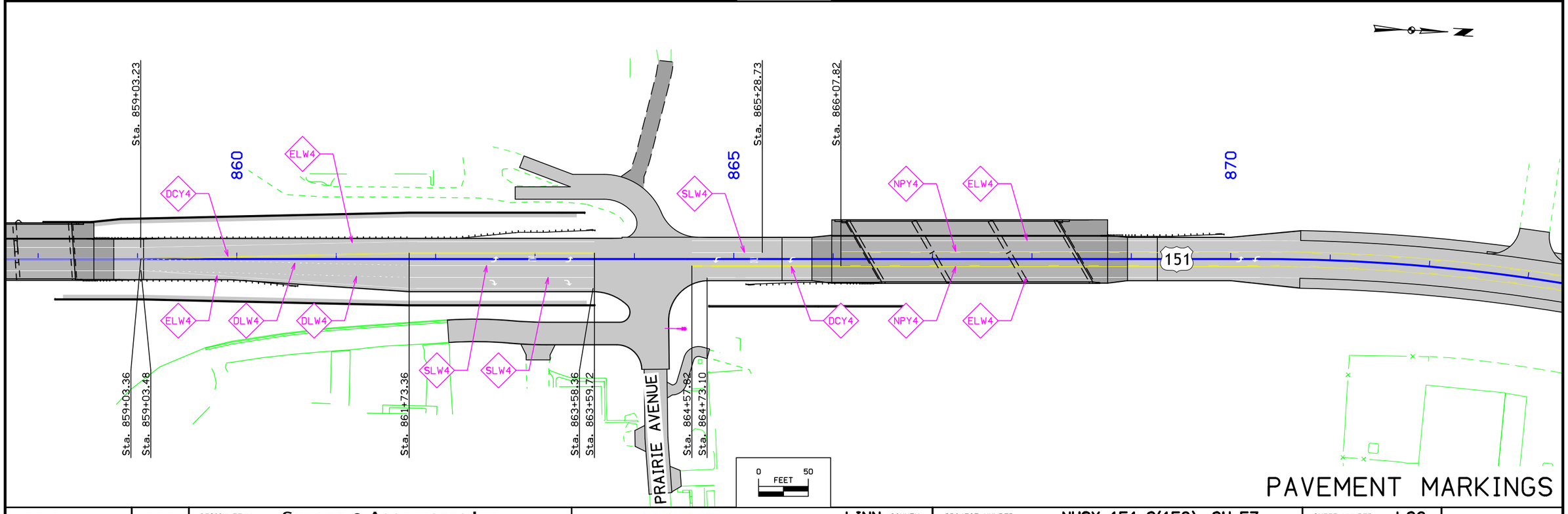


PAVEMENT MARKINGS



PAVEMENT MARKINGS

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER J.36

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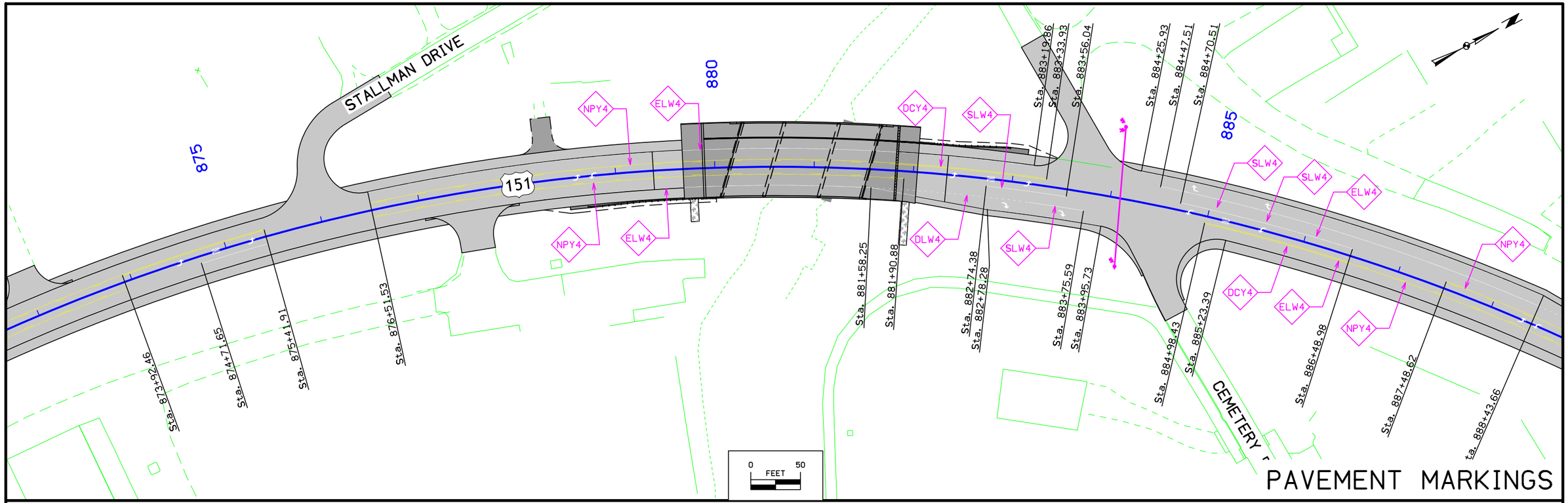

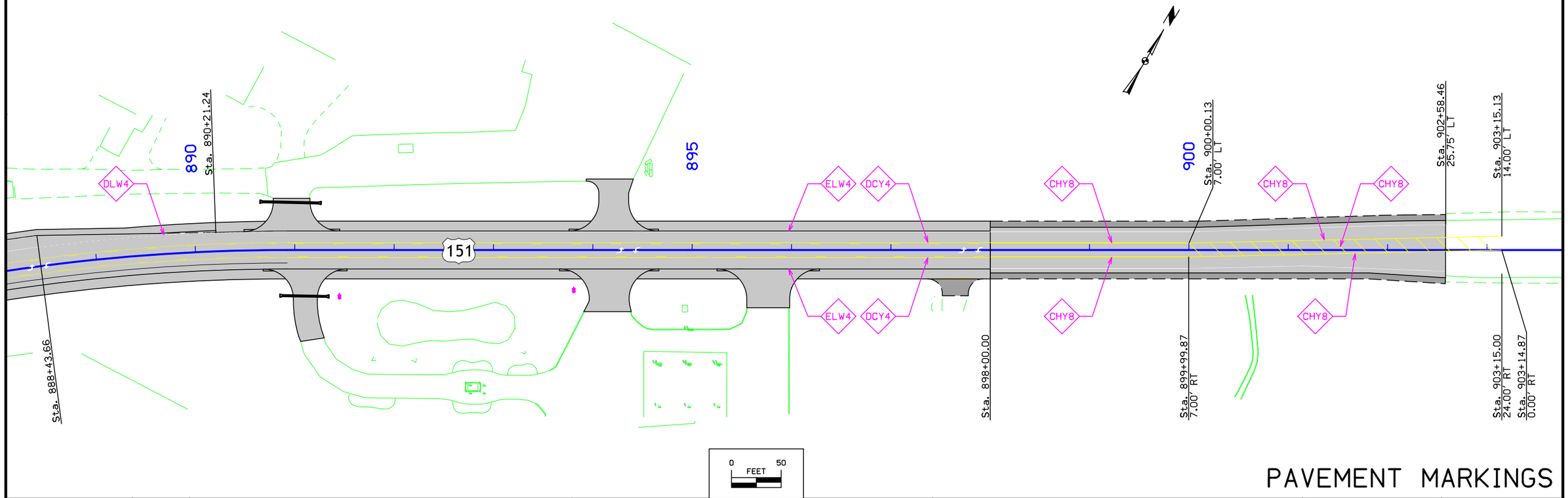

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.37

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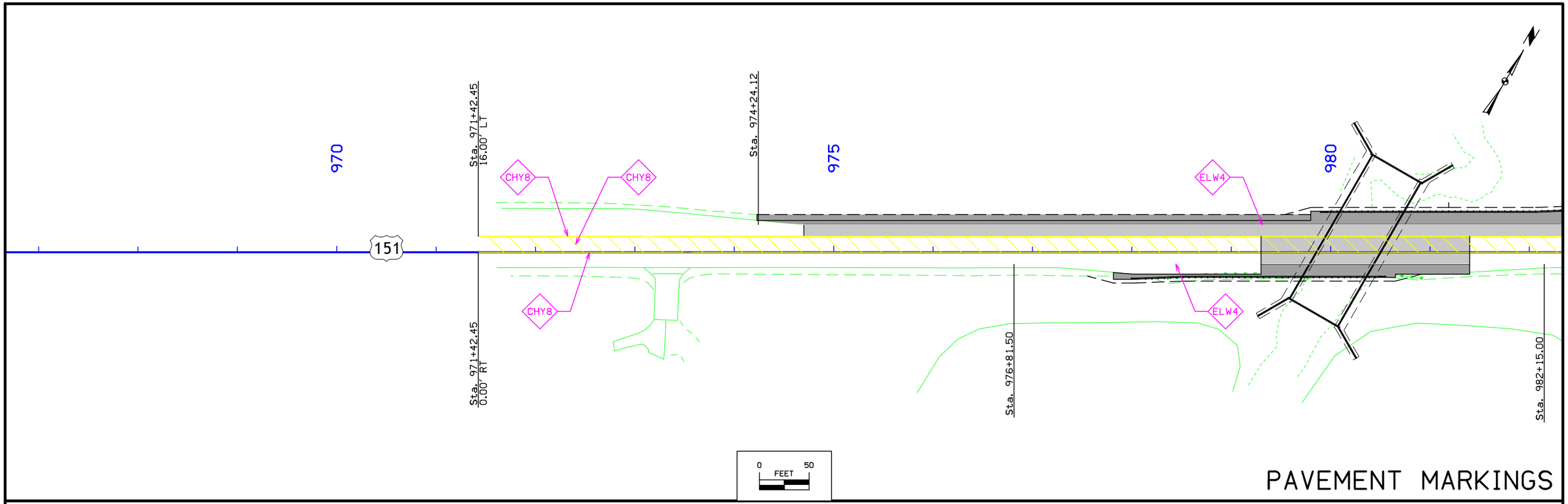
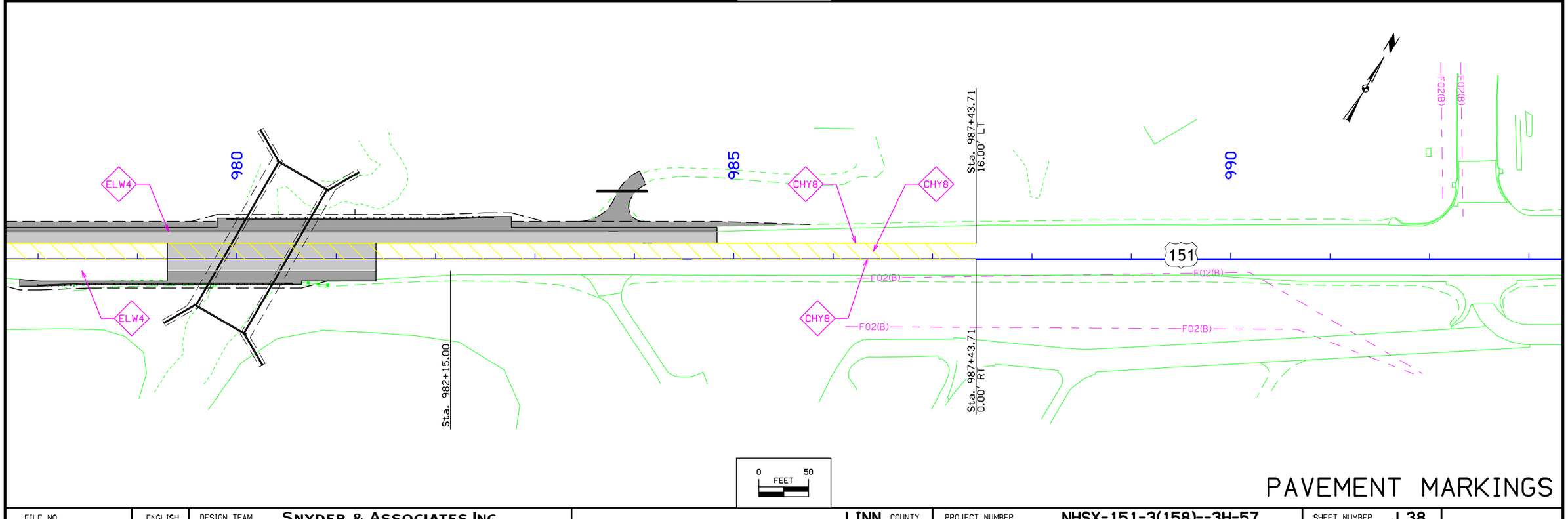


PAVEMENT MARKINGS



PAVEMENT MARKINGS

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.38

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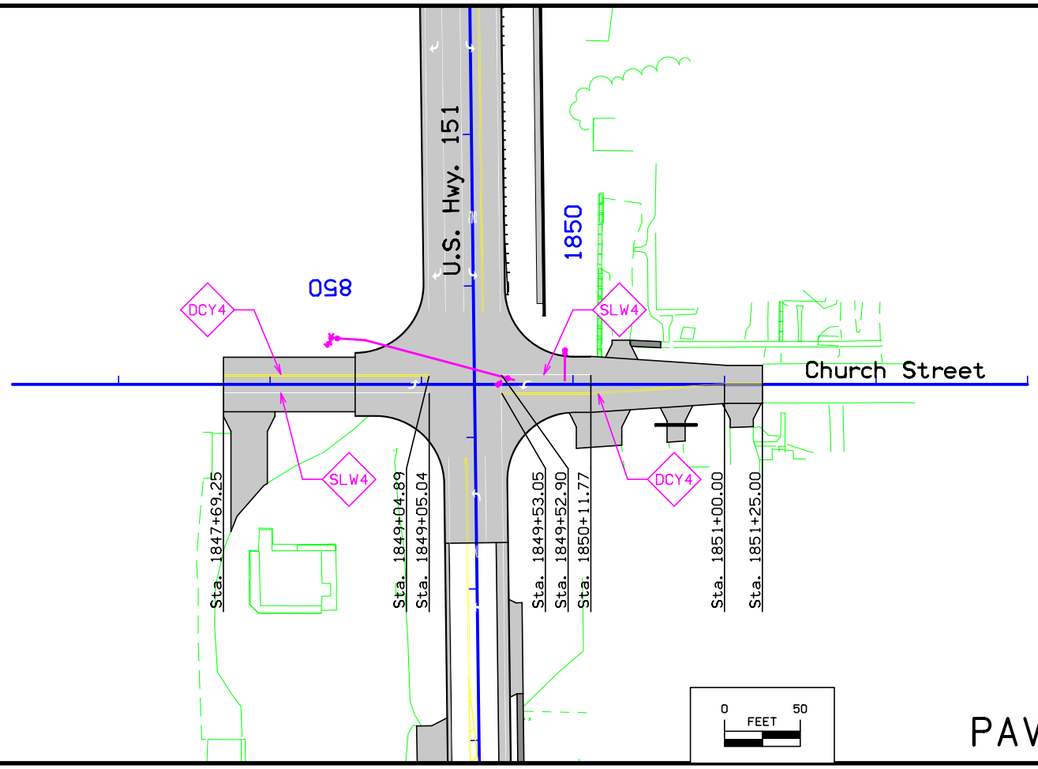


PAVEMENT MARKINGS - Church Street

FILE NO.	ENGLISH	DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	J.39

8:54:11 AM 11/30/2018 ncarhoff pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\Design_(158)_Grade and Pave\57151158J02.sht

- CP Control Point
- BM Bench Mark
- PPA Power Pole Co. 1
- PLG Location of General Photo
- IN Storm Sewer Intake
- SI Sign
- LC Lot Corner
- BB Billboard
- WV Water Valve
- WH WHD Water Hydrant
- TP TPD Telephone Pedestal
- TDC Tree Deciduous
- TEV Evergeen Tree
- SHR Shrub
- PR Electric Riser Pole
- SL Speed Limit Sign
- MH Utility Access (Manhole)
- MIS Miscellaneous
- MM Mile Marker Post
- WEL Well
- LUM Luminaire
- GP Guard Post (Less Than 4 Posts)
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FLG Flag Poles
- FHD Fire Hydrants
- STP Stump
- OUT Tile Outlet
- INB Storm Sewer Beehive Intake
- S Soil Sampling Site (Wetlands)
- TVP TV Pedestal
- SP Stream Profile
- TW Top of Water
- BLD Building or Foundation
- LIN Miscellaneous Line
- ST Spiral Point
- RET Retaining Walls
- BRG Bridge
- TLNR Tree Line Right
- TLNL Tree Line Left
- CON Concrete or A/C Slab
- CUL Culvert
- FCL Chain Link and Security Fence
- GDL Guard Rail Steel
- BL Topo Breakline
- FWD Wood Fence
- D Centerline Draw or Stream (Down)
- DU Centerline Draw or Stream (Up)
- FW Wire Fence
- PIP Pipe Culvert
- RRR Railroad Rail
- CU Back of Curb
- ENU Edge Unpaved Entrance & Parking
- ENP Edge Paved Entrance & Park Lot
- EP Edge of Paved Roads (ML or SR)
- GU Gutter In Front of Curb
- SNP Unpaved Shoulder
- BNK Stream Bank
- EG Edge of Gravel Road
- EW Edge of Water
- ENT Centerline BL of Entrance
- SH Paved Shoulder
- RIP Rip-Rap
- TRL Trail
- SWK Sidewalk
- TV Satelite TV Dish
- TR Telephone Riser Pole
- TSB Telephone Switch Box
- UV Underground Utility Vault
- VS Channel Cross Section
- BLS Bridge Low Steel

- G(C) - GL1C Gas Line Co. 1 - Quality C
- G - GL1D Gas Line Co. 1 - Quality D
- Default_Chain Default Chain Feature
- W3 - WL3D Water Line Co. 3 - Quality D
- San. - SA1D Sanitary Sewer Co. 1- Quality D
- T(C) - TL1C Telephone Line Co. 1 - Quality C
- St.S.(C) - ST1C Storm Sewer Co. 1 - Quality C
- ST Spiral Point
- San.(C) - SA1C Sanitary Sewer Co. 1- Quality C
- San.2 - SA2D Sanitary Sewer Co. 2 - Quality D

- PPA Alliant Energy
- TPD Telephone Pedestal
- WV Water Valve
- WHD Water Hydrant
- PR Electric Riser Pole
- GV Gas Valve
- EB Electrical Box
- UB Utility Box
- FHD Fire Hydrants
- TVP TVP TV Pedestal
- G - GLA MidAmerican Energy
- E2 - ELB Linn County Rural Electric Cooperative
- FO - FOA South Slope Phone Internet Television
- FO2 - FOB Mediacom
- FO3(C) - FOC Sprint/Nextel
- San.(C) SA1C City of Fairfax
- San. - SA1D City of Fairfax
- San.2 - SA2D City of Cedar Rapids
- T1 - TLA South Slope Phone Internet Television
- T2 - TLB Centurylink
- TV - TVA Underground TV Cable Co. 1
- W - Water Line City of Cedar
- W2 - Water Line City of Cedar Rapids
- W3 - Water Line City of Fairfax

PLAN VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Green	(2)	Existing Topographic Features and Labels
Purple (Halo)	(15)	Backslope Drains
Blue	(1)	Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
SHADING	**Design Color No.**	
Brown, Light	(236)	Core Out

PROFILE VIEW COLOR LEGEND OF SOILS SHEETS

LINEWORK	Design Color No.	
Blue	(1)	Proposed Alignment, Stationing, and Alignment Annotation
Green	(2)	Existing Ground Line Profile
Green, Med	(227)	Topsoil
Green, Med	(227)	Slope Dressing Only
Orange	(6)	Loam
Brown, Dark	(238)	Class 10
Brown, Med	(237)	Sand
Red	(3)	Unsuitable A
Pink, Dark	(13)	Unsuitable B
Pink	(11)	Unsuitable C
Red	(3)	Shale
Red	(3)	Waste
Gray, Light	(48)	Broken and Weathered Rock
Gray, Med	(80)	Rock
Gray, V.Dark	(128)	Boulders

PATTERN AND SYMBOL LEGEND OF SOILS SHEETS

- Drill
- Dig/Core
- Date(s) Drilled_____
- $-H_2O-$ Water
- Treatment
- Sandstone
- DRY Dry
- Sand Blanket
- Unsuitable A
- S Sample
- Soil Remediation Area
- Unsuitable B
- Plugged
- Select Soil
- Unsuitable C
- M Moisture
- Select Sand
- Sandy Soil
- Shelby
- Slope Dressing Only
- Boulders
- Blow Count
- Broken and Weathered Rock
- Shale
- Dens. Core
- Rock

Reference Point
Station
Survey Line
Section Corner
Ground Line Intercept
Saw Cut
Guardrail
Clearing & Grubbing Area
Pavement Removal

RIGHT-OF-WAY LEGEND

- Proposed Right-of-Way
- Existing and Proposed Right-of-Way
- Easement and Existing Right-of-Way
- Borrow
- Easement (Temporary)
- Easement
- Excess
- A/C Access Control

NOTE: Sounding and test boring data shown in the plans were accumulated for designing and estimating purposes. Their appearance on the plans does not constitute a guarantee that conditions other than those indicated will be encountered. Details and notes shown elsewhere shall be used for roadway and structure construction.

SOILS

(COVERS SHEET SERIES Q)

Keyed Notes

① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

Curve Data
Δ = 66° 14′ 42.26″ (LT)
T = 623.05
L = 1,104.08
R = 954.93
E = 185.28

0 FEET 50

STA 845+05.45
BEGIN PCC WIDENING LT.

STA 843+88.58
BEGIN PCC WIDENING RT.

STA 843+47.28
BEGIN PROJECT

STA 848+30.33
END PCC WIDENING LT. AND RT.
BEGIN PCC PAVING

STA 849+34.97 (HWY 151) =
STA 1849+34.97 (CHURCH STREET)

Relocate Monument (By Others)

WORKING BLANKET 1

835 840 845 850

PT Sta 840+20.65

U.S. Hwy. 151

45:1 Taper

+34.00 Prop. Type "C" Ent.
+93.00 Prop. Type "B" Ent.
+91.50 Prop. Type "C" Ent.
+97.50 Prop. Type "B" Ent.
+44.00 Prop. Type "C" Ent.
+60.50 Prop. Type "B" Ent.

Do Not Disturb Sign

Church Street

20 21 30 101 18

W3 G F.O. San.

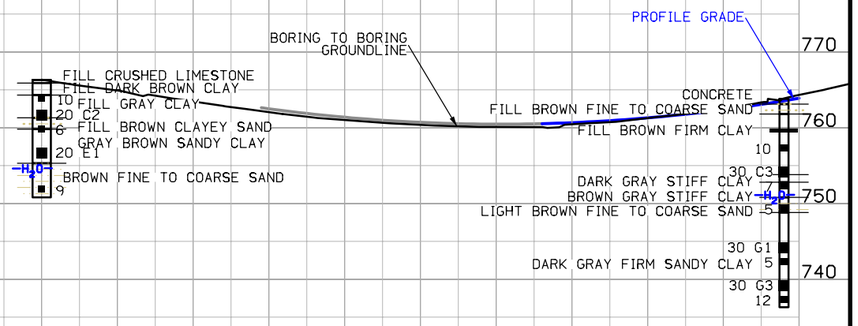
SPECIAL ATTENTION (SLIVER FILL)
Special attention should be given to Article 2107.03.C,
of the current Standard Specification Series, on this project.

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.2

8:04:31 AM kekausalik N:\Projects\2017\08175112\CAD\SHT\571511580Q1.sht

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

30 | 20, 106, ,



SHELBY TUBE CORE DATA

CORE NO.	20 C2	20 E1	30 C3	30 G1	30 G3
DEPTH IN FEET	4	9	9	19	24
CLASSIFICATION (AASHTO)	A-2-6(1)	A-6(12)	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC
COHESION - PSF	2460	540	2010	1100	2350
FRICTION COEFF.	-	-	-	-	-
MOISTURE CONTENT %	9	21	28	18	17
DRY DENSITY - PCF	110	106	87	110	115

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

20
RT.15

30
RT.12

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.3

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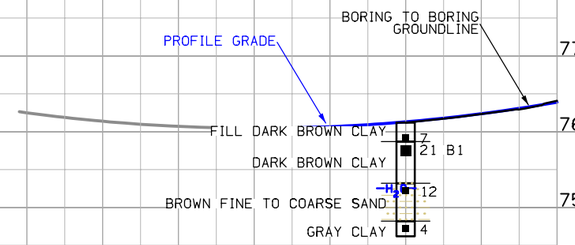

SHELBY TUBE CORE DATA	
CORE NO.	21 B1
DEPTH IN FEET	3
CLASSIFICATION (AASHTO)	-
COEFF.CONSOL.(SQ. FT /DAY)	-
TRIAXIAL COMPRESSION	UC
COHESION - PSF	1690
FRICTION COEFF.	-
MOISTURE CONTENT %	28
DRY DENSITY - PCF	86
CU-CONSOLIDATED UNDRAINED	
UU-UNCONSOLIDATED UNDRAINED	
UC-UNCONFINED COMPRESSION (c=1/2 Qu)	

US HWY 151 SB

21
LT.15

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.4

8:04:33 AM kekausalik N:\Projects\2017\08175112\CAD\SHT\5715115801.sht

Sta. 852+26.00 U.S. Hwy. 151
Install 42"x170' 3000D RCP
F.L. = Lt. 752.04
Rt. 754.30

Sta 857+23.00
144'-10"x30'-0" I-Beam
Span Bridge with 0° skew
(Remove)

FAIRFAX TWP.
T-82N R-8W
SEC. 16

FAIRFAX TWP.
T-82N R-8W
SEC. 9

Union Pacific Railroad

Keyed Notes
① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

STA 864+19.80 (HWY 151) =
STA 2864+19.80 (PRARIE AVENUE)

WORKING BLANKET 1

WORKING BLANKET 2

IFI REMEDIATION 2
SEE Q.21-Q.22

Proposed MSE Wall

Sta 857+32.60
Construct 204'-0" x 40'-0"
Pretensioned Prestressed Concrete
Beam Bridge with 4° Skew (R.A.)

+19.80 Prop.
Type "C" Paved Ent.

+19.80 Prop.
Type "C" Granular Ent.

Losey Avenue

Prairie Avenue

IFI REMEDIATION 1
SEE Q.17-Q.18

CORE-OUT REMEDIATION 1
SEE Q.19-Q.20

CORE-OUT REMEDIATION 2
SEE Q.23

0 50
FEET

Install a working blanket (design thickness is 1-foot) Consisting of Special Backfill in embankment fill areas as tabulated on CS.1 and shown on Q sheets. Working blankets may be deleted if determined not to be necessary at the time of construction.

