CITY OF SEWARD
City Council
Regular Meeting
Agenda

Tuesday, April 5, 2022	**7:00 PM**	**Municipal Building Council Chambers**

NOTICE IS HEREBY GIVEN that a meeting of the City Council of the City of Seward, Nebraska will be held at 7:00 PM on Tuesday, April 5, 2022, in the Council Chambers, 142 7th Street, Seward, Nebraska in which the meeting will be open to the public. The Mayor and City Council reserve the right to adjourn into Closed Session as per Section 84-1410 of the Nebraska Revised Statutes. An Agenda for such meeting, kept continually current, is available at the Office of the City Clerk, 537 Main Street, Seward, Nebraska, during normal business hours. Individuals requiring physical or sensory accommodations, who desire to attend or participate, please contact the City Clerk's Office at 402.643.2928 no later than 3:30 PM on the Friday preceding the Council Meeting.

City financial claims and related invoices will be available for Council member review, audit and voluntary signatures at Council Chambers beginning 30 minutes prior to the scheduled meeting time.

CALL TO ORDER
PLEDGE OF ALLEGIANCE
DISCLOSURE OF OPEN MEETINGS ACT & OTHER NOTIFICATIONS
This is an Open Meeting of the Seward Nebraska Governing Body. The City of Seward abides by the Nebraska Open Meetings Act in conducting business. A copy of the Nebraska Open Meetings Act is displayed on the north wall of this meeting room facility as required. Disclosure of meeting recording processes is posted in the Meeting Room. A participant sign-in sheet is available for use by any Citizen addressing the Council. Presenters shall approach the podium, state their name & address for the Clerk's record and are asked to limit remarks to five minutes. All remarks shall be directed to the Mayor who shall determine by whom any appropriate response shall be made. The City of Seward reserves the right to adjust the order of items on this Agenda if necessary and may elect to take action on any of the items listed.
ROLL CALL
MINUTES
1. Draft Minutes of March 15, 2022 Meeting - City Clerk Bargmann

March 15, 2022

The Seward City Council met at 7:00 p.m. on Tuesday, March 15, 2022 with Mayor Joshua Eickmeier presiding and Deputy Clerk Mindy Meier recording the proceedings. Upon roll call, the following Councilmembers were present: Ellen Beck, Alyssa Hendrix, Sid Kamprath, Jessica Kolterman, Karl Miller, Jonathon Wilken, Matt Stryson. Councilmembers Absent: John Singleton. Other officials present: City Administrator Greg Butcher, City Attorney Kelly Hoffschneider, Building/Zoning & Code Enforcement Tim Dworak, City Engineer Michael Oneby, Tim Richtig Water/Wastewater Director, and Chief of Police Brian Peters.

Notice of the meeting was given in advance thereof by the method of communicating advance notice of the regular and special meetings of the City Council of the City of Seward, Nebraska, as stated in Ordinance No. 2015-08, which was adopted on the 5th day of May, 2015; said method stating that the notice of such meeting, with the agenda thereon, be posted in the following places: City Hall, Municipal Building, Seward County Courthouse, CityofSewardNE.com, and Seward Memorial Library. The certificate of posting notice is attached to these minutes. Notice of this meeting was simultaneously given to the Mayor and all members of the City Council and a copy of their acknowledgment of receipt of notice and the agenda are attached to these minutes. Availability of the agenda was communicated in the advance notice and in the notice to the Mayor and Council of this meeting. All proceedings hereafter shown were taken while the convened meeting was open to the attendance of the public.

THE PLEDGE OF ALLEGIANCE

Mayor Eickmeier announced that a copy of the Agenda for this meeting is posted in the Council Chambers of the Municipal Building and copies are available where a copy of the Open Meetings Act is also posted for public inspection. He also noted that any citizen wishing to address the Council should come to the podium, state their name and address and limit their comments to five minutes. All remarks should be directed to the Mayor/Chairperson, who will then determine who will make any appropriate response. The City of Seward reserves the right to adjust the order of items on this agenda if necessary and may elect to take action on any of the items listed.

APPROVAL OF MINUTES OF March 1, 2022 COUNCIL MEETING

Councilmember Stryson moved, seconded by Councilmember Wilken, that the minutes of the March 1, 2022 City Council meeting be approved.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

CONSENT AGENDA CONSIDERATION ITEMS

The following Consent Agenda items were approved in one single motion made by Councilmember Kolterman, seconded by Councilmember Miller:

1. Claims & Payables Reports

CLAIMS LIST
3-15-22

COUNCIL MEETING

Abbreviations: BE, Benefits; BU, Building Upkeep; CI, Capital Improvements; DO, Donations; EQ, Equipment; EX, Expense; FA, Fixed Asset; GS, Gas; GU, Ground Upkeep; IT, Technology; IV, Inventory; MA, Maintenance; MC, Miscellaneous; MH, Merchandise; MI, Mileage; ML, Meals; MS, Memberships; OI, Oil; OP, Operations; PO, Postage; PU, Publications; RE, Repairs; RI, Reimbursement; SA, Salaries, SE, Services; SL, Sales; ST, Sales Tax; SU, Supplies; TG, Training; TO, Tools; TR, Transfer; UN, Uniforms; UT, Utilities,

All Copy Products Inc	MA	10.12
Akrs Equipment Inc	SU	20.76
All Road Barricades Inc	SU	1,115.22
Amazon.Com Credit Service	SU	2,049.93
ARPS	CI	2,165.63
Baker & Taylor	SU	2,135.45
Baker Becky J	RI	109.94
Barco Municipal Products	SU	426.21
Bargmann Derek	RI	233.95
Bizco Technologies	IT	1,276.48
Bobcat Of Omaha	FA	28,000.00
Burlington Northern Santa	MC	710.92
C N A Surety	MS	100.00
Callaway Golf	MH	1,078.02
Campbell Cleaning	SE	1,350.00
Capital Business-Cheyenne	MA	9.04
City Seward Electric Fund	UT	45,292.90
City Seward Library Petty	RI	330.22
City Seward Merchant Serv	SE	2,526.95
City Seward Payroll Accou	SA	156,733.77
City Seward Perpetual Fd	SL	900.00
Constellation Newenergy	UT	2,624.17
Dane Refuse & Recycling	MC	241.67
Danko Emergency Equipment	UN	352.72
Electronic Contracting Co	SE	321.00
Emergency Medical Product	SU	500.12
Envision Electric LLC	BU	4,144.75
Exchange Bank	FA	3,300.00
Farmers Coop Seward	GS	2,353.18
Fast Mart	SU	90.00
Frazey Russell	RI	65.03
Fyr-Tek	EQ	1,094.66
Galls LLC	UN	401.75
Gerhold Concrete Co Inc	GU	960.68
Graham Tire	SU	556.08
Hach Company	MA	4,205.98
Hansent Int'L Truck Inc	RE	703.78
Hobson Automotive & Tire	RE	132.00
Hoffschneider Law PC LLO	SE	4,750.00
Home Depot Pro	SU	149.76
Jackson Services Inc	SU	81.64
JEO Consulting Group	SE	7,165.00

Kahler Daniel S	RI		110.00
Last Mile Network Consult	IT		90.00
League NE Municipalities	TG		735.00
Lincoln Winwater Works	IV		252.12
Matheson Tri-Gas Inc	OP		114.34
Merle'S Flower Shop	SU		100.00
Mid-American Benefits Inc	BE		1,008.00
Midwest Auto Parts	RE		702.93
Midwest Turf & Irrigation	RE		4.99
Municipal Supply Omaha	SU		262.45
Mustang Graphics	SE		176.00
My-Lor Inc	SU		191.85
Nebraska Equipment Inc	GS		29.98
Nebraska Golf & Turf	RE		70.01
Nebraska Health Environme	MA		168.00
Nebraska Society Certifie	TG		129.00
Nebraska Treasurer	MC		9.76
Nifco Mechanical Systems	SE		200.00
Norris Public Power Distr	UT		484.00
Northern Safety Co Inc	SU		151.75
Odeys Inc	GU		680.70
Olsson	SE		5,145.50
One Call Concepts Inc	SE		81.40
O'Reilly Automotive Inc	SU		111.59
Orscheln Farm & Home	SU		455.63
Pac 'N' Save Discount Foo	ML		2,274.10
Pipher Jim	SE		350.00
Policky Brandon A	RI		117.70
Promes Golf Cart Service	RE		317.40
Quill Corp	SU		55.58
Resco	IV		67,635.00
Riverside Portables LLC	SE		100.00
Security Equipment Inc	BU		383.40
Seward County Chamber & D	MC		998.03
Seward County Ema	SU		6.00
Seward County Independent	PU		996.61
Seward County Treasurer	SE		15,949.25
Seward Electronics	SU		229.50
Seward Lumber & Home Cent	SU		529.28
Seward Public Schools	MC		20.00
Seward Wind LLC	UT		49,489.34
Sommerfeld Allison N	RI		216.74
Sparetime Lounge & Grill	ML		2,570.51
Sports Express	UN		98.60
U S A Bluebook - Cust 812	SU		221.44
Verizon Wireless	SU		511.58
Visa - Pinnacle Bank			629.54
Bluestem	SE	115.00	
Demco	SU	88.34	

Harlequin	SU	28.26	
Paypal - Schifferdecker	SU	27.00	
Sam's Club	SU	246.98	
Walmart	SU	107.93	
Zoom	SE	16.03	
Voehl Cindy	MI		9.36
Wake Max T/Elizabeth B	MC		3,416.26
Webcemeteries	IT		9,381.80
Wesco Distribution Inc	IV		438.43
Windstream Nebraska Inc	SE		1,929.99
Yellow Robe, Colette	SE		250.00
Zimco Supply Co	RE		7,359.05
	CLAIMS TOTAL		$458,718.97

2. City Treasurer Report
3. City Codes Director Report
4. Police Department Report

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

CONFIRMATION OF MAYOR APPOINTMENTS

1. REAPPOINT MEMBERS TO VARIOUS BOARDS AND COMMITTEES

Councilmember Beck moved, seconded by Councilmember Stryson, that Mayor Eickmeier's appointments to the following Boards and Commissions be confirmed:

Kevin Sagehorn to the LB840 Sales Tax Application Review Board for a Term of 3- Years.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

PUBLIC HEARINGS

1. PUBLIC HEARING – 7:00 PM – CONSIDERATION OF A RESOLUTION APPROVING THE REDEVELOPMENT PLAN AMENDMENT FOR THE PROJECT SUPERIOR REDEVELOPMENT PROJECT

This public hearing was postponed.

2. ORDINANCE APPROVING THE PRELIMINARY AND FINAL PLAT OF BLUFF ROAD ACRES

Building/Zoning & Code Enforcement Director Tim Dworak informed this is an application to subdivide 80 acres into 8 Rural Residential lots at the southeast corner of 252nd Road and Bluff Road in the ETJ (Extra Territorial Jurisdiction). The Planning Commission addressed three minor concerns: 1 – number of driveways exiting off of Bluff Road. The plat was submitted to Seward County Highway Superintendent. He did not see an issue with it. Each driveway will require a permit to the county for review to make sure the placement of the driveway is adequate. 2 - available water. Thomas Kayton

supplied a copy of the well counts in the area along with the details of the those wells existing. Planning & Zoning Commission Chairman Ron Wallman stated that it would be very difficult to guarantee that every lot would have water. The buyer will need to research if water would be available for the lot they purchase. 3 – best use practice. The property is hilly and has drainage running through the property. They recommended the plat would be better used as a residential area.

Councilmember Beck inquired what kind of due diligence would the buyer have to do and what would the cost be.

Dworak informed Ernst Wells supplied the information. They advised there is water, but how much they don't know. Every buyer in Rural Residential area will want to make sure there is water available.

Councilmember Stryson asked if the other homeowner's wells are protected in that area.

Dworak commented he was not sure and that it would be the responsibility of the home owner to confirm this information.

Mayor Eickmeier opened the public hearing at 7:08pm.

Thomas Kayton, 1119 Augusta Drive, stated he and his business partner are planning on moving to this area. They plan on splitting off six, 5-acre parcels as well.

Councilmember Hendrix questioned if lots 7 & 8 will also be residential and if there are easements filed along with this plat.

Kayton commented the six, 5-acre lots would have access from Bluff Road. One 25-acre parcel will have access from Bluff Road and the other 25-acre parcel on the south side will have access from 252nd. The county confirmed that all those driveways would be permitted. Dworak advised they did include easements on the plats just in case they ever needed access to these properties.

Josh Maurer, 1025 Cypress Blvd, Hickman, Nebraska, stated he looks forward to moving to this area if the council approves this plat.

Diane Hofer, 1545 252nd Rd, stated there is a water issue and she is concerned with the increased traffic on the roads in this area.

Marla Baumbach, 1560 252nd Rd, stated water is an issue there and increased traffic is a concern.

Jonathan Jank, 1616 Bradford St., advised the current housing study (between 2019 and 2023) shows there is a demand for more housing units in Seward.

With no further comments, Mayor Eickmeier closed the public hearing at 7:16pm.

Councilmember Hendrix questioned when does this property in the ETJ become an issue for the City with water supply.

City Administrator Butcher advised when we annex a property, the City needs to be able to provide water, sewer and electric.

Councilmember Kolterman introduced Ordinance No. 2022-2. Councilmember Kolterman moved, seconded by Councilmember Miller to dispense with the statutory rule. Councilmember Kolterman moved, seconded by Councilmember Miller, that the minutes of the proceedings of the Mayor and Council of the City of Seward, Seward County, Nebraska in the matter of passing and adopting: **Ordinance No. 2022-2**, "AN ORDINANCE TO APPROVE THE PLAT ENTITLED "BLUFF ROAD ACRES", A PLAT OF LAND LOCATED IN THE N1/2 OF THE NW1/4 OF SECTION 23, TOWNSHIP 11 NORTH, RANGE 3 EAST OF THE 6TH P.M., SEWARD COUNTY, NEBRASKA," AS HEREINAFTER SET FORTH; TO PROVIDE FOR PUBLICATION OF THIS ORDINANCE IN PAMPHLET FORM; TO PROVIDE FOR A TIME WHEN THIS ORDINANCE SHALL TAKE EFFECT."

Aye: Beck, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: Hendrix.
Absent: Singleton. Motion carried.

3. ORDINANCE RE-ZONING PROPERTY IDENTIFIED AS BLUFF ROAD ACRES

Building/Zoning & Code Enforcement Director Tim Dworak informed the applicant is requesting a rezone from AG-Agricultural District to RR-Rural Residential District. The major subdivision application requests subdividing a parcel of land for the purpose of single-family homes from agricultural land. The parcel meets zoning requirements for rural residential. The current property is located outside of the city limits of the City of Seward but is within the Extra Territorial Jurisdiction (ETJ) of the City of Seward.

Mayor Eickmeier opened the public hearing at 7:24pm. With no public comments, Mayor Eickmeier closed the public hearing.

Councilmember Beck introduced Ordinance No. 2022-3. Councilmember Kolterman moved, seconded by Councilmember Miller to dispense with the statutory rule. Councilmember Beck moved, seconded by Councilmember Miller, that the minutes of the proceedings of the Mayor and Council of the City of Seward, Seward County, Nebraska in the matter of passing and adopting: **Ordinance No. 2022-3**, AN ORDINANCE TO AMEND THE OFFICIAL ZONING MAP OF THE CITY OF SEWARD, NEBRASKA; TO REZONE CERTAIN PROPERTY WITHIN THE EXTRA TERRITORIAL JURISDICTION OF THE CITY OF SEWARD, NEBRASKA NOW ZONED AG AGRICULTURAL DISTRICT, TO RR RURAL RESIDENTIAL DISTRICT; SPECIFICALLY, TRACTS OF LAND SOUTH OF BLUFF ROAD AND EAST OF 252ND RD; TO DESCRIBE THE PROPERTY REZONED; TO PROVIDE FOR PUBLICATION OF THIS ORDINANCE IN PAMPHLET FORM; TO PROVIDE FOR A TIME WHEN THIS ORDINANCE SHALL TAKE EFFECT.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

Councilmember Kamprath moved, seconded by Councilmember Kolterman that all ordinances be added to the permanent record.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

ADMINISTRATIVE ITEMS

1. AGREEMENT FOR PROFESSIONAL ENGINEERING SERVICES WITH THE SCHEMMER ASSOCIATES FOR PRELIMINARY AND FINAL DESIGN OF STORM SEWER IMPROVEMENTS FOR PARK AVENUE (6th-8th STREETS) AND BRADFORD STREET (5th-10th Streets)

City Engineer Oneby informed this is an agreement for design services. The total amount of this agreement is $700,550. The three projects include: 1 – storm sewer from 6th & Cedar, down to Park Ave. to 8th St., 2 – Hillcrest from Ironwood and 7th St., down 8th Street and Park Ave. 3 - Bradford from 5th Street to 12th Street. It includes a portion of Roberts Street from 5th to 6th. The last two projects are recommended by the NDOT as part of the Hwy 15 reconstruction project, which is supposed to begin spring of 2024 and be completed by June of 2025. These projects are all interconnected, so they have been all given to the engineering firm at one time.

Councilmember Stryson questioned how many engineering firms were considered for these projects.

City Engineer Oneby advised quotes were not solicited. The City has four engineering companies that they work with primarily: Olsson, JEO, Schemmer and SEH. Schemmer submitted a proposal and Administration accepted.

Councilmember Beck recapped the question that the projects were not being bid out.

City Administrator Butcher advised that for professional services the most that would be requested was qualifications. For the Wastewater Treatment Plant they required qualifications since that is an $18 million project. However, for these smaller projects we use engineering companies that the City has worked with before. The qualifications process would take 2 to 3 months before we could start. The City doesn't have any contractual obligations by state law to bid out professional services.

Councilmember Kamprath commented that even if City Administration wouldn't normally undertake a bidding process, the Council could request this process. City Administrator Butcher responded affirmatively.

Councilmember Stryson wanted to know if there will be a list of recommended engineering firms from DOT. City Engineer Oneby responded that all of the engineers he has worked with have DOT standard specifications and details.

Councilmember Kolterman moved, seconded by Councilmember Kamprath, to approve the contract with Schemmer Associates for professional engineering services.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

2. APPROVAL OF SPECIFICATIONS AND CONTRACT DOCUMENTS FOR NEW WELL DEVELOPMENT OF SEWARD WELLS SW3, S4 AND PIPING

Water/Wastewater Director Richtig informed they are looking at two sites for a new well development. One well is an abandoned irrigation well, SW3. There were no signs of nitrates from this well in the three tests that were done within the last three years. It does have a higher rating of

uranium and gross alpha, but the Reverse Osmosis (RO) plant can take that out. The well companies can also put a sealant to keep blue clay (uranium and gross alpha) from coming into the water as well. The other site (S4) was found in a search for the Dakota Aquifer, south of the airport. This well is about 500ft deep and the water is of very good quality. It was tested and there were no nitrates. Both of these wells have permits and have been approved by the DNR and NRD. They are ready to start on the project.

Councilmember Kamprath moved, seconded by Councilmember Stryson, to accept the approval of specifications and contract with Miller & Associates.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

3. CONSIDERATION OF A RESOLUTION TO SET SEWER RATES BASED ON JANUARY & FEBRUARY 2022 CONSUMPTION FOR A 12-MONTH PERIOD STARTING APRIL 2022

City Administrator Butcher advised this came to him from Councilmember Kamprath. Kamprath questioned if we were still setting our sewer rates based on the winter months (January, February, and March). It was noted that due to the ongoing drought, the March bills might be higher which would skew the rates to the detriment of customers. This March there has been such a major drought that people have been watering their lawns and irrigating more. This would impact the citizens water bill for the entire year based on the way sewer bills are averaged over the winter months. Kamprath then inquired if there is a way to eliminate March. After researching and checking with the City Attorney, we are able to do a one-time resolution excluding March.

Councilmember Kolterman introduced the following resolution:

RESOLUTION NO. 2022-12

WHEREAS, Section 325-8.1 of the City Municipal Code of the City of Seward, Nebraska provides that annual residential sewer charges are based upon water consumption billed in January, February, and March;

WHEREAS, the City of Seward and State of Nebraska has seen extreme winter drought in the winter of 2021-2022; and

WHEREAS, early season watering has been recommended in March 2022 to assist trees, plants, and turf to properly grow.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF SEWARD, NEBRASKA THAT:

1. That residential sewer rates for the 12 months beginning April 2022 shall be based on an average of the water consumption billed in January 2022 and February 2022.

3. All previous resolutions in conflict with this resolution as they relate of the above described area or portion of street are hereby revoked

Dated: _____ day of _____, 2022

THE CITY OF SEWARD, NEBRASKA

ATTEST:

_____
Joshua Eickmeier, Mayor

_____
Derek Bargmann
City Clerk

Councilmember Beck moved, seconded by Councilmember Hendrix, to approve Resolution 2022-12, which will set sewer rates on January & February 2022 consumption for a 12-month period starting April 2022.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

REPORTS

1. CITY ADMINISTRATOR'S REPORT

Councilmember Kolterman moved, seconded by Councilmember Stryson, that City Administrator Butcher's report of March 15, 2022 be accepted.

Aye: Beck, Hendrix, Kamprath, Kolterman, Wilken, Stryson, Miller.
Nay: None.
Absent: Singleton. Motion carried.

FUTURE REQUESTS FOR COUNCIL AGENDA ITEMS OR ADMINISTRATIVE ACTION

None.

ANNOUNCEMENT OF UPCOMING EVENTS

March 21, 2022 – 54th Annual Seward County Ag Banquet
March 31, 2022 – COVID 19 Zoom Meeting
April 15, 2022 - Seward Downtown Revitalization Grant Application
April 23, 2022 – Seward County Clean-up Day
April 28, 2022 – Business Anniversaries Luncheon

STRATEGY SESSION

1. STRATEGY SESSION WITH CITY ATTORNEY TO PROVIDE NEGOTIATION GUIDANCE CONCERNING REAL ESTATE INTERESTS AT THE COMMERCIAL RAIL CAMPUS DEVELOPMENT AREA

At 8:10 p.m., Councilmember Miller moved, seconded by Councilmember Kamprath, that the Council enter a closed session with the Mayor, City Administrator, City Attorney, for the protection of the public interest and to

discuss real estate interests and to provide the City Attorney with negotiating guidance for a period not to exceed 30 minutes.

Aye: Beck, Hendrix, Kamprath, Kolterman, Miller, Stryson, Wilken.
Nay: None
Absent: Singleton. Motion carried.

Mayor Eickmeier stated the Council has voted to go into closed session for the protection of the public interest and to discuss real estate interests and to provide the City Attorney with negotiating guidance.

At 8:40 p.m., the closed session ended, and the following Councilmembers reconvened to regular session: Beck, Miller, Kamprath, Kolterman, Stryson, Wilken.

Mayor Eickmeier announced that no formal action was taken during the executive session.

MOTION TO ADJOURN

Councilmember Kamprath moved, seconded by Councilmember Kolterman, that the March 15, 2022 City Council Meeting be adjourned.

Aye: Beck, Hendrix, Kamprath, Kolterman, Miller, Wilken, Stryson.
Nay: None.
Absent: Singleton. Motion carried.

Adjourned approximately 8:40 p.m.