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.5

8:04:33 AM kekausalik N:\Projects\2017\08175112\CAD\SHT\5715115801.sht

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

37	, , ,
	, , ,
	15, 17, 20,

4	, ,
	, ,
	18, 20,

39	12,
	,
	,

41	,
	,
	17,

43	5,
	122,
	,

PROFILE GRADE

BORING TO BORING GROUNDLINE

CONCRETE
FILL BROWN FINE TO COARSE SAND
32 C1
9
9 FILL BROWN FIRM CLAY
10
32 C5
12 BROWN GRAY STIFF CLAY
12 BROWN FINE TO COARSE SAND
6
GRAY STIFF SANDY CLAY
10

FILL DARK BROWN STIFF SANDY CLAY
4
22 B1
FILL BROWN FIRM CLAY
9
22 B3
11 DARK BROWN FIRM SANDY CLAY
18 GRAY FINE TO COARSE SAND

CONCRETE
FILL BROWN FINE TO COARSE SAND
FILL BROWN STIFF CLAY
13 FILL BROWN FINE TO COARSE SAND
35 E2
10
35 E4
12
FILL YELLOW BROWN FIRM CLAY
11
35 E7
6
35 E9
16
GRAY FIRM SANDY CLAY
16
15 BROWN FINE TO COARSE SAND

ASPHALT
CONCRETE
FILL BROWN FINE TO COARSE SAND
A-6(10) LO Y BR 113pcf @15%
37 D2
7
6
37 D5
9
A-6(10) SI LO Y BR 114pcf @14.5%
15
37 D9
17
A-6(7) SI LO Y BR 111pcf @15.9%
19
37 D13
12 GRAY BROWN STIFF CLAY
37 G1
9 BROWN FIRM SANDY CLAY
17

ASPHALT
CONCRETE
4 C1
10
4 C4
12
4 C6
21
4 C8
21
4 C10
21
11
A-6(9) SI LO Y BR 112pcf @15.5%
A-7-6(19) SI LO V DK GR BR
11
27
14 BROWN GRAY FINE TO COARSE SAND
22
50/0" SEAT
LIGHT BROWN SLIGHTLY WEATHERED LIMESTONE
PRACTICAL AUGER REFUSAL AT 53 FEET

CONCRETE
FILL BROWN FINE TO COARSE SAND
11
39 C2
8
39 C4
16
FILL YELLOW BROWN FIRM CLAY
18
17 YELLOW BROWN FIRM SANDY CLAY
39 D1
23 BROWN FINE TO COARSE SAND
6 GRAY BROWN STIFF SANDY CLAY
28 BROWN FINE TO COARSE SAND

CONCRETE
FILL BROWN FINE TO COARSE SAND
A-7-6(8) SI LO 113pcf @15%
41 D2
9
16
41 D5
12
41 D7
6
BROWN STIFF SANDY CLAY
8
BROWN FINE TO COARSE SAND
2
LIGHT BROWN WEATHERED LIMESTONE

CONCRETE
FILL GRAY BROWN FINE TO COARSE SAND
4
30
FILL GRAY BROWN FIRM CLAY
13
10
BROWN FINE TO COARSE SAND

ASPHALT
YELLOW BROWN STIFF SANDY CLAY
44 B1
6
5
BROWN FINE TO COARSE SAND
8
50/1" SEAT
LIGHT BROWN WEATHERED LIMESTONE

ASPHALT
FILL BROWN FINE TO COARSE SAND
FILL BROWN STIFF CLAY
FILL BROWN FINE TO COARSE SAND
11
45 E1
6 YELLOW BROWN FIRM CLAY
6 BROWN FINE TO COARSE SAND
50/4" SEAT
LIGHT BROWN HIGHLY TO MODERATELY WEATHERED LIMESTONE

BORING 45 SHOWN HERE FOR CLARITY
SEE PLAN VIEW FOR BORING LOCATION

SHELBY TUBE CORE DATA

CORE NO.	32 C1	32 C5	22 B1	22 B3	35 E2	35 E4	35 E7	35 E9	37 D2	37 D5	37 D9	37 D13	4 C1	4 C4	4 C6	4 C8	4 C10	39 C2	39 C4	39 D1	41 D2	41 D5	41 D7	44 B1
DEPTH IN FEET	4	19	3	18	9	14	24	29	4	14	24	34	3	8	13	18	23	9	14	29	4	14	19	4
CLASSIFICATION (AASHTO)	-	-	A-6(10)	-	-	-	-	-	-	-	-	-	-	A-4(5)	-	A-6(9)	-	-	-	-	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	-	-	-	-	0.43	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	-	UC	CU	UC	UC	UC	UC	UC	UC	UC	UC
COHESION - PSF	660	1940	790	1200	620	500	610	1790	650	780	820	3690	720	-	1370	420	920	1410	1040	1830	970	1120	1100	1300
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	19	31	19	19	20	17	22	29	17	17	21	20	16	18	14	15	15	22	15	16	18	19	22	16
DRY DENSITY - PCF	98	92	108	104	104	105	97	83	109	108	103	104	112	109	115	112	108	107	113	109	108	104	96	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

32 RT.12	22 RT.15	35 RT.12	37 RT.12	4 RT.12	39 RT.12	41 RT.12	43 RT.12	44 RT.40	45 RT.20

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.6

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

54		56		—		57		59		62		63
	, 16, 22, , 14,		13, 19,		11,		, , 21,		19, 25,		, 10, , 6,		25,
	, 111, 103, , ,		116, 102,		117,		, , 106,		108, 97,		, 121, , ,		98,
	19, , , 17, ,		, ,		,		17, 18, ,		, ,		15, , 16, ,		,

PROFILE GRADE

BORING TO BORING GROUNDLINE

ASPHALT
CRUSHED LIMESTONE
FILL BROWN
50 C1 STIFF CLAY
FILL DARK BROWN
5 STIFF CLAY
3 FILL DARK BROWN SOFT CLAY
H_2O
11 BROWN FINE TO COARSE SAND
5
5 GRAY STIFF SANDY CLAY
50 H1
11 GRAY FIRM SANDY CLAY

CONCRETE
CRUSHED LIMESTONE
8
52 C2 FILL BROWN WITH DARK BROWN STIFF CLAY
12
7
9 FILL DARK BROWN STIFF CLAY
52 E1 GRAY STIFF SANDY CLAY
H_2O
11 BROWN FINE TO MEDIUM SAND
6
BROWN STIFF SANDY CLAY
5 GRAY STIFF CLAY
13 BROWN GRAY FIRM SANDY CLAY

CONCRETE
CRUSHED LIMESTONE
A-4(5) GR SI LO Y BR 115pcf @15.1%
15
12
54 C5
14
14
A-6(10) SI LO DK GR BR 112pcf @15.5%
10
54 D3
13 FILL DARK BROWN FIRM CLAY
H_2O
24 GRAY BROWN FINE TO MEDIUM SAND
50 BROWN FINE TO COARSE SAND

CONCRETE
FILL DARK BROWN AND BROWN FINE TO MEDIUM SAND
5
17 FILL BROWN STIFF CLAY
56 C4
11
18 FILL GRAY BROWN FIRM CLAY
15 GRAY STIFF CLAY
56 F1
15
12 DARK BROWN AND DARK GRAY FIRM CLAY
H_2O
11

ASPHALT
CONCRETE
4
1 C3
10
12 FILL BROWN STIFF CLAY
9
1 C8
12
13 DARK BROWN FIRM CLAY
8
13
15 BROWN FINE TO COARSE SAND
20
RUN1 LIGHT BROWN MODERATELY WEATHERED LIMESTONE
RUN2

BORING 1 SHOWN HERE FOR CLARITY SEE PLAN VIEW FOR BORING LOCATION

A-6(7) SI LO Y BR 116pcf @13.6%
A-6(9) SI LO GR BR 118pcf @12.9%

ASPHALT
FILL BROWN FINE TO COARSE SAND
57 C2
14
8
14
57 C8
15
12
DARK BROWN
11 FIRM CLAY
57 E1 GRAY FIRM SANDY CLAY
14
BROWN FINE TO
24 COARSE SAND
BROWN GRAY FIRM
30 SANDY CLAY
LIGHT BROWN WEATHERED LIMESTONE

CONCRETE
11
FILL LIGHT BROWN, BROWN, GRAY, AND DARK BROWN FIRM CLAY
8
59 B4
18 FILL BROWN FINE TO COARSE SAND
12
FILL GRAY BROWN FIRM CLAY
14
DARK BROWN
4 FIRM CLAY
H_2O
BROWN FINE TO
18 COARSE SAND

FILL DARK BROWN STIFF SANDY CLAY
9
23 B1
FILL BROWN FIRM CLAY
18
BROWN FINE TO
10 COARSE SAND

CONCRETE
A-6(10) SI LO V DK GR BR 116pcf @13.6%
7
62 B5
8 ASPHALT RUBBLE
BROWN FINE TO COARSE SAND
7
BROWN FIRM SANDY CLAY
10
PRACTICAL AUGER REFUSAL AT 19.1 FEET

A-6(6) GR LO BR Y 120pcf @12.3%
CRUSHED LIMESTONE WITH SAND
FILL DARK BROWN STIFF CLAY
63 C1
19
BROWN VERY FIRM CLAY
5 GRAY FINE TO COARSE
3 SAND
BROWN STIFF SANDY CLAY
50/1" SEAT
LIGHT BROWN WEATHERED LIMESTONE

SHELBY TUBE CORE DATA

CORE NO.	50 C1	50 H1	52 C2	52 E1	54 C5	54 D3	56 C4	56 F1	1 C3	1 C8	57 C2	57 C8	57 E1	59 B4	23 B1	62 B5	63 C1
DEPTH IN FEET	4	29	9	24	14	29	14	29	6	20	4	19	34	14	3	9	4
CLASSIFICATION (AASHTO)	-	-	-	-	-	-	-	-	A-6(15)	A-4(6)	-	-	-	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	0.17	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	UC	UC	UC	UC	UC	CU	-	UC	UC	UC	UC	UC	UC	UC
COHESION - PSF	1370	2370	970	1100	580	1840	1060	1550	260	-	980	1070	1430	2050	1080	1120	1480
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	17	20	12	19	31	18	29	18	18	18	14	18	14	27	13	17
DRY DENSITY - PCF	112	112	104	114	102	84	107	89	107	109	104	115	102	112	84	110	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 SB

50	52	54	56	1	57	59	23	62	63
LT.30	LT.26	LT.23	LT.12	LT.12	LT.12	LT.12	LT.15	LT.14	LT.25

850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.7

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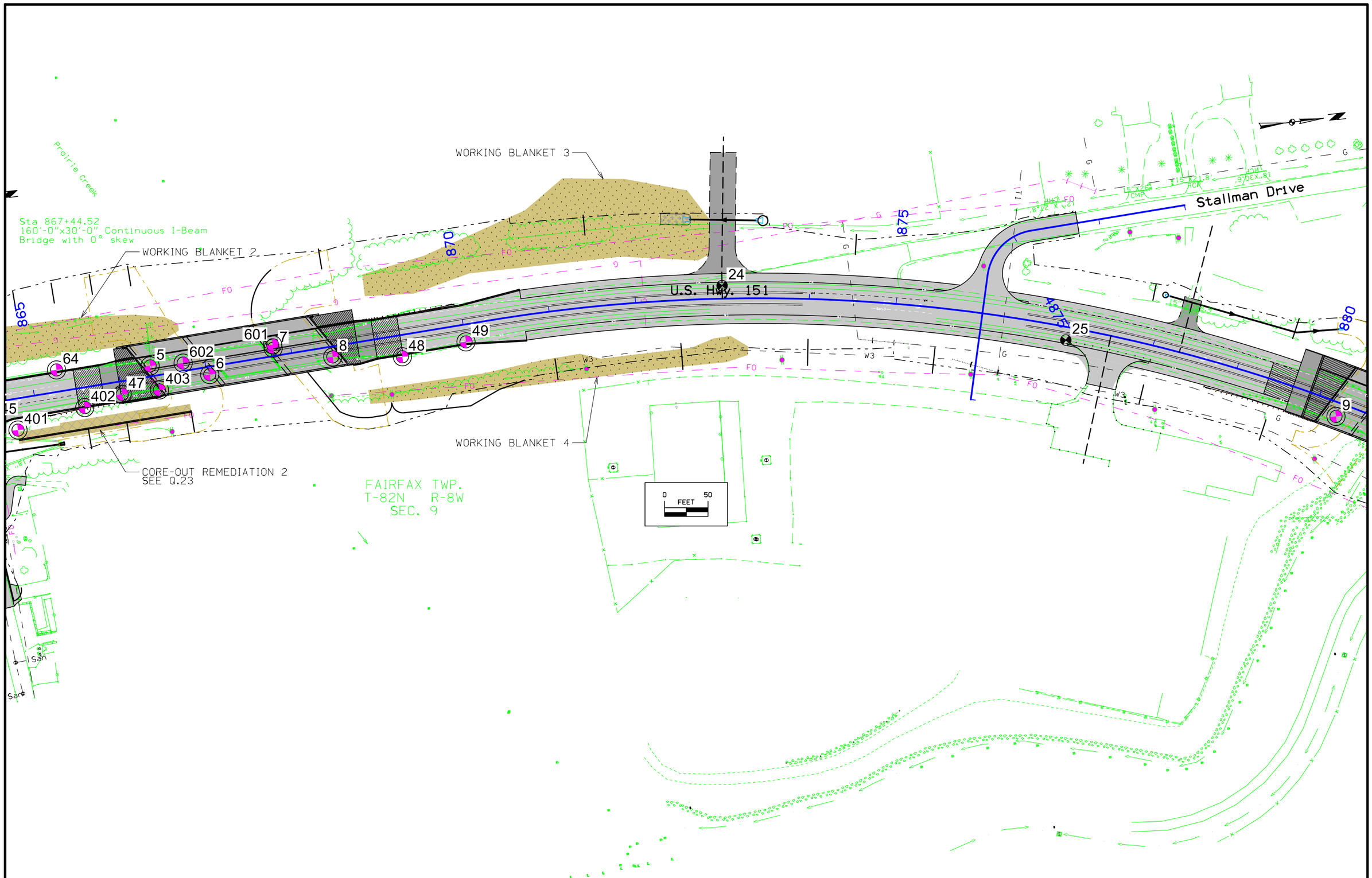

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.8

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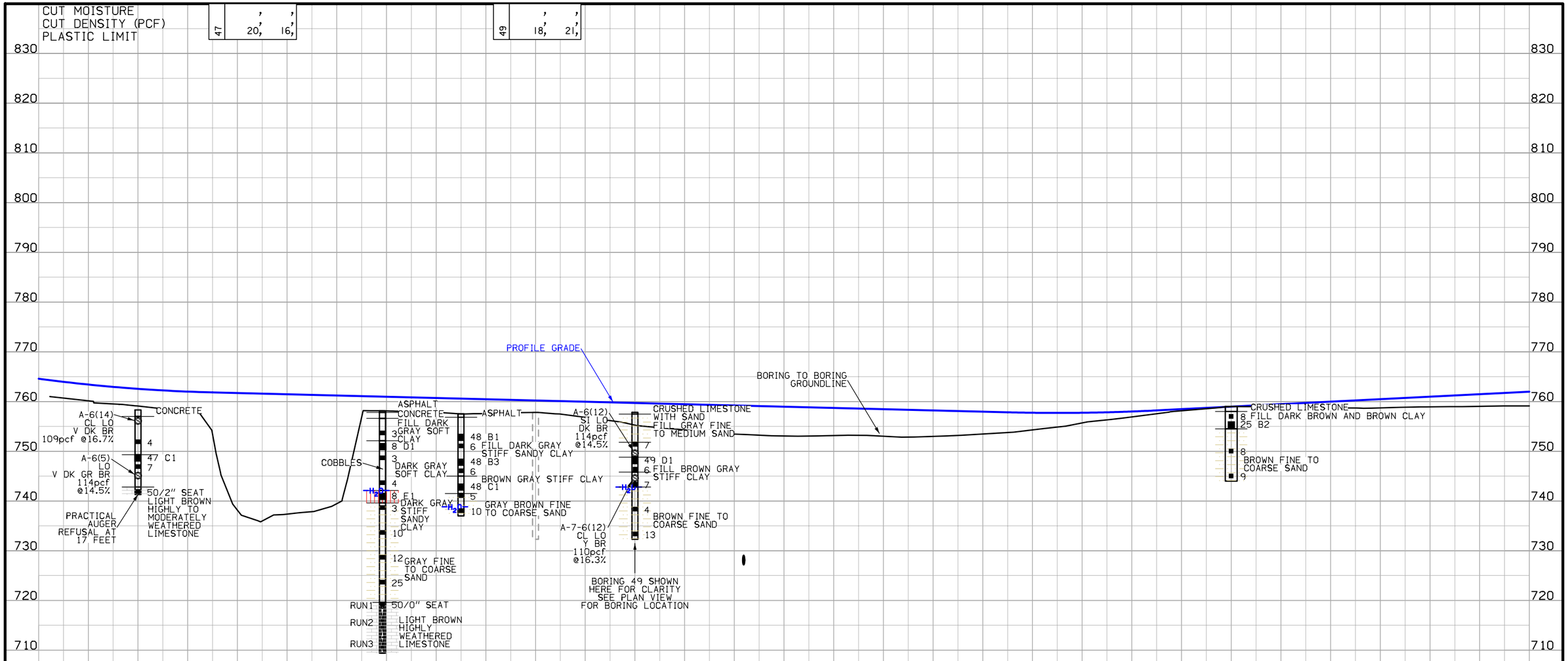
	47	49
CUT MOISTURE	, ,	, ,
CUT DENSITY (PCF)	, ,	, ,
PLASTIC LIMIT	20, 16,	18, 21,



SHELBY TUBE CORE DATA

CORE NO.	45 E1	47 C1	8 D1	8 E1	48 B1	48 B3	48 C1	49 D1	25 B2
DEPTH IN FEET	9	9	6.5	16.5	4	9	14	9	3
CLASSIFICATION (AASHTO)	-	-	A-7-6(16)	A-7-6(21)	-	-	-	-	A-6(15)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	0.15	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	CU	CU	UC	UC	UC	UC	UC
COHESION - PSF	1610	1240	120	70	610	460	860	530	1460
FRICTION COEFF.	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	27	12	24	44	24	29	19	33	24
DRY DENSITY - PCF	97	104	93	77	90	90	105	78	94

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

47	8	48	49	49	25
RT.15	RT.12	RT.25	RT.20	RT.20	RT.15

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.9

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SHELBY TUBE CORE DATA

CORE NO.	64 A1	64 B3	64 B6	5 F1
DEPTH IN FEET	4	9	14	16.5
CLASSIFICATION (AASHTO)	-	-	-	A-6(2)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU
COHESION - PSF	710	420	630	160
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	7	23	25	23
DRY DENSITY - PCF	117	100	90	101

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

Keyed Notes

① Adjust Water Valve to Grade
② Adjust Gas Valve to Grade
③ Adjust Manhole to Grade
④ Adjust Hydrant to Grade

Sta 880+89.90
24'-0"x44'-0" I-Beam
and PPC Beam Bridge
with 0° skew

STA 884+13.63 (HWY 151) =
STA 5884+13.63 (CEMETERY ROAD)

Sta 880+85.25
Construct 140'-0" x 58'-0"
Continuous Concrete Slab
Bridge with 15° Skew (L.A.)

Protect Well

15:1 Taper

Cemetery Road

U.S. Hwy. 151

Do Not Disturb Sign

+96.75 Prop. Type "B" Ent.

+21.00 Prop. Type "B" Joint Ent.

+10.00 Prop. Type "B" Ent.

+18.50 Prop. Type "B" Ent.

+76.54 Prop. Type "B"

5880 5885 5890 885 890 895

9 10 11 12 26 27 28

0 FEET 50

FAIRFAX TWP.
T-82N R-8W
SEC. 9

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.11

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CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

9	,	10,	
	,	,	
	16,	,	

PROFILE GRADE

BORING TO BORING GROUNDLINE

ASPHALT
FILL BROWN FINE TO COARSE SAND
9 C2
8
A-6(5)
GR LO
DK BR
6 115pcf @14.1%
12
6 BROWN FINE TO COARSE SAND
4
18 GRAY STIFF SANDY CLAY
15
6
GRAY FINE TO COARSE SAND
4
48
RUN1
LIGHT BROWN SLIGHTLY TO MODERATELY WEATHERED LIMESTONE
RUN2

ASPHALT
CONCRETE
FILL DARK BROWN STIFF SANDY CLAY
ASPHALT RUBBLE
11 C1
4
4
LIGHT BROWN STIFF CLAY
0
GRAY VERY SOFT CLAY
2
17
DARK GRAY FINE TO COARSE SAND
6
6
GRAY STIFF CLAY
8
10
7
LIGHT BROWN SLIGHTLY WEATHERED LIMESTONE

BORING 11 SHOWN HERE FOR CLARITY SEE PLAN VIEW FOR BORING LOCATION

CRUSHED LIMESTONE
10 FILL BROWN CLAY
26 B2
20
BROWN FINE TO COARSE SAND
20

CRUSHED LIMESTONE
10 FILL DARK BROWN CLAY
28 C1
DARK BROWN CLAY
21
BROWN FINE TO COARSE SAND
26

SHELBY TUBE CORE DATA

CORE NO.	9 C2	11 C1	26 B2	28 C1
DEPTH IN FEET	4	4	3	3
CLASSIFICATION (AASHTO)	A-7-6(12)	-	-	A-6(6)
COEFF.CONSOL.(SQ. FT /DAY)	0.003	-	-	-
TRIAXIAL COMPRESSION	CU	UC	UC	UC
COHESION - PSF	170	550	780	1090
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	27	8	21	21
DRY DENSITY - PCF	92	114	107	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 NB

9 RT.16 | 11 RT.13 | 11 RT.13 | 26 RT.15 | 28 RT.15

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.12

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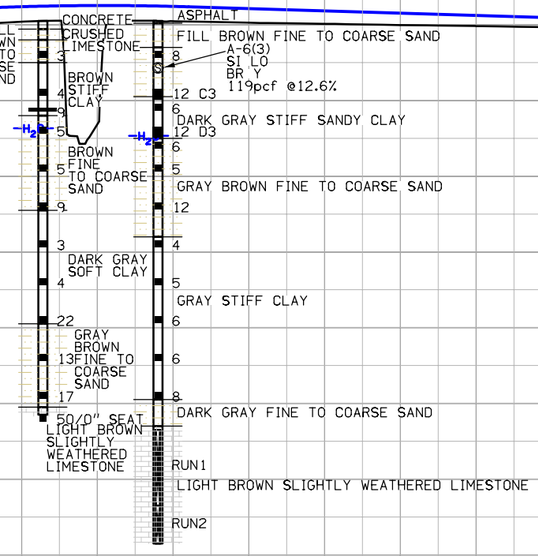
	10	12	27
CUT MOISTURE	9,	,	18,
CUT DENSITY (PCF)	,	,	111,
PLASTIC LIMIT	,	15,	,



SHELBY TUBE CORE DATA		
CORE NO.	12 C3	12 D3
DEPTH IN FEET	9	14
CLASSIFICATION (AASHTO)	A-6(3)	A-6(7)
COEFF.CONSOL.(SQ. FT /DAY)	-	-
TRIAXIAL COMPRESSION	-	UC
COHESION - PSF	-	830
FRICTION COEFF.	-	-
MOISTURE CONTENT %	22	19
DRY DENSITY - PCF	98	110

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

US HWY 151 SB

10 LT.15 12 LT.15 27 LT.15

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.13

Keyed Notes
Adjust Water Valve to Grade
Adjust Gas Valve to Grade
Adjust Manhole to Grade
Adjust Hydrant to Grade

FAIRFAX TWP.
T-82N R-8W
SEC. 9

STA 898+00.00
END PCC PAVING
BEGIN HMA PAVING

STA 900+00.00
END HMA PAVING
BEGIN HMA OVERLAY

STA 902+58.42
END HMA OVERLAY

STA 903+15.44
STOP PROJECT

U.S. Hwy. 151

80th Street

+76.54 Prop. Type "B" Ent.

+64.90 Prop. Type "C" Ent.

—Do Not Disturb Sign
—Protect Gas Shut-off Valve

Sta. 900+59.26 U.S. Hwy. 151
Install 48"x2' 2000D RCP
Lt. U.A.C
F.L. = Other 753.30
Rt. 753.22

0 FEET 50

CUT MOISTURE
CUT DENSITY (PCF)
PLASTIC LIMIT

29 | 17, , ,

BORING TO BORING GROUNDLINE

PROFILE GRADE

CRUSHED LIMESTONE
6 FILL BROWN AND DARK BROWN CLAY
BROWN CLAY
36
BROWN FINE TO COARSE SAND
HJO
26

29
LT.15

US HWY 151 NB/SB

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.14

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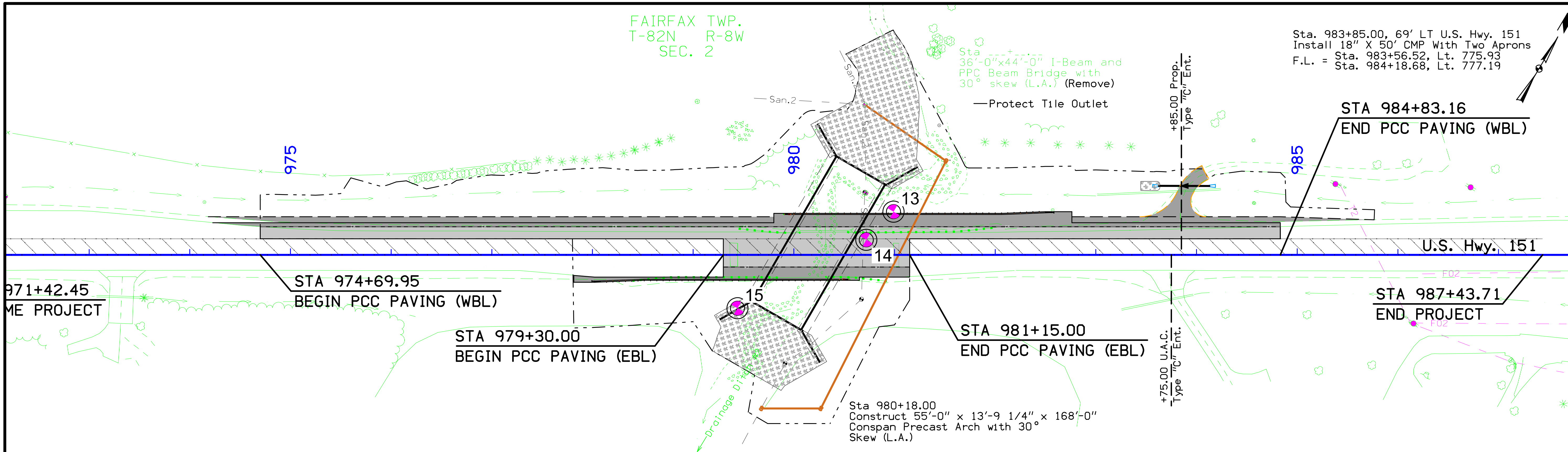
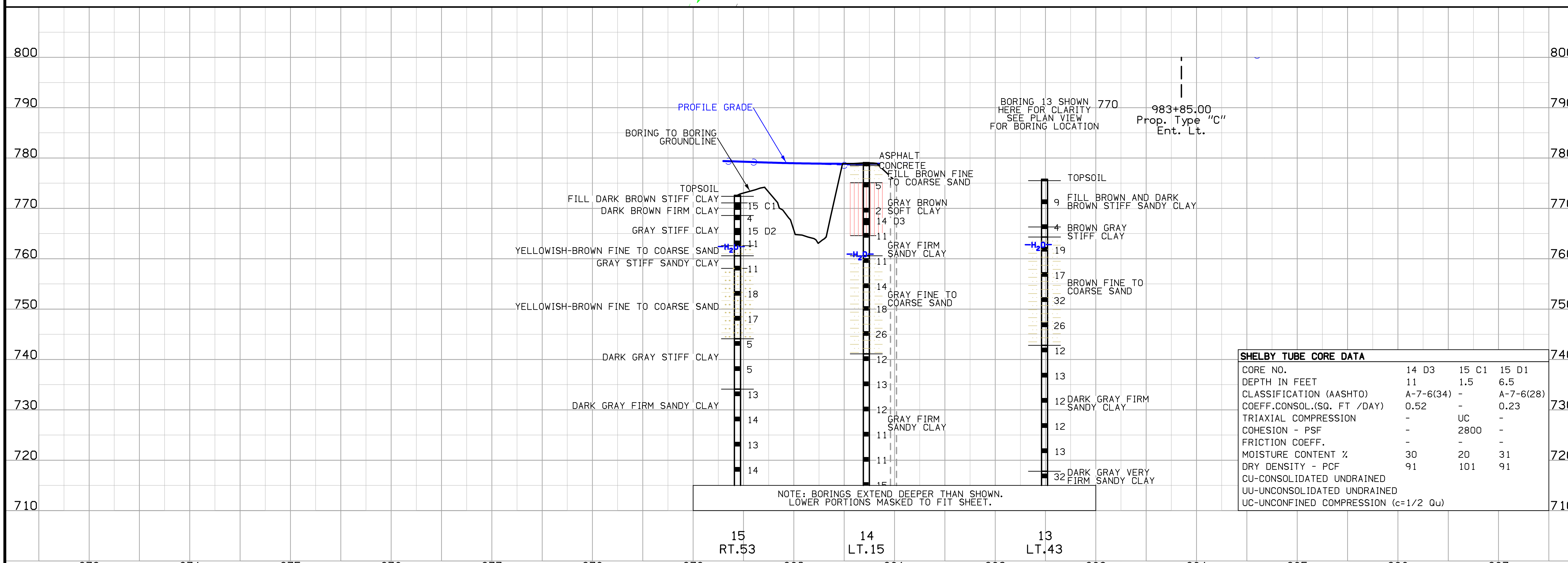