THE CITY OF SEWARD, NEBRASKA

_____
Joshua Eickmeier, Mayor

_____
Mindy Meier
Deputy Clerk

CONSENT AGENDA

1. Claims & Payables Reports

CLAIMS LIST
4-5-22

COUNCIL MEETING

Abbreviations: BE, Benefits; BU, Building Upkeep; CI, Capital Improvements; DO, Donations; EQ, Equipment; EX, Expense; FA, Fixed Asset; GS, Gas; GU, Ground Upkeep; IT, Technology; IV, Inventory; MA, Maintenance; MC, Miscellaneous; MH, Merchandise; MI, Mileage; ML, Meals; MS, Memberships; OI, Oil; OP, Operations; PO, Postage; PU, Publications; RE, Repairs; RI, Reimbursement; SA, Salaries, SE, Services; SL, Sales; ST, Sales Tax; SU, Supplies; TG, Training; TO, Tools; TR, Transfer; UN, Uniforms; UT, Utilities.

ADE	SU		30.00
All Road Barricades Inc	SU		2,035.57
Awards Unlimited Inc	MC		7.50
Barco Municipal Products	SU		1,728.55
Bargmann Derek	RI		67.31
Black Hills Energy	UT		2,022.67
Blackburn Manufacturing C	SU		273.56
Blue Cross Blue Shield Ne	BE		58,751.77
Blue Valley Public Safety	MA		981.19
Bluestem Network Llc	SE		100.00
Callaway Golf	MH		3,116.14
Campbell Cleaning	SE		1,460.00
Capital Business-Dallas	MA		371.00
Carroll Construction Supp	CI		1,806.31
Cash-Wa Distributing Co	ML		186.88
Cerny Dan	RI		212.97
Chase Card Service			4,060.34
Amazon	SU	533.25	
AWWA	TG	75.00	
Best Buy	SU	42.89	
Constant Contact	MS	20.00	
Disc Golf NE	GU	427.99	
Dragon Palace	ML	123.92	
Epic Sports	EQ	-235.63	
ITPA	TG	30.00	
Microsoft	MS	158.90	
Peekaboo Baby	RI	29.96	
PlanZone	TG	100.00	
Sam's Club	SU	79.27	
SpareTime	ML	643.65	
The Fort	UN	979.59	
Unique Sports	EQ	75.00	
USPS	PO	145.76	
Virtual Tree	TG	60.00	
Walmart	SU	484.90	
Wanda's Kitchen	ML	72.00	
Zoom	MS	213.89	
City Seward Buildings/Gr	RI		3,000.00
City Seward Electric Fund	UT		37,034.18

City Seward Payroll Accou	SA	157,518.82
Conner Psych Services	SE	385.00
Constellation Newenergy	UT	1,944.77
Eakes Office Solutions	SU	33.63
Farmers Valley Football	MS	100.00
Foreup Golf Software Inc	IT	455.00
Garland Youth Sports	MS	275.00
General Code	PU	1,422.15
Great Plains Communicatio	SE	490.00
H&S Plumb Heat & Air Inc	BU	416.82
Hansen Dan	OP	90.00
Hartmann Custom Service C	CI	7,359.00
Hobson Automotive & Tire	RE	841.50
Home Depot Pro	SU	55.68
Hornung'S Golf Products I	MH	240.48
Interstate All Battery Ce	RE	63.00
Janicek Gary M	OP	90.00
John Henry's	BU	699.08
K & Z Distributing	SU	205.35
Kocian Tyler	OP	90.00
Last Mile Network Consult	IT	75.30
Lee's Refrigeration	BU	115.00
Lincoln Winwater Works	RE	310.30
Lintt Mark	OP	90.00
Mailand's Clothing	UN	40.00
Mid-American Benefits Inc	BE	686.15
Midwest Laboratories Inc	CI	1,411.77
Midwest Turf & Irrigation	RE	668.83
Miers Robert M	OP	90.00
Milford City Of	MS	500.00
Miller Seed Co	GU	56.64
Morrow & Associates Inc	SE	150.00
Nebraska D A S Acct Ocio	MA	231.00
Nebraska Health Human Wtr	MA	124.00
Nebraska Society Certifie	TG	420.00
Nebraska Spray Foam Llc	RE	376.30
Nebraska State Patrol	OP	837.00
Nebraskaland Tire	RE	594.99
Northwest Electric, LLC	RE	10,162.99
Oborny Tanner	OP	90.00
O'Kief John F	OP	90.00
One Source Background Che	SE	97.00
Orscheln Farm & Home	SU	772.68
Policky Brandon A	OP	90.00
Pollak Douglas W	OP	90.00
Principal Financial Group	BE	2,324.81
Quality Brands Of Lincoln	SU	629.80
Quill Corp	SU	175.74
Rathjen Shad	OP	90.00
Richtig Tim L	OP	90.00

Sapp Brothers Petroleum I	GS	13,414.00
Sargent Drilling Inc	GU	300.00
Seward County EMA	SU	6.00
Siteone Landscape Supply	SU	1,115.99
Snap-On Tools Kaiser Ben	TO	558.00
St P J Supply Inc	SU	94.95
State Distributing Co	SU	187.40
Subsurface Solutions	IV	892.19
Time Warner Cable	SE	800.87
Total Fire & Security Inc	MA	420.00
U S A Bluebook - Cust 812	MA	3,425.51
Verizon Wireless	SE	476.28
VW Golf Inc	MH	68.30
Watson Wendell B	OP	90.00
Wells Implement Inc	FA	16,082.00
Wesco Distribution Inc	IV	3,296.03
York Equipment	RE	1,152.47
	CLAIMS TOTAL	$353,881.51

ADMINISTRATIVE ITEMS

1. Presentation of the East Seward Street Concrete Project Plans & Specs (City Limit to Hwy 34) - City Engineer Oneby

EXISTING

- RIGHT OF WAY
- PERMANENT EASEMENT
- PROPERTY LINE
- HORIZONTAL CONTROL POINT
- BENCHMARK
- SURVEY MARKER
- SOIL BORING
- SANITARY SEWER AND MANHOLE
- FORCE MAIN AND LIFT STATION
- SANITARY SEWER SERVICE & CLEANOUT
- WATER MAIN, HYDRANT, VALVE AND MANHOLE
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- GAS MAIN, VALVE, VENT AND METER
- HANDHOLE
- BURIED FIBER OPTIC CABLE AND MANHOLE
- BURIED PHONE CABLE, PEDESTAL AND MANHOLE
- BURIED TV CABLE, PEDESTAL AND MANHOLE
- BURIED ELECTRIC CABLE, PEDESTAL, MANHOLE, TRANSFORMER AND METER
- OVERHEAD WIRE, POLE AND GUY WIRE
- LIGHT POLE
- TRAFFIC SIGNAL
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RAILROAD TRACKS
- DECIDUOUS AND CONIFEROUS TREE
- BUSH / SHRUB AND STUMP
- EDGE OF WOODED AREA
- WETLAND
- BUILDING
- FENCE (UNIDENTIFIED)
- BARBED WIRE FENCE
- CHAIN LINK FENCE
- ELECTRIC WIRE FENCE
- WOOD FENCE
- WOVEN WIRE FENCE
- PLATE BEAM GUARDRAIL
- CABLE GUARDRAIL
- POST / BOLLARD
- RETAINING WALL

PROPOSED

- STREET CENTERLINE
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

STANDARD PLANS

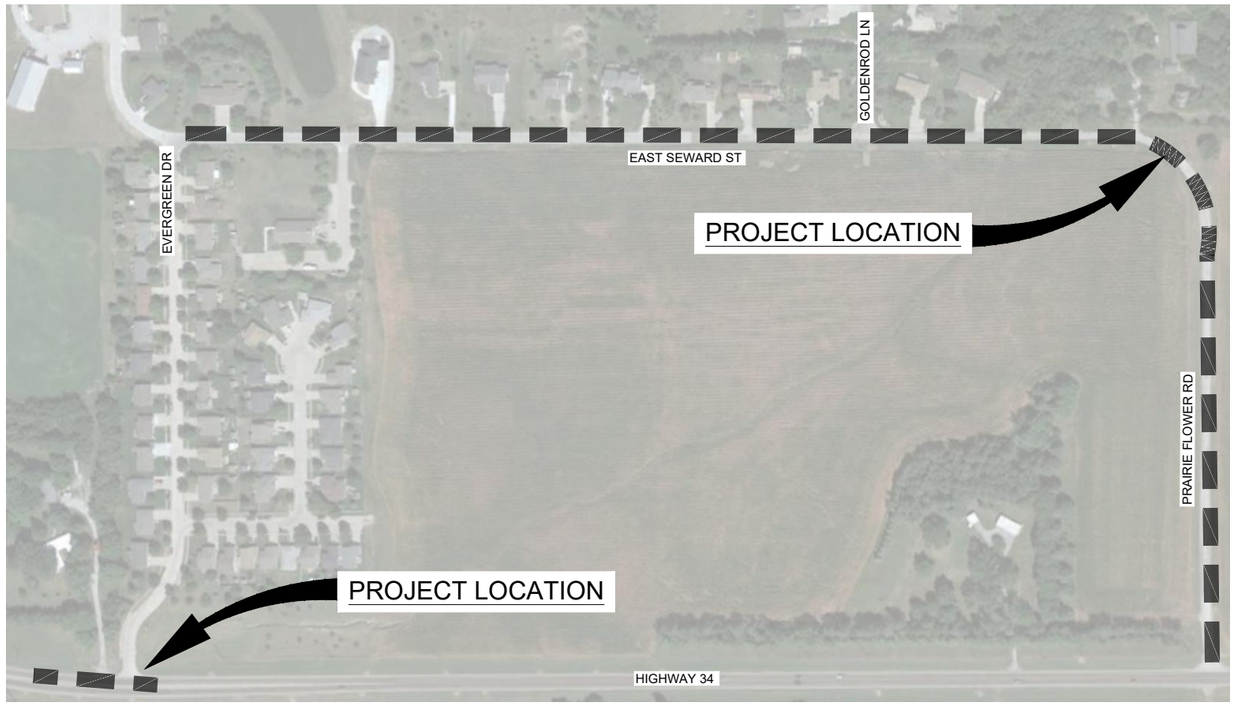
NDOT STAND PLAN 303-R3
NDOT STAND PLAN 443-R12
NDOT STAND PLAN 710-R5
NDOT STAND PLAN 435-R2
NDOT STAND PLAN 428-R4
NDOT STAND PLAN 329-R11
NDOT STAND PLAN 301-R12
NDOT STAND PLAN 924-R4
NDOT STAND PLAN 941-R1

CITY OF SEWARD, NEBRASKA

CONSTRUCTION PLANS FOR

SANITARY SEWER, STORM SEWER, PAVING

EAST SEWARD STREET



N.T.S.

NOTE:
THE SUBSURFACE UTILITY QUALITY INFORMATION IN THIS PLAN IS LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-02 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA."

THE CONTRACTOR SHALL CALL THE NEBRASKA STATE ONE CALL SYSTEM AT 811 BEFORE COMMENCING EXCAVATION.

811 Know what's below. Call before you dig.

GOVERNING SPECIFICATIONS

THE RECENT EDITION OF THE NEBRASKA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN EXCEPT AS MODIFIED BY THE SPECIFICATIONS FOR THIS PROJECT.

ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE LATEST EDITION OF THE NEBRASKA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS.

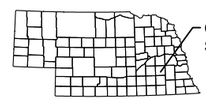
INDEX

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	PROJECT NOTES
3	PHASING PLAN
4	MARKINGS PLAN
5	TYPICAL SECTIONS
6-9	DETAILS
10	ALIGNMENT PLAN
11-16	EROSION CONTROL
17	LANDSCAPING PLAN
18-24	REMOVAL
25-28	WATER AND SANITARY PLAN
29-33	STORM SEWER PLAN AND PROFILE
34-41	CONSTRUCTION PLAN
42-46	PAVING PLAN AND PROFILE
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53	WIRING DIAGRAMS
54-56	ROW PLAN
57-65	CROSS SECTIONS

THIS PLAN CONTAINS 65 SHEETS.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

PROJECT LOCATION



SEWARD NEBRASKA

SEWARD, NEBRASKA

SEH
PHONE: 402.513.8200
15750 DODGE RD.
SUITE 304
OMAHA, NE 68118
www.sehinc.com

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NE.

JAKE VASA
Signature

Date: _____ Lic. No. E-14500

FILE NO. 160685

1 of 65

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PROJECT NOTES

1. ALL WORK SHALL BE PERFORMED COMPLETE AND READY FOR FINAL PAYMENT BY DECEMBER 1, 2022. LIQUIDATED DAMAGES FOR WORK PAST THIS DATE SHALL BE $200/DAY, WEATHER CONDITIONS WILL BE CONSIDERED.
2. ANY LANDSCAPING, ROCK, PAVERS OR OTHER MISCELLANEOUS ITEMS IN THE RIGHT OF WAY THAT WILL BE REMOVED WITH THIS PROJECT, MUST BE SALVAGED AND REPLACED IN A SIMILAR LOCATION AS PREVIOUS BY THE CONTRACTOR.
3. IRRIGATION WATER LINES OR SPRINKLERS SHALL BE PAID FOR BY THE 'IRRIGATION REPLACEMENT' PAY ITEM, AND SHALL NOT BE MEASURED BY SHALL BE PAID FOR AS A LUMP SUM. CONTRACTOR WILL BE RESPONSIBLE FOR REPLACING ANY IRRIGATION DISTURBED DURING CONSTRUCTION.
4. PROJECT GRADING WILL BE PAID FOR UNDER THE 'EXCAVATION' & 'EMBANKMENT' PAY ITEMS AND WILL NOT BE MEASURED DIRECTLY, BUT WILL BE ESTABLISHED QUANTITIES. THE GRADING QUANTITIES DO NOT INCLUDE A BULKING OR A COMPACTION FACTOR, CONTRACTOR SHALL BE RESPONSIBLE FOR APPLYING THESE FACTORS. THE GRADING WILL FOLLOW THE TYPICAL SECTIONS AND WILL FOLLOW THE NOTES ON THE PLANS. WHERE IT IS INDICATED THAT 'EXISTING DITCH TO REMAIN', THE CONTRACTOR WILL CUT/FILL TO THE DITCH FLOWLINE BUT NOT ALTER IT OR GRADE INTO IT. LIMITS OF GRADING (CUT OR FILL) SHOULD FOLLOW THE LIMITS OF CONSTRUCTION LINE ON THE 'CONSTRUCTION' SHEETS:
   CUT : 11,149 CY
   FILL : 555 CY
5. TOPSOILING AND EARTH SHOULDERING WILL BE CONSIDERED SUBSIDIARY TO THE 'EMBANKMENT' PAY ITEM.

REMOVAL NOTES

1. ALL MATERIAL REMOVED SHALL BE RETAINED BY THE CITY OF SEWARD, AND HAULED BY THE CONTRACTOR TO THE CITY YARD ON COLUMBIA AVE. NEAR DEPOT ST.
2. ALL EXISTING SIGNS SHALL BE REMOVED AND SALVAGED TO THE CITY BY THE CONTRACTOR.
3. ANY EXISTING PAVEMENT OR MATERIAL THAT IS NOT TO BE REMOVED, BUT IS DAMAGED BY THE CONTRACTOR, SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE CITY ENGINEER.
4. CONTRACTOR MUST GIVE 48 HOURS NOTICE PRIOR TO REMOVALS TO THE CITY ENGINEER.
5. REMOVAL LIMITS SHALL BE MARKED BY THE CITY ENGINEER PRIOR TO REMOVAL WORK.
6. ALL MAILBOXES SHALL BE TEMPORARILY RELOCATED DURING THE PROJECT TO ONE LOCATION. AT THE END OF THE PROJECT, THE MAILBOXES SHALL BE MOVED BACK TO THEIR ORIGINAL LOCATION. ANY DAMAGE TO THE MAILBOXES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS SHALL BE PAID FOR UNDER EACH 'REMOVE AND REPLACE MAILBOX' PAY ITEM.

SANITARY SEWER NOTES

1. SANITARY SEWERS SHALL BE SEPARATED BY AT LEAST 10 FT. (3.48 M) HORIZONTALLY FROM ANY EXISTING OR PROPOSED PARALLEL WATER MAINS, MEASURED EDGE TO EDGE.
2. AT ALL WATER MAIN CROSSINGS, SANITARY SEWERS SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SANITARY SEWER IS AT LEAST 18 IN (457 MM) BELOW THE BOTTOM OF THE WATER MAIN. IN THOSE INSTANCES WHERE THE BOTTOM OF THE WATER MAIN IS LESS THAN 18 IN (457 MM), ABOVE THE TOP OF THE SANITARY SEWER OR THE SANITARY SEWER IS LOCATED ABOVE THE WATER MAIN, THE SANITARY SEWER SHALL BE CONSTRUCTED USING A 20 FT. (6.10 M) LENGTH OF PVC PRESSURE PIPE, MEETING THE REQUIREMENTS OF AWWA C900 FOR DR18, PRESSURE RATING 150 PSI (1034 KPA), CENTERED ON THE WATER MAIN.
3. ALL SANITARY SEWER WILL BE DONE UNDER A PLUMBERS PERMIT, AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.
4. PRIOR TO FINAL ACCEPTANCE ALL SEWER MAIN SHALL BE AIR TESTED BY THE CONTRACTOR @ 5 LBS FOR 15 MINUTES.
5. PRIOR TO FINAL ACCEPTANCE, THE CONTRACTOR SHALL HAVE THE SEWER MAIN TV INSPECTED AND THE COST OF SUCH WORK SHALL BE SUBSIDIARY TO THE PRICE BID FOR SEWER WITH INSTALLATION.
6. PRIOR TO FINAL ACCEPTANCE, VACUUM TESTING SHALL BE PERFORMED ON ALL MANHOLES TO CONFORM TO THE REQUIREMENTS OF STANDARD TEST METHOD FOR CONCRETE MANHOLES BY THE “NEGATIVE AIR PRESSURE (VACUUM) TEST” ASTM DESIGNATION C-1244.
7. SANITARY SEWER PIPE SHALL BE PVC SDR 26 FOR 8". ALL SANITARY PIPE SHALL BE VCP FOR 24" TRUNK MAIN (ALTERNATIVE 1 : HOBAS).

CONSTRUCTION NOTES

1. ALL CONCRETE SHALL BE NDOT 47B-3500, WITH A LIGHT BROOM OR BURLAP FINISH.
2. ALL REINFORCING STEEL SHALL BE EPOXY COATED.
3. ALL JOINTS SHALL BE SPACED NO MORE THAN 14.0', AND SHALL BE SAW CUT TO $\frac{1}{4}$ THE THICKNESS.
4. ALL PAVEMENT JOINTS SHALL BE SAWED AND SEALED BY THE CONTRACTOR, INCLUDING SIDEWALK EXPANSION JOINTS, WHICH SHALL BE PLACED EVERY 150'. SIDEWALK SEALANT SHALL BE GREY.
5. MAINTAIN 1.5% MAX. CROSS SLOPE ON SIDEWALKS UNLESS OTHERWISE NOTED.
6. THE CITY WILL PROVIDE ALL STAKING FOR THIS PROJECT. THIS WILL INCLUDE: MARKED OUT REMOVAL LIMITS, ALL UTILITY LOCATIONS AND PIPE LINE AND GRADE, CENTERLINE OF GRADING LINE AND GRADE, PAVING RADIUS POINTS AND BACK OF CURB WITH LINE AND GRADE. ANY ADDITIONAL STAKING REQUESTED WILL BE AT THE CONTRACTOR'S COST. ANY RE-STAKING SHALL BE AT THE CONTRACTOR'S COST.
7. THE CITY WILL PROVIDE ALL SOIL DENSITY, AND CONCRETE TESTS.
8. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, OR BACK OF CURB, FOLLOW WRITTEN DIMENSIONS ALWAYS.
9. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY AND DETERMINE LOCATION AND ELEVATIONS OF THE EXISTING AND PROPOSED PAVEMENT, WHICH SHALL FOLLOW THE GENERAL DRAINAGE ARROWS SHOWN.
10. THE CITY OF SEWARD SHALL BE RESPONSIBLE FOR ALL PAVEMENT AND SUBGRADE TESTING. SUBGRADE SHALL MEET THE FOLLOWING REQUIREMENTS:
    10.1. PAVEMENT SUBGRADE - 12" STABILIZED, COMPACTED TO 98% STANDARD PROCTOR
    10.2. DRIVEWAY SUBGRADE - 12" COMPACTED TO 95% STANDARD PROCTOR
    10.3. SIDEWALK & MEDIAN SURFACING - 8" COMPACTED TO 95% STANDARD PROCTOR
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADING REQUIRED.
12. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT, OR BACK OF CURB, FOLLOW WRITTEN DIMENSIONS ALWAYS.
13. ADA RAMPS SHALL FOLLOW THE NDOT STANDARD PLAN 303-R11

GRADING NOTES

1. THE PROPOSED CONTOURS REPRESENT TOP OF SLAB, TOP OF CURB, OR TOP OF SIDEWALK IN PAVEMENT, IN ALL OTHER AREAS, THEY REPRESENT THE FINISHED GROUND SURFACE.
2. THE EXISTING AND PROPOSED FINISHED GROUND SURFACES ARE AVAILABLE ELECTRONICALLY FOR CONTRACTOR VERIFICATION VIA E-MAIL (IN AUTOCAD 2007 FORMAT). THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE EXISTING GROUND SURFACE ELEVATIONS.
3. ALL LINES SHOWN REPRESENTING PAVEMENT ARE TO BACK OF CURB OR EDGE OF PAVEMENT, UNLESS OTHERWISE NOTED.
4. CONTRACTOR WILL BE HELD RESPONSIBLE FOR SETTLEMENT DUE TO IMPROPER COMPACTION.
5. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL PROPERTY CORNERS.
6. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY GRADING WILL TAKE PLACE BEYOND THE RIGHT OF WAY LINE.
7. ALL HERBACEOUS VEGETATION SHALL BE REMOVED FROM WITHIN THE LIMITS OF GRADING PRIOR TO PLACEMENT OF FILL MATERIAL AND REDISTRIBUTED WITH THE TOPSOIL. A STRIPPING DEPTH OF 6" TO 10" IS ANTICIPATED ON THIS SITE.
8. SUFFICIENT TOPSOIL SHOULD BE SALVAGED AND STOCKPILED BY THE CONTRACTOR FOR RE-SPREADING IN PERMANENT PLANTING AREAS, INCLUDING PARKING LOT ISLANDS AND GREEN SPACES. STOCKPILING AND RE-SPREADING OF TOPSOIL IS NOT A SEPARATE BID ITEM, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE SITE GRADING.
9. TOPSOIL SALVAGED AS PART OF THE EXCAVATION SHALL BE PLACED TO A MINIMUM DEPTH OF 6 INCHES OVER ALL AREAS DISTURBED BY THE WORK. LARGE STONES, STICKS AND LUMPS SHALL BE REMOVED OR BROKEN UP, AND THE TOPSOIL SHALL BE LEVELED AND RAKED TO MATCH ADJACENT GRADES, READY FOR SEEDING. ANY ROCK OR SAND FROM PAVING ACTIVITIES SHALL BE REMOVED PRIOR TO PLACEMENT OF TOPSOIL. ALL EXCESS SOILS, NOT RE-SPREAD WITHIN THE PROJECT LIMITS, SHALL BE REMOVED BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL FINISH GRADE SLOPES AS SHOWN NO STEEPER THAN ONE FOOT VERTICAL IN 3 FEET HORIZONTAL.
11. CONTRACTOR SHALL GRADE ALL LOW SPOTS TO DRAIN.
12. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND THE ENGINEER METHODS TO VERIFY POSITIVE DRAINAGE.
13. CONTRACTOR SHALL GRADE TO CONTOURS SHOWN IN GREENSPACES.
14. AT THE COMPLETION OF GRADING, THE CONTRACTOR SHALL REMOVE ANY EXCESS EXCAVATION FROM THE SITE.
15. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND INSPECTIONS PRIOR TO COMMENCING CONSTRUCTION.
16. CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL AND SAFETY MEASURES, IF NECESSARY.
17. ANY GEOTECHNICAL/TESTING REPORTS SOLICITED BY THE CONTRACTOR SHALL BE SUBMITTED TO THE OWNER AND THE ENGINEER.

EROSION AND SEDIMENT CONTROL NOTES

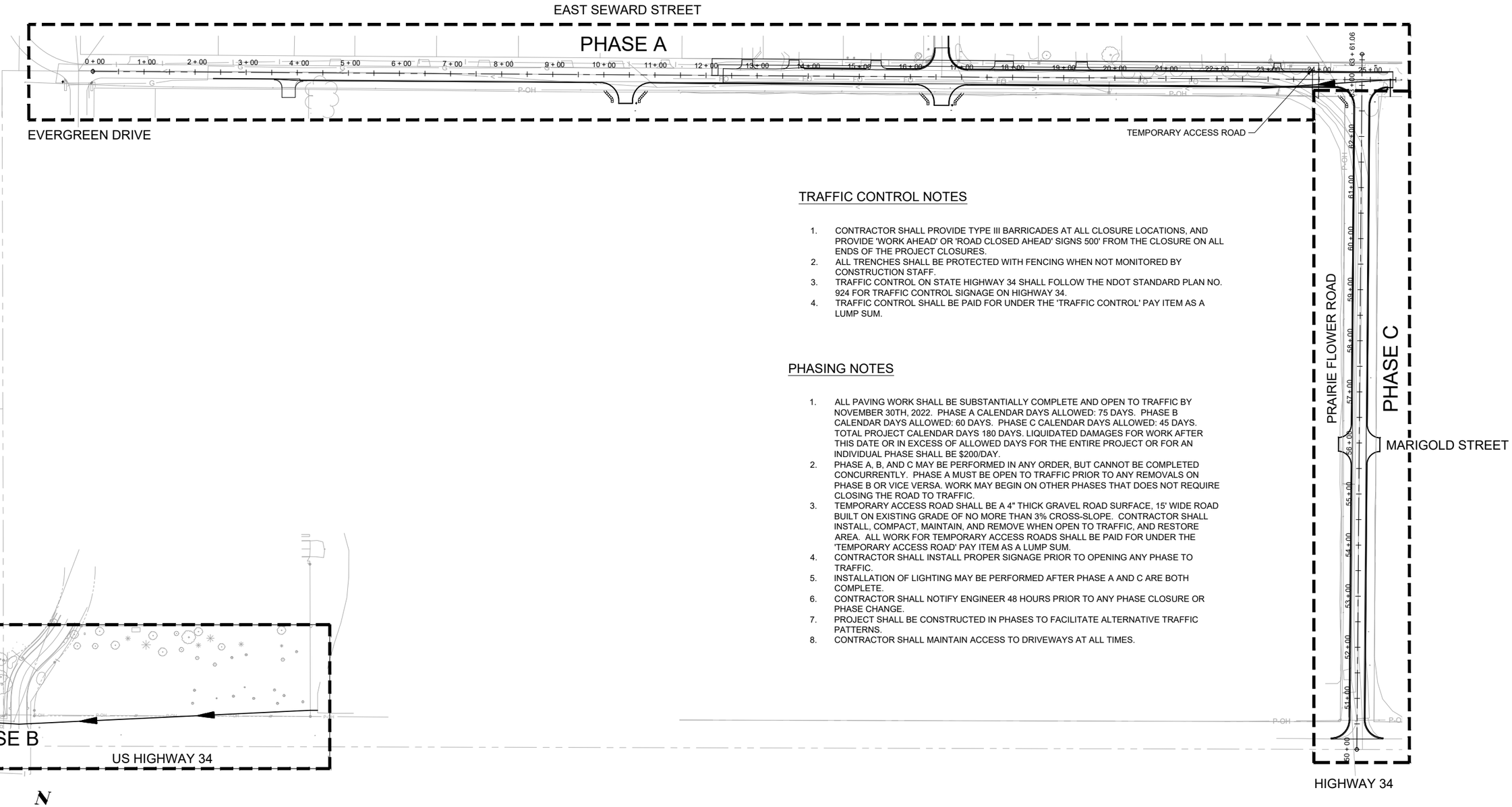
1. THIS EROSION AND SEDIMENT CONTROL PLAN IS PART OF THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP). THIS E & S PLAN MUST BE USED IN CONJUNCTION WITH THE SWPPP.
2. ALL EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
3. ALL HERBACEOUS VEGETATION SHALL BE REMOVED FROM WITHIN THE LIMITS OF THE GRADING, STOCKPILED AND REDISTRIBUTED WITH THE TOPSOIL FOR FINAL GRADING AND PERMANENT STABILIZATION. IF POSSIBLE, LEAVE VEGETATION BUFFER TO NEIGHBORING PROPERTIES AND SENSITIVE AREAS.
4. THE ENGINEER WILL FLAG ANY TREES TO BE REMOVED. NO TREES SHALL BE REMOVED WITHOUT PRIOR APPROVAL FROM THE OWNERS REPRESENTATIVE & OR THE ENGINEER.
5. THE CONTRACTOR SHALL INSTALL GRAVEL CHECK DAMS OR SEDIMENT BARRIERS IN ANY GULLY WASHOUT AREAS TO CONTROL FURTHER EROSION AS DIRECTED BY THE ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SEDIMENT CONTROL STRUCTURES UNTIL FINAL SITE STABILIZATION IS ACHIEVED.
7. ADDITIONAL STRAW WATTLES SHALL BE INSTALLED WHEN NECESSARY TO PREVENT SEDIMENT FROM MIGRATING ONTO THE ROADS OR ADJACENT PROPERTY.
8. ALL SEDIMENT AND EROSION CONTROL PRACTICES WILL BE INSPECTED BY THE CONTRACTOR AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD BY RESPONSIBLE PERSONNEL. ANY NECESSARY REPAIRS OR CLEAN-UP TO MAINTAIN THE EFFECTIVENESS OF THE BEST MANAGEMENT PRACTICES SHALL BE MADE IMMEDIATELY.
9. BMP IMPLEMENTATION SCHEDULE SHALL BE FOLLOWED FOR INSTALLATION, MAINTENANCE AND REMOVAL OF BMP'S.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND DUST CONTROL. ANY DAMAGE FROM BLOWING DUST OR EROSION AND RUNOFF FROM THE SITE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
11. CONTRACTOR IS RESPONSIBLE FOR OBTAINING PROPER NPDES PERMITS ON ALL BORROW SITES.

WATER MAIN NOTES

1. FOR DETAILS OF TYPICAL HYDRANT INSTALLATIONS, SEE LINCOLN STANDARD PLAN - 330.
2. PRIOR TO FINAL ACCEPTANCE ALL WATER MAIN PIPE SHALL BE PRESSURE TESTED BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY OF LINCOLN STANDARD SPECIFICATIONS, CHAPTER 23, WATER MAINS, 2011 EDITION.
3. PRIOR TO FINAL ACCEPTANCE ALL WATER MAIN PIPE SHALL BE DISINFECTED BY THE CONTRACTOR IN ACCORDANCE WITH THE CITY OF LINCOLN STANDARD SPECIFICATIONS, CHAPTER 23, WATER MAINS, 2011 EDITION.
4. FOR PVC WATER MAIN CONSTRUCTION, ALL FITTINGS SHALL BE DUCTILE IRON WRAPPED WITH POLYWRAP. POLYWRAP SHALL BE LINEAR LOW DENSITY POLYETHYLENE FILM MANUFACTURED OF VIRGIN POLYETHYLENE MATERIAL. MINIMUM THICKNESS SHALL BE 8 MIL. POLYWRAP SHALL BE IN ACCORDANCE WITH DRAFT OF AWWA C105 REVISION, DOUBLE WRAPPED (2 LAYERS) AND TAPED AS PER CITY OF LINCOLN STANDARD SPECIFICATION.
5. WHERE THE WATER MAIN IS TO BE CONSTRUCTED BELOW OR WITHIN 18 INCHES (0.5 M) OF ANY SEWER PIPE, THE CONTRACTOR SHALL LAY A FULL LENGTH OF WATER MAIN PIPE CENTERED ON THE SEWER OR SUCH LENGTH AS WILL PROVIDE THE MAXIMUM POSSIBLE SEPARATION OF THE JOINTS IN THE WATER MAIN FROM THE SEWER LINE. IF NOT ALREADY SO, THE CONTRACTOR SHALL CONSTRUCT SANITARY SEWER WITH ONE 20 FOOT (6 M) NOMINAL LENGTH OF PRESSURE PIPE MATERIAL CENTERED ON THE WATER MAIN AS PROVIDED IN SECTION 22.02(B), SUCH THAT THE MAXIMUM POSSIBLE SEPARATION BETWEEN THE WATER MAIN AND THE SEWER PIPE JOINTS WILL RESULT. THE BACKFILL MATERIAL SHALL BE SELECT, LOW PERMEABILITY SOIL.
6. ALL PERMANENT FIRE HYDRANTS SHALL BE INSTALLED TO LINE AND GRADE IN ACCORDANCE WITH THE PLAN DRAWINGS AND AS FIELD STAKED BY THE ENGINEER. FIRE HYDRANTS SHALL BE A MINIMUM OF 5.5' BURY AND SHALL BE SET SO THAT THE CENTER OF THE TRAFFIC FLANGE IS THREE (3") INCHES ABOVE THE TOP OF CURB GRADE.
7. PERMANENT FIRE HYDRANTS SHALL BE COUNTED AND PAID FOR AT THE CONTRACT UNIT PRICE BID FOR “FIRE HYDRANT ASSEMBLY”. SUCH PRICE SHALL BE FULL COMPENSATION FOR ALL LOADING, HAULING, INSTALLATION, THRUST BLOCKING, HYDRANT BURY, HYDRANT DRAIN MATERIAL, BACKFILLING, LABOR, MATERIALS, AND INCIDENTALS NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH THE SPECIFICATIONS, THE PLAN DRAWINGS AND AS ACCEPTED BY THE ENGINEER.
8. AT ALL WATER MAIN CROSSINGS, SANITARY SEWERS SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SANITARY SEWER IS AT LEAST 18 IN (357 MM) BELOW THE BOTTOM OF THE WATER MAIN.
9. ALL WATER MAIN CONSTRUCTION TO BE DONE UNDER A PLUMBERS PERMIT AND SHALL COMPLY WITH ALL APPLICABLE BUILDING CODES.

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA



TRAFFIC CONTROL NOTES

1. CONTRACTOR SHALL PROVIDE TYPE III BARRICADES AT ALL CLOSURE LOCATIONS, AND PROVIDE 'WORK AHEAD' OR 'ROAD CLOSED AHEAD' SIGNS 500' FROM THE CLOSURE ON ALL ENDS OF THE PROJECT CLOSURES.
2. ALL TRENCHES SHALL BE PROTECTED WITH FENCING WHEN NOT MONITORED BY CONSTRUCTION STAFF.
3. TRAFFIC CONTROL ON STATE HIGHWAY 34 SHALL FOLLOW THE NDOT STANDARD PLAN NO. 924 FOR TRAFFIC CONTROL SIGNAGE ON HIGHWAY 34.
4. TRAFFIC CONTROL SHALL BE PAID FOR UNDER THE 'TRAFFIC CONTROL' PAY ITEM AS A LUMP SUM.

PHASING NOTES

1. ALL PAVING WORK SHALL BE SUBSTANTIALLY COMPLETE AND OPEN TO TRAFFIC BY NOVEMBER 30TH, 2022. PHASE A CALENDAR DAYS ALLOWED: 75 DAYS. PHASE B CALENDAR DAYS ALLOWED: 60 DAYS. PHASE C CALENDAR DAYS ALLOWED: 45 DAYS. TOTAL PROJECT CALENDAR DAYS 180 DAYS. LIQUIDATED DAMAGES FOR WORK AFTER THIS DATE OR IN EXCESS OF ALLOWED DAYS FOR THE ENTIRE PROJECT OR FOR AN INDIVIDUAL PHASE SHALL BE $200/DAY.
2. PHASE A, B, AND C MAY BE PERFORMED IN ANY ORDER, BUT CANNOT BE COMPLETED CONCURRENTLY. PHASE A MUST BE OPEN TO TRAFFIC PRIOR TO ANY REMOVALS ON PHASE B OR VICE VERSA. WORK MAY BEGIN ON OTHER PHASES THAT DOES NOT REQUIRE CLOSING THE ROAD TO TRAFFIC.
3. TEMPORARY ACCESS ROAD SHALL BE A 4" THICK GRAVEL ROAD SURFACE, 15' WIDE ROAD BUILT ON EXISTING GRADE OF NO MORE THAN 3% CROSS-SLOPE. CONTRACTOR SHALL INSTALL, COMPACT, MAINTAIN, AND REMOVE WHEN OPEN TO TRAFFIC, AND RESTORE AREA. ALL WORK FOR TEMPORARY ACCESS ROADS SHALL BE PAID FOR UNDER THE 'TEMPORARY ACCESS ROAD' PAY ITEM AS A LUMP SUM.
4. CONTRACTOR SHALL INSTALL PROPER SIGNAGE PRIOR TO OPENING ANY PHASE TO TRAFFIC.
5. INSTALLATION OF LIGHTING MAY BE PERFORMED AFTER PHASE A AND C ARE BOTH COMPLETE.
6. CONTRACTOR SHALL NOTIFY ENGINEER 48 HOURS PRIOR TO ANY PHASE CLOSURE OR PHASE CHANGE.
7. PROJECT SHALL BE CONSTRUCTED IN PHASES TO FACILITATE ALTERNATIVE TRAFFIC PATTERNS.
8. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS AT ALL TIMES.

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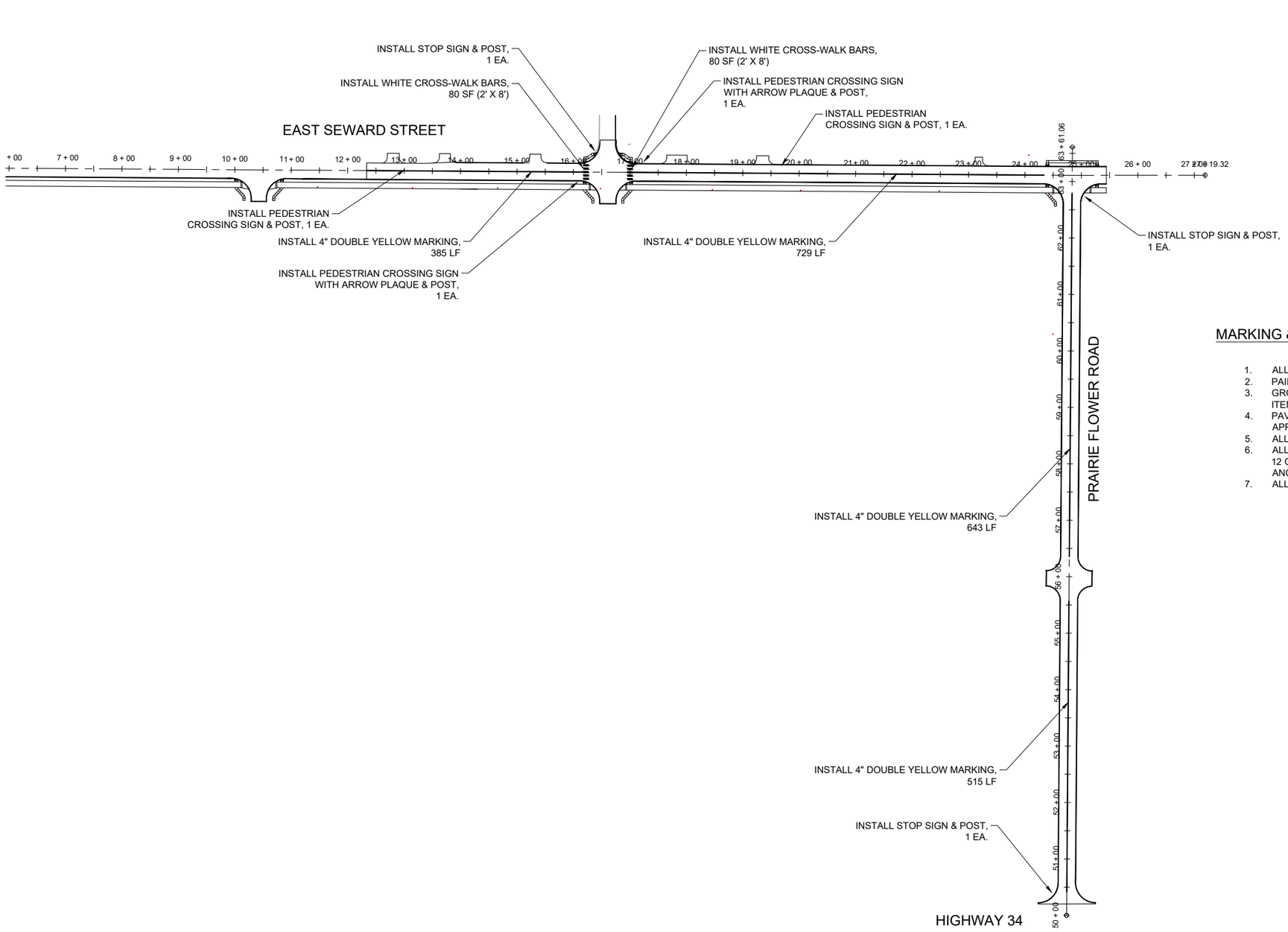
PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH
Drawn By		.			.			
Designed By		.			.			
Checked By		.			.			

EAST SEWARD STREET
SEWARD, NEBRASKA

PHASING PLAN
EAST SEWARD STREET



MARKING & SIGNAGE NOTES

1. ALL PAVEMENT MARKINGS SHALL BE GROOVED, AND PAINTED WITH TWO COATS OF PAINT.
2. PAINT SHALL MEET AASHTO M248 REQUIREMENTS, AND SHALL BE REFLECTIVE POLYUREA.
3. GROOVING OF THE CONCRETE SHALL BE CONSIDERED SUBSIDIARY TO PAVEMENT MARKINGS PAY ITEMS. GROOVING SHALL NOT TAKE PLACE UNTIL THE CONCRETE HAS CURED FOR 7 DAYS.
4. PAVEMENT MARKINGS SHALL BE LAID OUT BY THE CONTRACTOR, AND THE LAYOUT MUST BE APPROVED PRIOR TO PLACEMENT OF PAINT BY THE CITY ENGINEER.
5. ALL SIGNS SHALL BE PAID FOR BY THE SQUARE FEET OF SIGN AREA.
6. ALL POSTS SHALL BE PAID FOR BY EACH. POSTS SHALL BE 2" SQUARE GALVANIZED STEEL TUBING, 12 GA., FOUR (4) LBS. PER FOOT, COLD ROLLED STEEL IN ACCORDANCE WITH ASTM A653, WITH ANCHOR PER THE DETAIL.
7. ALL SIGN LOCATIONS SHALL BE STAKED BY THE CITY PRIOR TO INSTALLATION.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

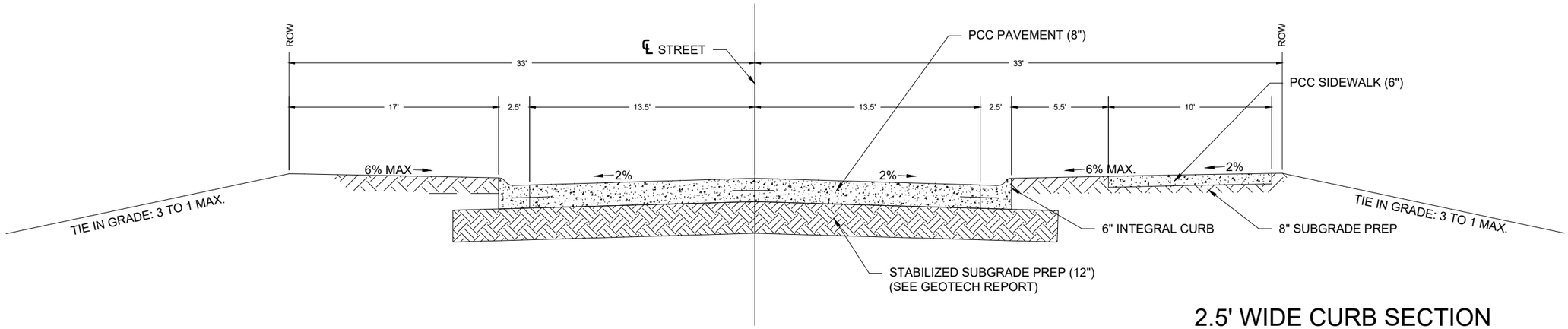
EAST SEWARD STREET

SEWARD, NEBRASKA

MARKINGS PLAN
EAST SEWARD STREET

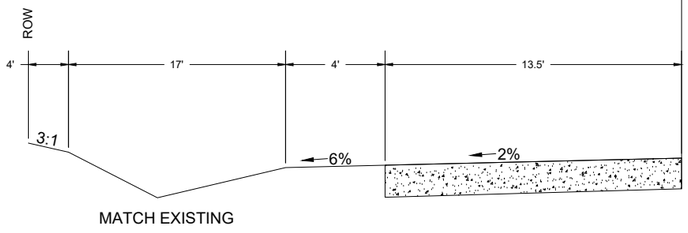
32' WIDE URBAN SECTION

STA. 13+91.83 TO STA. 25+34.24



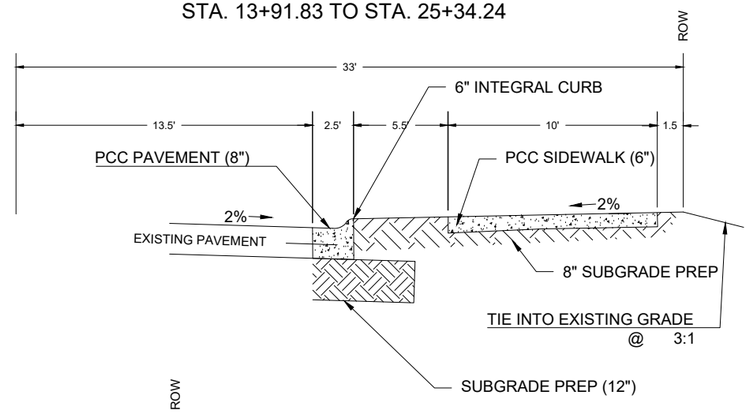
RURAL SECTION

STA. 12+33.49 TO STA. 13+36.17



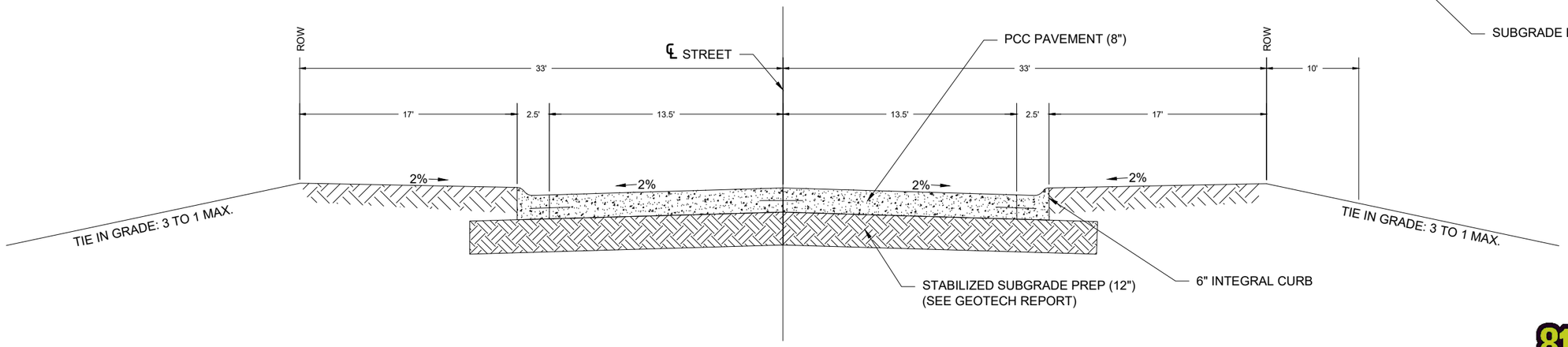
2.5' WIDE CURB SECTION

STA. 13+91.83 TO STA. 25+34.24



32' WIDE URBAN SECTION

STA. 50+00 TO STA. 63+00



Know what's below. Call before you dig.