FAIRFAX TWP.
T-82N R-8W
SEC. 2
Sta. 983+85.00, 69' LT U.S. Hwy. 151
Install 18" X 50' CMP With Two Aprons
F.L. = Sta. 983+56.52, Lt. 775.93
Sta. 984+18.68, Lt. 777.19
36'-0"x44'-0" I-Beam and
PPC Beam Bridge with
30° skew (L.A.) (Remove)
Protect Tile Outlet
+85.00 Prop. Type "C" Ent.
STA 984+83.16
END PCC PAVING (WBL)
975
980
985
13
14
15
U.S. Hwy. 151
971+42.45
ME PROJECT
STA 974+69.95
BEGIN PCC PAVING (WBL)
STA 979+30.00
BEGIN PCC PAVING (EBL)
STA 981+15.00
END PCC PAVING (EBL)
STA 987+43.71
END PROJECT
+75.00 U.A.C. Type "C" Ent.
Sta 980+18.00
Construct 55'-0" x 13'-9 1/4" x 168'-0"
Conspan Precast Arch with 30°
Skew (L.A.)
Drainage Ditch



PROFILE GRADE
BORING TO BORING GROUNDLINE
BORING 13 SHOWN HERE FOR CLARITY SEE PLAN VIEW FOR BORING LOCATION
770
983+85.00
Prop. Type "C"
Ent. Lt.
TOPSOIL
FILL DARK BROWN STIFF CLAY
DARK BROWN FIRM CLAY
GRAY STIFF CLAY
YELLOWISH-BROWN FINE TO COARSE SAND
GRAY STIFF SANDY CLAY
YELLOWISH-BROWN FINE TO COARSE SAND
DARK GRAY STIFF CLAY
DARK GRAY FIRM SANDY CLAY
ASPHALT
CONCRETE
FILL BROWN FINE TO COARSE SAND
GRAY BROWN SOFT CLAY
GRAY FIRM SANDY CLAY
GRAY FINE TO COARSE SAND
GRAY FIRM SANDY CLAY
TOPSOIL
FILL BROWN AND DARK BROWN STIFF SANDY CLAY
BROWN GRAY STIFF CLAY
BROWN FINE TO COARSE SAND
DARK GRAY FIRM SANDY CLAY
DARK GRAY VERY FIRM SANDY CLAY
NOTE: BORINGS EXTEND DEEPER THAN SHOWN. LOWER PORTIONS MASKED TO FIT SHEET.
15
RT.53
14
LT.15
13
LT.43
800
790
780
770
760
750
740
730
720
710
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987

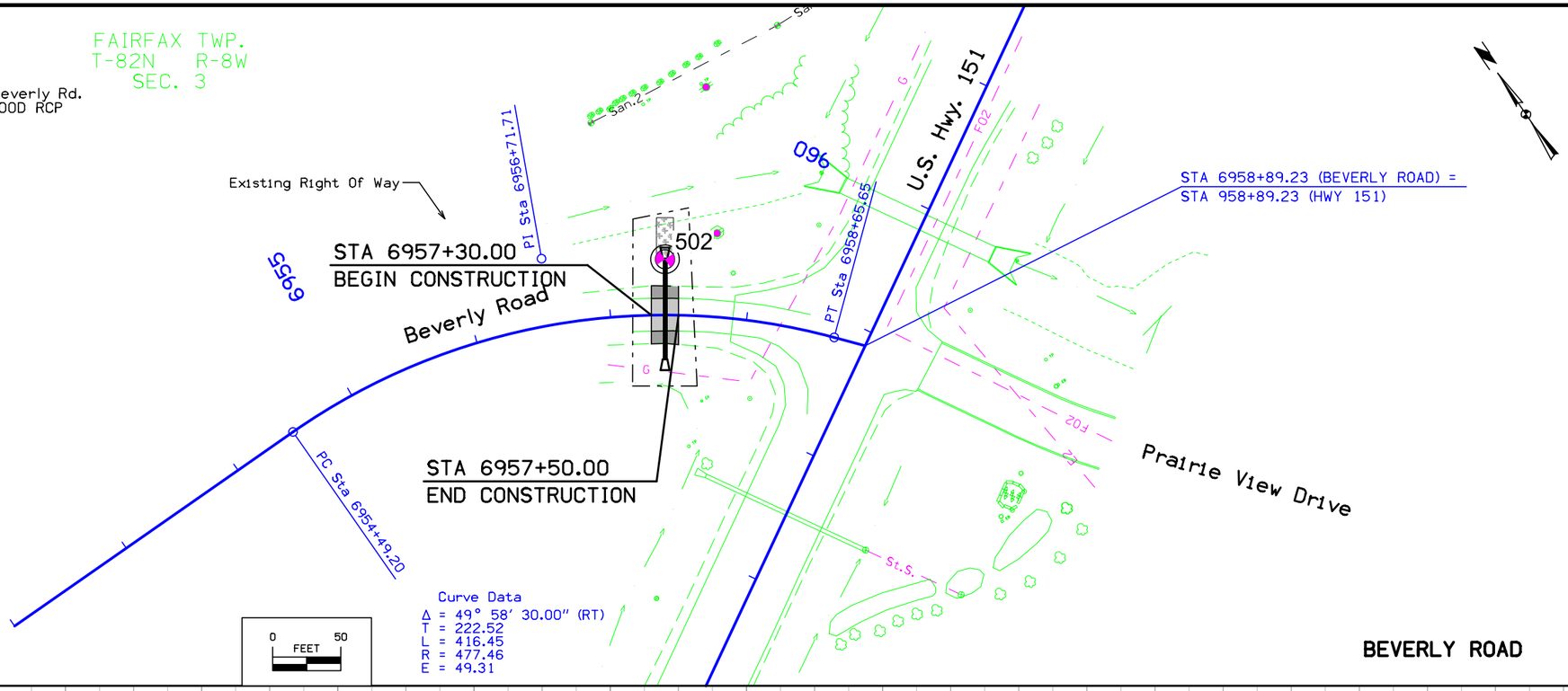
SHELBY TUBE CORE DATA

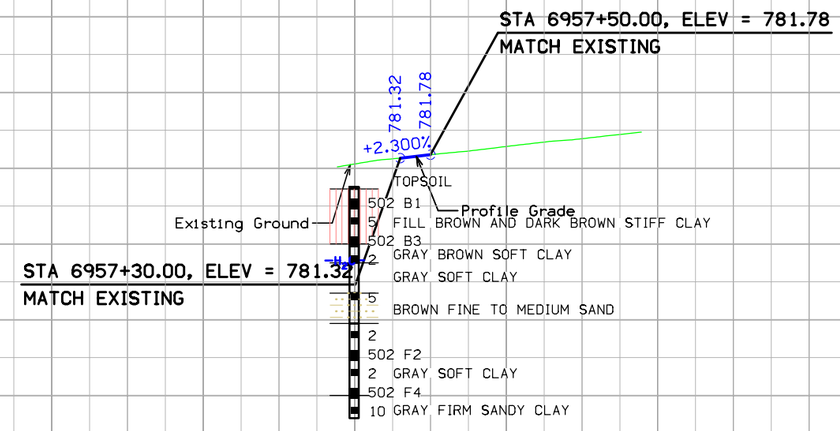
CORE NO.	14 D3	15 C1	15 D1
DEPTH IN FEET	11	1.5	6.5
CLASSIFICATION (AASHTO)	A-7-6(34)	-	A-7-6(28)
COEFF.CONSOL.(SQ. FT /DAY)	0.52	-	0.23
TRIAXIAL COMPRESSION	-	UC	-
COHESION - PSF	-	2800	-
FRICTION COEFF.	-	-	-
MOISTURE CONTENT %	30	20	31
DRY DENSITY - PCF	91	101	91

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

FAIRFAX TWP.
T-82N R-8W
SEC. 3

Sta. 6957+40.00 Beverly Rd.
Install 42"x74' 2000D RCP
F.L. = Lt. 772.40
Rt. 773.30



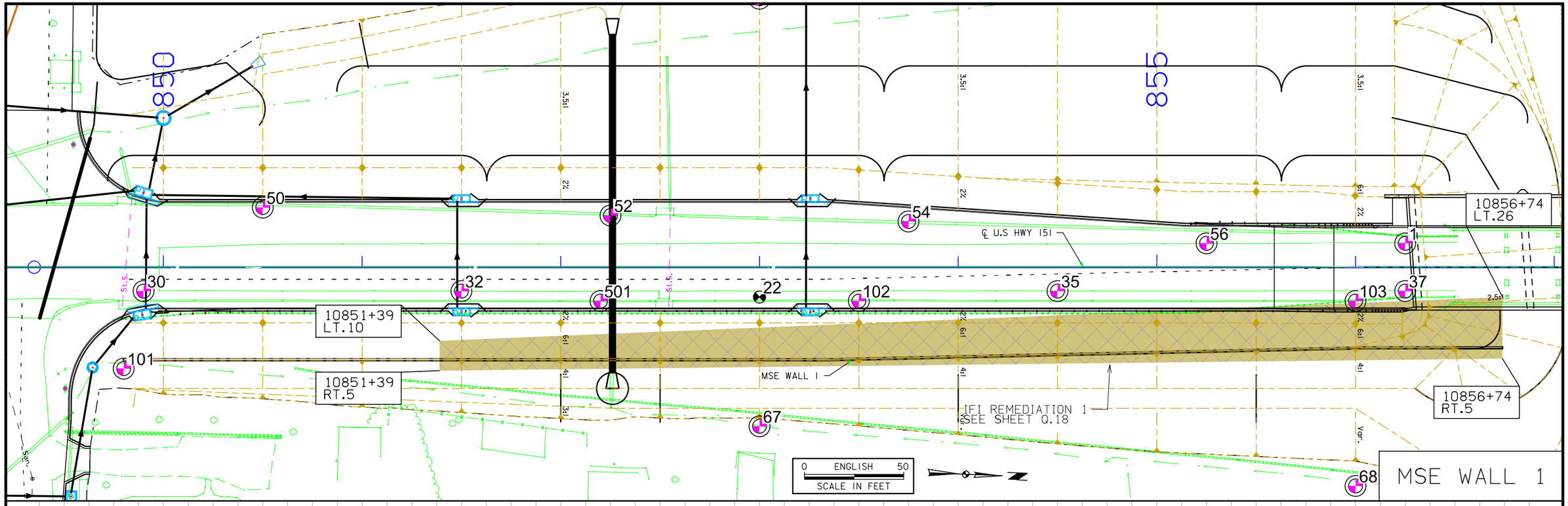


SHELBY TUBE CORE DATA

CORE NO.	502 B1	502 B3	502 F2	502 F4
DEPTH IN FEET	1.5	6.5	21.5	26.5
CLASSIFICATION (AASHTO)	-	A-7-6(31)	A-6(12)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-
TRIAXIAL COMPRESSION	UC	CU	CU	UC
COHESION - PSF	770	90	560	280
FRICTION COEFF.	-	-	-	-
MOISTURE CONTENT %	22	31	31	19
DRY DENSITY - PCF	89	90	96	117

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.16



For Soil Profile Information Refer to Sheet Q.18

850 851 852 853 854 855 856

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.17

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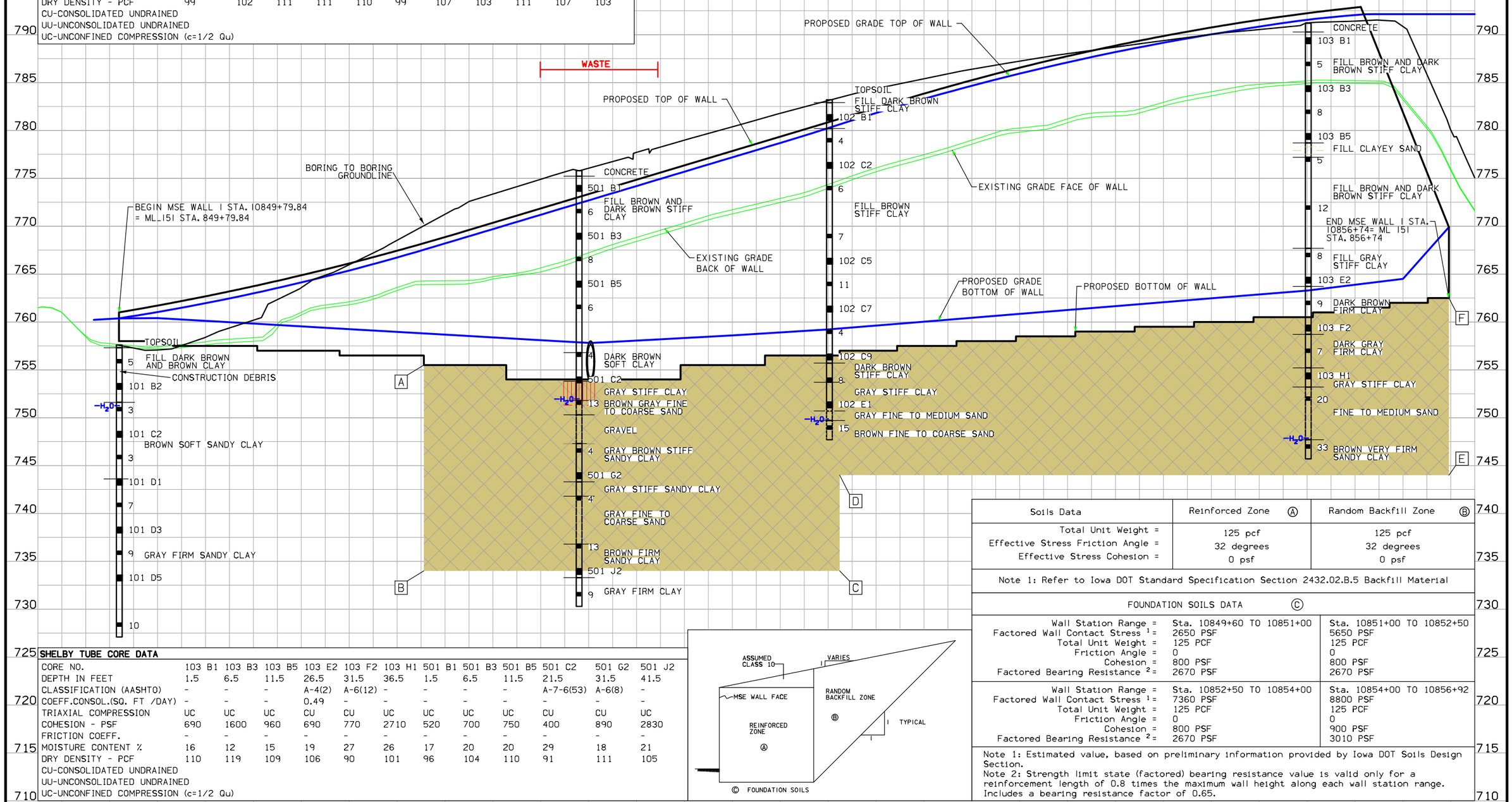
SHELBY TUBE CORE DATA

CORE NO.	101 B2	101 C2	101 D1	101 D3	101 D5	102 B1	102 C2	102 C5	102 C7	102 C9	102 E1
DEPTH IN FEET	4	9	14	19	24	1.5	6.5	16.5	21.5	26.5	31.5
CLASSIFICATION (AASHTO)	A-7-6(23)	-	-	-	-	-	A-6(11)	-	-	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	CU	UC	UC	UC	UC	UC	CU	UC	UC	UC	UC
COHESION - PSF	200	820	1410	2760	3230	2120	150	890	1240	1420	1290
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	28	21	17	16	16	8	18	18	16	17	22
DRY DENSITY - PCF	99	102	111	111	110	99	107	103	111	107	103

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

IFI REMEDIATION 1		
POINT	STATION	ELEVATION
A	10851+39	755.5
B	10851+39	734
C	10853+56	734
D	10853+56	744
E	10856+74	744
F	10856+74	763



SHELBY TUBE CORE DATA

CORE NO.	103 B1	103 B3	103 B5	103 E2	103 F2	103 H1	501 B1	501 B3	501 B5	501 C2	501 G2	501 J2
DEPTH IN FEET	1.5	6.5	11.5	26.5	31.5	36.5	1.5	6.5	11.5	21.5	31.5	41.5
CLASSIFICATION (AASHTO)	-	-	-	A-4(2)	A-6(12)	-	-	-	-	A-7-6(53)	A-6(8)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	0.49	-	-	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU	CU	UC	UC	UC	UC	CU	CU	UC
COHESION - PSF	690	1600	960	690	770	2710	520	700	750	400	890	2830
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	12	15	19	27	26	17	20	20	29	18	21
DRY DENSITY - PCF	110	119	109	106	90	101	96	104	110	91	111	105

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

Wall Station Range =	Sta. 10849+60 TO 10851+00	Sta. 10851+00 TO 10852+50
Factored Wall Contact Stress [1] =	2650 PSF	5650 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF
Wall Station Range =	Sta. 10852+50 TO 10854+00	Sta. 10854+00 TO 10856+92
Factored Wall Contact Stress [1] =	7360 PSF	8800 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	900 PSF
Factored Bearing Resistance [2] =	2670 PSF	3010 PSF

Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.

101 RT.4 | 501 LT.30 | 102 LT.30 | 103 LT.25

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.18

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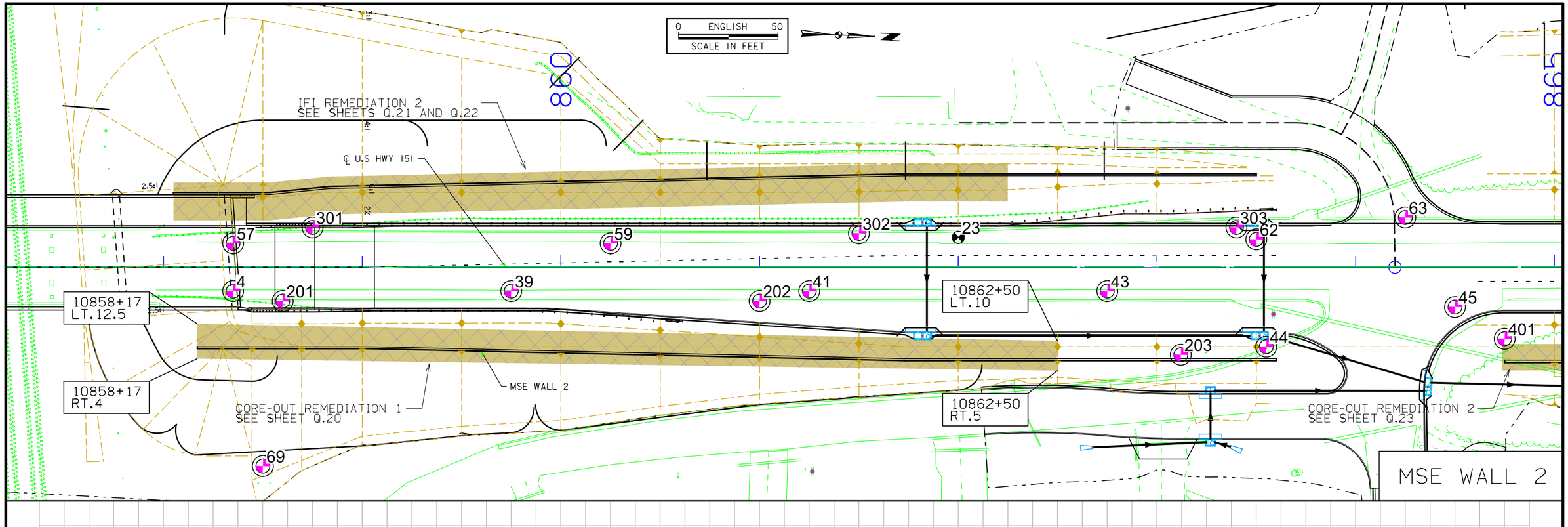

For Soil Profile Information Refer to Sheet Q.20

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.19

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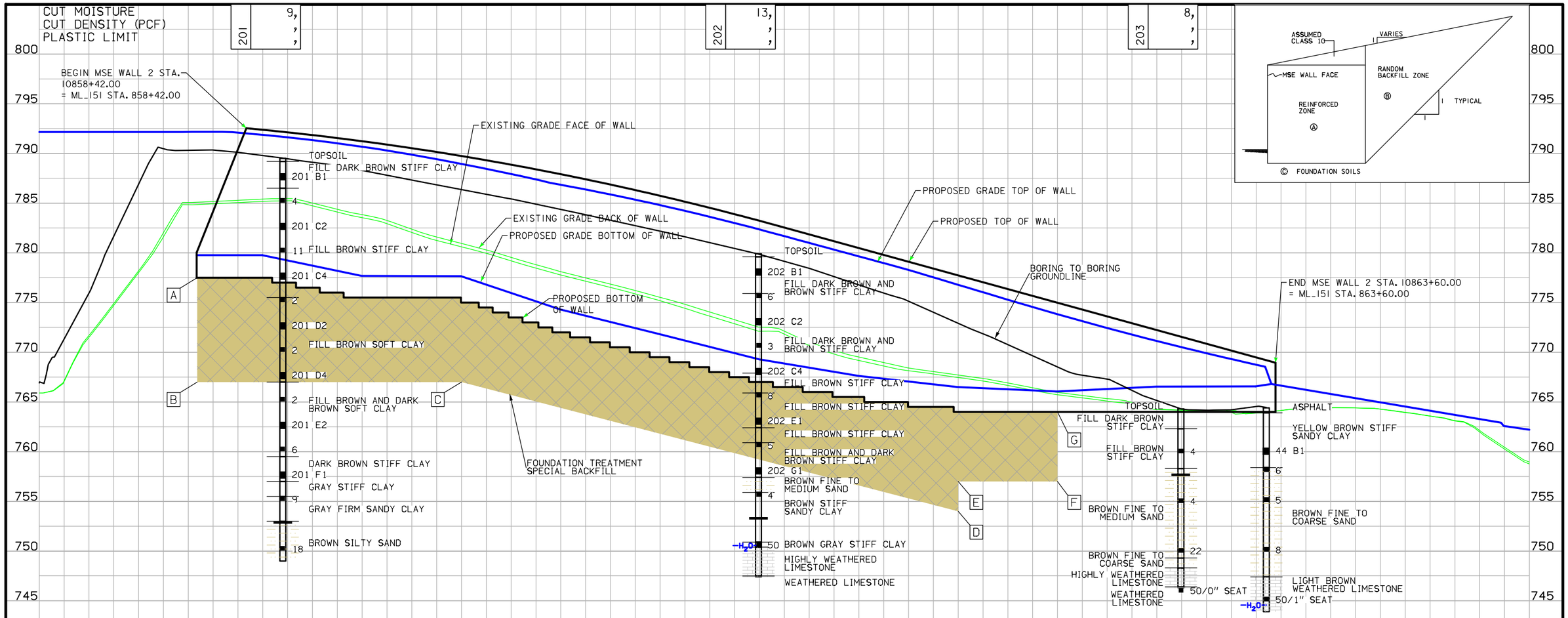

Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

Wall Station Range =	Sta. 10858+44 TO 10862+00	Sta. 10862+00 TO 10863+60
Factored Wall Contact Stress [1] =	4360 PSF	3500 PSF
Total Unit Weight =	125 PCF	120 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF

Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.

CORE-OUT REMEDIATION 1

POINT	STATION	ELEVATION
A	10858+17	777.5
B	10858+17	767
C	10859+50	767
D	10862+00	754
E	10862+00	757
F	10862+50	757
G	10862+50	764

SHELBY TUBE CORE DATA

CORE NO.	201 B1	201 C2	201 C4	201 D2	201 D4	201 E2	201 F1	202 B1	202 C2	202 C4	202 E1	202 G1	44 B1
DEPTH IN FEET	1.5	6.5	11.5	16.5	21.5	26.5	31.5	1.5	6.5	11.5	16.5	21.5	4
CLASSIFICATION (AASHTO)	-	-	-	A-4(3)	-	-	A-7-6(28)	-	-	-	A-4(7)	-	-
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	-	-	0.43	-	-	-	-	-	-
TRIAXIAL COMPRESSION	UC	UC	UC	CU	UC	UC	CU	UC	UC	UC	CU	UC	UC
COHESION - PSF	5230	2510	1580	140	460	340	500	6420	1190	1830	270	880	1300
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	11	14	18	22	24	27	29	7	19	16	21	23	16
DRY DENSITY - PCF	117	106	114	97	93	85	92	123	104	112	102	104	107

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.20

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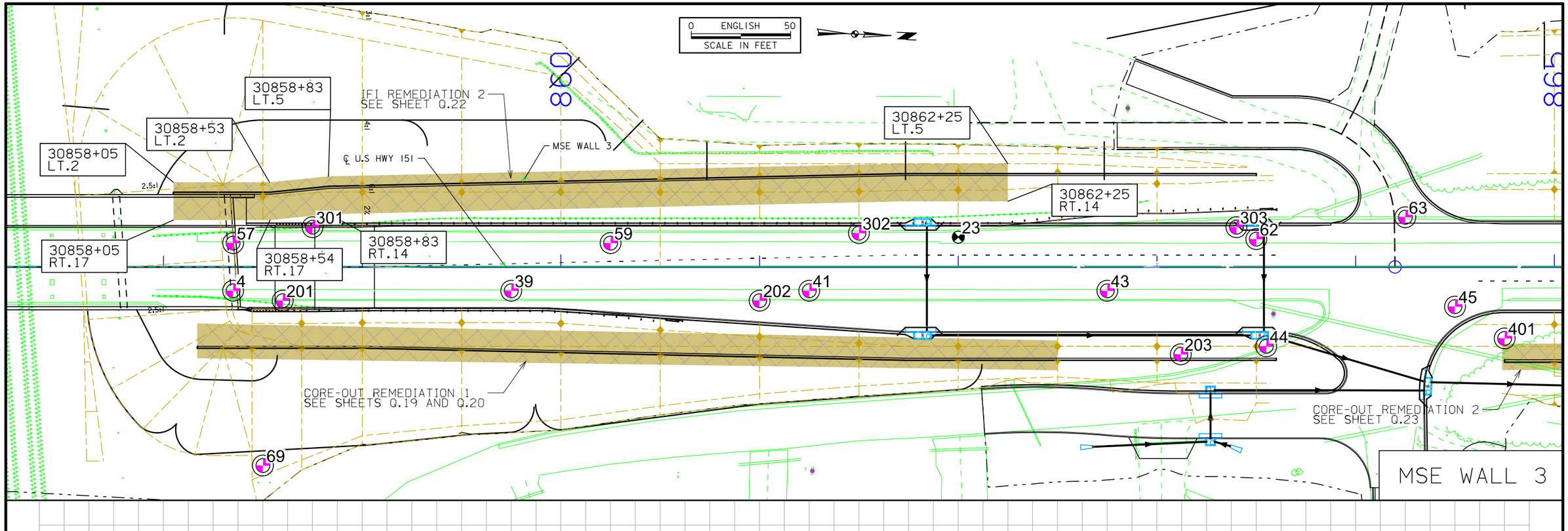

For Soil Profile Information Refer to Sheet Q.22

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM Snyder & Associates\Terracon	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER Q.21

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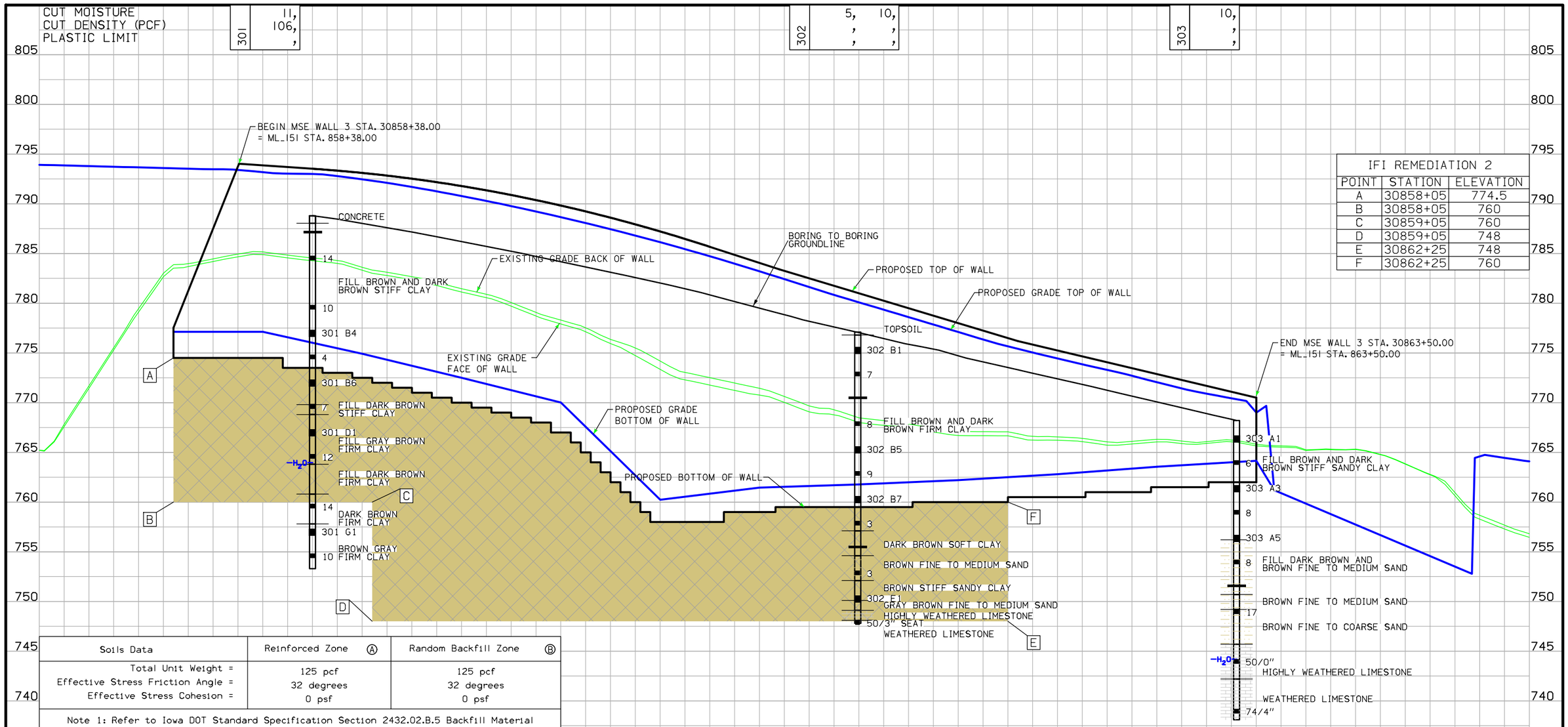
	301	302	303
CUT MOISTURE	11,	5, 10,	10,
CUT DENSITY (PCF)	106,	, ,	,
PLASTIC LIMIT	,	, ,	,



IFI REMEDIATION 2		
POINT	STATION	ELEVATION
A	30858+05	774.5
B	30858+05	760
C	30859+05	760
D	30859+05	748
E	30862+25	748
F	30862+25	760

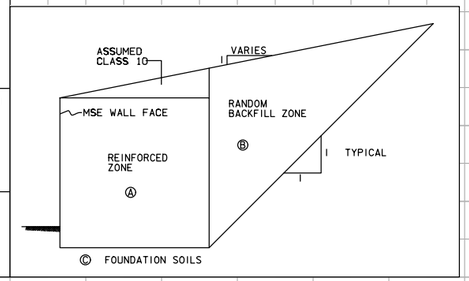
Soils Data	Reinforced Zone Ⓐ	Random Backfill Zone Ⓑ
Total Unit Weight =	125 pcf	125 pcf
Effective Stress Friction Angle =	32 degrees	32 degrees
Effective Stress Cohesion =	0 psf	0 psf

Note 1: Refer to Iowa DOT Standard Specification Section 2432.02.B.5 Backfill Material

FOUNDATION SOILS DATA Ⓒ

Wall Station Range =	Sta. 30858+40 TO 30859+50	Sta. 30859+50 TO 30861+00
Factored Wall Contact Stress [1] =	4010 PSF	7800 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	900 PSF	900 PSF
Factored Bearing Resistance [2] =	3010 PSF	3010 PSF
Wall Station Range =	Sta. 30861+00 TO 30862+00	Sta. 30862+00 TO 30863+50
Factored Wall Contact Stress [1] =	6510 PSF	4510 PSF
Total Unit Weight =	125 PCF	125 PCF
Friction Angle =	0	0
Cohesion =	800 PSF	800 PSF
Factored Bearing Resistance [2] =	2670 PSF	2670 PSF

Note 1: Estimated value, based on preliminary information provided by Iowa DOT Soils Design Section.
Note 2: Strength limit state (factored) bearing resistance value is valid only for a reinforcement length of 0.8 times the maximum wall height along each wall station range. Includes a bearing resistance factor of 0.65.