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JACOB R. VASA
E-14500
STATE OF NEBRASKA

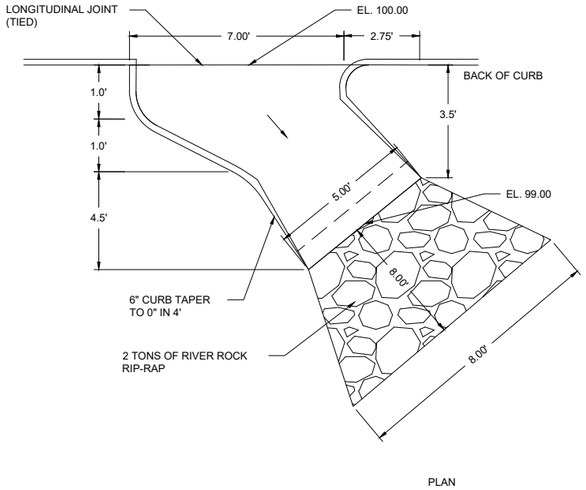
SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH
Drawn By	ACR							
Designed By								
Checked By	JRV							

EAST SEWARD STREET

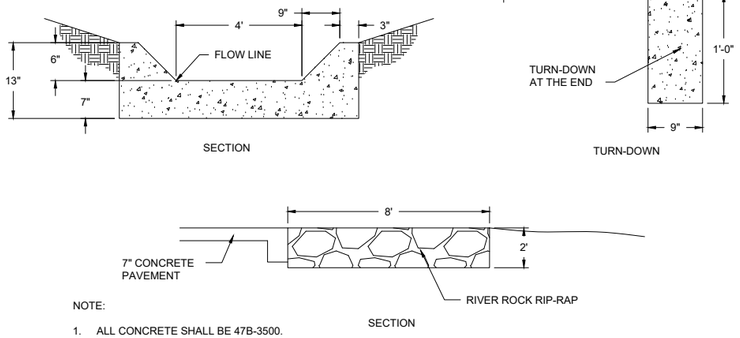
SEWARD, NEBRASKA

TYPICAL SECTIONS
EAST SEWARD STREET

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PLAN



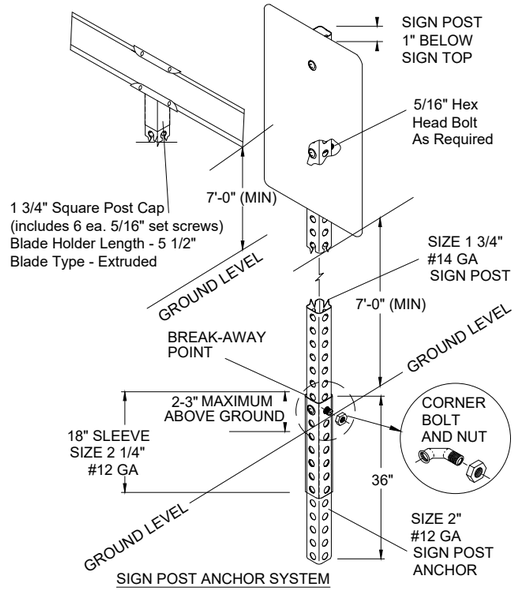
NOTE:

1. ALL CONCRETE SHALL BE 47B-3500.

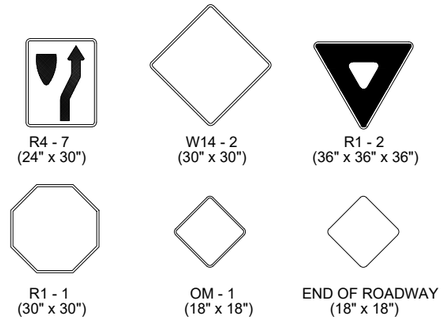
CONCRETE FLUME DETAIL

NOT TO SCALE

PERFORATED TUBE SIGN POST INSTALLATION



SIGN POST ANCHOR SYSTEM



* IN NO CASE SHALL THE SPECIFICATIONS BE LESS THAN REQUIRED BY THE CURRENT MUTCD.

811 Know what's below. Call before you dig.

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E-14500
STATE OF NEBRASKA

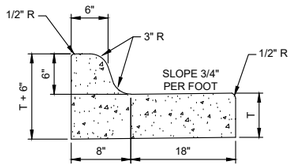
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Drawn By	ACR	.			.			
Designed By		.			.			
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EAST SEWARD STREET

SEWARD, NEBRASKA

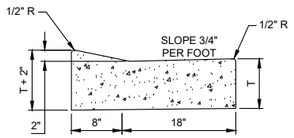
DETAILS
EAST SEWARD STREET

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INTEGRAL CURB & GUTTER

NOT TO SCALE



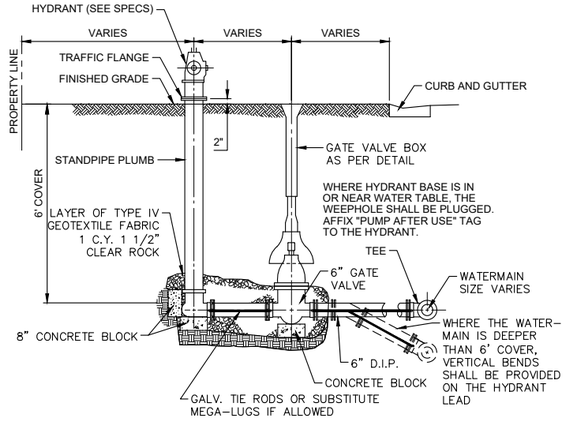
DROP CURB & GUTTER

NOT TO SCALE

HYDRANTS SHALL BE AS REQUIRED BY SPECIFICATIONS
- –HYDRANT SHALL BE MUELLER, KENNEDY, OR APPROVED EQUAL, COLOR RED
- –FACTORY PAINTED TO GROUND LINE
- –TRAFFIC FLANGE
- –6 FOOT MIN. BURY
- –ALUMINUM PLATE TO DENOTE BURY DEPTH
- –STEAMER,NOZZLES AND THREAD PER SPECS.
- –PENTAGON NUT TYPE, CAPS WITH CHAINS
- –CONDUCTIVITY IS REQUIRED (DO NOT TEST CONDUCTIVITY THROUGH OPERATING NUT)

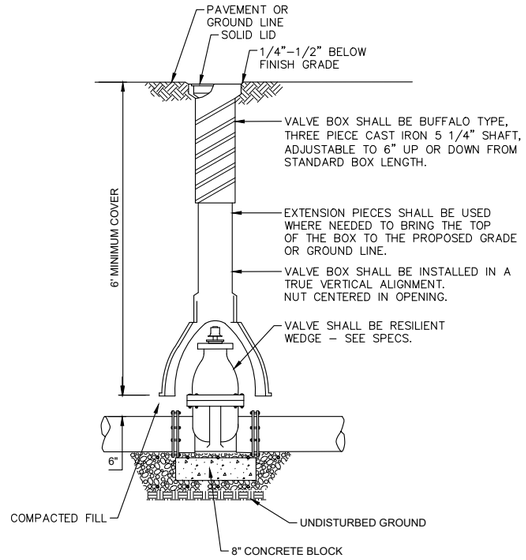
PROVIDE PERMANENT MARKINGS WHICH INDICATE:
- –MANUFACTURER'S NAME
- –YEAR OF MANUFACTURE

HYDRANTS GENERALLY LOCATED 3 FEET BEHIND BACK OF CURB.
HYDRANT LEADS SHALL BE EQUIPPED WITH AUXILIARY GATE VALVES LOCATED NEAR THE HYDRANT (BETWEEN CURB & HYD).
VALVES SHALL BE TIED TO HYDRANT AND TEE.



FIRE HYDRANT ASSEMBLY

NOT TO SCALE

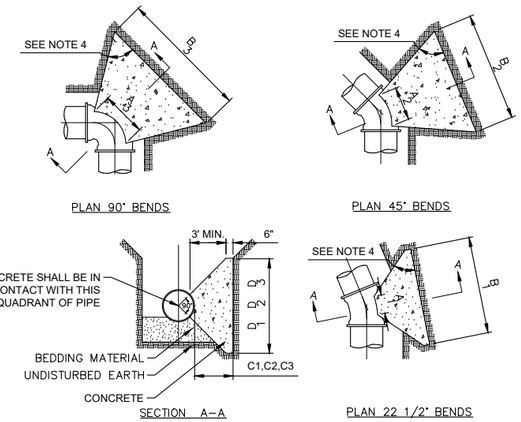


GATE VALVE & BOX

NOT TO SCALE

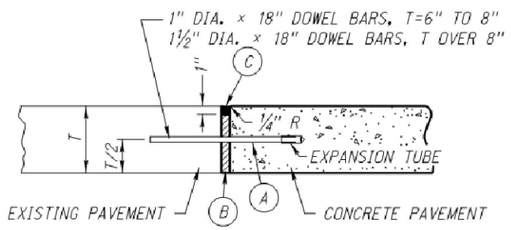
NOTES:
1. SHAPE OF BACK BUTTRESS MAY VARY AS LONG AS POURED AGAINST FIRM UNDISTURBED EARTH.
2. DIMENSION C1,C2,C3 SHOULD BE LARGE ENOUGH TO MAKE ANGLE 0 EQUAL TO OR LARGER THAN 45°.
3. DIMENSION A1,A2,A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
4. 45° MINIMUM.
5. PLACE POLYETHYLENE BETWEEN CONCRETE AND PIPE.

PIPE SIZE	BUTTRESS DIMENSIONS					
	22 1/2° BEND		45° BEND		90° BEND	
	B_1	D_1	B_2	D_2	B_3	D_3
6"	1'-5"	1'-5"	1'-5"	1'-5"	2'-1"	1'-6"
8"	1'-5"	1'-5"	2'-1"	1'-6"	2'-8"	2'-0"
12"	1'-10"	1'-10"	3'-4"	2'-0"	4'-9"	2'-6"
16"	3'-0"	2'-0"	3'-10"	3'-0"	6'-2"	3'-6"
20"	3'-6"	2'-8"	5'-6"	3'-4"	8'-4"	4'-0"
24"	4'-4"	3'-0"	6'-10"	3'-10"	9'-8"	5'-0"
30"	–	–	9'-3"	6'-0"	17'-0"	6'-0"



CONCRETE THRUST BLOCKS

NOT TO SCALE



(A) GREASE DOWEL BAR ON EXPANSION TUB SIDE

(B) 1" PREFORMED EXPANSION JOINT FILLER

(C) JOINT SEALANT

NOTES:

DOWEL BARS SHALL BE DRILLED TO A DEPTH OF 8" INTO EXISTING PAVEMENT AND GROUTED.

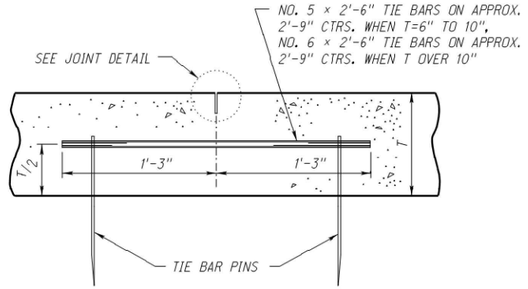
DOWEL BARS SHALL BE PLACED AT 1 FOOT CENTERS. THE OUTSIDE DOWEL BAR SHALL BE PLACED 6" FROM THE EDGE OF THE PAVEMENT.

THIS JOINT SHALL BE CONSTRUCTED TRANSVERSE TO THE ROADWAY WHERE THE NEW CONCRETE ABUTS THE EXISTING CONCRETE.

DOWEL BARS SHALL BE PLACED PARALLEL TO THE ROADWAY ℄ AND TO THE ROAD BED.

TRANSVERSE EXPANSION JOINT

NOT TO SCALE

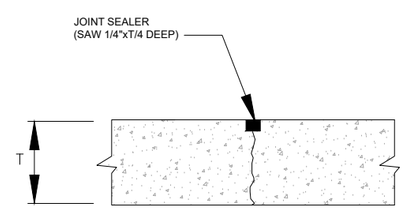


SAWED

WHEN TWO ADJACENT LANES ARE PLACED AT THE SAME TIME, THE LONGITUDINAL JOINT COMMON TO THE LANES SHALL BE SAWED

LONGITUDINAL JOINT

NOT TO SCALE



NOTE: CONTRACTION JOINTS SHALL BE SPACED NO MORE THAN 14'

TRANSVERSE CONTRACTION JOINT

NOT TO SCALE

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E-14500
STATE OF NEBRASKA

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SEH Project	160685	.			.		
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SEH

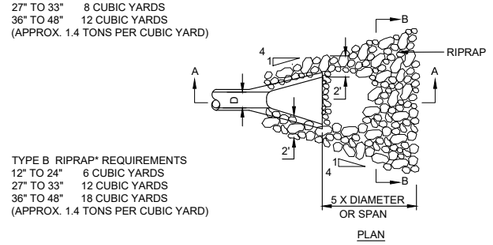
EAST SEWARD STREET

SEWARD, NEBRASKA

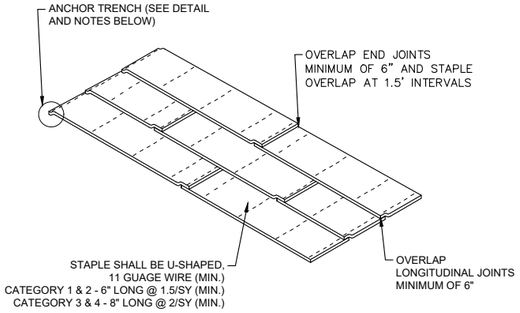
DETAILS
EAST SEWARD STREET

TYPE A RIPRAP REQUIREMENTS
12" TO 24" 4 CUBIC YARDS
27" TO 33" 8 CUBIC YARDS
36" TO 48" 12 CUBIC YARDS
(APPROX. 1.4 TONS PER CUBIC YARD)

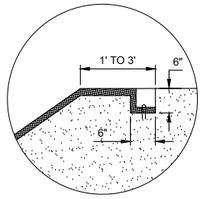
TYPE B RIPRAP* REQUIREMENTS
12" TO 24" 6 CUBIC YARDS
27" TO 33" 12 CUBIC YARDS
36" TO 48" 18 CUBIC YARDS
(APPROX. 1.4 TONS PER CUBIC YARD)



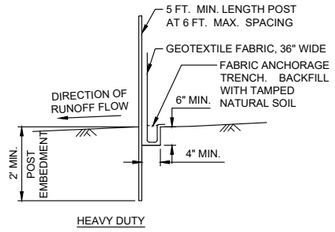
RIP RAP STORM SEWER OUTLET
NOT TO SCALE



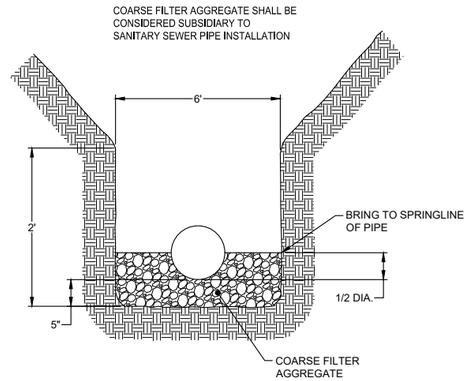
ANCHOR TRENCH
1. DIG 6" X 6" TRENCH
2. LAY BLANKET IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. BLANKET LENGTH SHALL NOT EXCEED 100'
WITHOUT AN ANCHOR TRENCH



EROSION CONTROL BLANKET
NOT TO SCALE

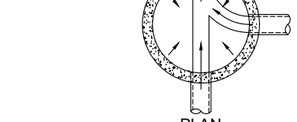


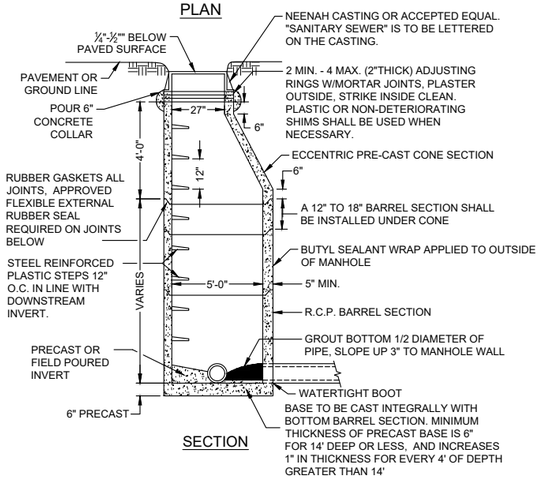
SILT FENCE INSTALLATION
NOT TO SCALE



NOTE:
INCREASED THICKNESS OF COARSE AGGREGATE
FOR USE IN UNSTABLE TRENCH BOTTOM
AS DETERMINED BY THE ENGINEER

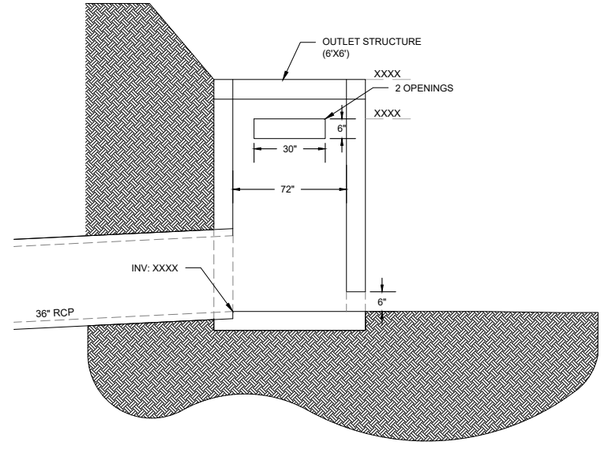
SANITARY SEWER & STORM SEWER PIPE BEDDING
NOT TO SCALE





SECTION

SANITARY SEWER MAHOLE
NOT TO SCALE



OUTLET STRUCTURE
NOT TO SCALE

NOTES:

1. BARRIER BAR SHALL BE #4 SMOOTH BAR COMPLYING W/ASTM A-36, FULLY GALVANIZED IN ACCORDANCE W/ASTM A-123.
2. WHERE TWO LEAD PIPES ARE USED, FILET SHALL BE BROUGHT P TO SPRING LINE OF LARGER PIPE.
3. ALL REINFORCING STEEL SHALL CLEAR ALL SURFACES A MINIMUM OF 2'.
4. ALL EXPOSED EDGES OF AREA INLET SHALL BE CHAMFERED.

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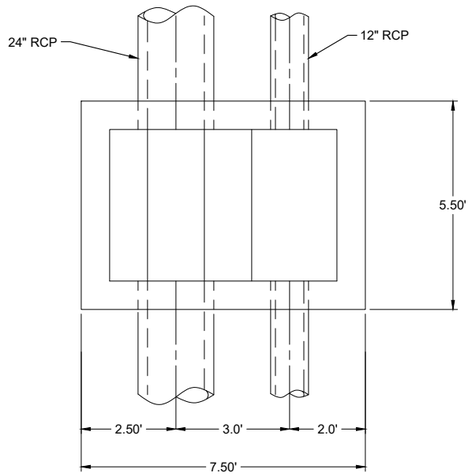
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SEH

EAST SEWARD STREET

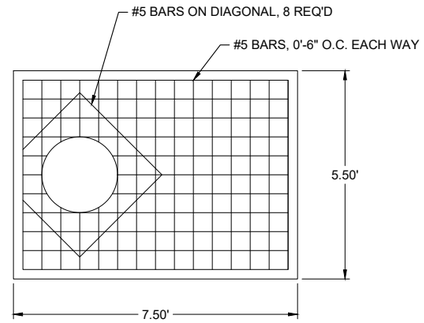
SEWARD, NEBRASKA

DETAILS
EAST SEWARD STREET



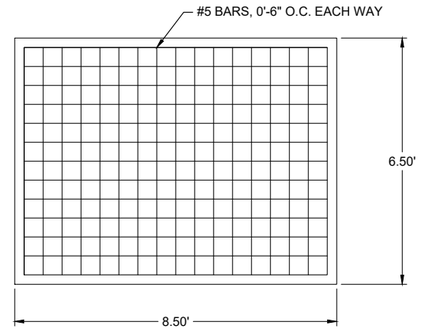
PLAN VIEW

NOT TO SCALE



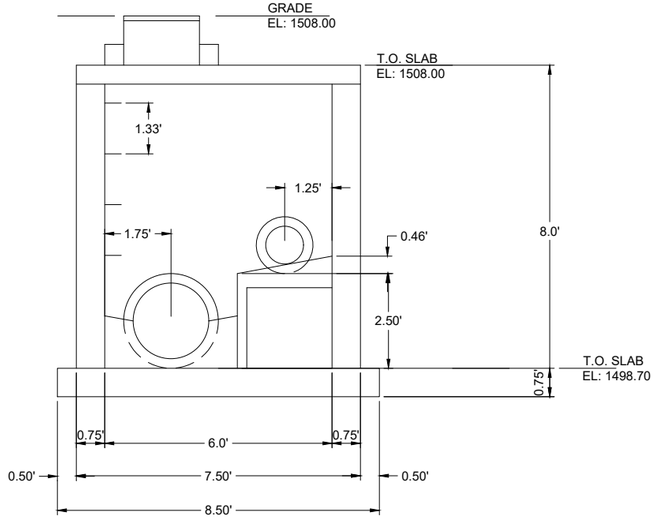
TOP SLAB

NOT TO SCALE



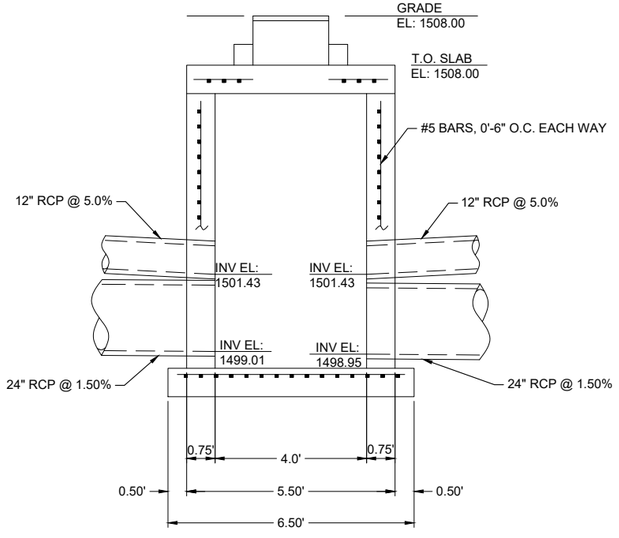
BASE SLAB

NOT TO SCALE



SECTION A

NOT TO SCALE



SECTION B

NOT TO SCALE

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SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

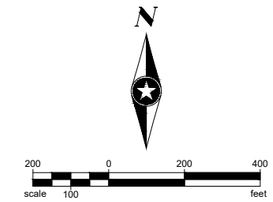
STORM SEWER MANHOLE DETAILS
EAST SEWARD STREET

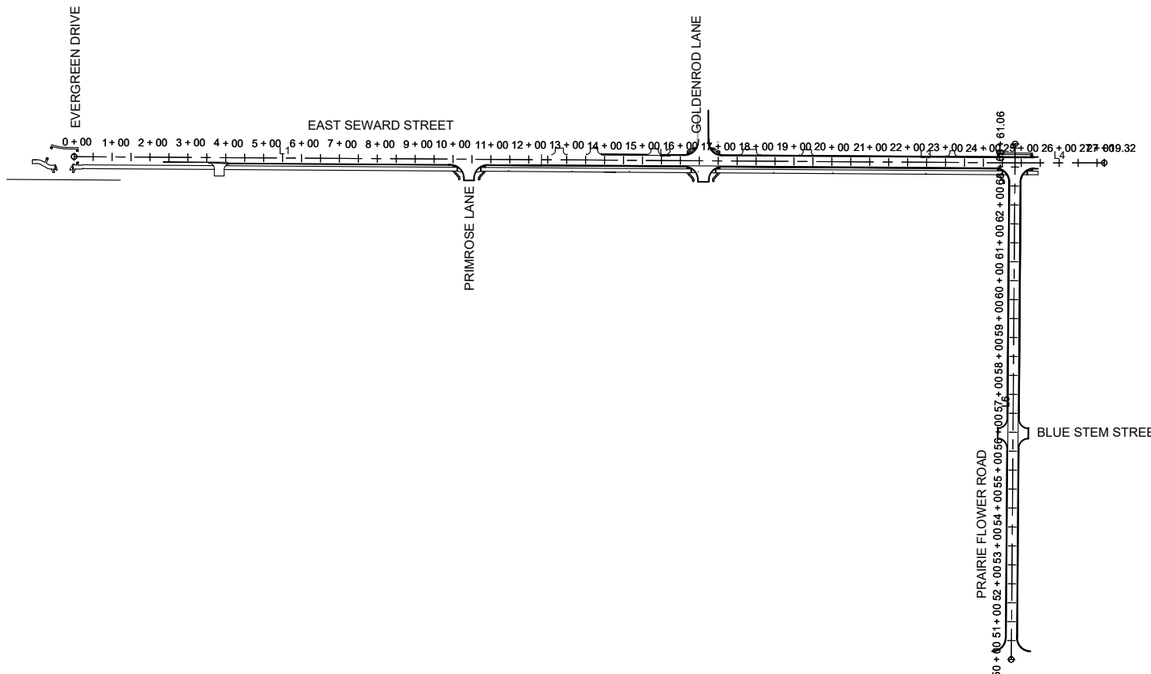
ALIGNMENT TABULATION - EAST SEWARD STREET - EAST-WEST

POINT ID	POINT	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING	START STATION	END STATION	START NORTHING	START EASTING	END NORTHING	END EASTING
L1		0+00.00				1108.89	85694.3004	96250.7556	S 89° 37' 43" E	0+00.00	11+08.89	85694.3004	96250.7556	85687.1149	97359.6269
L2		11+08.89				904.31	85687.1149	97359.6269	S 89° 36' 59" E	11+08.89	20+13.21	85687.1149	97359.6269	85681.0621	98263.9202
L3		20+13.21				470.45	85681.0621	98263.9202	S 89° 37' 01" E	20+13.21	24+83.66	85681.0621	98263.9202	85677.9160	98734.3620
L4		24+83.66				235.66	85677.9160	98734.3620	N 89° 58' 34" E	24+83.66	27+19.32	85677.9160	98734.3620	85678.0142	98970.0217

ALIGNMENT TABULATION - EAST SEWARD STREET - NORTH-SOUTH

POINT ID	POINT	STATION	DELTA	RADIUS	TANGENT	LENGTH	NORTHING	EASTING	BEARING	START STATION	END STATION	START NORTHING	START EASTING	END NORTHING	END EASTING
L6		50+00.00				1361.06	84366.8911	98724.4360	N 00° 25' 59" E	50+00.00	63+61.06	84366.8911	98724.4360	85727.9086	98734.7251
L5		50+00.00				1361.06	84366.8911	98724.4360	N 00° 25' 59" E	50+00.00	63+61.06	84366.8911	98724.4360	85727.9086	98734.7251





HORIZONTAL SURVEY CONTROL - SEWARD COUNTY LOW DISTORTION PROJECTION

PROJECTION: LAMBERT CONFORMAL CONIC - 1 STANDARD PARALLEL
SCALE FACTOR: 1.000066†
CENTRAL MERIDIAN: -97°08'00"
STANDARD PARALLEL: 40°51'00"
FALSE NORTHING: 20,000 METERS (65,616.667 US FEET)
FALSE EASTING: 25,000 METERS (82,020.833 US FEET)

POINT NAME	NORTHING	EASTING	LONG DESCRIPTION
CP-109	84366.89	98724.44	FOUND SURVEY SPIKE AND WASHER (S1/4 COR. SEC. 22-11-3)
CP-113	85653.86	97403.21	FOUND PROP CORNER 5/8" REBAR
CP-114	85719.70	97403.51	FOUND PROP CORNER 1" OTP
CP-316	85677.91	98734.35	E1/16 SW1/4 22-11-3 STONE
CP-118	85717.66	97719.44	FOUND PROP CORNER 1/2" OTP
CP-119	85713.74	98264.13	FOUND PROP CORNER 3/4" OTP
CP-121	85715.05	98100.99	FOUND PROP CORNER 1/2" OTP
CP-122	85716.45	97876.48	FOUND PROP CORNER 5/8" REBAR

BENCHMARKS - NAVD88

POINT NAME	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
BM-6	85717	97561	1507.59	TOP NUT HYD ON NORTH SIDE E SEWARD ST, BETWEEN HOUSES #2620 AND #2622
BM-7	85715	97874	1512.06	SW BONNET BOLT ON HYD @ NW CORNER OF E SEWARD ST & GOLDENROD LANE
BM-8	85712	98261	1513.65	TOP NUT HYD ON NORTH SIDE E SEWARD ST @ SE PROP CORNER OF HOUSE #2602
BM-9	85710	98741	1512.92	TOP NUT HYD ON NORTH SIDE E SEWARD ST 77' +/- NE OF PP @ MIDPOINT OF CURVE IN ROAD
BM-10	85010	98698	1516.03	CHAR NAILS IN EAST FACE PP ON WEST SIDE OF E SEWARD RD, 5TH PP NORTH OF HWY 34
BM-11	84302	98710	1517.88	NDOR CP 301-901 ALUM CAP ON CONCRETE ON WEST SIDE FIELD ENTRANCE ON SOUTH SIDE HWY 34



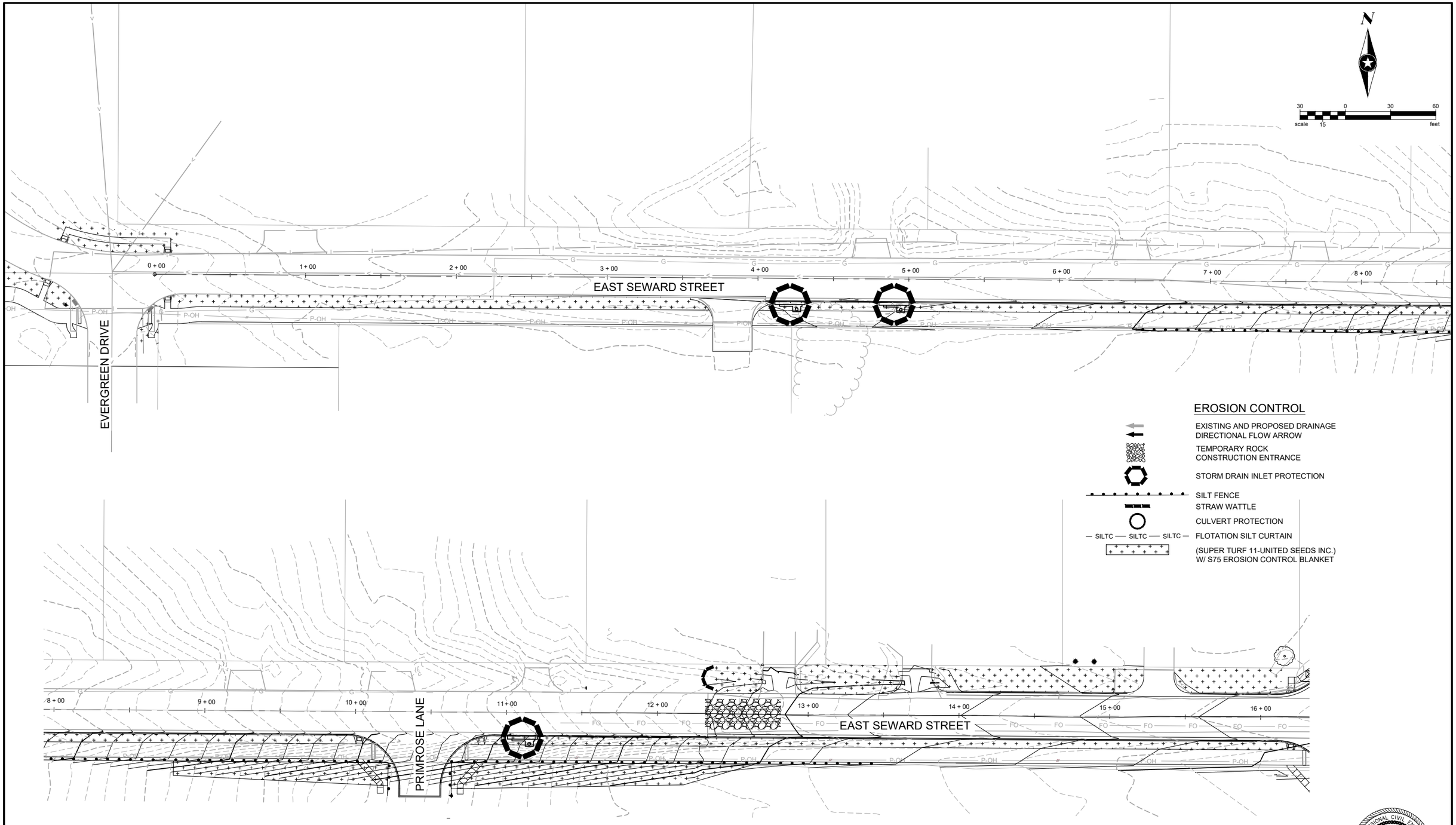
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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By		.			.		
Designed By		.			.		
Checked By		.			.		

EAST SEWARD STREET

SEWARD, NEBRASKA

ALIGNMENT PLAN
EAST SEWARD STREET



EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- (SUPER TURF 11-UNITED SEEDS INC.) W/ S75 EROSION CONTROL BLANKET

NOTE : SEEDING RATE SHALL BE 10LBS PER 1,000 SF

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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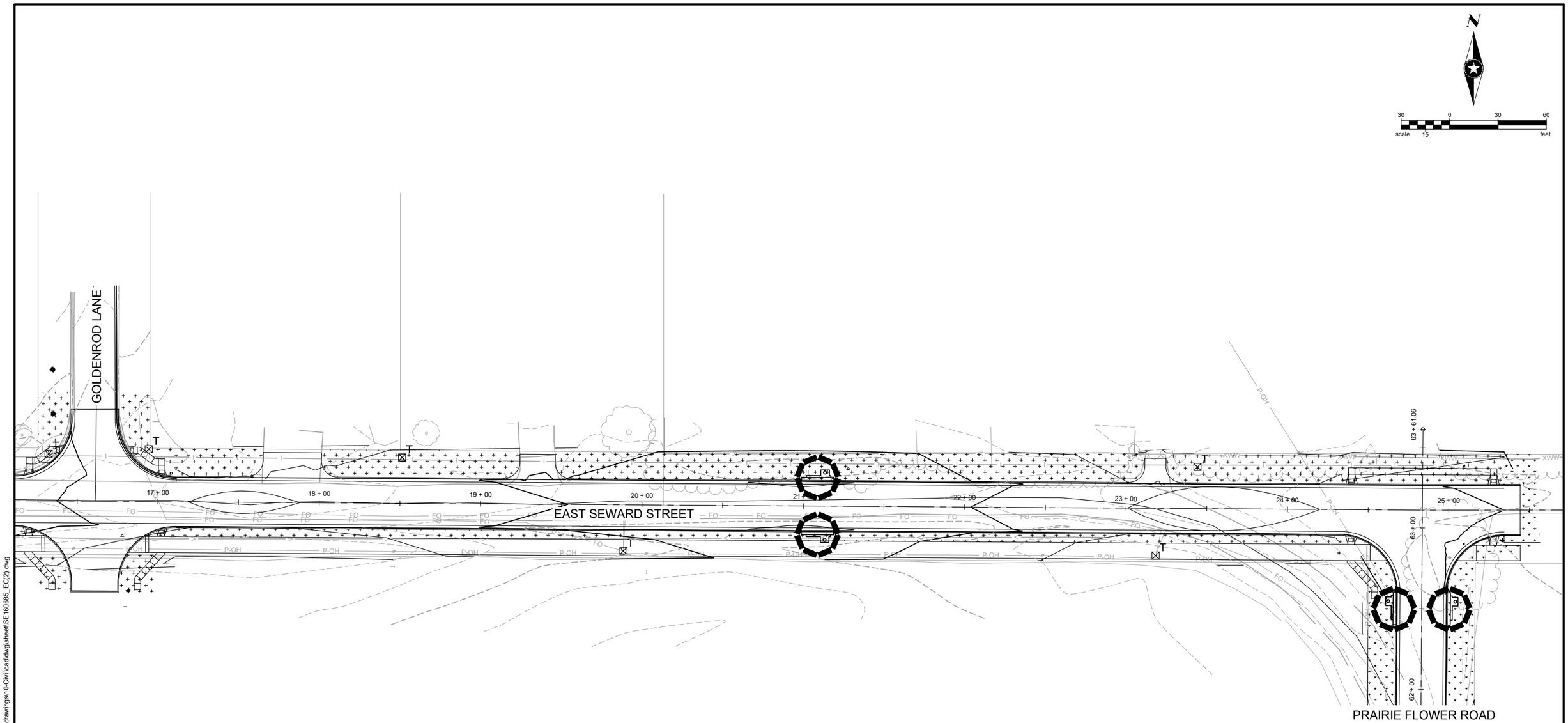
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Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

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EAST SEWARD STREET

SEWARD, NEBRASKA

EROSION CONTROL EAST SEWARD ST



EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- (SUPER TURF 11 - UNITED SEEDS INC.) W/ S75 EROSION CONTROL BLANKET
- (LOW GROW GRASS MIXTURE - UNITED SEEDS INC.) W/ HAY MULCH COVER CRIMPED

NOTE : SEEING RATE SHALL BE 10LBS PER 1,000 SF

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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Checked By	JRV	.			.		

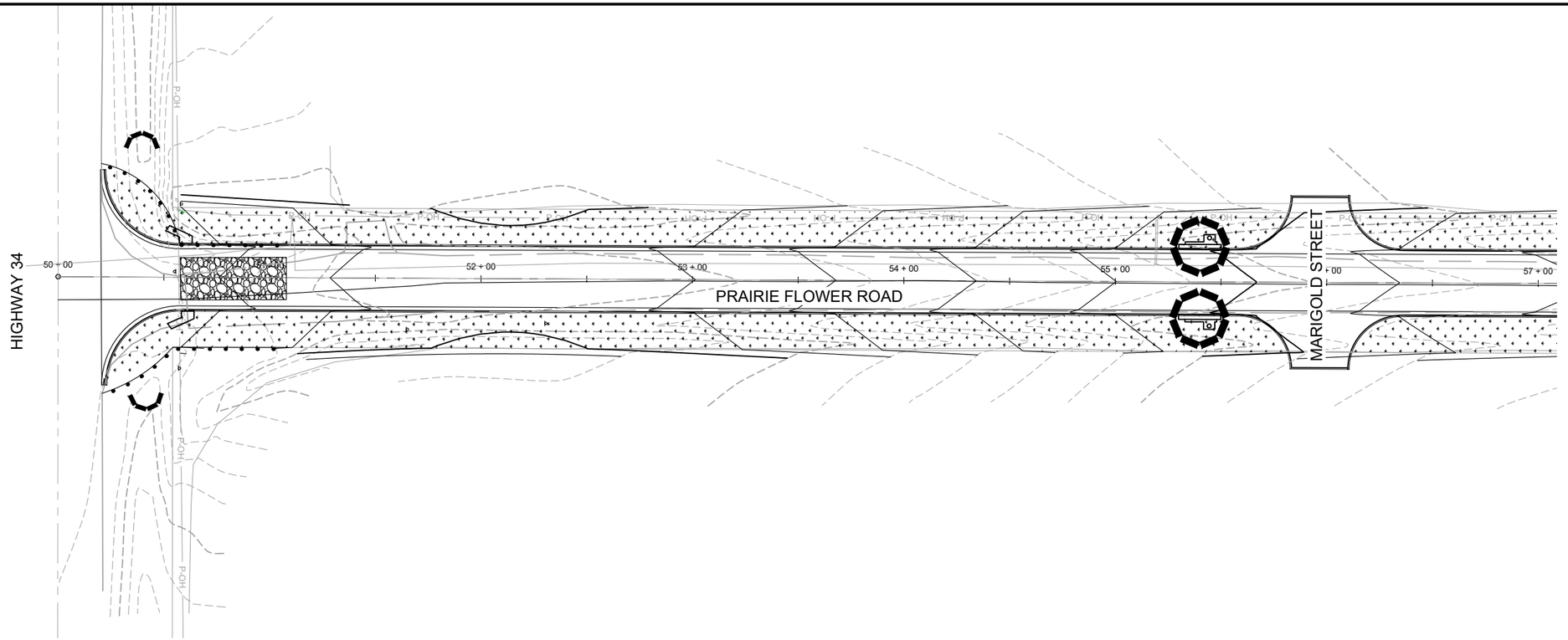
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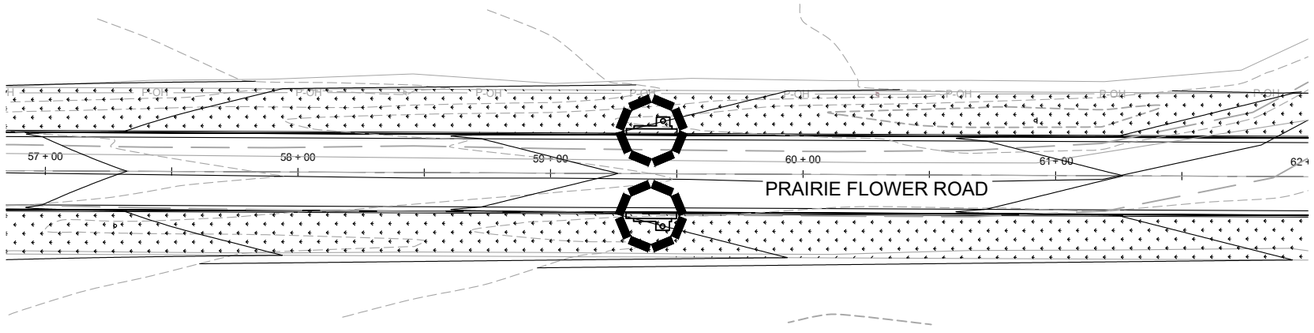
SEWARD, NEBRASKA

EROSION CONTROL EAST SEWARD ST

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of 65





EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- (LOW GROW GRASS MIXTURE - UNITED SEEDS INC.) W/ HAY MULCH COVER CRIMPED

NOTE : SEEDING RATE SHALL BE 10LBS PER 1,000 SF

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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Designed By		.			.			
Checked By	JRV	.			.			