SHELBY TUBE CORE DATA

CORE NO.	301 B4	301 B6	301 D1	301 G1	302 B1	302 B5	302 B7	302 E1	303 A1	303 A3	303 A5
DEPTH IN FEET	11.5	16.5	21.5	31.5	1.5	11.5	16.5	26.5	1.5	6.5	11.5
CLASSIFICATION (AASHTO)	-	A-6(6)	-	A-6(19)	-	-	A-7(7)	-	-	A-4(1)	-
COEFF.CONSOL.(SQ. FT /DAY)	-	0.67	-	0.48	-	-	-	-	-	0.31	-
TRIAXIAL COMPRESSION	UC	CU	UC	CU	UC	CU	UC	UC	UC	CU	UC
COHESION - PSF	1460	360	1620	940	2160	2160	180	310	1930	270	350
FRICTION COEFF.	-	-	-	-	-	-	-	-	-	-	-
MOISTURE CONTENT %	16	18	16	24	11	20	15	15	13	16	18
DRY DENSITY - PCF	115	116	107	94	115	111	117	103	119	116	103

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

301 RT.21 | 302 RT.29 | 303 RT.27

858 859 860 861 862 863 864

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.22

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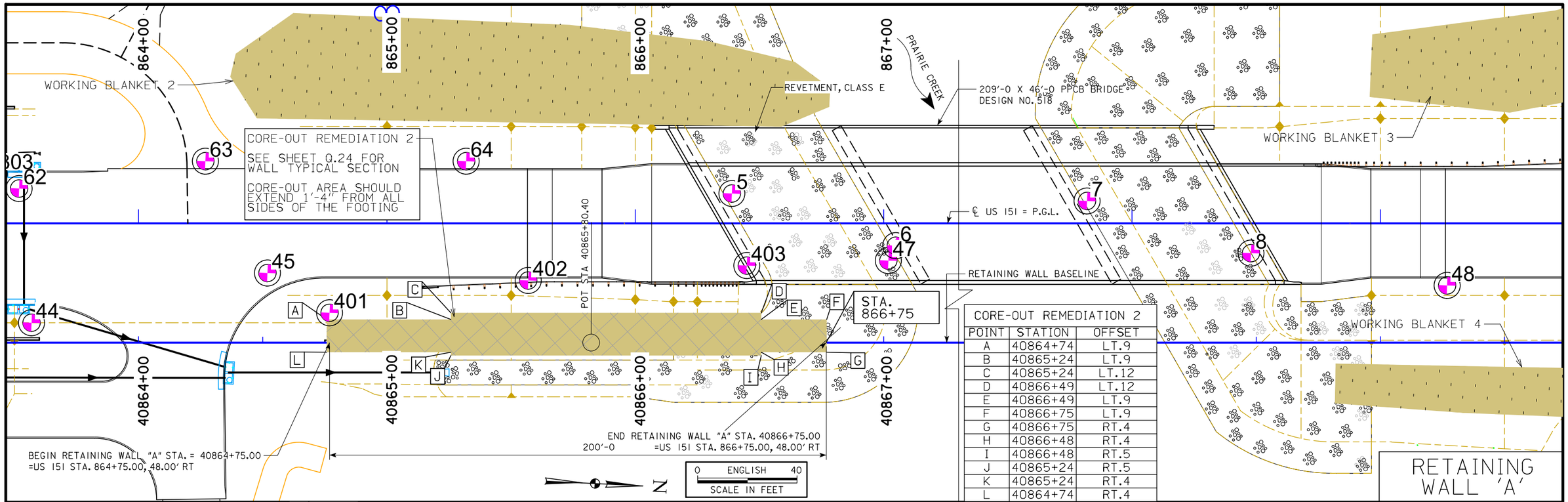
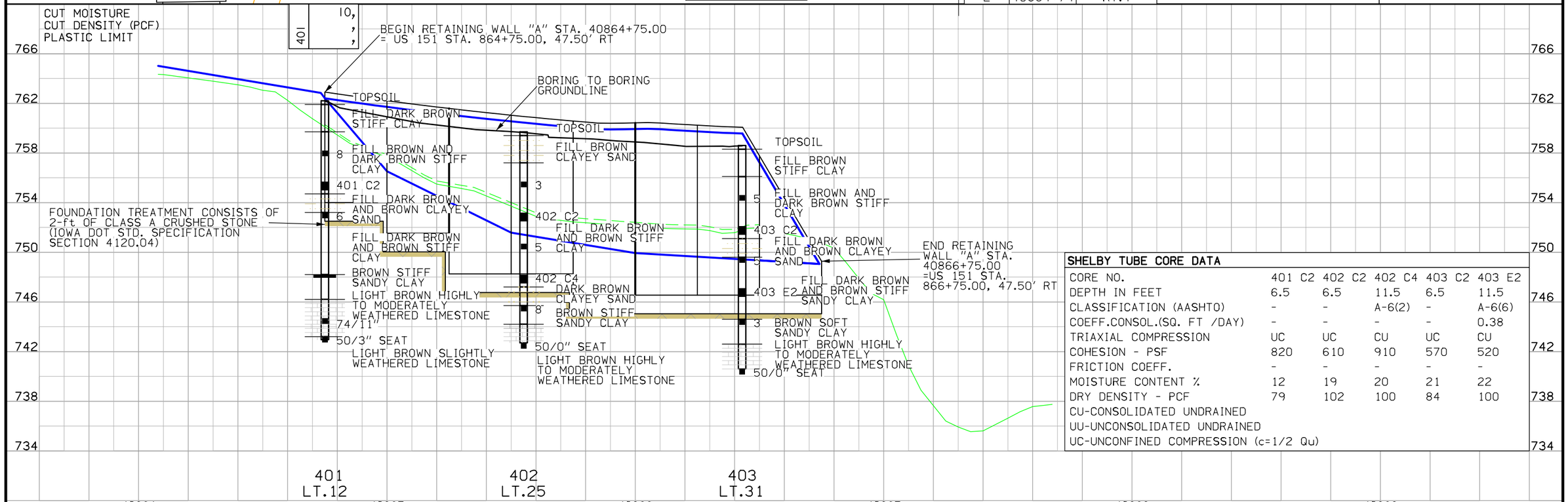


CORE-OUT REMEDIATION 2		
POINT	STATION	OFFSET
A	40864+74	LT.9
B	40865+24	LT.9
C	40865+24	LT.12
D	40866+49	LT.12
E	40866+49	LT.9
F	40866+75	LT.9
G	40866+75	RT.4
H	40866+48	RT.4
I	40866+48	RT.5
J	40865+24	RT.5
K	40865+24	RT.4
L	40864+74	RT.4

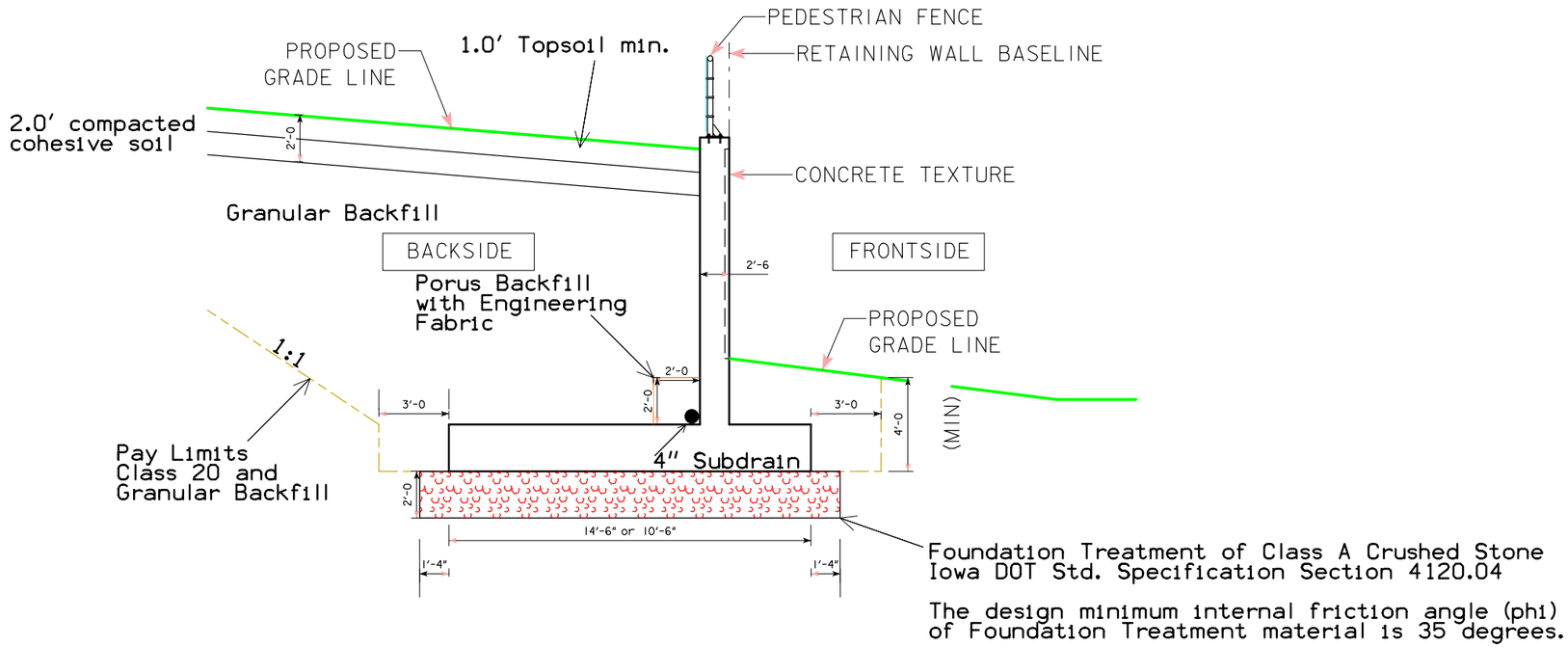


SHELBY TUBE CORE DATA					
CORE NO.	401 C2	402 C2	402 C4	403 C2	403 E2
DEPTH IN FEET	6.5	6.5	11.5	6.5	11.5
CLASSIFICATION (AASHTO)	-	-	A-6(2)	-	A-6(6)
COEFF.CONSOL.(SQ. FT /DAY)	-	-	-	-	0.38
TRIAXIAL COMPRESSION	UC	UC	CU	UC	CU
COHESION - PSF	820	610	910	570	520
FRICTION COEFF.	-	-	-	-	-
MOISTURE CONTENT %	12	19	20	21	22
DRY DENSITY - PCF	79	102	100	84	100

CU-CONSOLIDATED UNDRAINED
UU-UNCONSOLIDATED UNDRAINED
UC-UNCONFINED COMPRESSION (c=1/2 Qu)

ENGLISH	IOWA DOT	DESIGN TEAM	Snyder & Associates\Terracon	LINN	COUNTY	PROJECT NUMBER	NHSX-151-3(158)--3H-57	SHEET NUMBER	Q.23

RETAINING WALL 'A'



WALL TYPICAL SECTION

Showing Excavation and Backfill Limits
(See also SITE PLAN on sheet V.04)

ESTIMATED RETAINING WALL QUANTITIES

ITEM NO.	ITEM CODE	ITEM	UNIT	TOTAL	AS BUILT QUAN.
1	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS)	CY	300.5	
2	2404-7775000	REINFORCING STEEL	LB	21,790	
3	2404-7775005	REINFORCING STEEL, EPOXY COATED	LB	18,095	
4	2519-1001000	FENCE, CHAIN LINK, VINYL COATED	LF	199.2	

ESTIMATE REFERENCE INFORMATION

ITEM NO.	ITEM CODE	DESCRIPTION
1	2403-0100000	STRUCTURAL CONCRETE (MISCELLANEOUS) INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING EXPANSION AND CONSTRUCTION JOINT. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING CONCRETE TEXTURING AND CONCRETE RUSTIFICATION. INCLUDES MATERIAL AND LABOR ASSOCIATED WITH FURNISHING AND INSTALLING 4 INCH DIAMETER SUBDRAIN.
2	2404-7775000	REINFORCING STEEL - -
3	2404-7775005	REINFORCING STEEL, EPOXY COATED - -
4	2519-1001000	FENCE, CHAIN LINK, VINYL COATED - -

STRUCTURAL DESIGN

LICENSED PROFESSIONAL ENGINEER
Haiping Chen
17377
IOWA

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Haiping Chen 09/04/2018
Signature Date

Haiping Chen
Printed or Typed Name

My license renewal date is December 31, 2018

Pages or sheets covered by this seal: SHEETS V.1 THRU V.19

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

ESTIMATED QUANTITIES
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 1 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.1

GENERAL NOTES:

THIS DESIGN IS FOR A NEW 200'-0 x VARIABLE HEIGHT CAST-IN-PLACE CANTILEVER RETAINING WALL LOCATED ON US 151, SOUTH OF PRAIRIE CREEK BRIDGE IN LINN COUNTY, IA.

U.S. 151 WILL BE OPEN TO TRAFFIC DURING CONSTRUCTION. REFER TO THE TRAFFIC CONTROL PLAN INCLUDED ELSEWHERE IN THESE PLANS.

THE CITY AND UTILITY COMPANIES WHOSE FACILITIES ARE SHOWN ON THE PLANS OR KNOWN TO BE WITHIN THE CONSTRUCTION LIMITS SHALL BE NOTIFIED BY THE CONTRACTOR OF THE CONSTRUCTION STARTING DATE.

STRUCTURAL CONCRETE FOR THE FOOTING AND WALL SHALL BE CLASS 'C'.

BACKFILLING OPERATIONS SHALL BE IN ACCORDANCE WITH SECTION 2402.03.H OF THE STANDARD SPECIFICATIONS. SECTION 2403.03.N SHALL BE FOLLOWED WITH RESPECT TO SUBJECTING WALLS AND FOOTINGS TO EXTERIOR LOADS.

THE FRONTSIDE AND BACKSIDE OF THE WALL SHALL BE BACKFILLED SIMULTANEOUSLY. UNTIL THE FRONT OF THE WALL IS BACKFILLED TO GRADE, THERE SHALL NEVER BE GREATER THAN A FOOT DIFFERENCE IN HEIGHT BETWEEN THE FRONT SIDE AND BACK SIDE BACKFILL ELEVATIONS.

ALL REINFORCING BARS AND BARS NOTED AS DOWELS SUPPLIED FOR THIS STRUCTURE SHALL BE DEFORMED REINFORCEMENT UNLESS OTHERWISE NOTED OR SHOWN.

KEYWAY DIMENSIONS SHOWN ON THE PLANS ARE BASED ON NOMINAL DIMENSIONS UNLESS STATED OTHERWISE. IN ADDITION, THE BEVEL USED ON THE KEYWAY SHALL BE LIMITED TO A MAXIMUM OF 10 DEGREES FROM VERTICAL.

ALL COSTS ASSOCIATED WITH EXPANSION AND CONSTRUCTION JOINTS, INCLUDING ALL RESILANT JOINT FILLER, WATERSTOPS AND EXPANSION DOWEL ASSEMBLIES SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM "STRUCTURAL CONCRETE ('MISCELLANEOUS')".

MINIMUM CLEAR DISTANCE FROM FACE OF CONCRETE TO NEAR REINFORCING BAR IS TO BE 2" UNLESS OTHERWISE NOTED OR SHOWN.

SURCHARGE LOADING IS NOT INCLUDED IN THE DESIGN.

THE DESIGN NOMINAL BEARING RESISTANCE FOR THE FOOTING IS 5,000 PSF. THE CONTRACTOR SHALL VERIFY THE SOIL AT THE SITE MEETS THE DESIGN BEARING PRESSURE PRIOR TO PLACING ANY RETAINING WALL FOOTING CONCRETE.

THE EXCAVATION AND BACKFILLING QUANTITIES ARE INCLUDED IN THE ROADWAY PLANS.

SHOP DRAWING SUBMITTALS

SHOP DRAWINGS SHALL BE SUBMITTED FOR THE FOLLOWING ITEMS SHOWN IN THE TABLE BELOW. (NOTE ADDITIONAL SHOP DRAWINGS MAY BE REQUIRED IN ACCORDANCE WITH ARTICLE 1105.03 OF THE STANDARD SPECIFICATIONS.)

SUBMITTAL REQUIREMENTS FOR SHOP DRAWINGS SHOULD BE IN ACCORDANCE WITH ARTICLE 1105.03, OF THE STANDARD SPECIFICATIONS, FOR HIGHWAY AND BRIDGE CONSTRUCTION OF THE IOWA DEPARTMENT OF TRANSPORTATION.

SHOP DRAWINGS SHALL BE SUBMITTED WITH THE FOLLOWING NAMING CONVENTION:
(Paren)_County_DesignNumber_SubmittalDescription.pdf
Example: (090)_BlackHawk_Design915_DeckDrains.pdf

1	CHAIN LINK FENCE

SPECIFICATIONS:

DESIGN: AASHTO LRFD 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.
CONSTRUCTION: IOWA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION, SERIES 2015, PLUS APPLICABLE GENERAL SUPPLEMENTAL SPECIFICATIONS, DEVELOPMENTAL SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS SHALL APPLY TO CONSTRUCTION WORK ON THIS PROJECT.

DESIGN STRESSES:

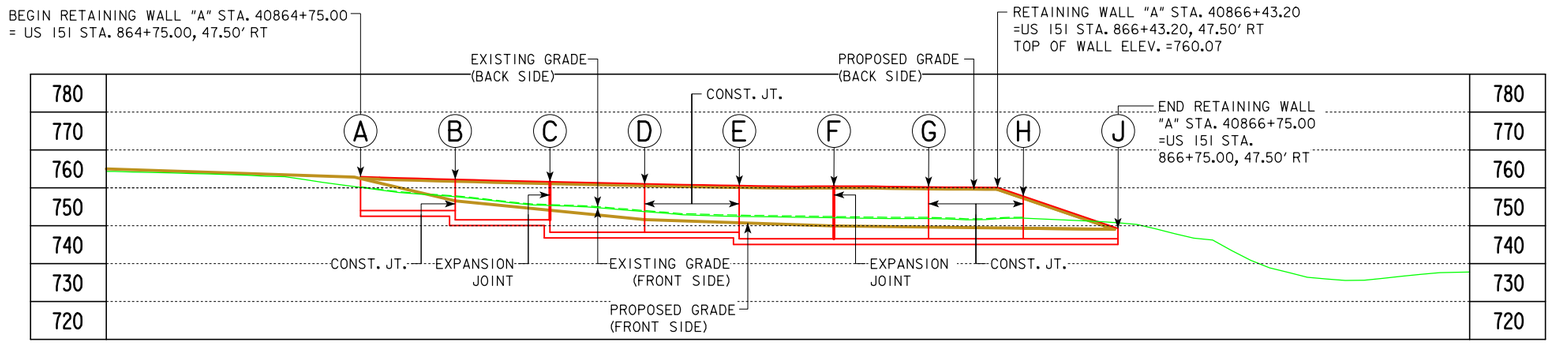
DESIGN STRESSES FOR THE FOLLOWING MATERIALS ARE IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7th Ed, SERIES OF 2014, EXCEPT AS NOTED IN THE CURRENT IOWA BRIDGE DESIGN MANUAL.
REINFORCING STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 5, GRADE 60.
CONCRETE IN ACCORDANCE WITH AASHTO SECTION 5, f'c= 4.0 KSI
STRUCTURAL STEEL IN ACCORDANCE WITH AASHTO LRFD SECTION 6. ASTM A709 GRADE 36, GRADE 50, AND GRADE 50W (AASHTO M270 GRADE 36, GRADE 50, AND GRADE 50W).

POLLUTION PREVENTION PLAN SHOWN ELSEWHERE IN THESE PLANS.

ROADWAY QUANTITIES SHOWN ELSEWHERE IN THESE PLANS.

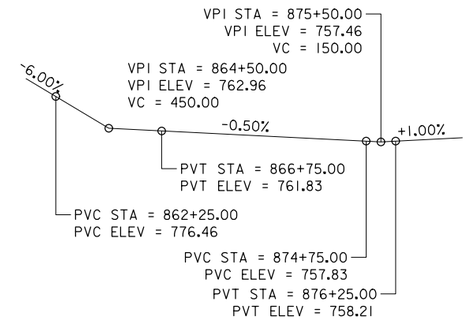
TRAFFIC CONTROL PLAN SHOWN ELSEWHERE IN THESE PLANS.

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018
GENERAL NOTES
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

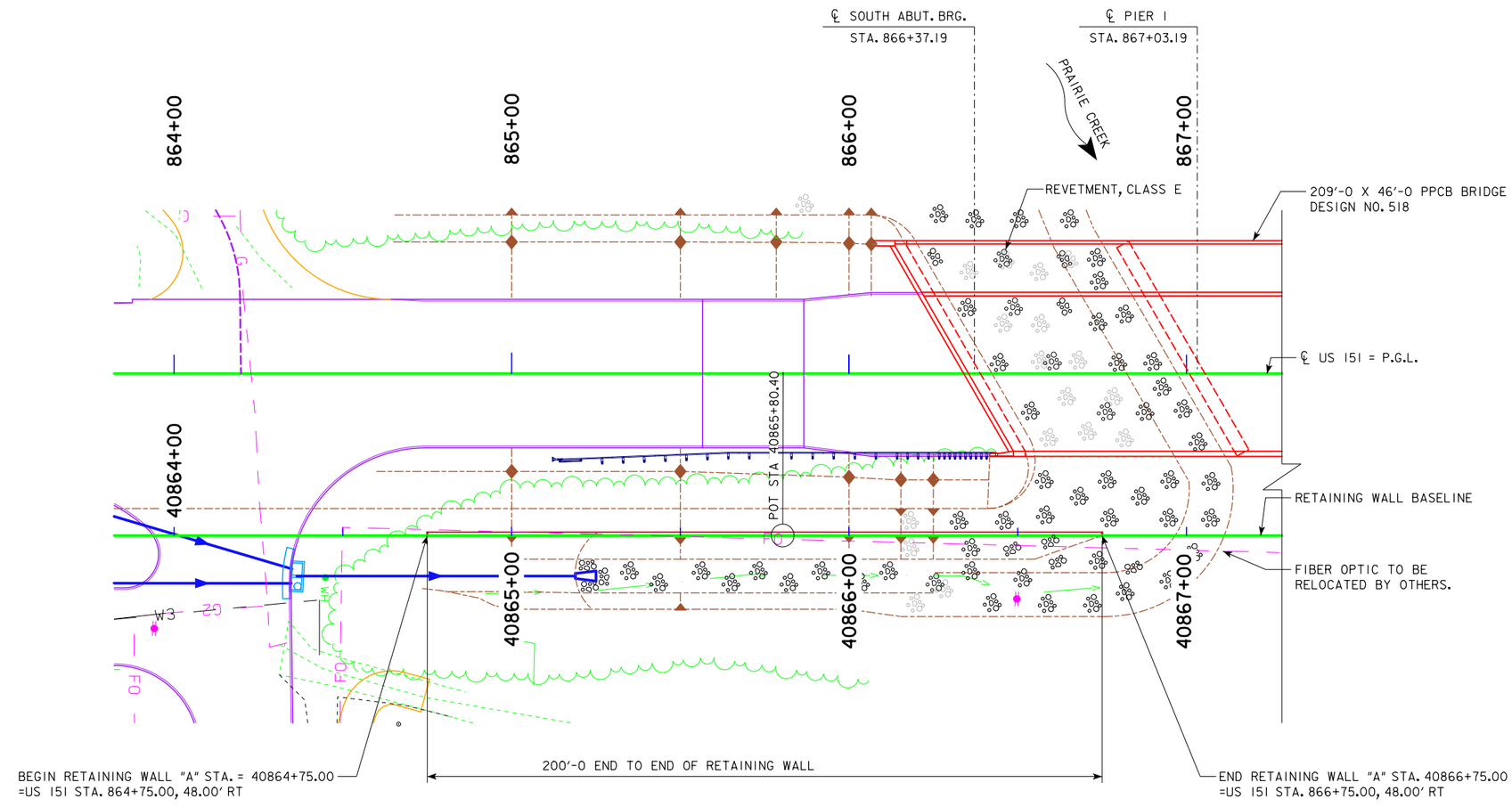


RETAINING WALL "A" ELEVATION

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE, EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF RIVER BRIDGE AT BEGINNING OF CLEARING.
ELEV. =750.420, N = 705704.166 E = 2107504.303



PROPOSED PROFILE GRADE (US 151)



N

SITUATION PLAN

ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE NOTED.

SEE DESIGN NO. 518 FOR LIMITS OF REVETMENT, CLASS E.