EAST SEWARD STREET
SEWARD, NEBRASKA

EROSION CONTROL
EAST SEWARD ST

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of 65

N

20 0 20 40
scale 10 feet

EVERGREEN DRIVE

1445

1446

20.00

1450

HIGHWAY 34

EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- SEEDING

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STATE OF NEBRASKA

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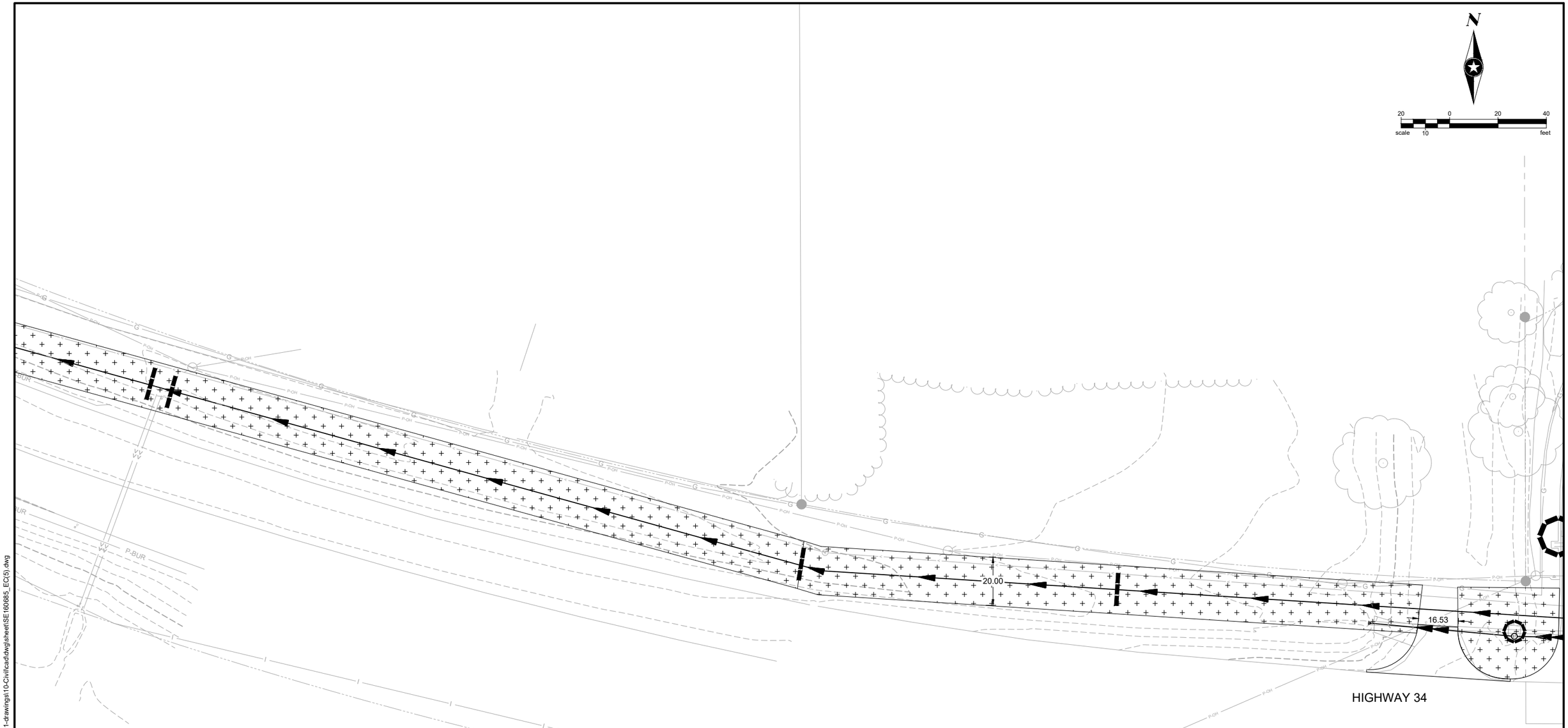
EAST SEWARD STREET

SEWARD, NEBRASKA

GRADING & EROSION CONTROL EAST SEWARD ST

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EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- SEEDING

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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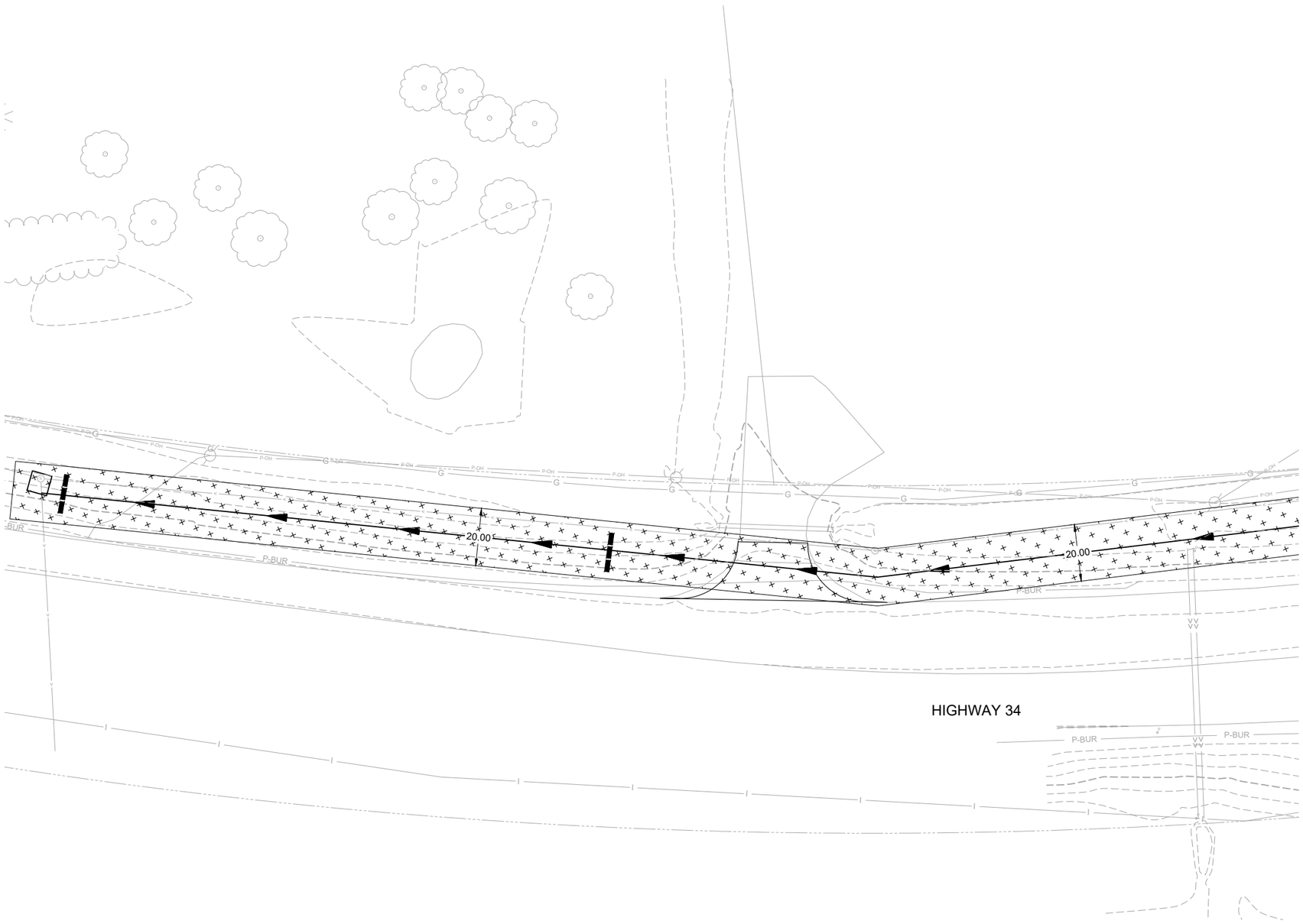
EAST SEWARD STREET

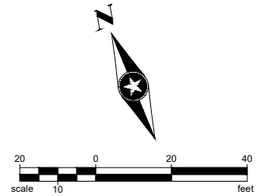
SEWARD, NEBRASKA

GRADING & EROSION CONTROL
EAST SEWARD ST

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of 65

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EROSION CONTROL

- EXISTING AND PROPOSED DRAINAGE DIRECTIONAL FLOW ARROW
- TEMPORARY ROCK CONSTRUCTION ENTRANCE
- STORM DRAIN INLET PROTECTION
- SILT FENCE
- STRAW WATTLE
- CULVERT PROTECTION
- SILTC — SILTC — SILTC — FLOTATION SILT CURTAIN
- SEEDING

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E-14500
STATE OF NEBRASKA

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Checked By	JRV	.			.		

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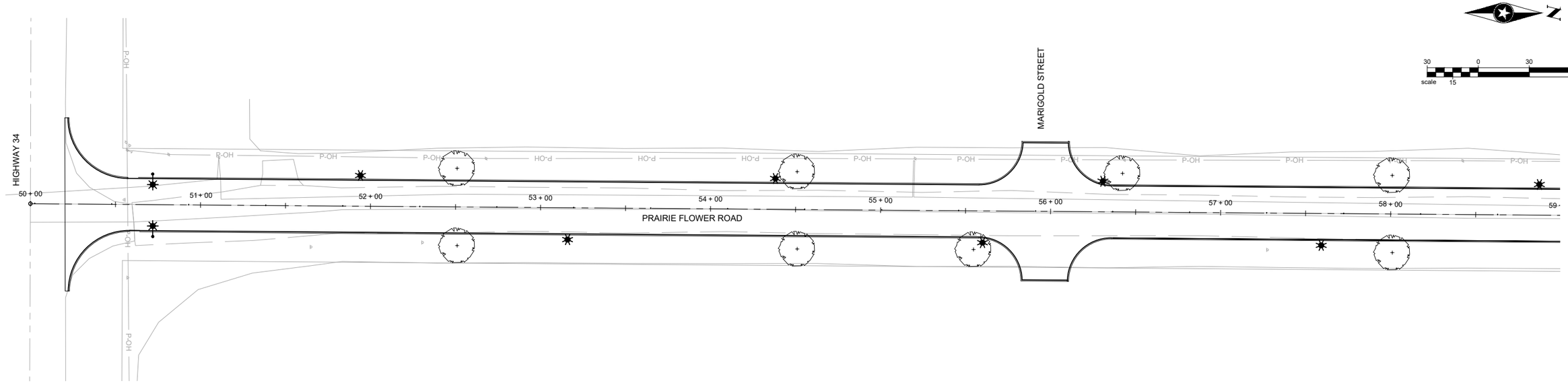
EAST SEWARD STREET

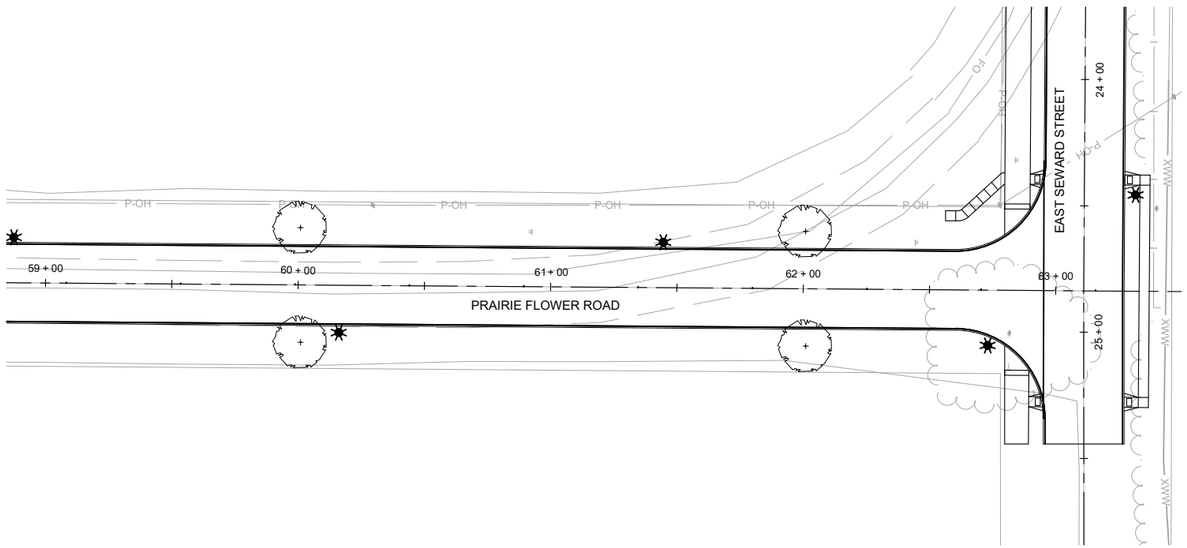
SEWARD, NEBRASKA

GRADING & EROSION CONTROL
EAST SEWARD ST

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of 65

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INSTALL STREET TREE (3" CAL.)

INSTALL LIGHTING UNIT 1 - UTILITY FURNISHED

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

SEH Project	160685
Drawn By	ACR
Designed By	
Checked By	JRV

Rev.#	Revision Issue Description	Date
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Rev.#	Revision Issue Description	Date
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SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

LANDSCAPING PLAN
EAST SEWARD ST

17

of 65

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N

20 0 20 40
scale 10 feet

EAST SEWARD STREET

CONCRETE

EVERGREEN DRIVE

CONCRETE

24.41

4.00

19.00

4.00

REMOVE FIRE HYDRANT ASSEMBLY, 1 EA.
INSTALL 6" CAP, 1 EA.

1.00

169.58

SAW CUT EXISTING CONCRETE
REMOVE PAVEMENT

36.63

26.00

REMOVE HEADWALL, 1 EA.

LEGEND

REMOVE PAVEMENT

REMOVE DRIVEWAY PAVEMENT

REMOVE SIDEWALK

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

BENCHMARK EL.

REMOVAL PLAN

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

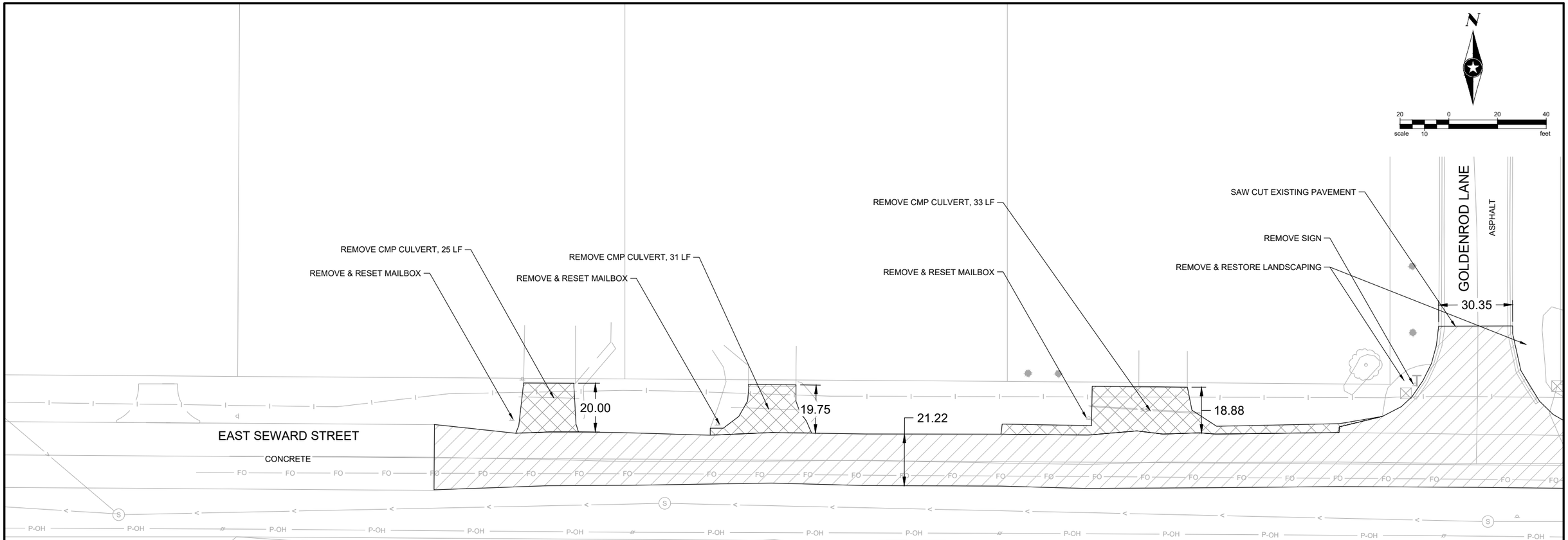
SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET

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LEGEND

- REMOVE PAVEMENT
- REMOVE DRIVEWAY PAVEMENT
- REMOVE SIDEWALK

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E-14500
STATE OF NEBRASKA

REMOVAL PLAN

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

EAST SEWARD STREET

SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET

19
of 65

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N

20 0 20 40
scale 10 feet

REMOVE & RESTORE LANDSCAPING

REMOVE SIGN

REMOVE & RESET MAILBOX

REMOVE & RESET MAILBOX

REMOVE & RESET SIGN

18.70

18.83

EAST SEWARD STREET

ASPHALT

21.38

REMOVE SIGN

LEGEND

REMOVE PAVEMENT

REMOVE DRIVEWAY PAVEMENT

REMOVE SIDEWALK

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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SEH Project	160685	.			.		
Drawn By	ACR	.			.		
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Checked By	JRV	.			.		

SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET

N

20 0 20 40
scale 10 feet

REMOVE FENCE & POST 198 SF
(SALVAGE MATERIAL TO OWNER)

REMOVE & RESET SIGN

REMOVE & RESET SIGN

REMOVE FIRE HYDRANT ASSEMBLY, 1 EA.
INSTALL 6" CAP, 1 EA.

16.00

16.88

EAST SEWARD STREET

ASPHALT

20.52

REMOVE PVC DRAINAGE PIPE STAND, 1 EA.
INSTALL 6" PVC DRAINAGE PIPE CAP, 1 EA.

REMOVE EXISTING TREES, I LS

REMOVE SIGN

GRAVEL

LEGEND

REMOVE PAVEMENT

REMOVE DRIVEWAY PAVEMENT

REMOVE GRAVEL SURFACING

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

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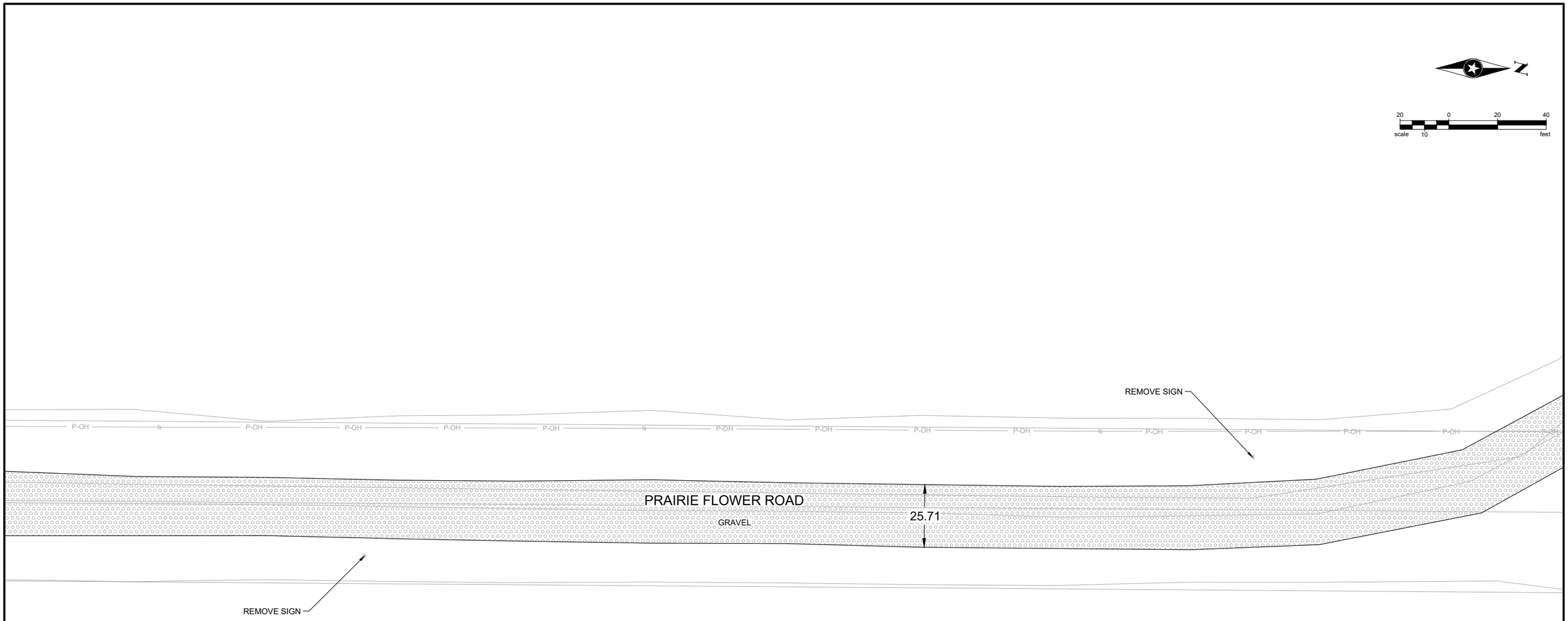
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Drawn By	ACR	.			.		
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SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET



LEGEND

- REMOVE PAVEMENT
- REMOVE DRIVEWAY PAVEMENT
- REMOVE GRAVEL SURFACING

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

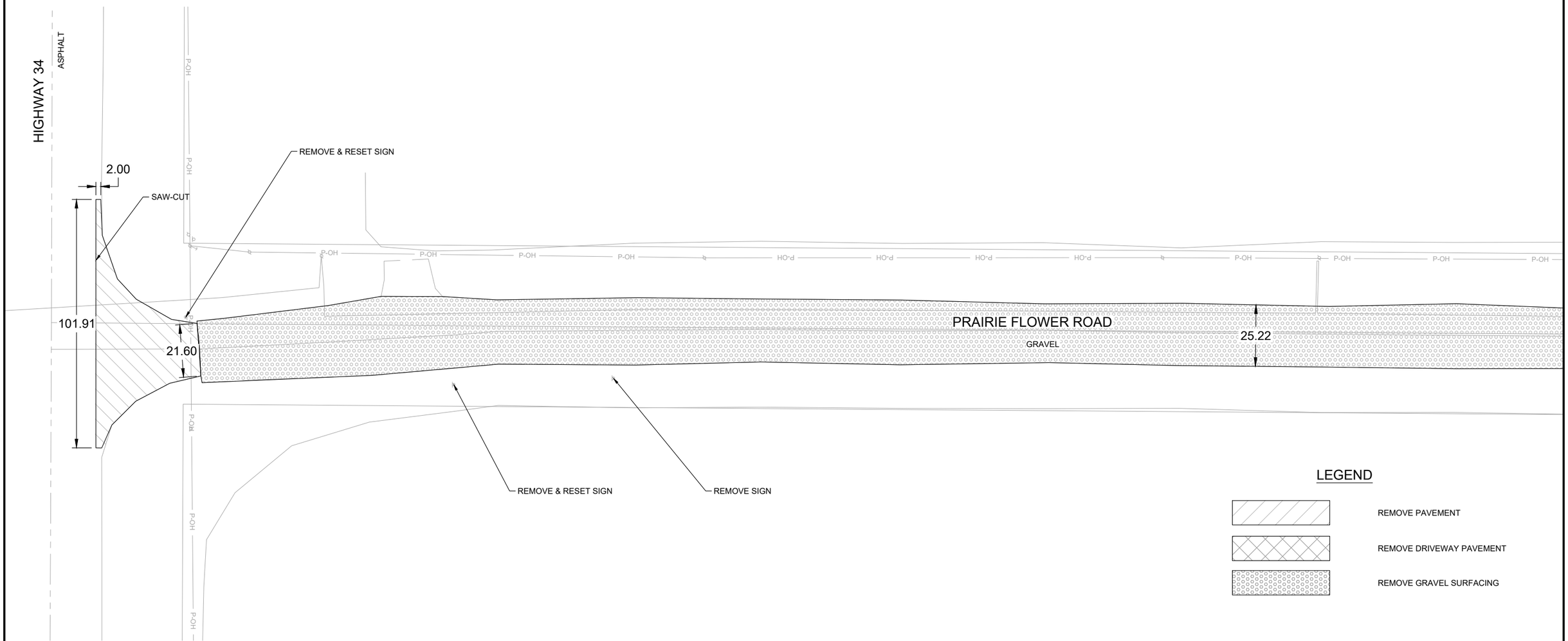
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EAST SEWARD STREET

SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET

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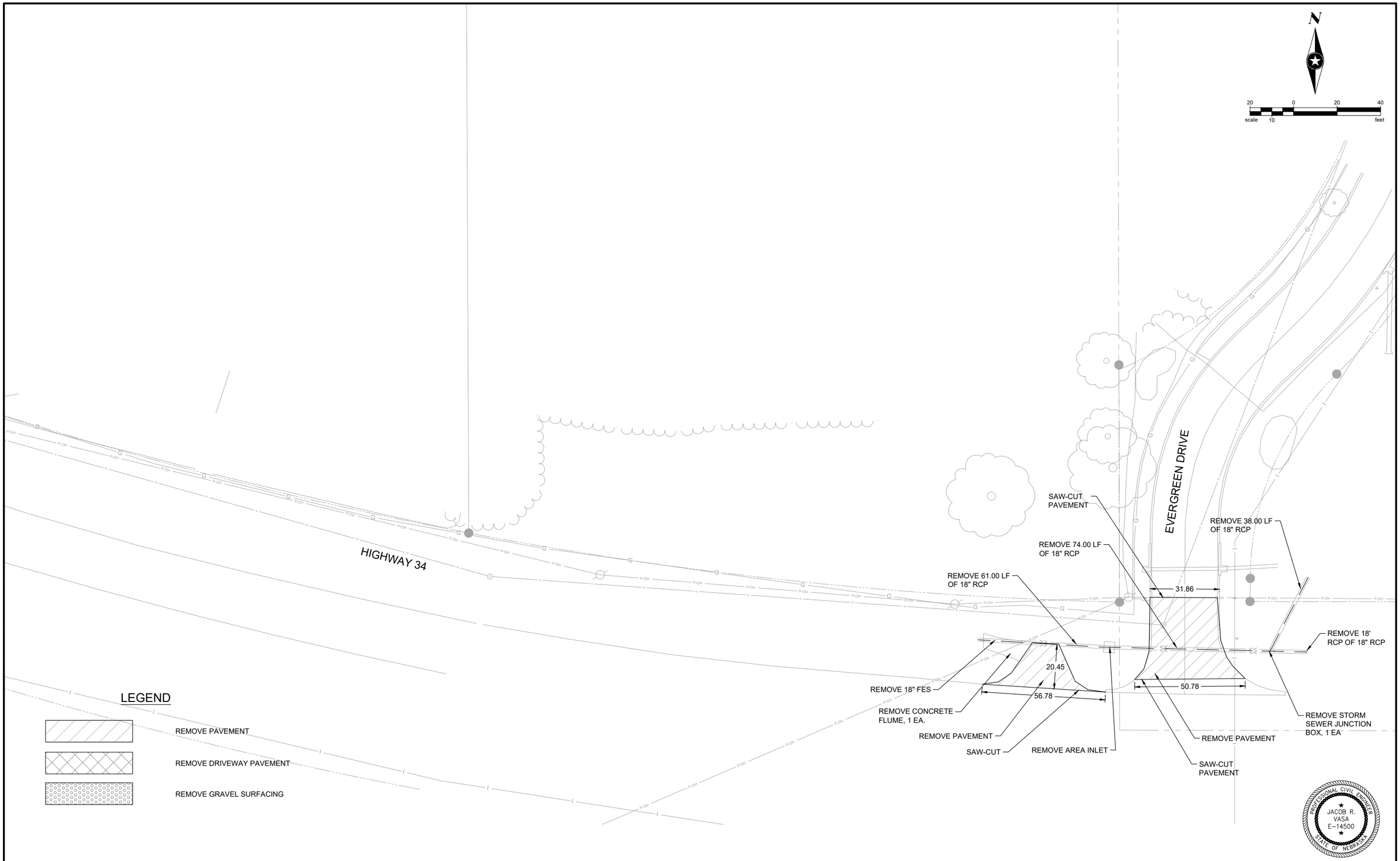
JACOB R. VASA E-14500
PROFESSIONAL CIVIL ENGINEER
STATE OF NEBRASKA

SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH
Drawn By	ACR	.			.			
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Checked By	JRV	.			.			

EAST SEWARD STREET
SEWARD, NEBRASKA

REMOVAL
EAST SEWARD STREET

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JACOB R. VASA
E–14500
STATE OF NEBRASKA

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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	EAST SEWARD STREET	**REMOVAL EAST SEWARD STREET**
Drawn By	ACR	.			.			SEWARD, NEBRASKA	24 of 65
Designed By		.			.				
Checked By	JRV	.			.				

NOTES:

EXISTING SANITARY MANHOLE.

REMOVE MANHOLE FRAME, COVER, AND ADJUSTING RINGS. ADJUST RIM ELEVATION TO WITHIN ½" OF FINISHED GRADE.

MORTAR SEAL ADJUSTING RINGS TO PREVENT INFILTRATION AND INFLOW.

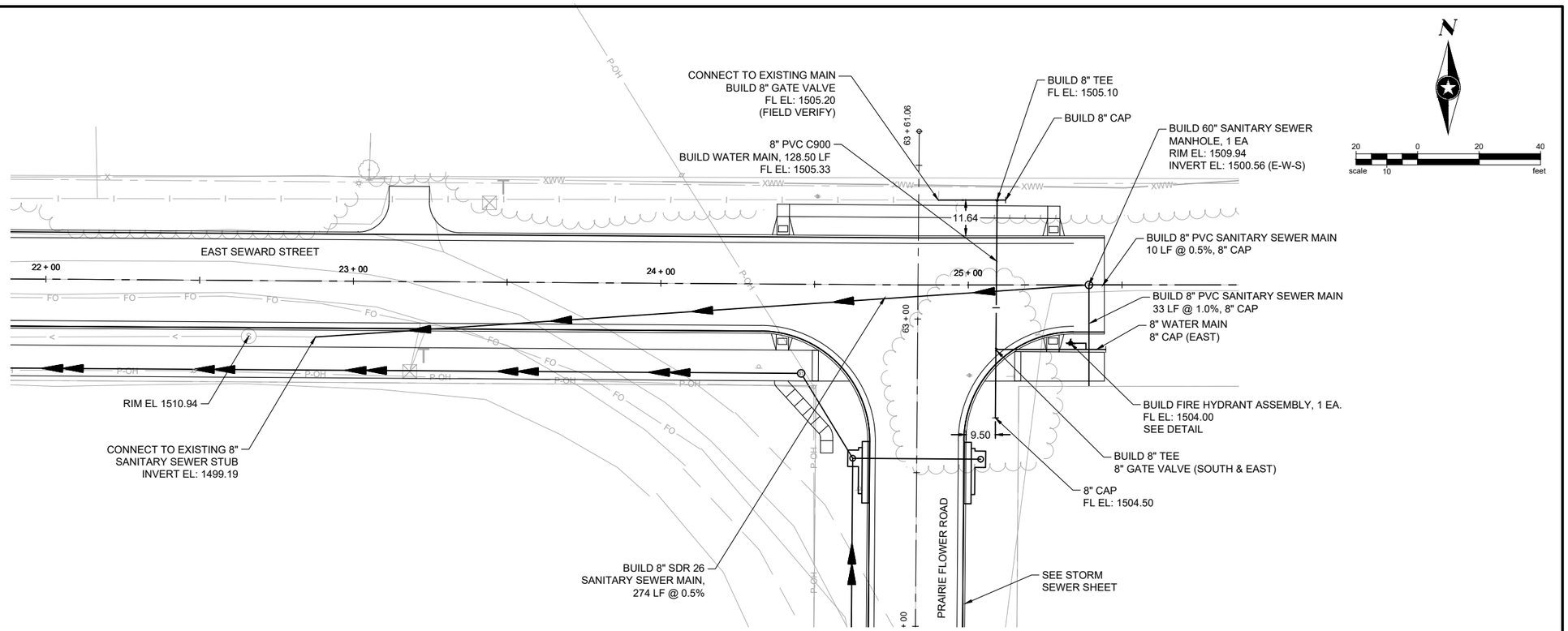
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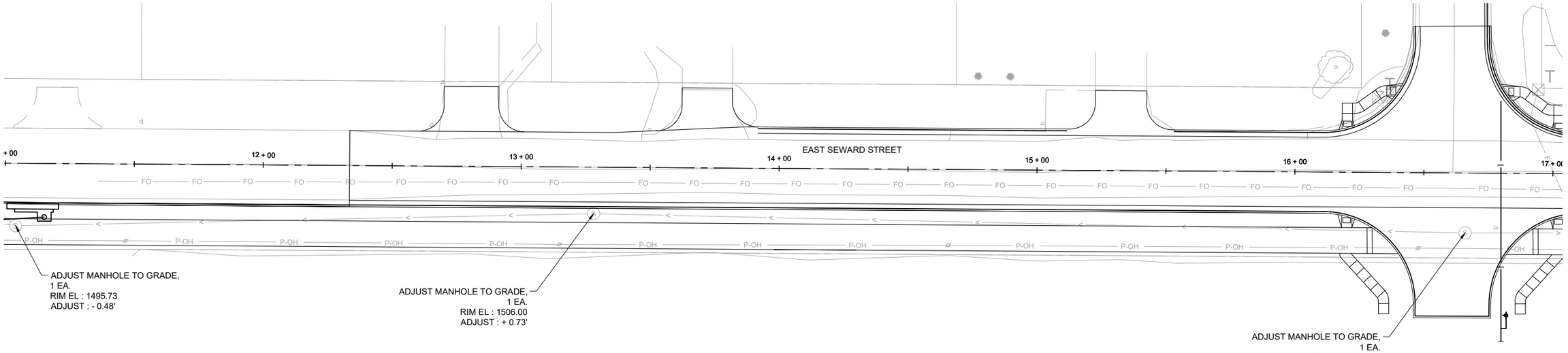
STORM SEWER

RIGHT-OF-WAY

SANITARY SEWER

WATER MAIN





PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
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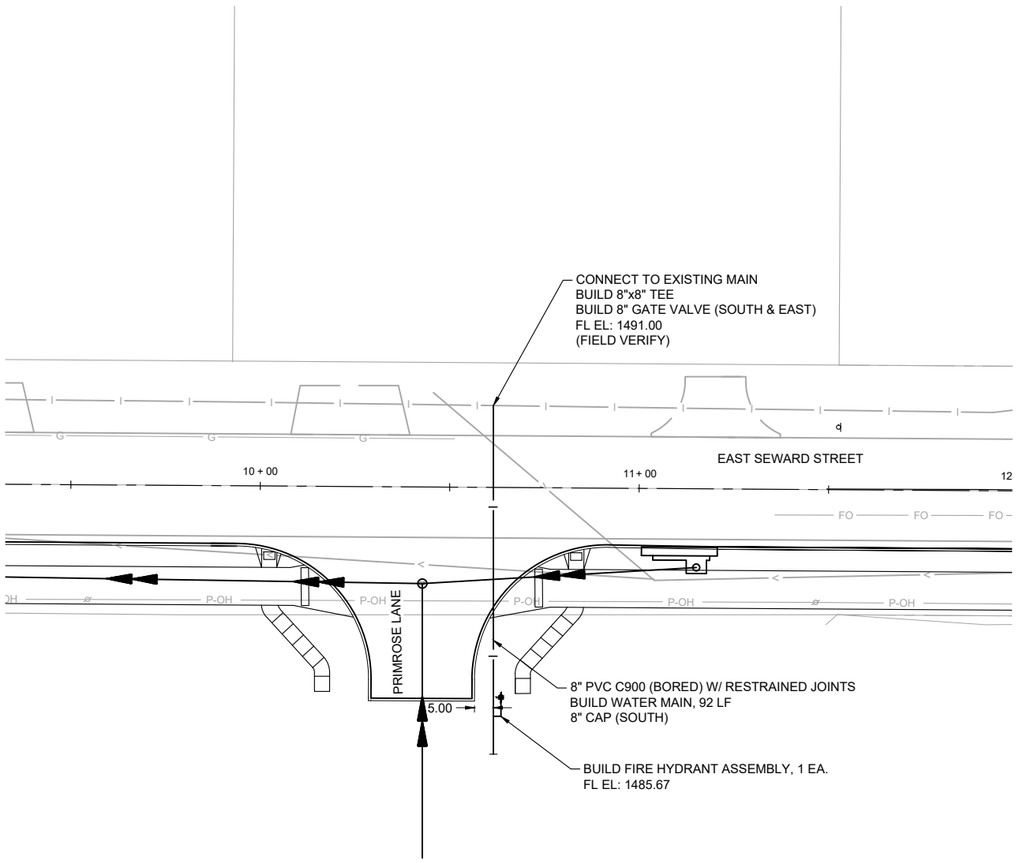
EAST SEWARD STREET

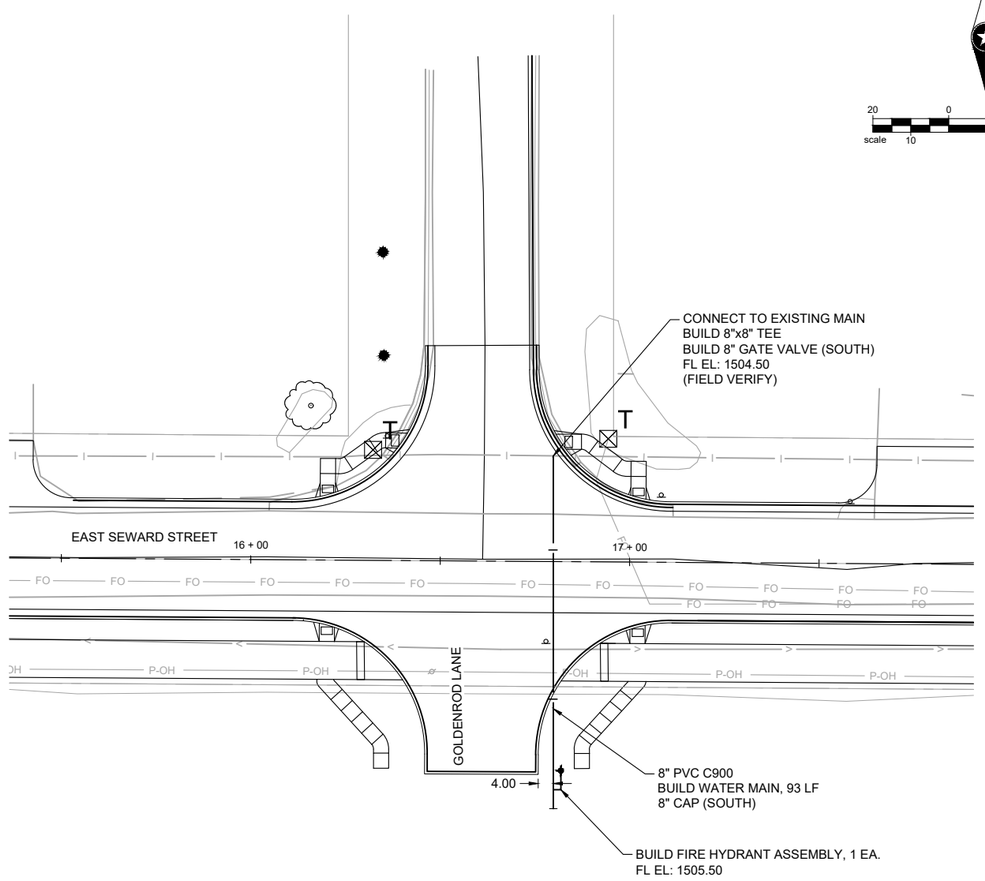
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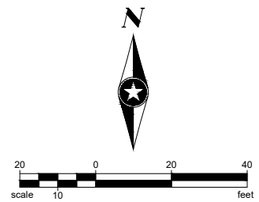
WATER AND SANITARY PLAN
EAST SEWARD STREET

25 of 65

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PROPOSED

STORM SEWER

RIGHT-OF-WAY

SANITARY SEWER

WATER MAIN

JACOB R. VASA
E-14500
PROFESSIONAL CIVIL ENGINEER
STATE OF NEBRASKA

SEH Project	160685
Drawn By	ACR
Designed By	
Checked By	JRV

Rev.#	Revision Issue Description	Date
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SEH

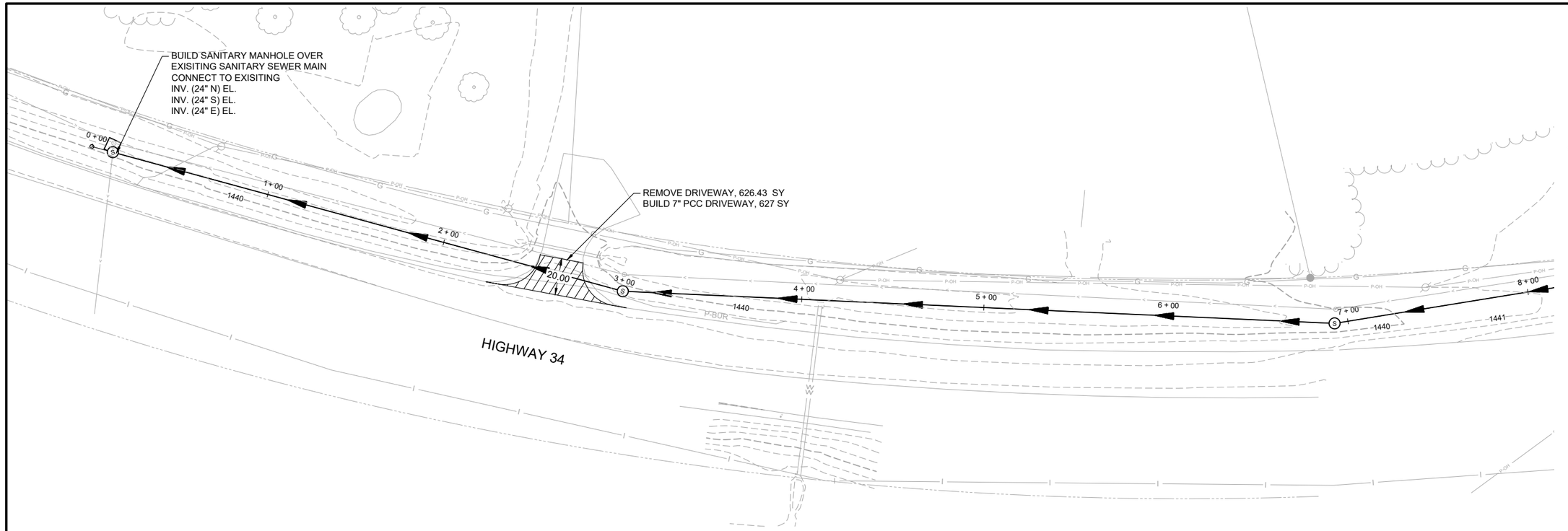
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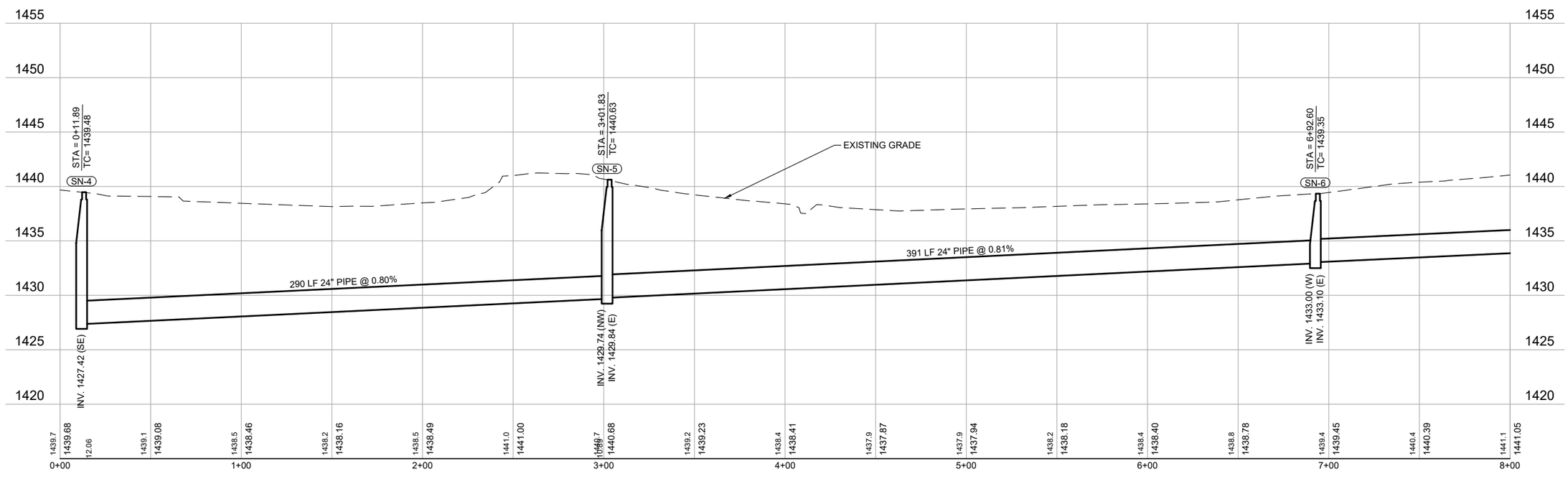
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WATER AND SANITARY PLAN
EAST SEWARD ST

26
of 65

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PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

SEH

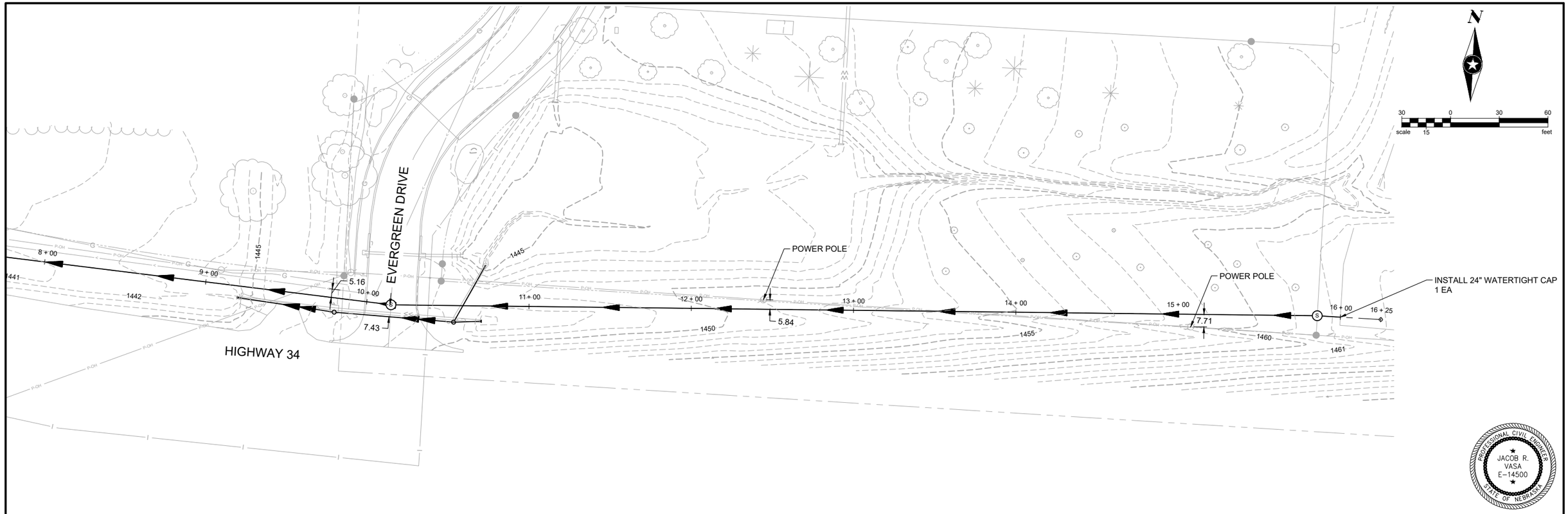
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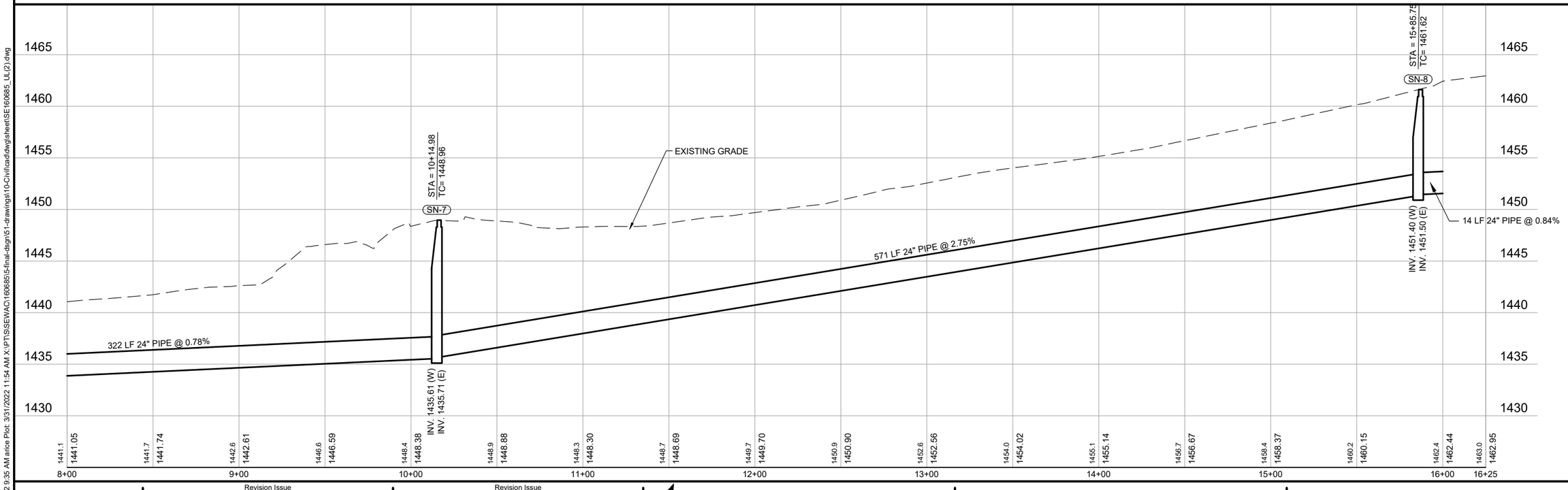
SEWARD, NEBRASKA