WALL ELEVATIONS

LOCATION	STATION (US 151)	TOP OF WALL ELEVATION	BOTTOM OF FOOTING ELEVATION	WALL HEIGHT (FT.)	WALL LENGTH (FT.)
A	864+75.00	762.91	752.50	10.41	25.0
B	865+00.00	762.21	750.03	12.18	25.0
C	865+25.00	761.59	746.76	14.83	25.0
D	865+50.00	761.04	746.76	14.28	25.0
E	865+75.00	760.57	745.04	15.53	25.0
F	866+00.00	760.42	745.04	15.38	25.0
G	866+25.00	760.23	745.04	15.19	25.0
START OF WALL SLOPE	866+43.20	760.07	745.04	15.03	18.2
H	866+50.00	757.76	745.04	12.72	6.8
J	866+75.00	749.28	745.04	4.24	25.0

UTILITIES LEGEND:

FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY
TI - TELEPHONE - SOUTH SLOPE
W3 - WATER - FAIRFAX

RETAINING WALL
AT US HIGHWAY 151
OVER PRAIRIE CREEK
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY
LATITUDE 41.922715°
LONGITUDE -91.783648°

TRAFFIC ESTIMATE

2013 AADT	8100	V.P.D.
2040 AADT	12,010	V.P.D.
TRUCKS	6	%
TOTAL DESIGN ESALs	2,104,152	

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

SITUATION PLAN
LINN COUNTY

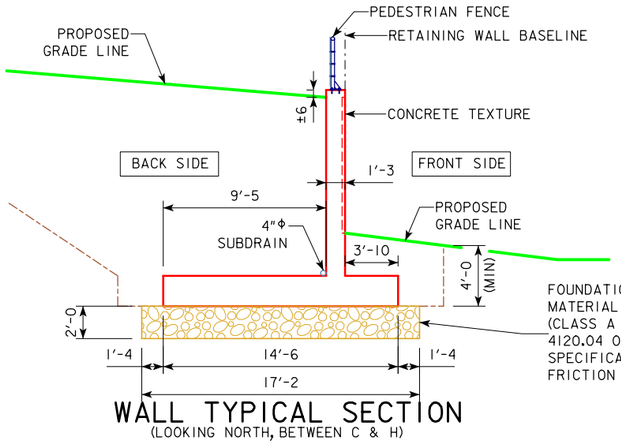
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 3 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.3

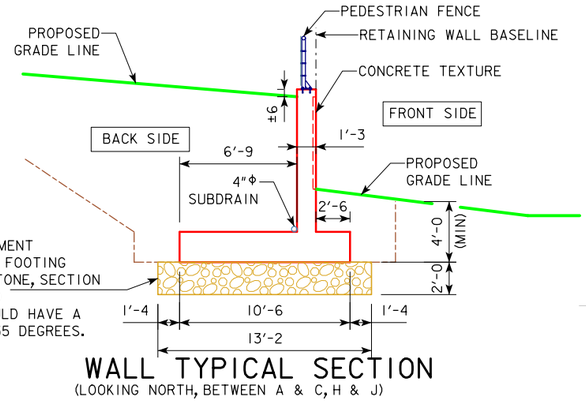
8/20/2018 8:18:23 AM tellio2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRFinal\BRG_57151158.dgn 570918S003p 11x17_pdf.pltcfg

BENCH MARK NO. BM2 STA. 871+35.96, 70.098 RT, RR SPIKE IN POWER POLE,
EAST SIDE HWY 151, 200' ± NORTH OF NORTH END OF
RIVER BRIDGE AT BEGINNING OF CLEARING.
ELEV. 750.420, N = 705704.166 E = 2107504.303

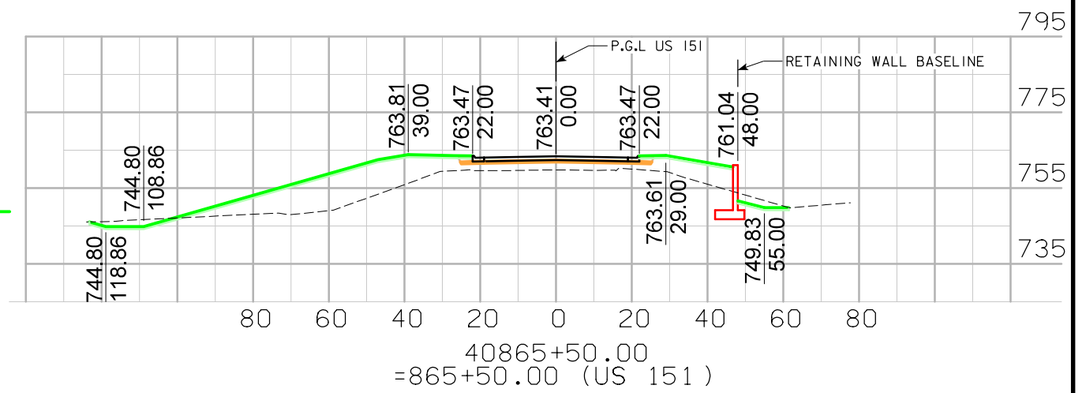


WALL TYPICAL SECTION
(LOOKING NORTH, BETWEEN C & H)

FOUNDATION IMPROVEMENT MATERIAL UNDER THE FOOTING (CLASS A CRUSHED STONE, SECTION 4120.04 OF STANDARD SPECIFICATIONS) SHOULD HAVE A FRICTION ANGLE OF 35 DEGREES.



WALL TYPICAL SECTION
(LOOKING NORTH, BETWEEN A & C, H & J)



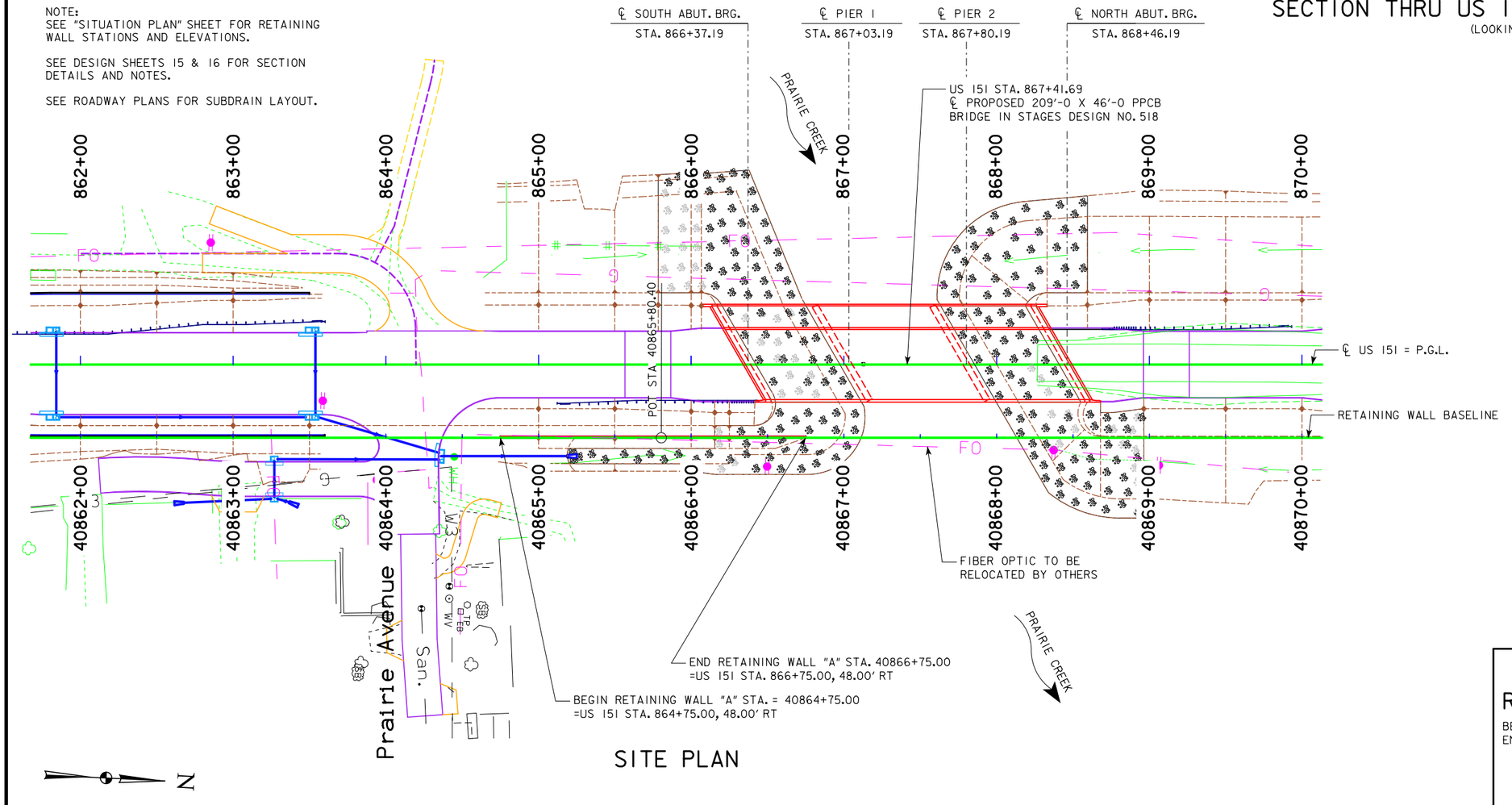
40865+50.00
=865+50.00 (US 151)

SECTION THRU US 151 WITH WALL SECTION
(LOOKING NORTH)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

SEE ROADWAY PLANS FOR SUBDRAIN LAYOUT.



SITE PLAN

UTILITIES LEGEND:
FO - FIBER OPTIC - SOUTH SLOPE
G - GAS - MIDAMERICAN ENERGY

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

SITE PLAN
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 4 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.4

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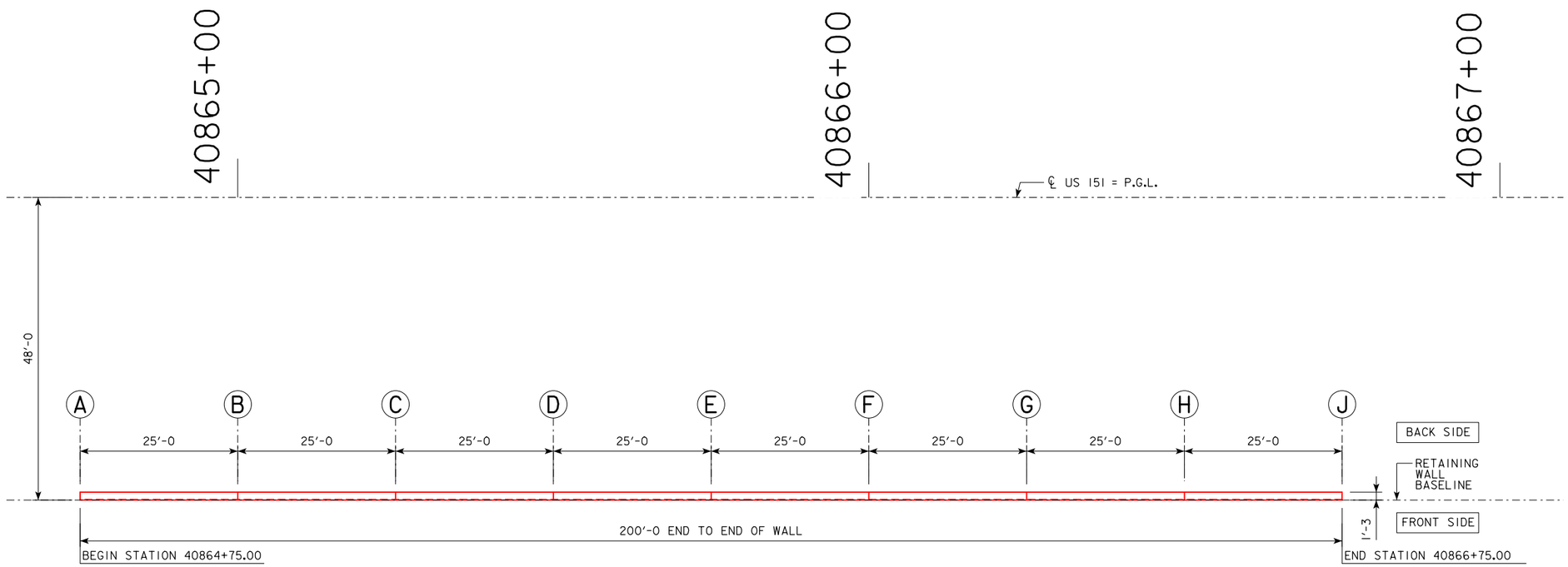


N

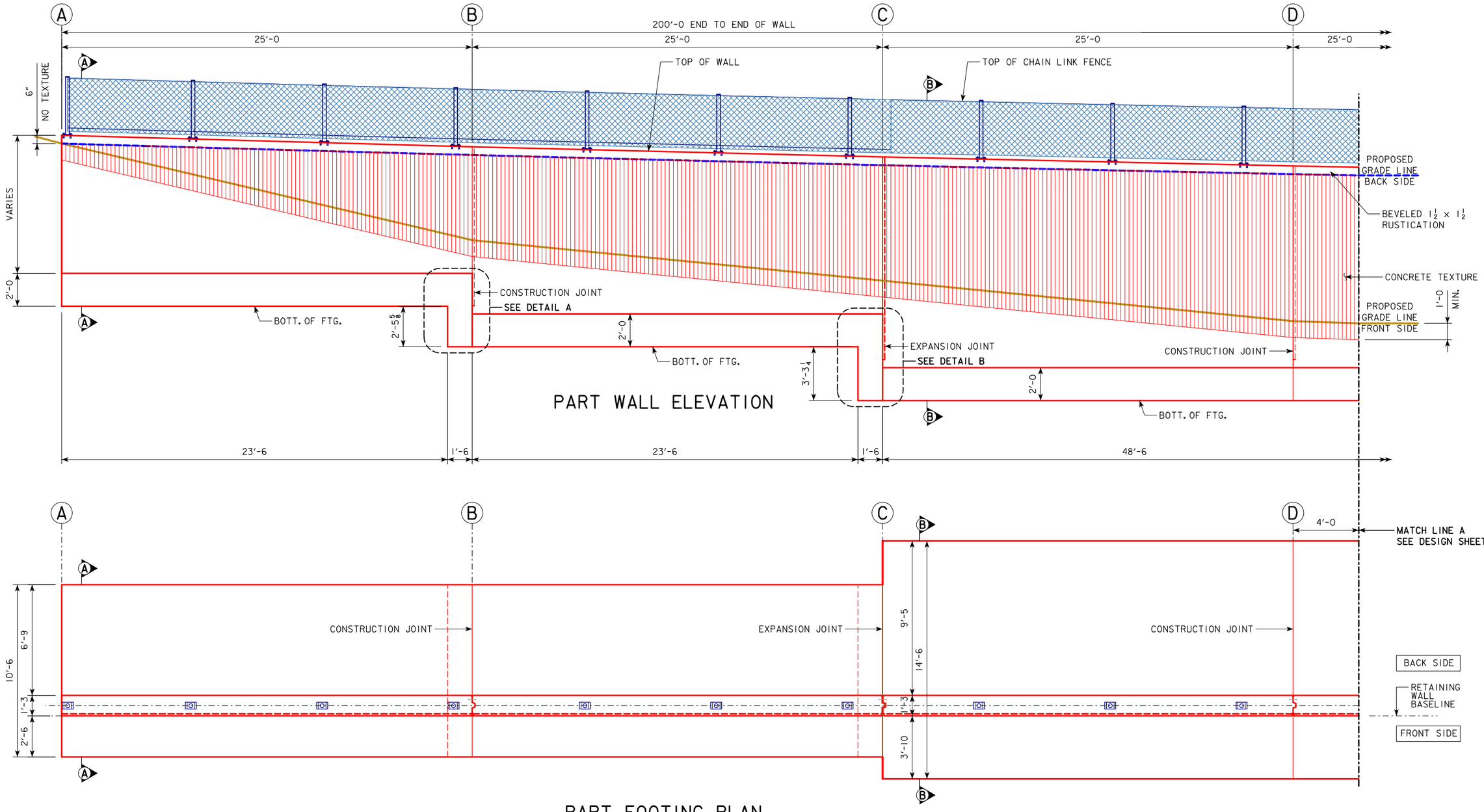
STAKING DIAGRAM

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL
BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00
STAKING DIAGRAM
LINN COUNTY
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION
DESIGN SHEET NO. 5 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.5



NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

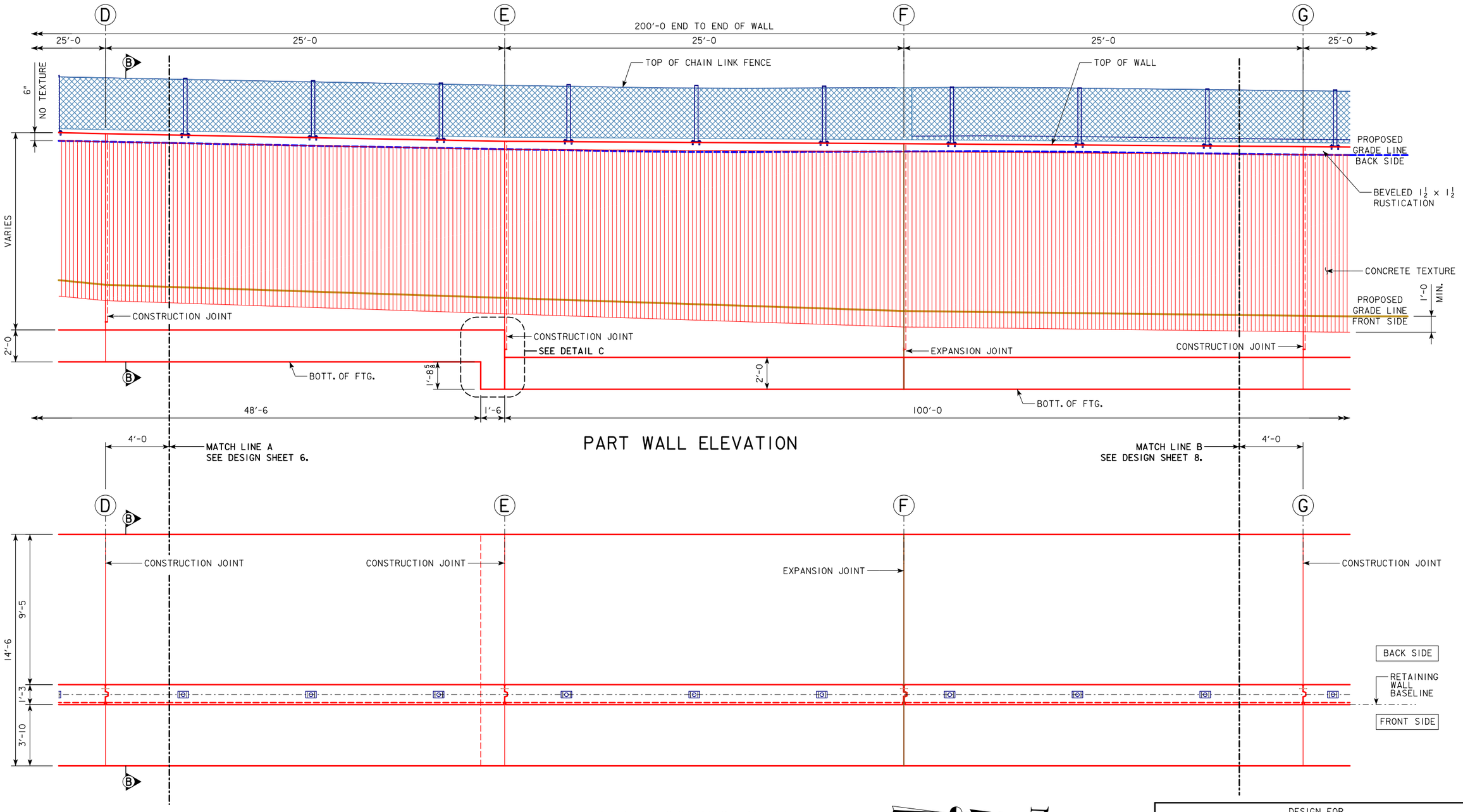
BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL DETAILS
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 6 OF 19 FILE NO. 31286 DESIGN NO. 918



PART WALL ELEVATION

PART FOOTING PLAN

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL DETAILS
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 7 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.7

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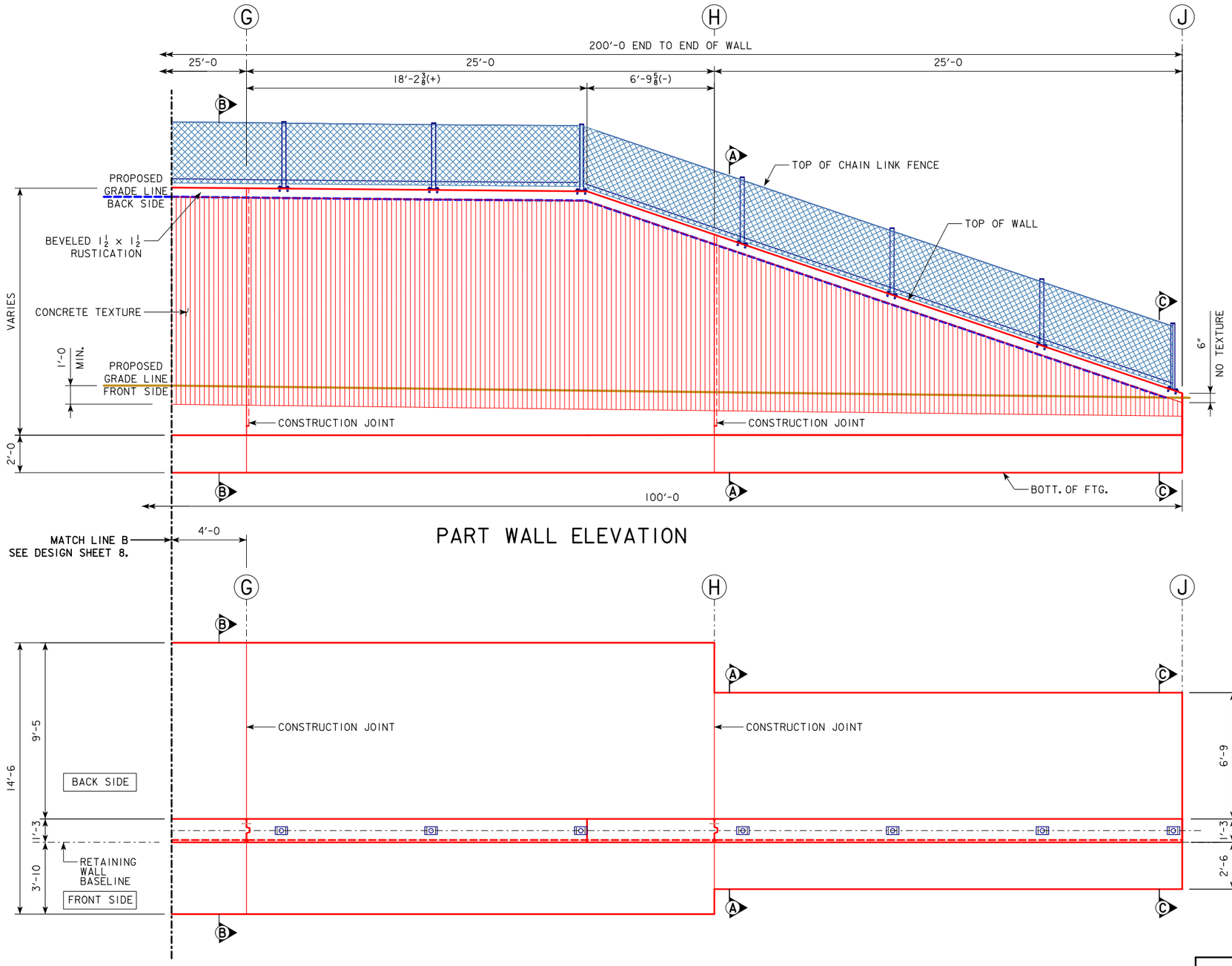

PART WALL ELEVATION

PART FOOTING PLAN

N

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

WALL DETAILS
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 8 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.8

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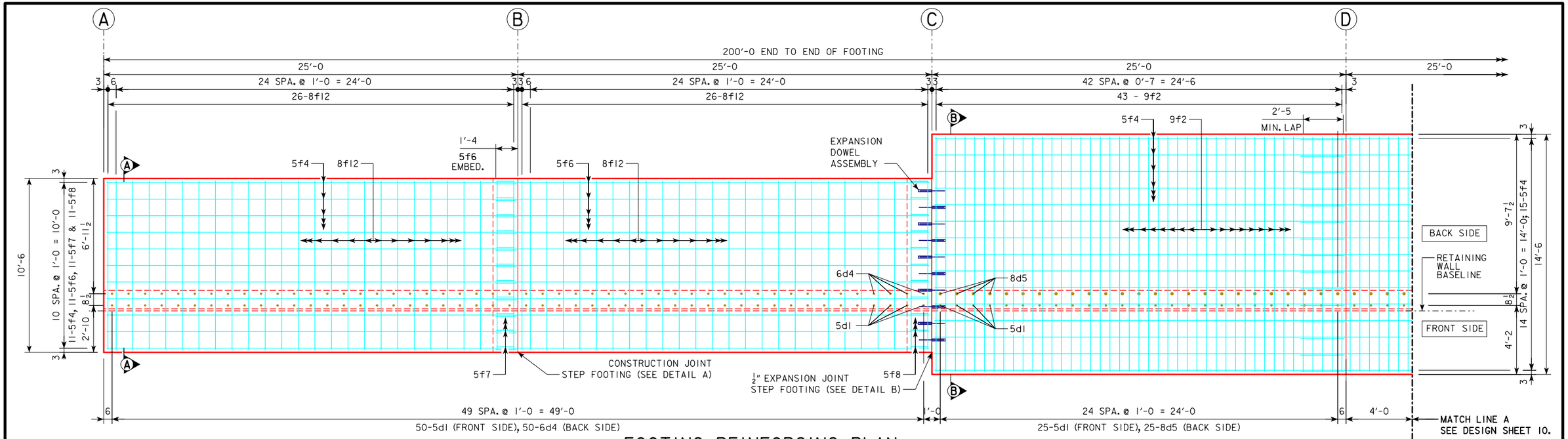
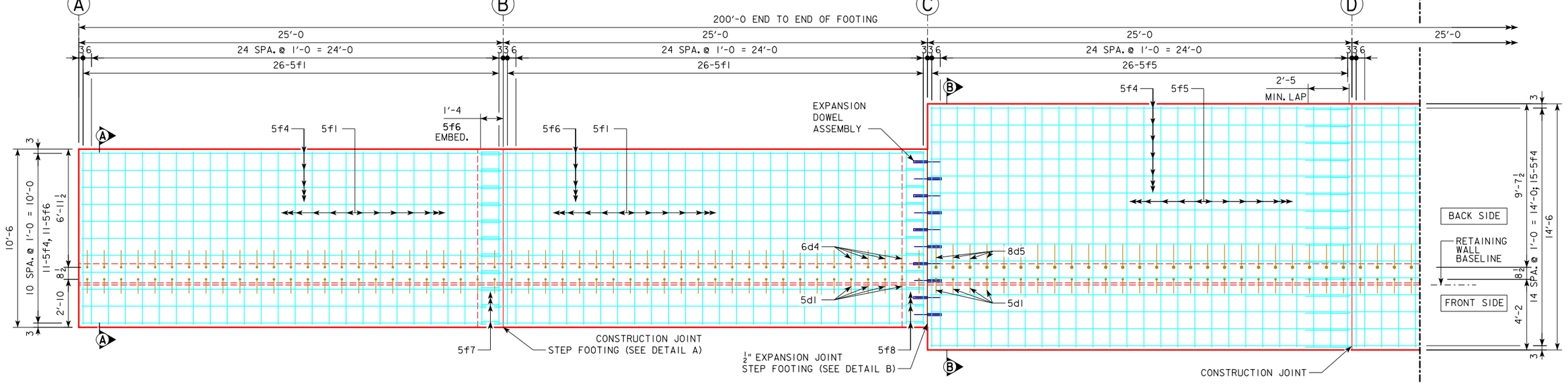


FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)



FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

N

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

DESIGN FOR

200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

FOOTING REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 9 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.9

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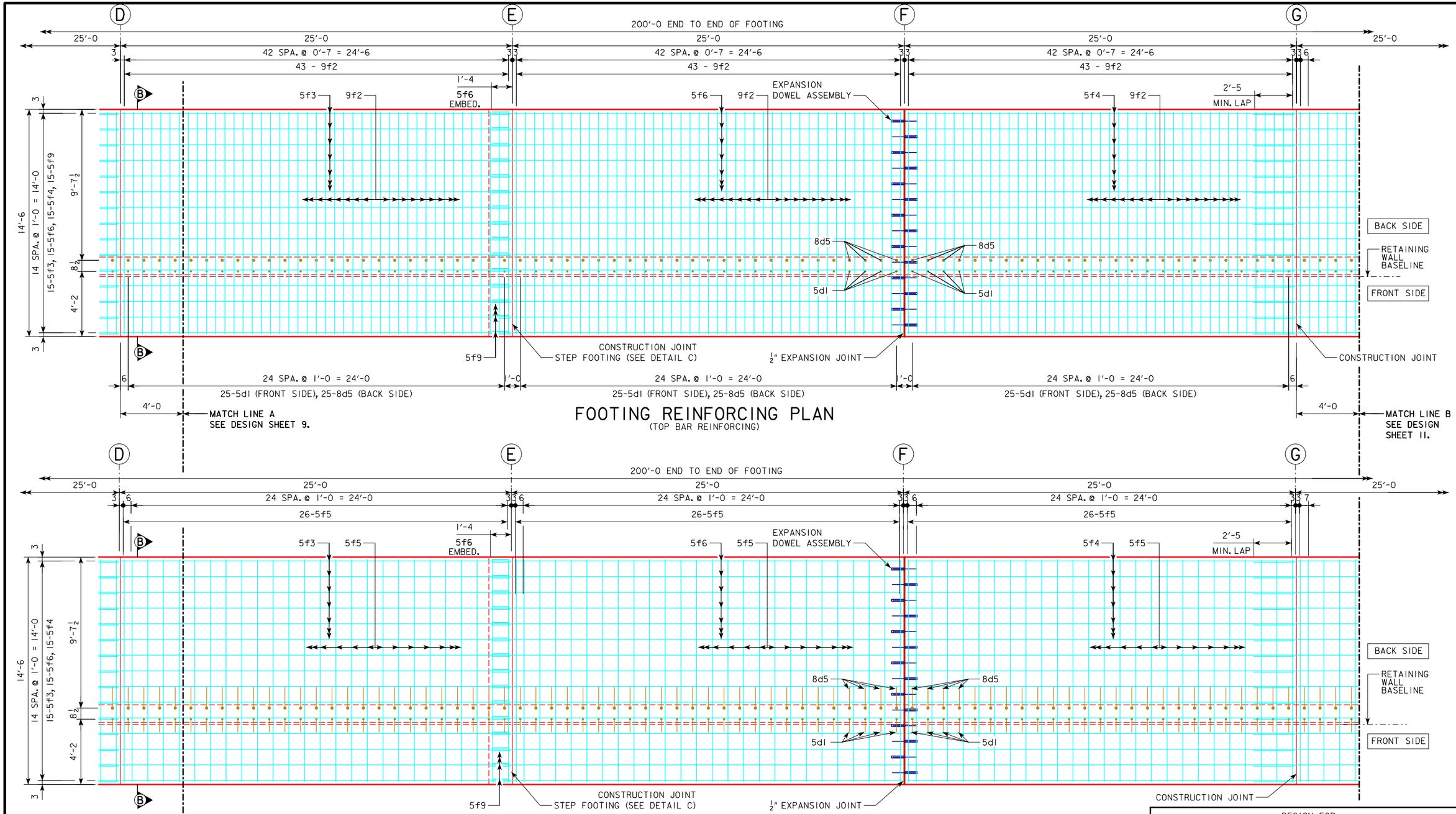

FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)

FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

N

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

DESIGN FOR
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

FOOTING REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 10 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.10

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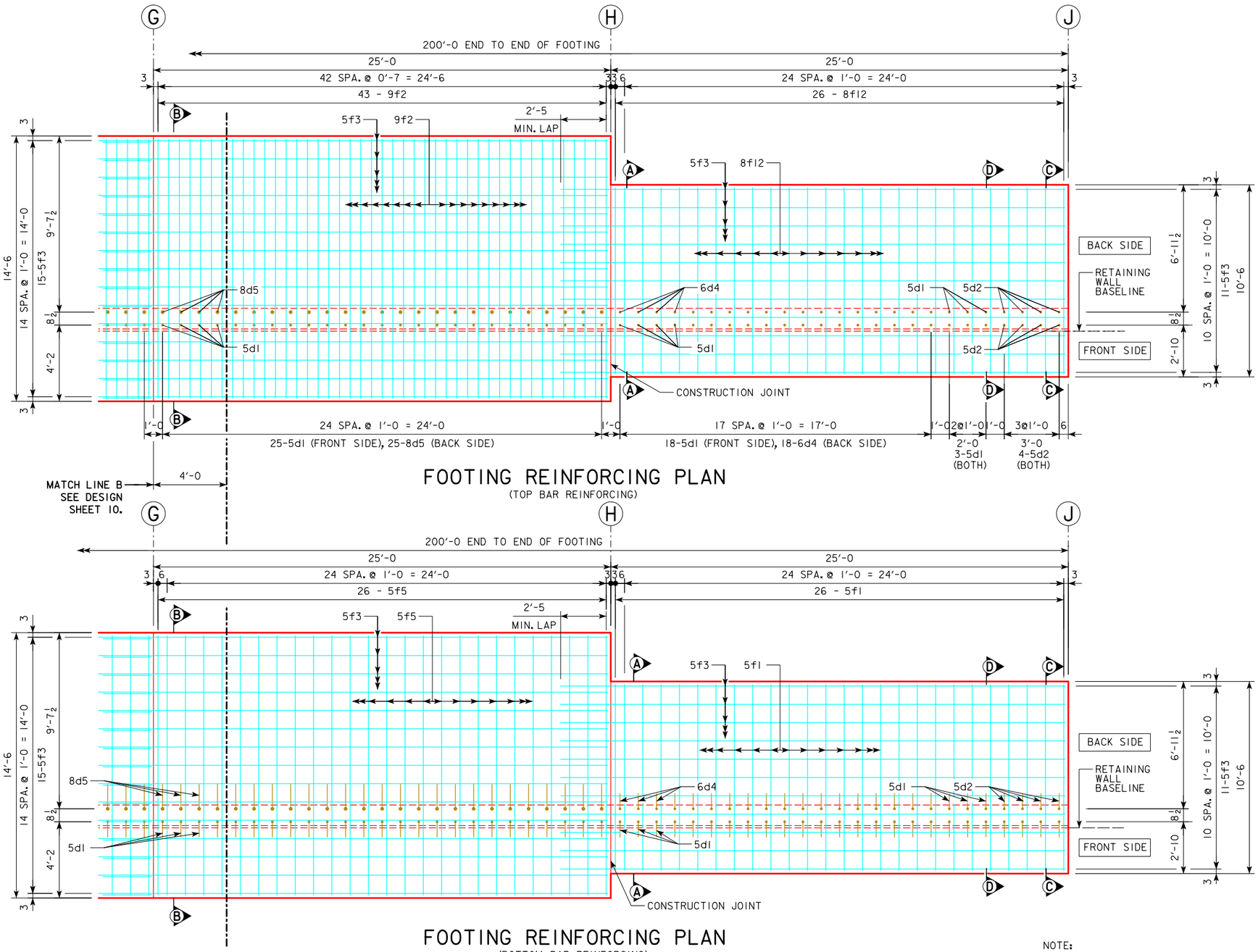


FOOTING REINFORCING PLAN
(TOP BAR REINFORCING)

FOOTING REINFORCING PLAN
(BOTTOM BAR REINFORCING)

N

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

RETAINING WALL NOT SHOWN FOR CLARITY.

DESIGN FOR
200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00
NOVEMBER 2018

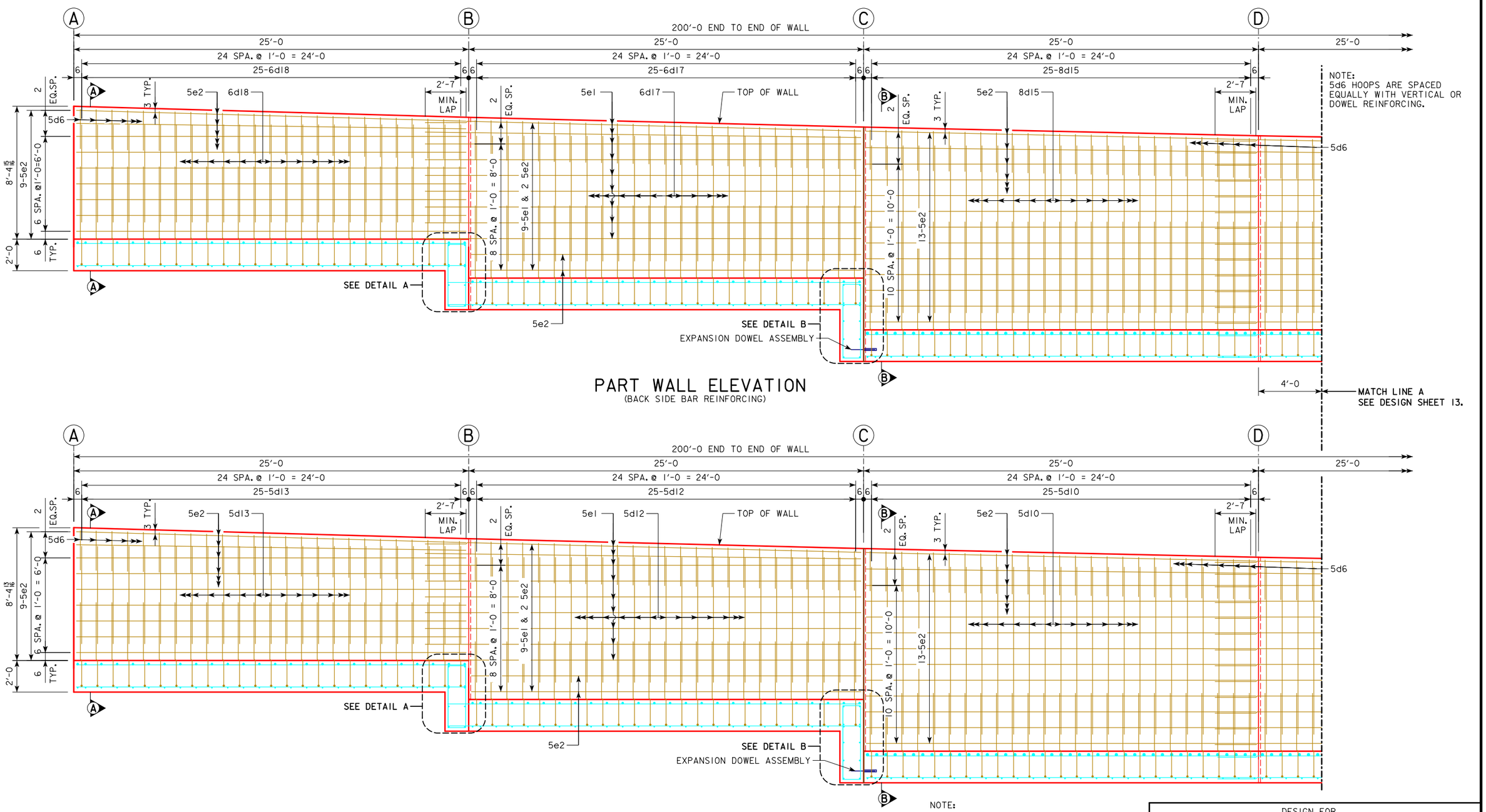
FOOTING REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 11 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.11



PART WALL ELEVATION
(BACK SIDE BAR REINFORCING)

PART WALL ELEVATION
(FRONT SIDE BAR REINFORCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

SEE DESIGN SHEETS 9 THRU 11 FOR FOOTING REINFORCING.

DESIGN FOR
200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

WALL REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 12 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.12

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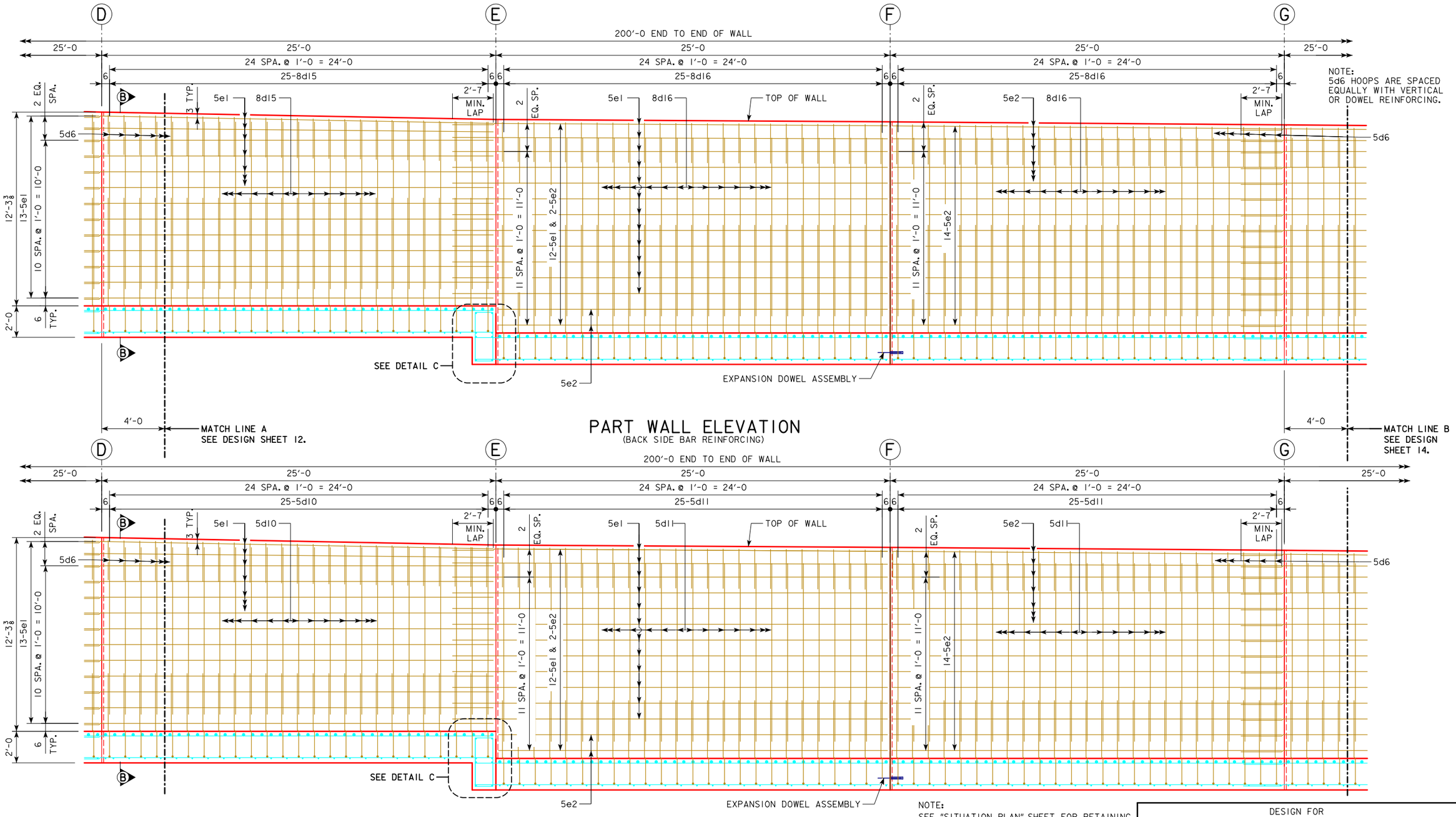


PART WALL ELEVATION
(BACK SIDE BAR REINFORCING)

PART WALL ELEVATION
(FRONT SIDE BAR REINFORCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

SEE DESIGN SHEETS 9 THRU 11 FOR FOOTING REINFORCING.

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

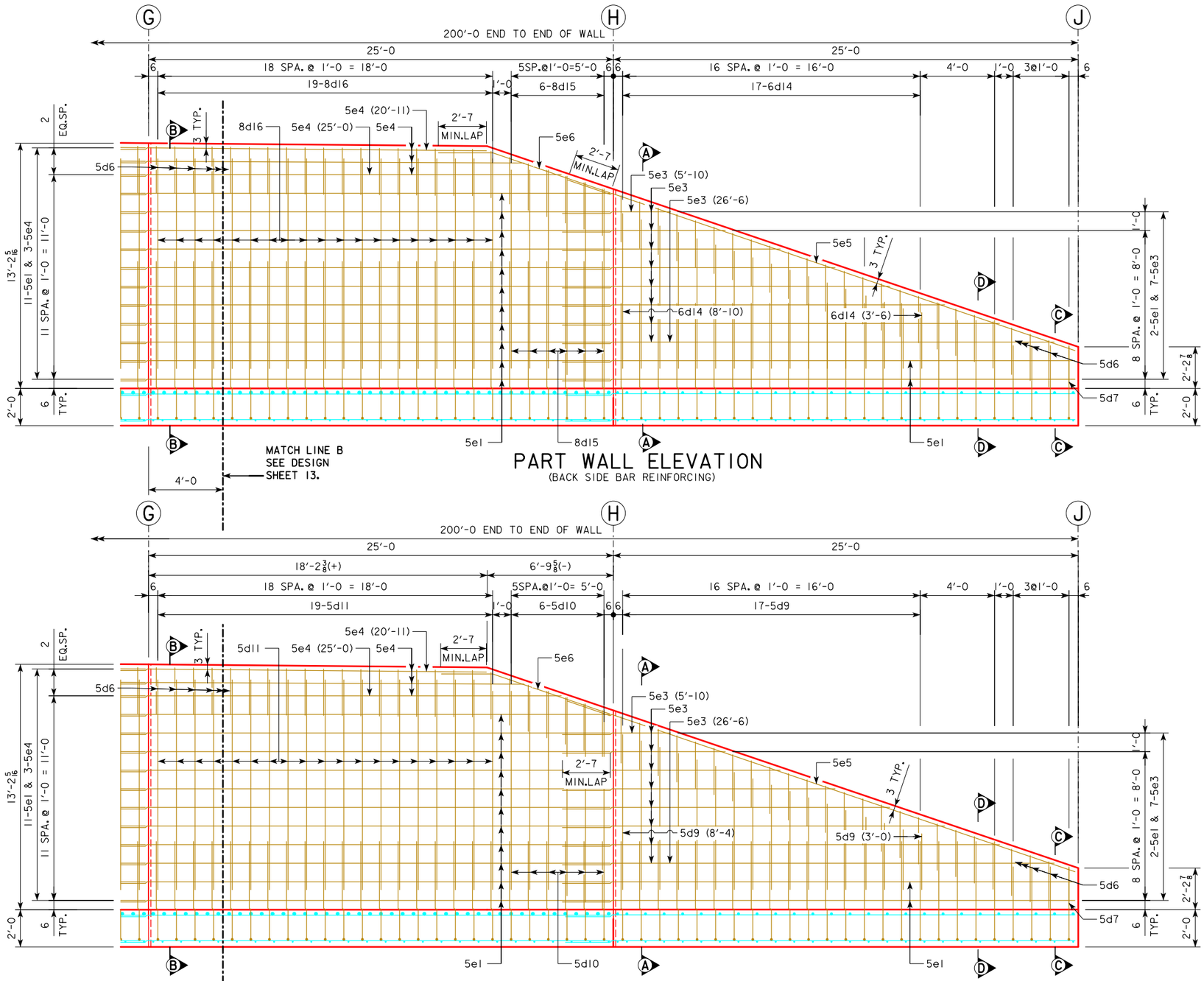
WALL REINFORCING
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 13 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.13



PART WALL ELEVATION
(BACK SIDE BAR REINFORCING)

NOTE:
5d6 & 5d7 HOOPS ARE SPACED EQUALLY WITH VERTICAL OR DOWEL REINFORCING.

PART WALL ELEVATION
(FRONT SIDE BAR REINFORCING)

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 15 & 16 FOR SECTION DETAILS AND NOTES.

CHAIN LINK FENCE NOT SHOWN FOR CLARITY SEE DESIGN SHEETS 18 & 19 FOR DETAILS.

SEE DESIGN SHEETS 9 THRU 11 FOR FOOTING REINFORCING.

DESIGN FOR

200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

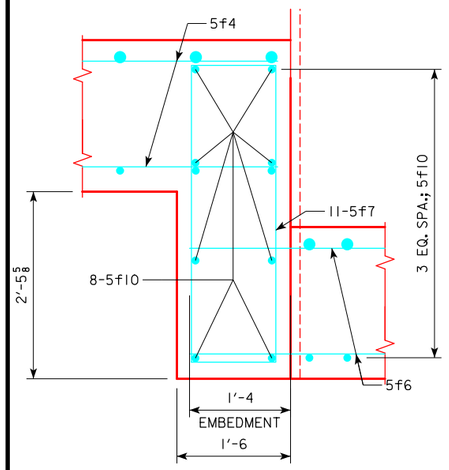
NOVEMBER 2018

WALL REINFORCING
LINN COUNTY

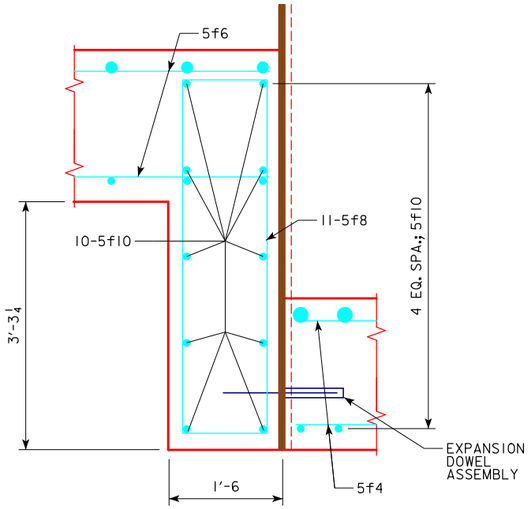
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 14 OF 19 FILE NO. 31286 DESIGN NO. 918

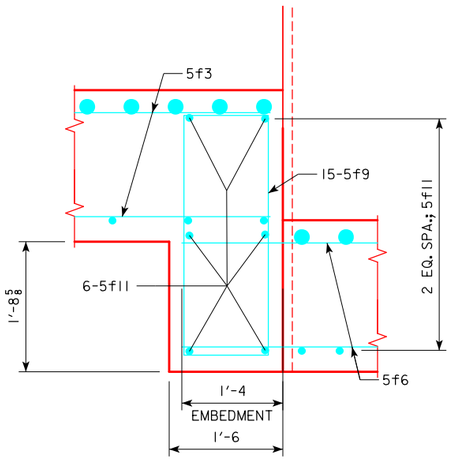
DESIGN TEAM HC / TWE / SHUCK-BRITSON INC | LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.14



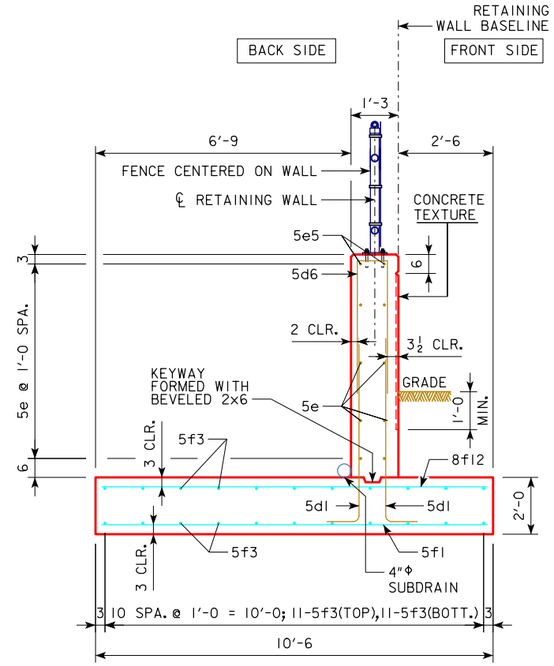
DETAIL A



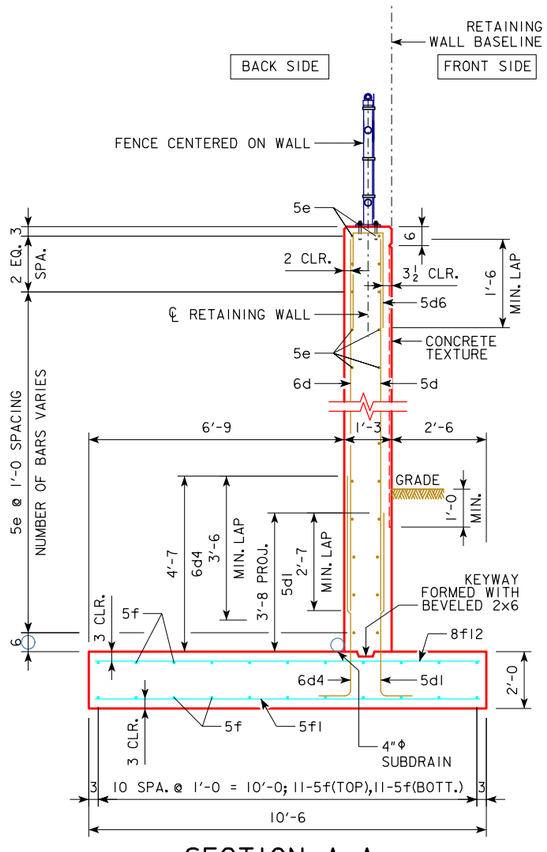
DETAIL B



DETAIL C

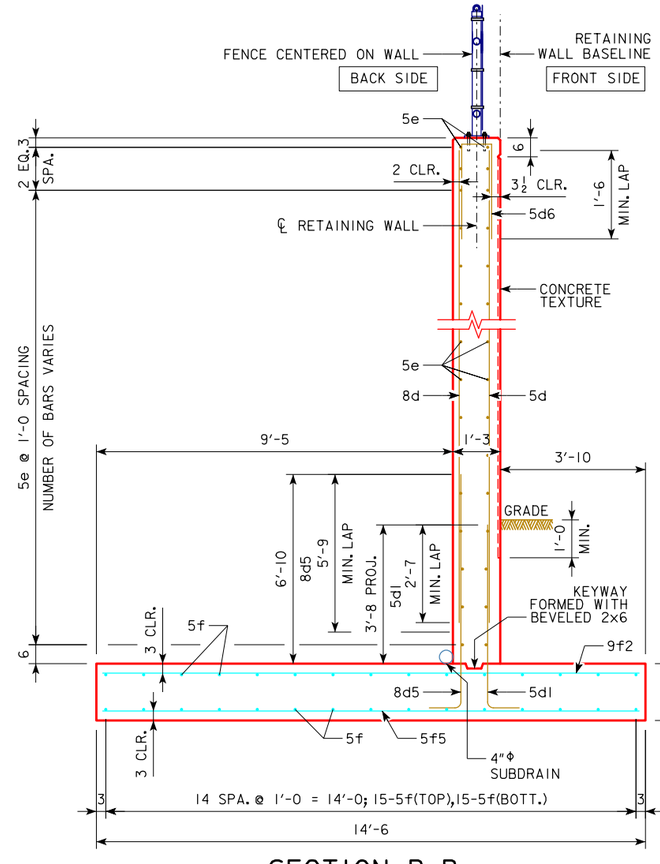


SECTION D-D



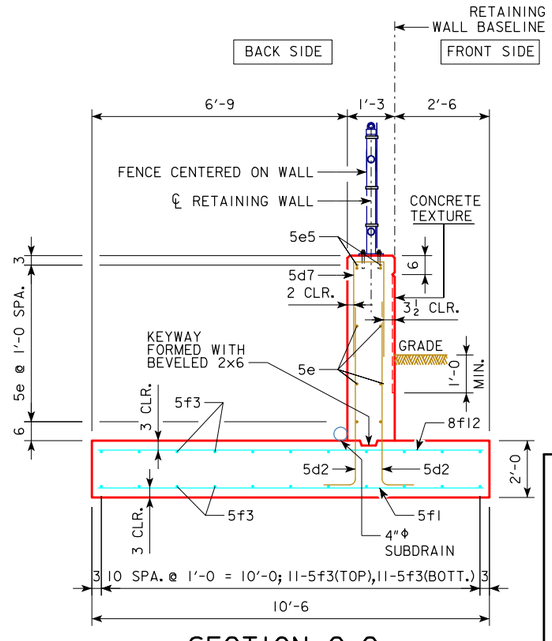
SECTION A-A

(LOOKING NORTH, BETWEEN A-C & H-J)



SECTION B-B

(LOOKING NORTH, BETWEEN C-H)



SECTION C-C

(LOOKING NORTH, BETWEEN H-J)

KEYWAY NOTE:

NOTE: KEYWAYS SHALL BE FORMED IN THE FOOTING BETWEEN THE PROTRUDING WALL REINFORCING BARS. KEYWAYS SHALL BE CONTINUOS BETWEEN WALL JOINTS AND SHALL TERMINATE WITH APPROXIMATELY 6 INCHES CLEARANCE FROM WALL JOINTS OR WALL ENDS. KEYWAYS FOR WALL SECTIONS SHALL BE FORMED WITH BEVELED 2"x6" LUMBER.

NOTE:

SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEETS 16 FOR ADDITIONAL SECTION DETAILS AND NOTES.

SEE ROADWAY PLANS FOR SUBDRAIN LAYOUT.

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018

END STATION 40866+75.00

RETAINING WALL DETAILS LINN COUNTY

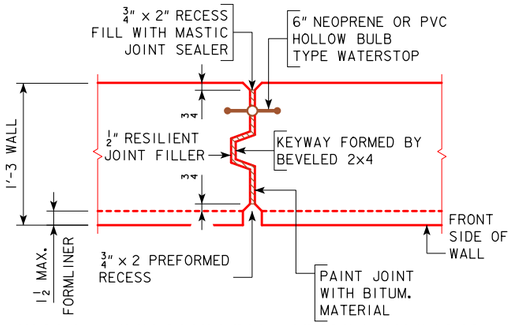
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 15 OF 19 FILE NO. 31286 DESIGN NO. 918

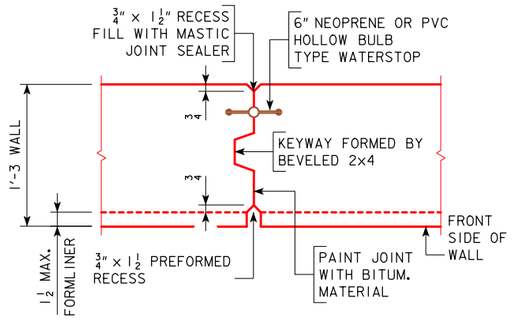
DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.15

8/20/2018 8:18:37 AM tellio2 pw:\\projectwise.dot.int.lan:PWMain\Documents\Projects\5715102008\BRFinal\BRG_57151158.dgn 570918S015 11x17_pdf.pltcfg



WALL EXPANSION JOINT DETAIL



WALL CONSTRUCTION JOINT DETAIL

EXPANSION DOWEL NOTES:

EXPANSION DOWELS ARE REQUIRED AT THE FOOTING EXPANSION JOINT.

ALL COSTS ASSOCIATED WITH EXPANSION DOWELS AND DOWEL SUPPORT ASSEMBLIES SHALL BE INCIDENTAL TO THE PRICE BID FOR "STRUCTURAL CONCRETE (MISCELLANEOUS)".

EXPANSION DOWEL BARS SHALL BE 1 1/2" DIAMETER, 18" LONG. CENTER TO CENTER SPACING OF DOWELS SHALL BE 12". CENTERLINES OF INDIVIDUAL DOWELS SHALL BE PARALLEL TO THE OTHER DOWELS IN THE ASSEMBLY WITHIN 1/8".

EACH DOWEL BAR SHALL BE FITTED WITH APPROVED 6" LONG EXPANSION TUBE AT ONE END. EXPANSION TUBE SHALL BE POSITIONED TO PROVIDE 1" CLEAR SPACE FOR DOWEL MOVEMENT. THE EXPANSION SIDE OF THE DOWEL SHALL BE COATED TO PREVENT BOND WITH THE FOOTING. THE OPPOSITE SIDE OF THE DOWEL SHALL BE WELDED TO THE WIRE DOWEL SUPPORT ASSEMBLY. DOWEL BARS SHALL BE PLACED TO ALTERNATE FIXED ENDS AND EXPANSION TUBE ENDS ALONG THE LENGTH OF THE SUPPORT ASSEMBLY.

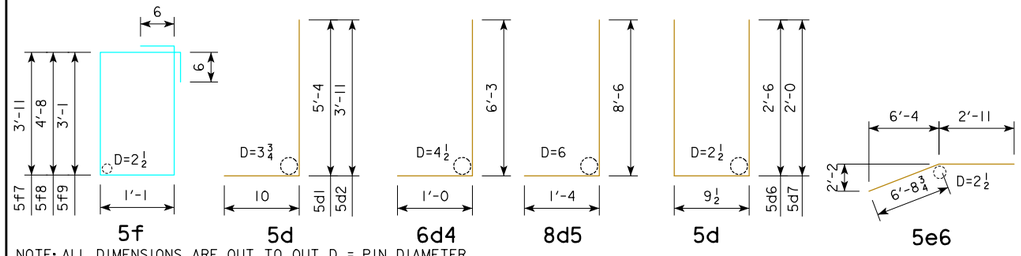
WIRES FOR THE DOWEL SUPPORT ASSEMBLY SHALL HAVE A MINIMUM TENSILE STRENGTH OF 50 KSI. MINIMUM WIRE DIAMETER SHALL BE AS FOLLOWS:

LOCATION	MIN. WIRE DIAMETER
LEGS	0.306" DIAMETER
SIDE RAILS	0.306" DIAMETER
RETAINER RAILS	0.250" DIAMETER WIRE
TIE WIRES	0.135" DIAMETER
ANCHOR PINS	0.306" DIAMETER

CLIP AND REMOVE CENTER PORTION OF TIE WIRE DURING FIELD ASSEMBLY.

A MINIMUM OF 8 ANCHOR PINS (4 PER SIDE, EVENLY SPACED) ARE REQUIRED AT EACH EXPANSION JOINT TO PREVENT MOVEMENT OF EXPANSION DOWEL ASSEMBLY. SEE ROAD STANDARD PV-101 FOR TYPICAL ANCHOR PIN DETAIL.

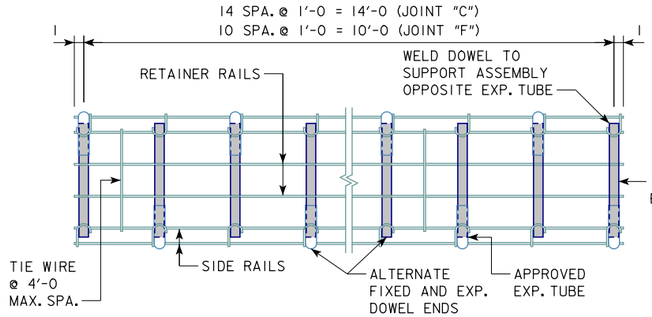
BENT BAR DETAILS



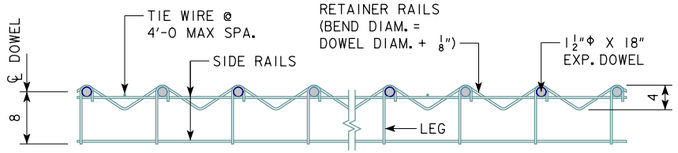
NOTE: ALL DIMENSIONS ARE OUT TO OUT. D = PIN DIAMETER.

WATERSTOP NOTE:

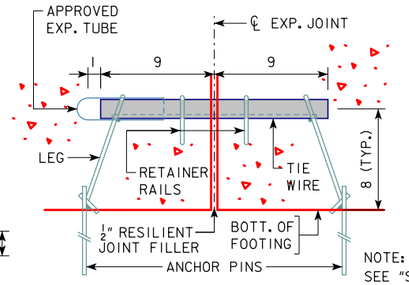
NOTE: WATERSTOP TO BE CENTER BULB TYPE. WATERSTOPS ARE TO EXTEND FROM TOP OF FOOTINGS TO 6" BELOW TOP OF WALLS.



EXPANSION DOWEL ASSEMBLY PLAN



EXPANSION DOWEL ASSEMBLY ELEVATION



SECTION THROUGH EXPANSION JOINT

NOTE:
SEE "SITUATION PLAN" SHEET FOR RETAINING WALL STATIONS AND ELEVATIONS.

SEE DESIGN SHEET 15 FOR ADDITIONAL SECTION DETAILS AND NOTES.

NON-COATED REINFORCING STEEL - FOOTING

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5f1	FOOTING TRANSV. BOTT. (SECT. A-A & C-C)	—	78	10'-2	827
9f2	FOOTING TRANSV. TOP (SECT. B-B)	—	215	14'-2	10,356
5f3	FOOTING LONGIT. TOP & BOTT. (SECT. B-B & C-C)	—	82	27'-5	2345
5f4	FOOTING LONGIT. TOP & BOTT. (SECT. A-A & B-B)	—	82	24'-8	2110
5f5	FOOTING TRANSV. BOTT. (SECT. B-B)	—	130	14'-2	1921
5f6	FOOTING LONGIT. TOP & BOTT. (SECT. A-A & B-B)	—	52	26'-2	1419
5f7	STEP HOOP (DETAIL A)	▭	11	11'-0	126
5f8	STEP HOOP (DETAIL B)	▭	11	12'-6	143
5f9	STEP HOOP (DETAIL C)	▭	15	9'-4	146
5f10	STEP TRANSV. (DETAIL A & B)	—	18	10'-2	191
5f11	STEP TRANSV. (DETAIL C)	—	6	14'-2	89
8f12	FOOTING TRANSV. TOP (SECT. A-A & C-C)	—	78	10'-2	2117
	NON-COATED REINFORCING STEEL - TOTAL (LBS)				21,790

EPOXY-COATED REINFORCING STEEL

BAR	LOCATION	SHAPE	NO.	LENGTH	WEIGHT
5d1	FOOTING TO WALL DOWELS (ALL SECTIONS)	⌊	199	6'-2	1280
5d2	FOOTING TO WALL DOWELS (SECT. C-C)	⌊	8	4'-9	40
6d4	FOOTING TO WALL DOWELS (SECT. A-A)	⌊	68	7'-3	740
8d5	FOOTING TO WALL DOWELS (SECT. B-B)	⌊	125	9'-10	3282
5d6	WALL, TOP, HOOPS	⌐	199	5'-10	1211
5d7	WALL, TOP, HOOPS (SECT. C-C)	⌐	1	4'-10	5
5d9	WALL, VERTICAL (SECT. C-C)	—	17	VARIES	100
5d10	WALL, VERTICAL (SECT. B-B)	—	56	10'-8	623
5d11	WALL, VERTICAL (SECT. B-B)	—	69	11'-4	816
5d12	WALL, VERTICAL (SECT. A-A)	—	25	8'-0	209
5d13	WALL, VERTICAL (SECT. A-A)	—	25	6'-2	161
6d14	WALL, VERTICAL (SECT. A-A)	—	17	VARIES	157
8d15	WALL, VERTICAL (SECT. B-B)	—	56	10'-8	1595
8d16	WALL, VERTICAL (SECT. B-B)	—	69	11'-4	2088
6d17	WALL, VERTICAL (SECT. B-B)	—	25	8'-0	300
6d18	WALL, VERTICAL (SECT. A-A)	—	25	6'-2	232
5e1	WALL, HORIZONAL (ALL SECTIONS)	—	94	27'-7	2704
5e2	WALL, HORIZONAL (SECT. A-A & B-B)	—	80	24'-8	2058
5e3	WALL, HORIZONAL (SECT. A-A)	—	16	VARIES	270
5e4	WALL, HORIZONAL (SECT. B-B)	—	6	VARIES	144
5e5	WALL, HORIZONAL (SECT. A-A, C-C & D-D)	—	2	29'-0	60
5e6	WALL, HORIZONAL (SECT. B-B)	◡	2	9'-8	20
	EPOXY-COATED REINFORCING STEEL - TOTAL (LBS)				18,095

CONCRETE PLACEMENT SUMMARY

LOCATION	WALL	FOOTING	TOTAL
BETWEEN A & C	20.8	42.4	63.2
BETWEEN C & F	44.1	82.2	126.3
BETWEEN F & H	30.2	53.7	83.9
BETWEEN H & J	7.5	19.6	27.1
TOTAL - CU. YDS.	102.6	197.9	300.5

DESIGN FOR

200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

REINFORCING BAR LIST
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 16 OF 19 FILE NO. 31286 DESIGN NO. 918

CONCRETE RUSTICATION NOTES

STRIPS AND PANELS USED AS INSERTS WITHIN CONCRETE FORMS TO CREATE THE RUSTICATION FEATURES MAY BE MADE OF WOOD, STEEL, PLASTIC OR OTHER NONPOROUS MATERIAL CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT PHYSICAL DEFECTS. WOOD INSERTS, IF USED, SHALL BE FREE OF WARP, TWIST, CHECKS OR CRACKS, AND SHALL BE PRESOAKED PRIOR TO PLACEMENT OF CONCRETE IN THE FORMS.

RUSTICATION INSERTS SHALL EASILY ATTACH TO FORMS AND SHALL NOT ALLOW LEAKAGE OF CONCRETE BETWEEN THE FORM AND THE INSERT. WHEN STEEL FORMS ARE USED, RUSTICATION STRIPS MAY BE RIGIDLY ATTACHED TO THE INSIDE SURFACES OF THE FORMS. WHEN STEEL FORMS ARE NOT USED, RUSTICATION STRIPS AND OTHER INSERTS FOR SMALL RECESSES ON EXPOSED CONCRETE SURFACES SHALL BE FASTENED TO THE FORMS IN A MANNER THAT WILL PERMIT THEM TO REMAIN IN PLACE WHEN THE FORMS ARE REMOVED. LEAVE INSERTS IN PLACE UNTIL THEY CAN BE REMOVED WITHOUT DAMAGE TO THE SURROUNDING CONCRETE.

THE INSERTS SHALL BE DESIGNED TO FORM SURFACES AND FEATURES CONFORMING TO THE DESIGN INTENT INCLUDING THE SHAPE, LINES, DEPTHS AND DIMENSIONS SHOWN IN THE PLANS. CREATE INSERTS USING A MINIMUM NUMBER OF SPLICE JOINTS IN THEIR LENGTH. SPLICES, IF USED, SHALL BE TIGHTLY JOINED SO AS NOT TO ALLOW GAPS OR LEAKS, AND SHALL NOT CREATE ANY CHANGE IN ALIGNMENT OR SHAPE OF THE RUSTICATION FEATURE.

FOR RUSTICATION FEATURES FOLLOWING THE PERIMETER OF ROUNDED SURFACES, IT MAY BE NECESSARY TO USE MULTIPLE LAYERS OF INSERT MATERIAL IN ORDER TO ACHIEVE THE RADIUS CURVE. THIS IS ACCEPTABLE, PROVIDED THAT THE FINAL SHAPE, LINE, DEPTH, AND DIMENSION OF THE FEATURES ARE MAINTAINED IN THE FINAL RESULT.

DURING LOADING OF FORMS WITH CONCRETE, TAKE EXTRA CARE TO ENSURE PROPER CONSOLIDATION OF CONCRETE AROUND ALL RUSTICATION INSERTS TO PRESERVE THE SHAPE, LINE AND DEPTH OF ALL INTENDED FEATURES IN THE FINAL CONCRETE SURFACE. FOLLOWING REMOVAL OF FORMS, REPAIR ALL DEFECTS TO ACHIEVE THE RUSTICATION FEATURES AS SPECIFIED IN THE PLANS. PATCH VOIDS, HONEYCOMB AREAS, ETC., IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. IF SURFACES WILL NOT RECEIVE A COLORED SEALER COATING, ADD WHITE CEMENT TO THE PATCHING MORTAR TO LIGHTEN IT IN ORDER TO MATCH SURROUNDING CONCRETE WHEN DRY. COMPLETED SURFACE SHALL BE FREE FROM BLEMISHES, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO ADDITIONAL COST TO THE PROJECT.

ALL COSTS ASSOCIATED WITH CONCRETE RUSTICATION ARE TO BE INCLUDED IN THE BID ITEM, "STRUCTURAL CONCRETE (MISCELLANEOUS)".

WALL CONCRETE TEXTURE NOTES

THE EXPOSED RETAINING WALL SURFACE AS DESIGNATED IN THE PLANS SHALL HAVE A SURFACE TEXTURE. WORK PERFORMED TO CREATE THE SURFACE TEXTURE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND THE FOLLOWING:

THE TEXTURED CONCRETE SURFACE SHALL BE FORMED USING A FORM LINING SYSTEM MADE OF HIGH-STRENGTH URETHANE ELASTOMER, PLASTIC, FLEXIBLE FOAM, OR OTHER SUITABLE MATERIALS CAPABLE OF WITHSTANDING ANTICIPATED CONCRETE POUR PRESSURES WITHOUT LEAKAGE OR CAUSING PHYSICAL DEFECTS. FORM LINERS SHALL ALLOW EASY REMOVAL FROM FORMED CONCRETE WITHOUT CAUSING CONCRETE SURFACE DAMAGE. IF RECOMMENDED BY THE FORM LINER MANUFACTURER, STRUCTURAL BACKERS SHALL BE USED TO PREVENT DEFORMATION OF THE LINER DURING LOADING OF THE FORMS. THE LINERS SHALL BE DESIGNED TO AVOID VISIBLE PATTERN REPEATS.

THE FORM LINER USED SHALL PRODUCE A TEXTURED EFFECT OF VERTICAL, FRACTURED-FACE RIBS ON APPROXIMATELY 2-INCH CENTERS. MAXIMUM TEXTURE DEPTH SHALL BE 1-1/2 INCHES, AND MINIMUM TEXTURE DEPTH SHALL BE 1-3/8 INCHES. THE CONTRACTOR SHALL SUBMIT MANUFACTURER'S CUT SHEETS FOR THE FORM LINER INTENDED FOR USE ON THE PROJECT TO THE ENGINEER FOR APPROVAL. FORM LINER APPROVAL MUST BE RECEIVED PRIOR TO PURCHASING FORM LINER MATERIALS OR BUILDING WALL FORMS. OBTAIN FORM LINER MATERIALS FROM ONE OF THE FOLLOWING MANUFACTURERS:

1. ARCHITECTURAL POLYMERS (PATTERN NO. 204)
2. FITZGERALD FORMLINERS (PATTERN NO. 16959)
3. GREENSTREAK (PATTERN NO. 367)
4. SCOTT SYSTEM, INC. (PATTERN NO. 129A)
5. CUSTOM ROCK INTERNATIONAL (PATTERN NO. 206)
6. SUBMIT ALL OTHER UNLISTED MANUFACTURERS AND PATTERNS INCLUDING A 1 FOOT BY 1 FOOT SAMPLE OF PROPOSED FORM LINER TO THE IOWA DEPARTMENT OF TRANSPORTATION, OFFICE OF BRIDGES AND STRUCTURES, AMES, IOWA. SAMPLE MAY BE EITHER ACTUAL FORM LINER MATERIALS OR FOAM CASTINGS. NO SAMPLES ARE REQUIRED TO BE SUBMITTED FOR MANUFACTURERS AND PATTERNS LISTED ABOVE.

DURING LOADING OF FORMS WITH CONCRETE, CARE SHOULD BE TAKEN TO ADEQUATELY VIBRATE CONCRETE IN ORDER TO MAINTAIN ALL INTENDED FEATURES OF THE FORM LINER IN THE FINAL SURFACE AND TO PREVENT VOIDS. FOLLOWING REMOVAL OF FORMS, FINISH MINOR DEFECTS TO BLEND WITH THE BALANCE OF THE SURFACE TEXTURE. THE COMPLETED SURFACE SHALL BE FREE OF BLEMISHES, DISCOLORATIONS, SURFACE VOIDS AND CONSPICUOUS FORM MARKS TO THE SATISFACTION OF THE ENGINEER. THE CONTRACTOR SHALL CORRECT ANY SURFACE DEFECTS AT NO EXTRA COST TO THE PROJECT.

RELEASE AGENTS USED SHALL BE VERIFIED TO BE COMPATIBLE WITH FORM LINER MATERIAL AND WITH THE CONCRETE MIX, AND SHALL BE NON-STAINING. RELEASE AGENT SHALL BE APPLIED IN ACCORDANCE WITH THE FORM LINER MANUFACTURER'S RECOMMENDATIONS.

STRIP FORMWORK USING TECHNIQUES IN ACCORDANCE WITH LINER MANUFACTURER'S RECOMMENDATIONS AFTER THE CONCRETE HAS ACHIEVED THE STRENGTHS AND CURE TIMES REQUIRED BY THE PLANS AND APPLICABLE SPECIFICATIONS AND AFTER THE CONCRETE HAS SUFFICIENT STRENGTH TO AVOID SURFACE DAMAGE. CLEAN AND REPAIR FORM LINER SURFACES PRIOR TO RE-USE. SPLIT, FRAYED, DELAMINATED OR OTHERWISE DAMAGED FORM LINERS SHALL NOT BE USED.

ALL COSTS ASSOCIATED WITH CONCRETE TEXTURING AND FORM LINERS SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "STRUCTURAL CONCRETE (MISCELLANEOUS)".

DESIGN FOR

200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

RUSTICATION AND TEXTURED CONCRETE NOTES

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 17 OF 19 FILE NO. 31286 DESIGN NO. 918

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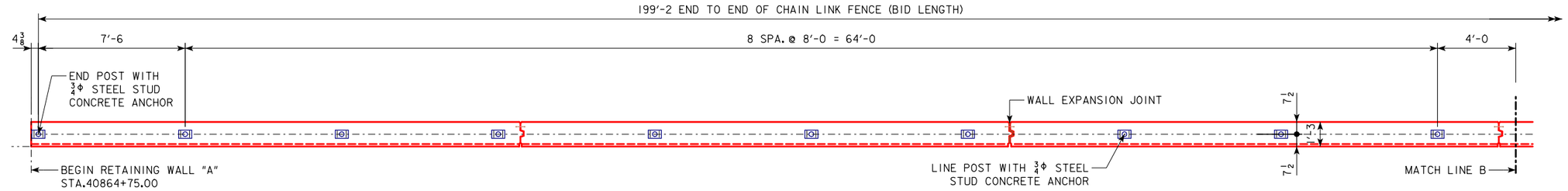
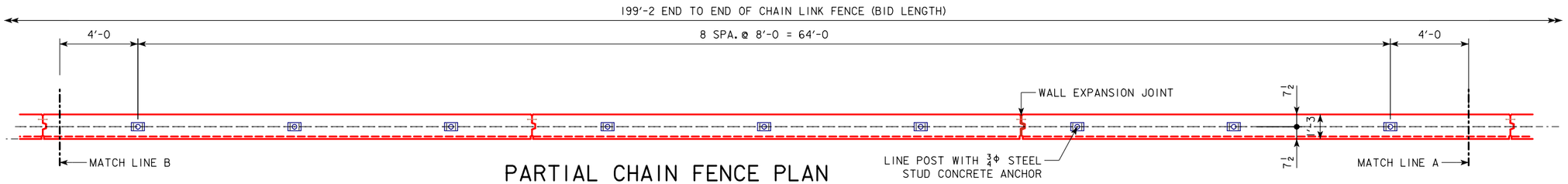
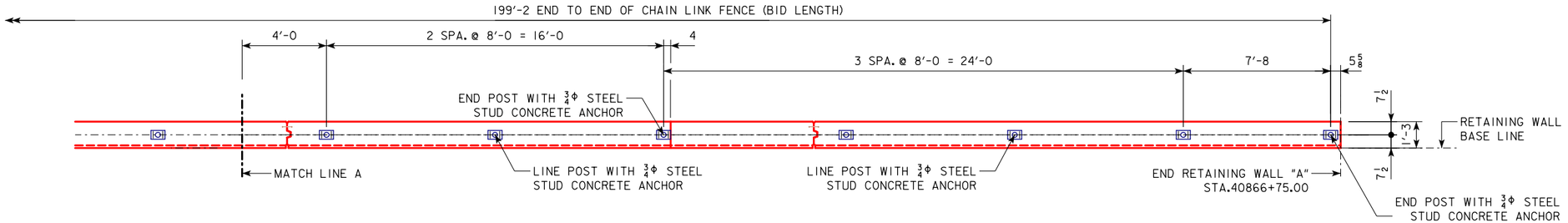


PARTIAL CHAIN FENCE PLAN



PARTIAL CHAIN FENCE PLAN



PARTIAL CHAIN FENCE PLAN

N

STEEL CHAIN LINK FENCE NOTES:

THE CHAIN LINK FENCE IS TO BE BID ON A LINEAR FOOT BASIS MEASURED FROM ℄ TO ℄ OF END POSTS. THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED" SHALL BE FULL COMPENSATION FOR FURNISHING ALL MATERIAL, INCLUDING CONCRETE ANCHORS AND SHIMS, AND ALL OF THE EQUIPMENT AND LABOR REQUIRED TO ERECT THE FENCE IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.

THE STUD CONCRETE ANCHORS SHALL BE GALVANIZED AND HAVE A MINIMUM PULLOUT STRENGTH OF 8000 POUNDS BASED ON 4000 PSI CONCRETE.

THE MATERIAL FOR POSTS, BRACES AND RAILS SHALL BE STEEL PIPE IN ACCORDANCE WITH ARTICLE 4154.10, A, OF THE STANDARDS SPECIFICATIONS. BASE PLATES AND SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A36. POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123. SPECIAL FITTINGS SHALL BE IN ACCORDANCE WITH ARTICLE 4154.11, OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.

THE FENCE SHALL BE TRUE TO LINE, TAUT, AND COMPLY WITH THE BEST PRACTICE FOR FENCE CONSTRUCTION OF THIS TYPE. ALL ENDS OF WIRES SHALL BE TURNED SO THAT THEY EXTEND AWAY FROM THE FILL SIDE OF THE FENCE.

CHAIN LINK FABRIC, RAILS, AND FENCE ACCESSORIES ARE TO BE PVC COATED IN ACCORDANCE WITH ASTM F 668, CLASS 2B. COLOR SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATING IS TO BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED".

AFTER GALVANIZING, THE FENCE POST AND BASE PLATE ASSEMBLIES SHALL BE CLEANED AND PREPARED FOR POWDER COATING IN ACCORDANCE WITH ASTM D 6386, THEN POWDER COATED BY AN APPROVED POWDER COATING SHOP MEETING THE REQUIREMENTS LISTED IN IOWA DOT MATERIALS I.M. 568. PREPARATION FOR POWDER COATING SHALL INCLUDE ZINC PHOSPHATE PRETREATMENT AND PREHEATING OF RAILING COMPONENTS. PREHEATING TEMPERATURE SHALL NOT EXCEED 400° F. POWDER COATING MATERIALS SHALL BE COMPATIBLE WITH THE GALVANIZED COATING. POWDER COATING SHALL INCLUDE THE USE OF DEGASSING GRADE POLYESTER POWDER AND AN ANTI-BLISTERING AGENT. MINIMUM COATING COVERAGE SHALL BE 3 MILS WHEN MEASURED IN ACCORDANCE WITH ASTM D 2967. SUBMIT PROPOSED PREPARATION METHODS AND PRODUCT DATA FOR ALL COATINGS PROPOSED FOR USE TO THE IOWA DOT, OFFICE OF MATERIALS, FOR REVIEW AND APPROVAL PRIOR TO POWDER COATING. COLOR SHALL MATCH FEDERAL STANDARD 595C COLOR NUMBER 27038, SEMI-GLOSS BLACK. PROTECT ALL POWDER COATED RAILING SURFACES FROM DAMAGE DURING SHIPPING, HANDLING, AND INSTALLATION. FOLLOWING FENCE INSTALLATION, REPAIR ANY DAMAGE TO THE POWDER COATED FINISH IN ACCORDANCE WITH THE COATING MANUFACTURER'S RECOMMENDATIONS. ALL COSTS ASSOCIATED WITH POWDER COATING SHALL BE CONSIDERED INCIDENTAL TO THE BID ITEM, "CHAIN LINK FENCE, VINYL COATED".

IF AVAILABLE, VINYL COATED FENCE POST ASSEMBLIES MAY BE SUBSTITUTED FOR POWDER COATED COMPONENTS PROVIDED THE MATERIAL IS IN COMPLIANCE WITH ALL OTHER REQUIREMENTS LISTED IN THESE PLANS AND THE STANDARD SPECIFICATIONS. PVC COATING SHALL COMPLY WITH ASTM F 668, CLASS 2B AND SHALL BE BLACK IN ACCORDANCE WITH ASTM F 934. THE COST OF PVC COATED FENCE POST ASSEMBLIES SHALL BE INCLUDED IN THE PRICE BID FOR "FENCE, CHAIN LINK, VINYL COATED".

QUANTITIES

ITEM	UNITS	AMOUNT
FENCE, CHAIN LINK, VINYL COATED	LIN. FT.	199.2

NOTE:
FOR FENCE DETAILS SEE DESIGN SHEET 15.

DESIGN FOR

200'-0 × VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00
END STATION 40866+75.00

NOVEMBER 2018

CHAIN FENCE PLAN
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. 18 OF 19 FILE NO. 31286 DESIGN NO. 918

DESIGN TEAM HC / TWE / SHUCK-BRITSON

LINN COUNTY | PROJECT NUMBER NHSX-151-3(158)--3H-57 | SHEET NUMBER V.18

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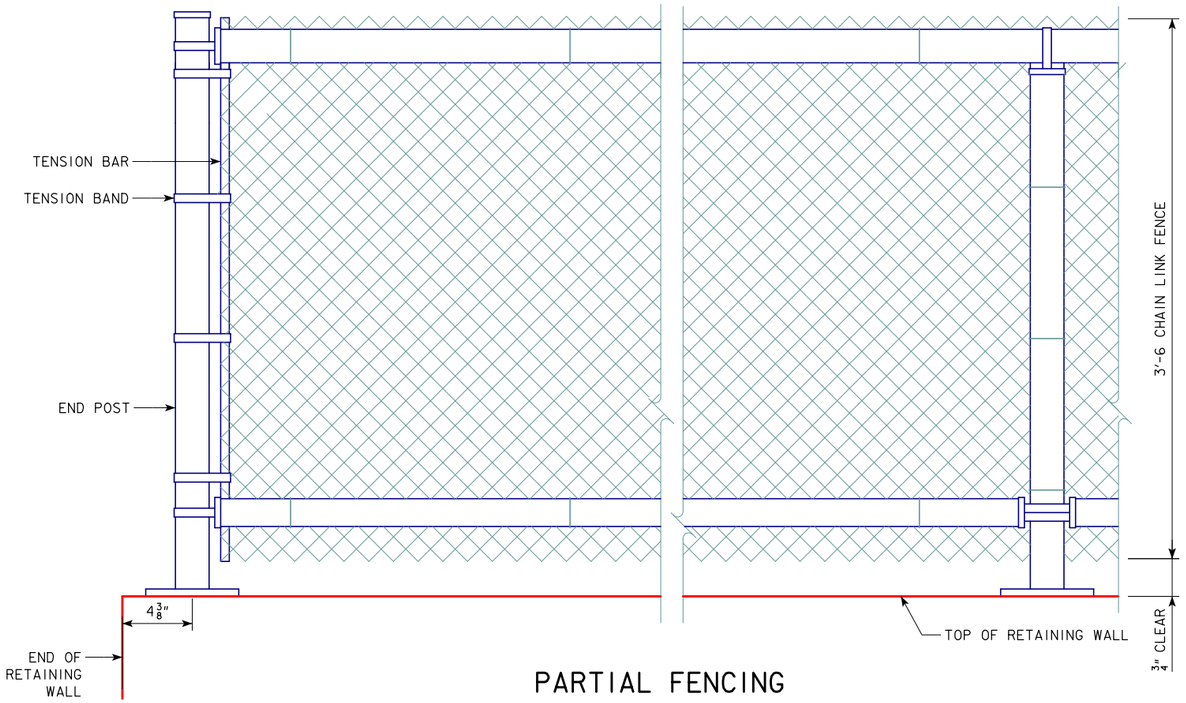

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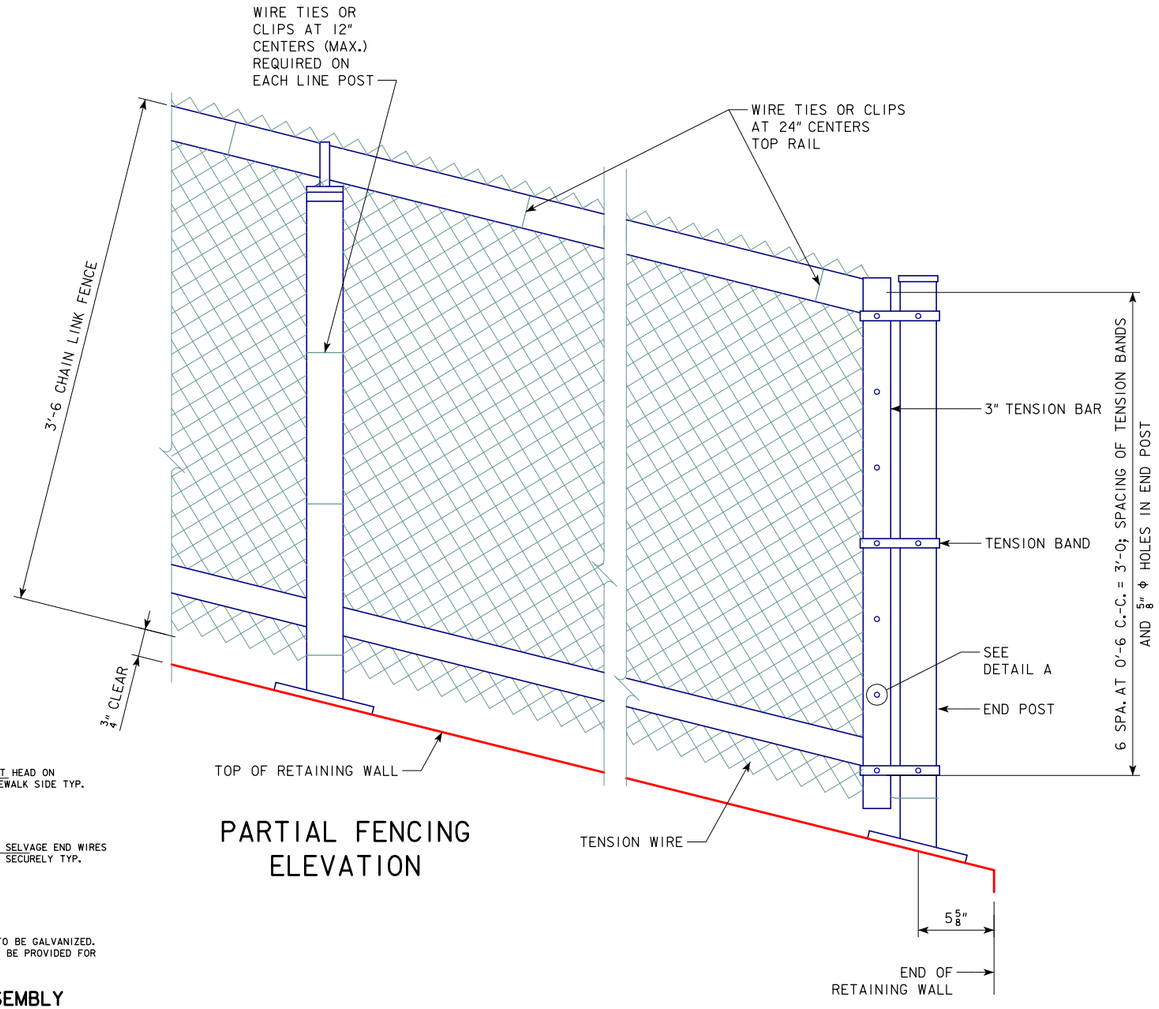

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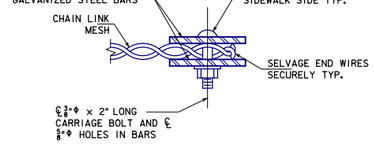
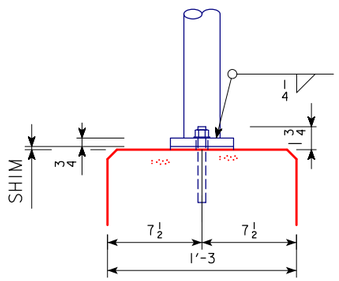
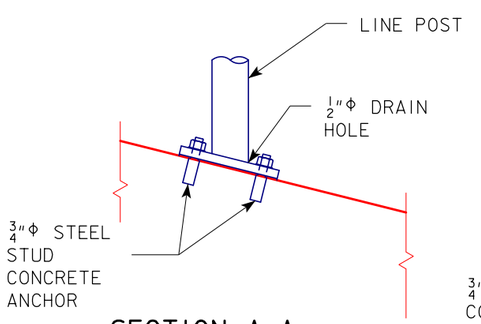


NOTE: CARRIAGE BOLTS, NUTS AND WASHERS ARE TO BE GALVANIZED. ONE LOCKNUT AND ONE STANDARD WASHER ARE TO BE PROVIDED FOR EACH BOLT.

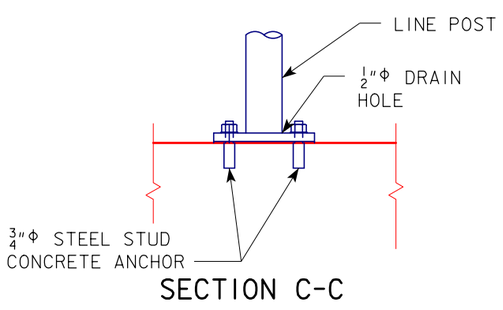
DETAIL 'A' TENSION BAR ASSEMBLY



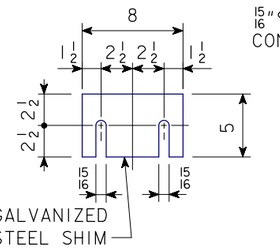
SECTION B-B



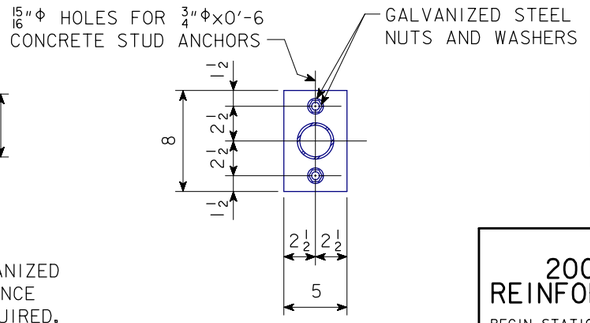
SECTION A-A



SECTION C-C



NOTE: PROVIDE 2-1/16" GALVANIZED STEEL SHIMS FOR EACH FENCE POST, TO BE USED AS REQUIRED.



BASE PLATE DETAILS FOR END POST AND LINE POSTS

NOTE : POSTS AND BASE PLATES SHALL BE GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM A123.

NOTE: USE NO ADDITIONAL BRACE RAILS OR DIAGONAL TENSION RODS IN FENCE CONSTRUCTION.

DESIGN FOR

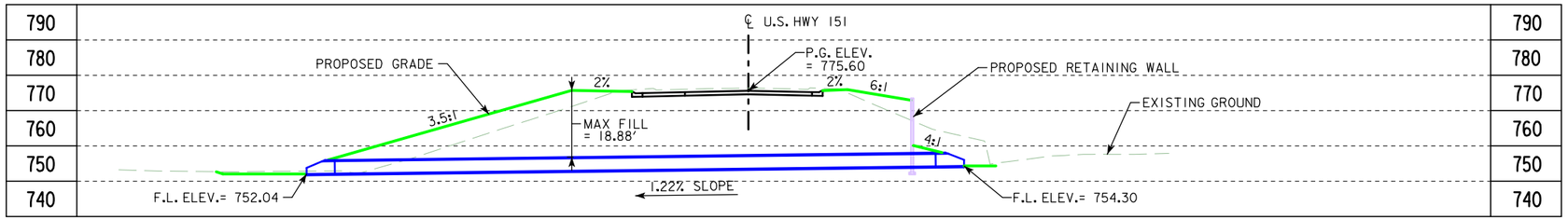
200'-0 x VARIABLE HEIGHT REINFORCED CONC. RETAINING WALL

BEGIN STATION 40864+75.00 NOVEMBER 2018
END STATION 40866+75.00

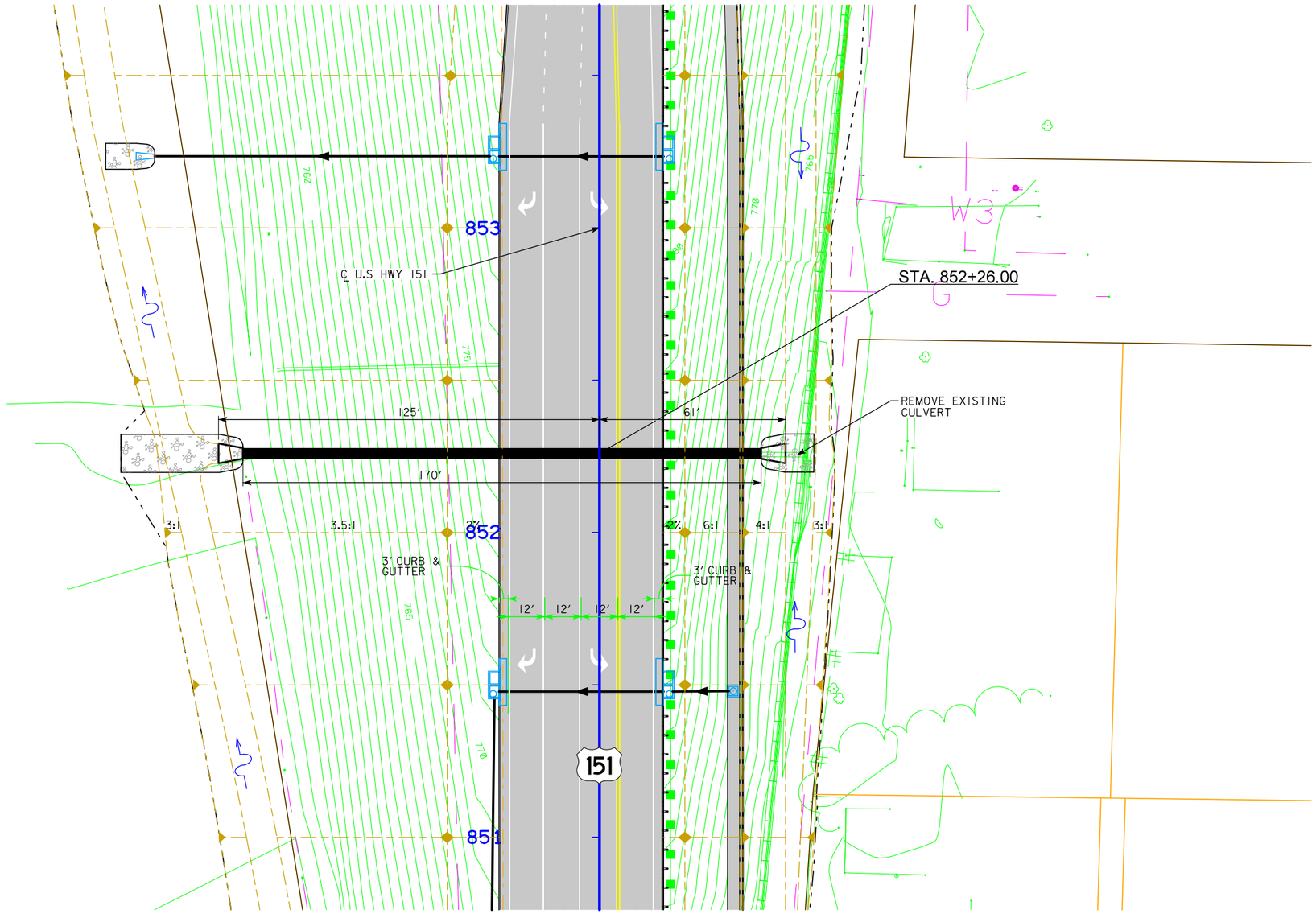
CHAIN FENCE DETAILS LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

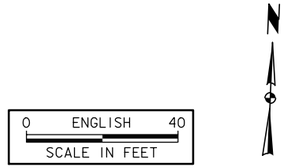
DESIGN SHEET NO. 19 OF 19 FILE NO. 31286 DESIGN NO. 918



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



BENCH MARK: BMI
DESCRIPTION: GIN SPIKE IN POWER POLE, EAST SIDE HWY 151, ACROSS FROM "PIT STOP"
STA. 846+60.91, 23.069' RT.
ELEV. = 763.60

HYDRAULIC DATA

DRAINAGE AREA = 11.97 ACRES ROLLING
DESIGN DISCHARGE, Q_{50}= 35.79 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 16
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

REMOVE EXISTING 3' x 2' BOX CULVERT EXTENDED WITH 36" RCP AND INSTALL NEW 42" PIPE AND APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 170' REINFORCED CONCRETE PIPE

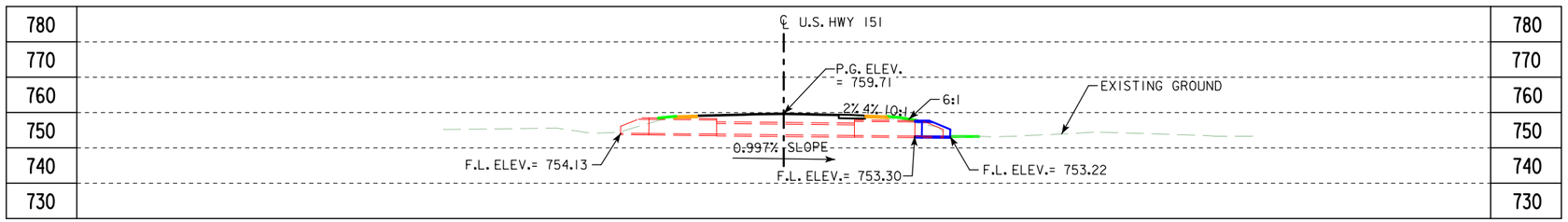
PLAT PLAN

STA. 852+26.00 ℄ U.S. HWY. 151 NOVEMBER 2018

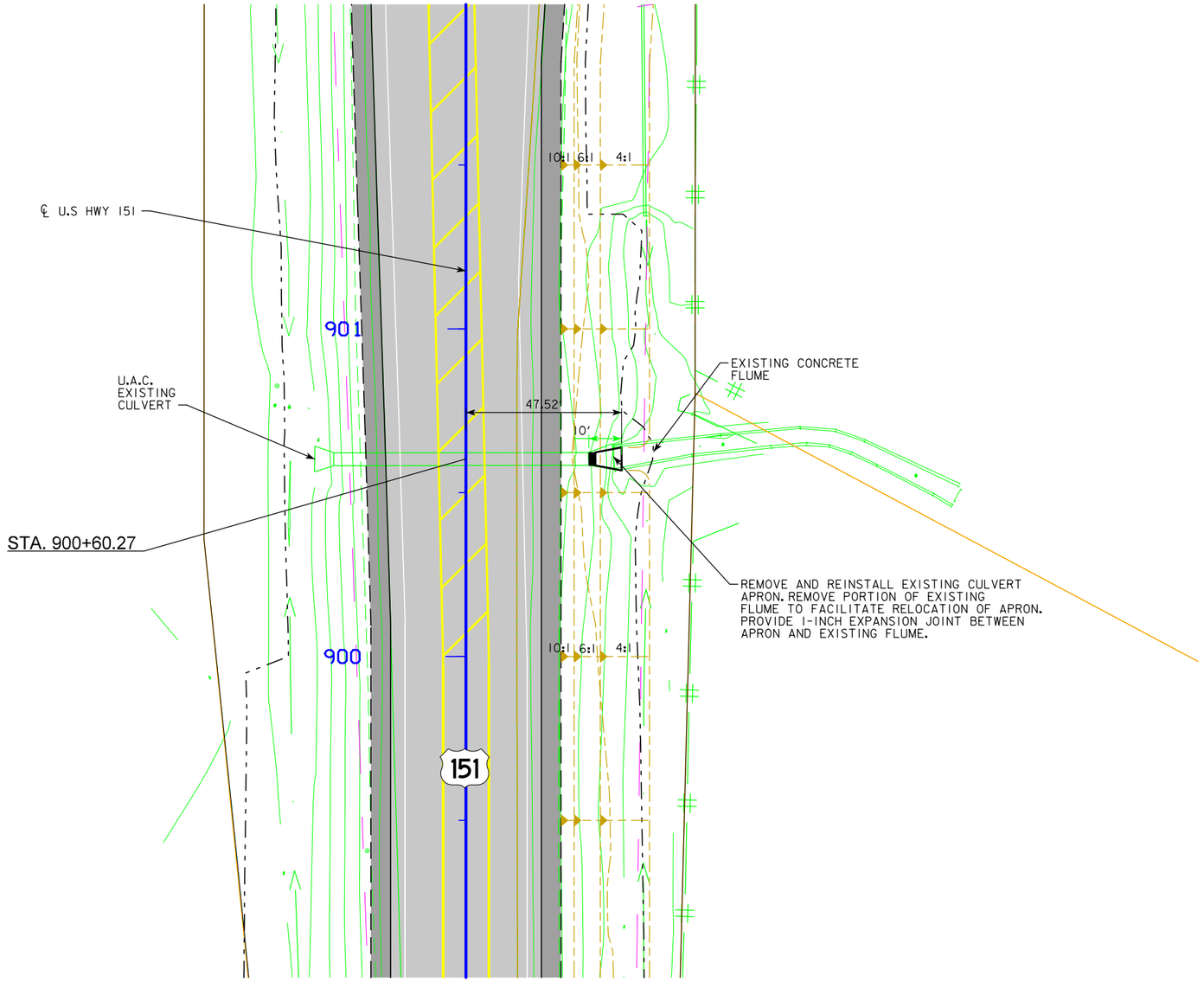
LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

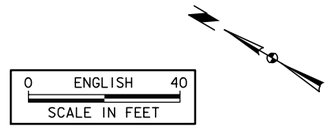
DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



BENCH MARK: #4
DESCRIPTION: RR SPIKE IN POWER POLE, SOUTH SIDE OF 80TH ST SW, 70' +/- WEST OF STOP SIGN ON HWY 151.
STA. 909+53.51, 171.787' LT.
ELEV. = 767.94

HYDRAULIC DATA

DRAINAGE AREA = 67 ACRES ROLLING
DESIGN DISCHARGE, Q = 35.07 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 9
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

REMOVE EXISTING 48" RCP APRON. INSTALL 2' SECTION OF 48" RCP WITH APRON.

DESIGN FOR 0° SKEW R.A.

48" X 2' REINFORCED CONCRETE PIPE EXTENSION PLAT PLAN

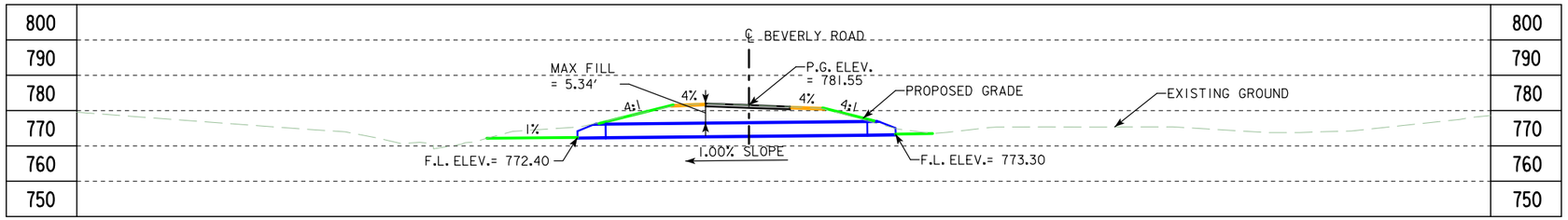
STA. 900+60.27 ℄ U.S. HWY. 151 NOVEMBER 2018

LINN COUNTY

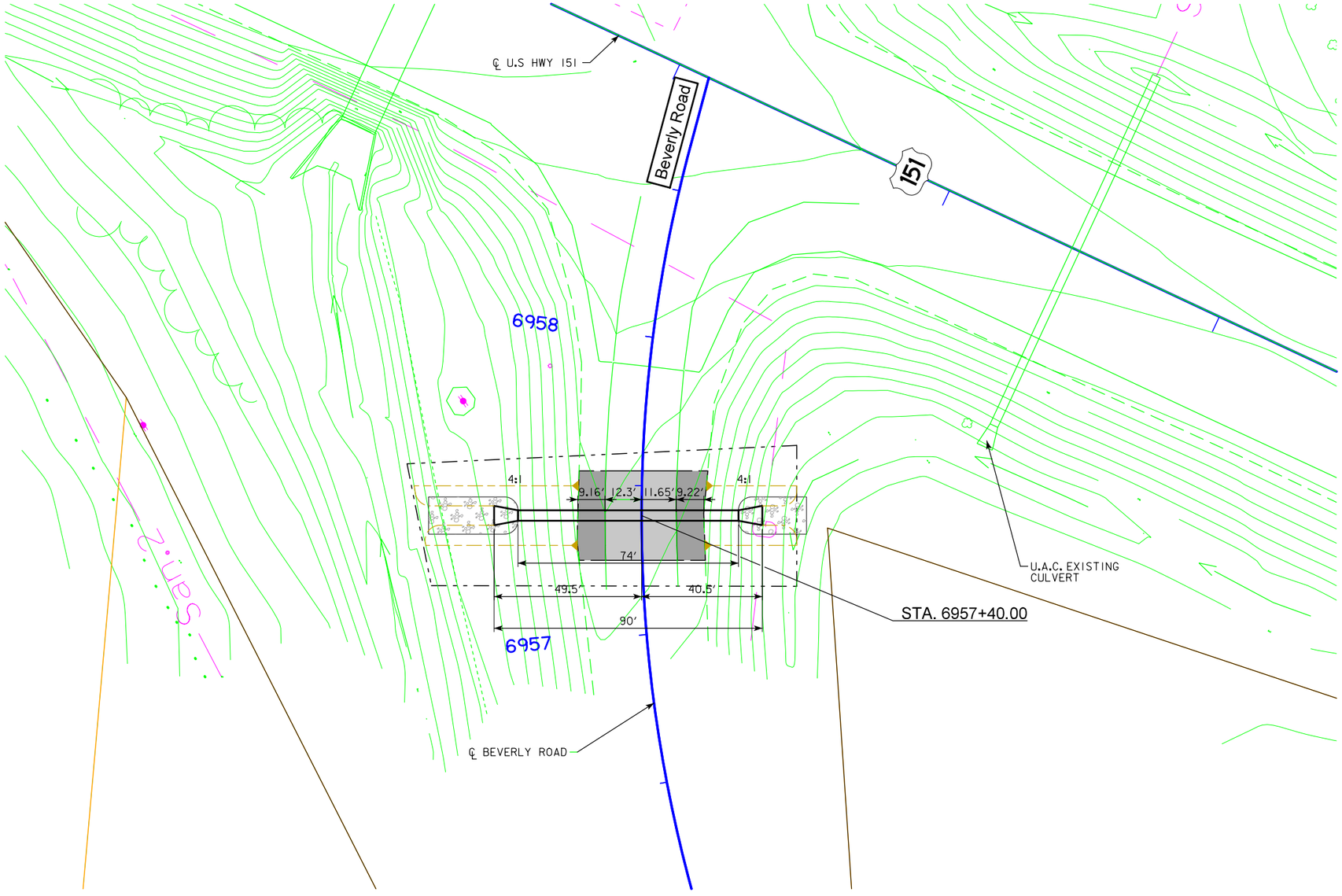
IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

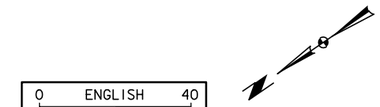
DESIGN TEAM	SNYDER AND ASSOCIATES, INC.	LINN	COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.21



LONGITUDINAL SECTION ALONG ℄ CULVERT



PLAT PLAN



BENCH MARK: #5
DESCRIPTION: GIN SPIKE IN LIGHT POLE, NW QUAD OF BEVERLY DRIVE WEST AND HWY 151
STA. 958+96.64, 109.70 LT.
ELEV. = 781.81

HYDRAULIC DATA

DRAINAGE AREA = 40.3 ACRES ROLLING
DESIGN DISCHARGE, Q_{50}= 67.56 CFS

UTILITIES LEGEND:

REFER TO SHEET D.1

LOCATION

U.S. 151
T-82N R-8W
SECTION 3
FAIRFAX TOWNSHIP
LINN COUNTY

STAGING NOTES

INSTALL 74' LF 42" RCP WITH APRONS.

DESIGN FOR 0° SKEW R.A.

42" X 74'
REINFORCED CONCRETE PIPE

PLAT PLAN

STA. 6957+40.00 ℄ BEVERLY ROAD NOVEMBER 2018

LINN COUNTY

IOWA DEPARTMENT OF TRANSPORTATION - HIGHWAY DIVISION

DESIGN SHEET NO. ____ OF ____ FILE NO. _____ DESIGN NO. _____

DESIGN TEAM	SNYDER & ASSOCIATES, INC.	LINN COUNTY	PROJECT NUMBER NHSX-151-3(158)--3H-57	SHEET NUMBER V.22

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