SANITARY PLAN & PROFILE
EAST SEWARD ST

27
of 65

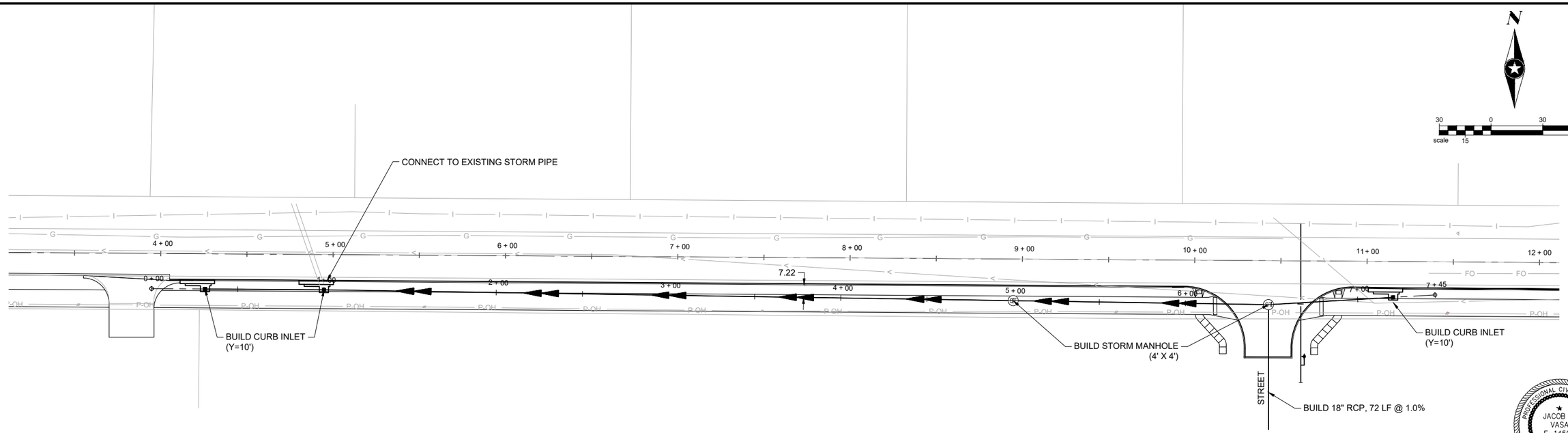
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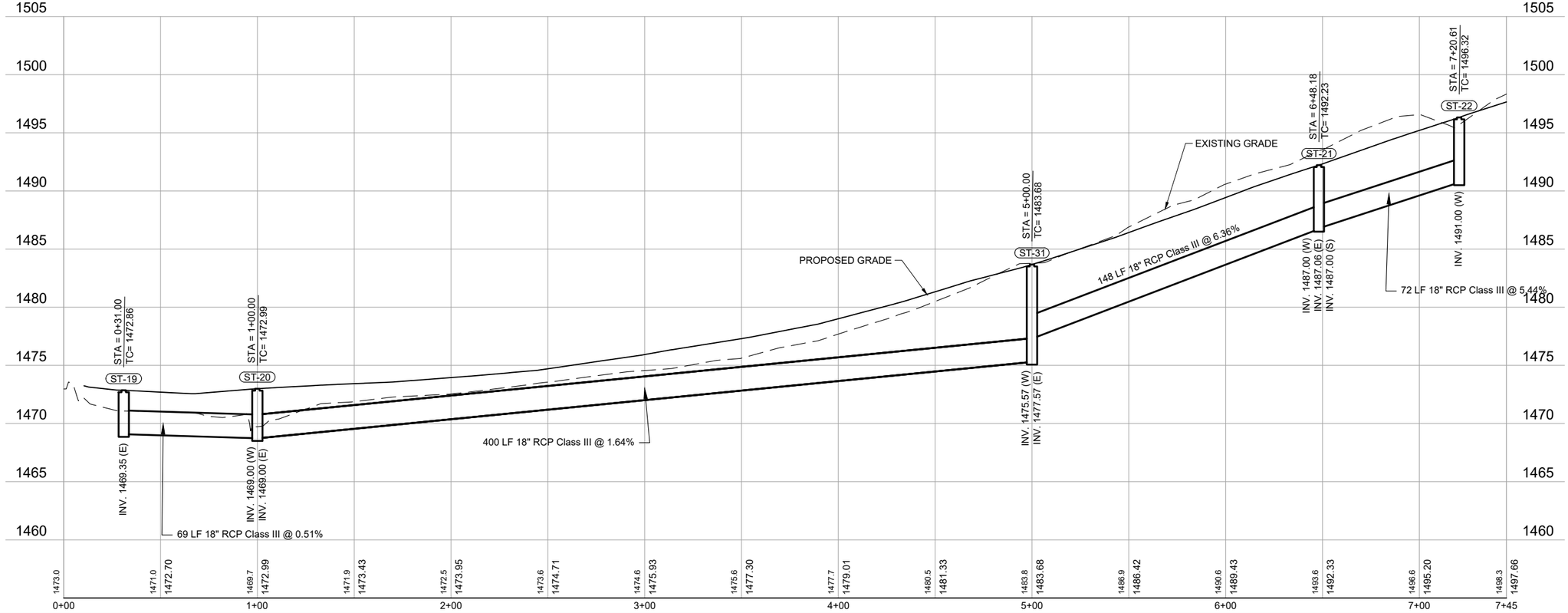


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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	EAST SEWARD STREET	**SANITARY PLAN & PROFILE EAST SEWARD ST**
Drawn By	ACR	.			.			SEWARD, NEBRASKA	
Designed By		.			.				
Checked By	JRV	.			.				



EAST SEWARD STREET



		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

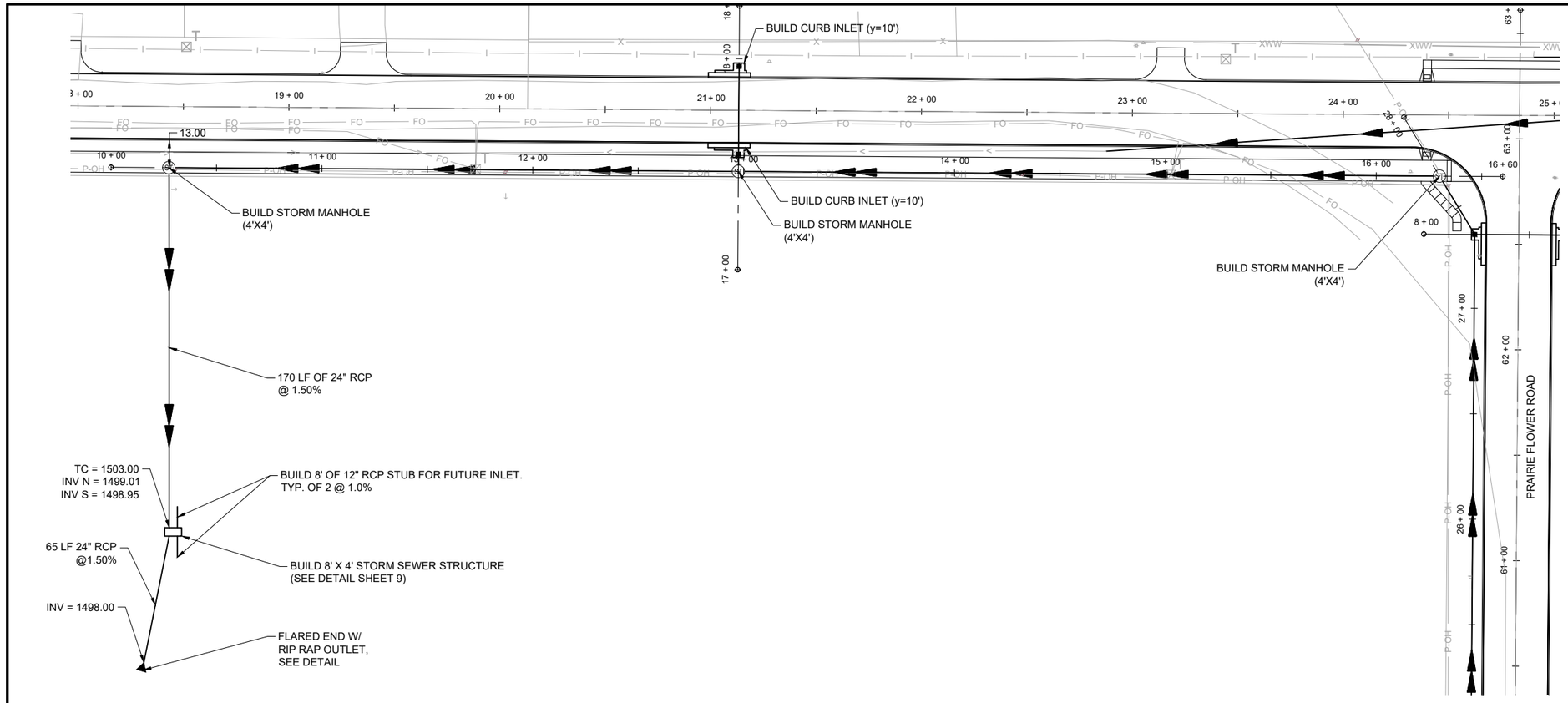
EAST SEWARD STREET

SEWARD, NEBRASKA

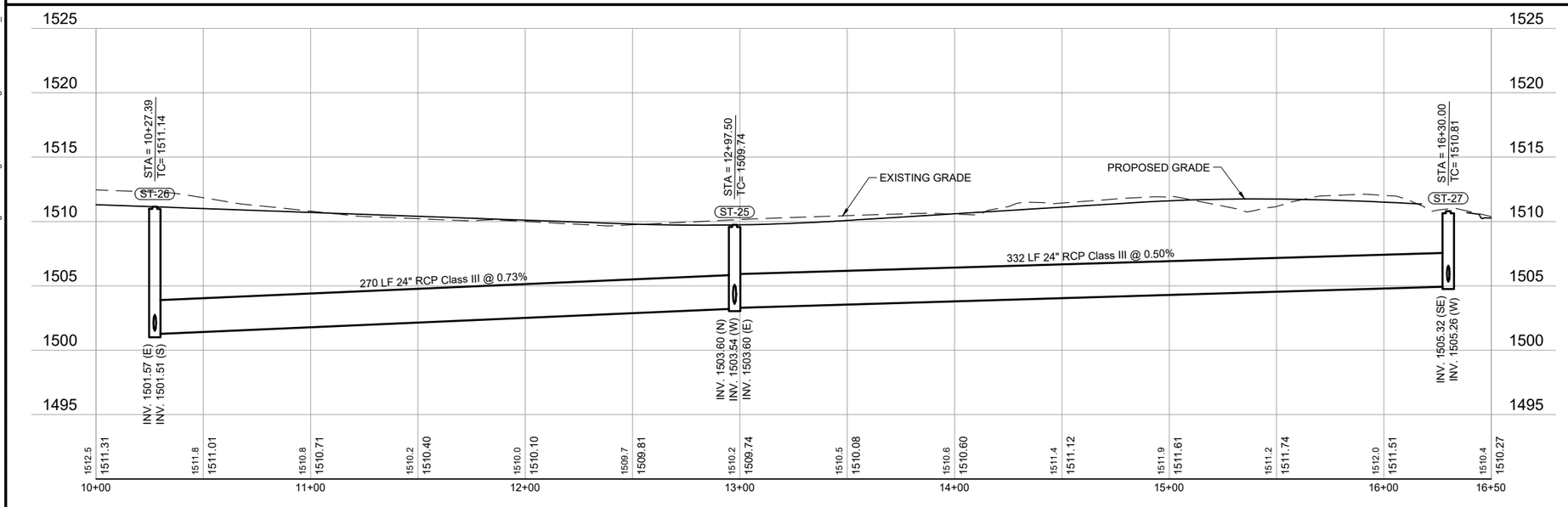
STORM SEWER PLAN & PROFILE
EAST SEWARD ST

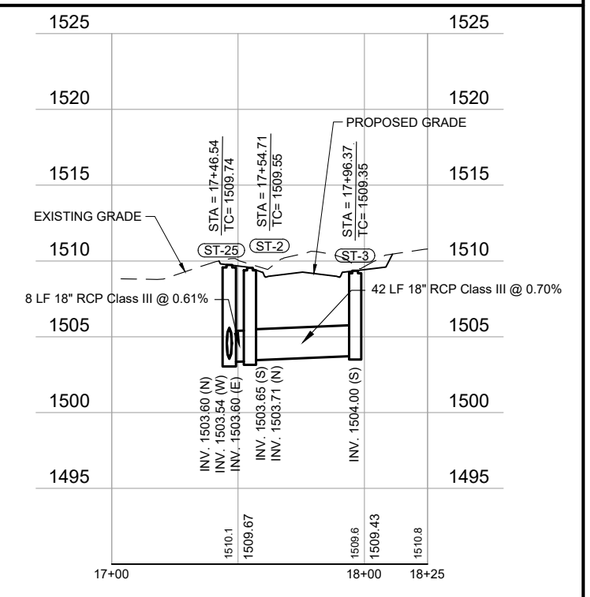
PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

Save: 3/31/2022 9:36 AM arice Plot: 3/31/2022 11:54 AM X:\PT\S\SEWAC\160685\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\SE160685_STORM.dwg



EAST SEWARD STREET





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		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By	ACR	.			.		
Designed By		.			.		
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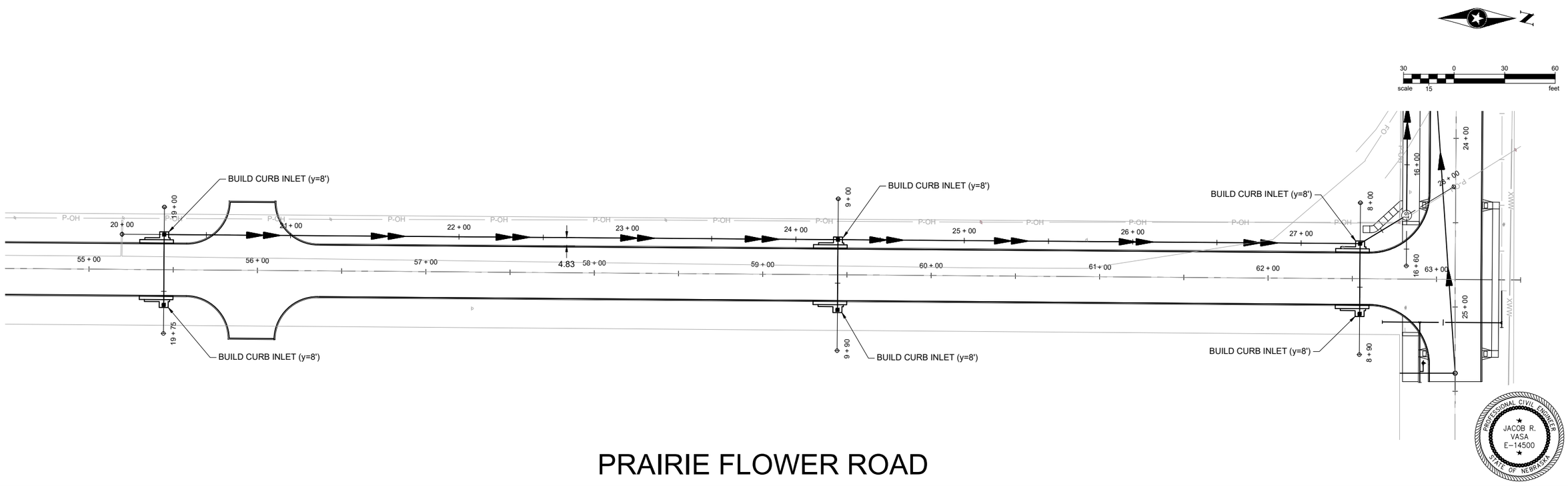
EAST SEWARD STREET

SEWARD, NEBRASKA

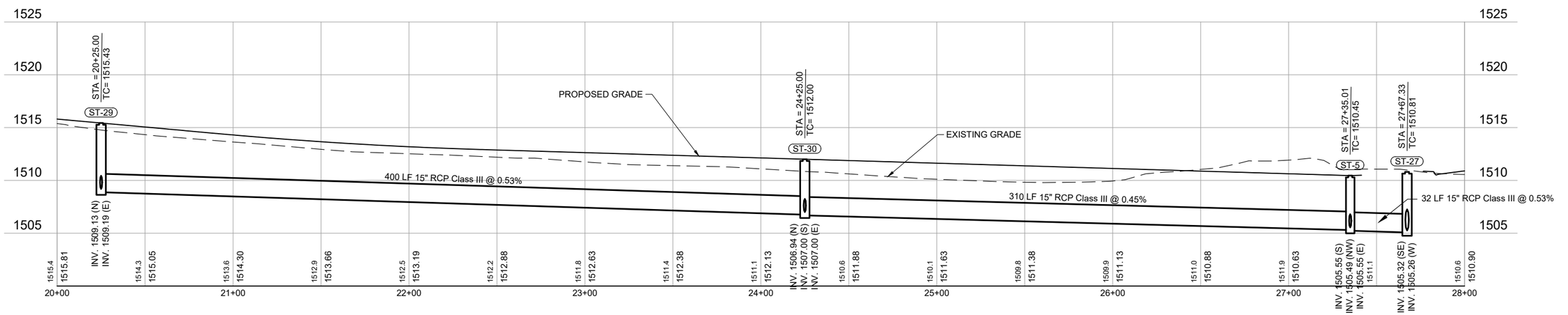
STORM SEWER PLAN & PROFILE
EAST SEWARD ST

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PRAIRIE FLOWER ROAD



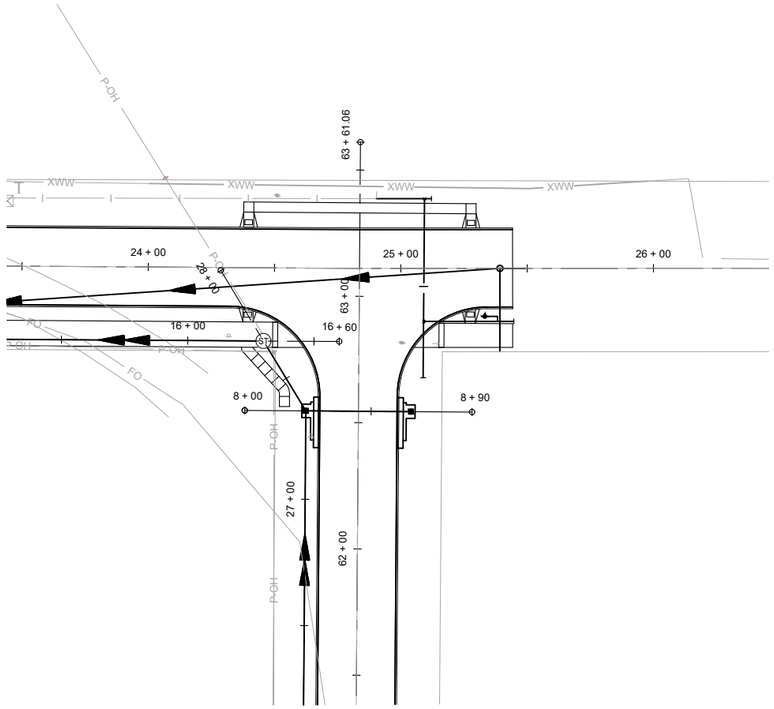
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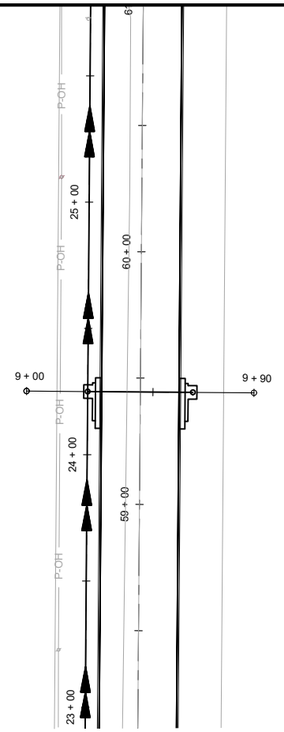
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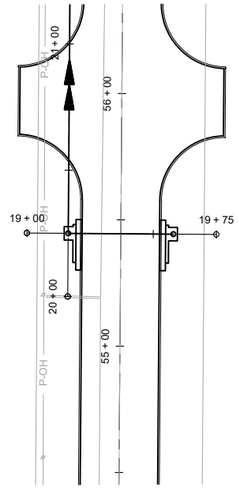
SEWARD, NEBRASKA

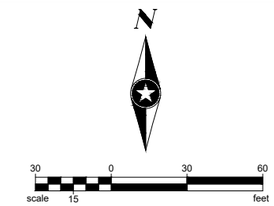
STORM SEWER PLAN & PROFILE
EAST SEWARD ST

Save: 3/31/2022 9:36 AM arice Plot: 3/31/2022 11:55 AM X:\PTI\SI\SEWAC\160685\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\SE160685_STORM.dwg



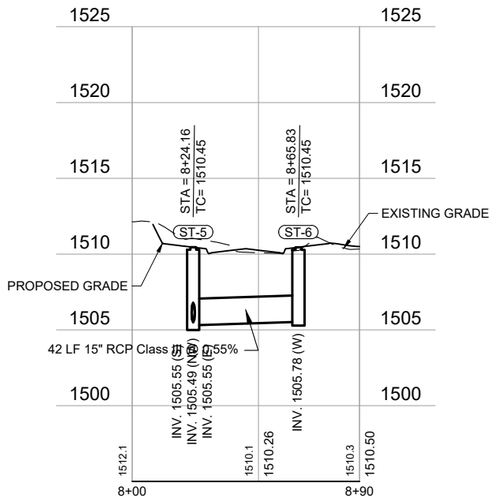


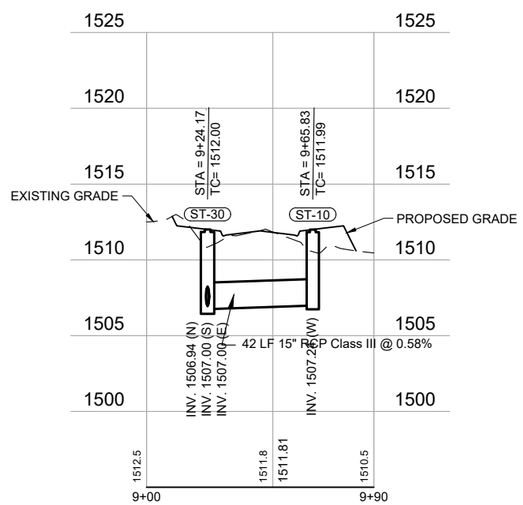


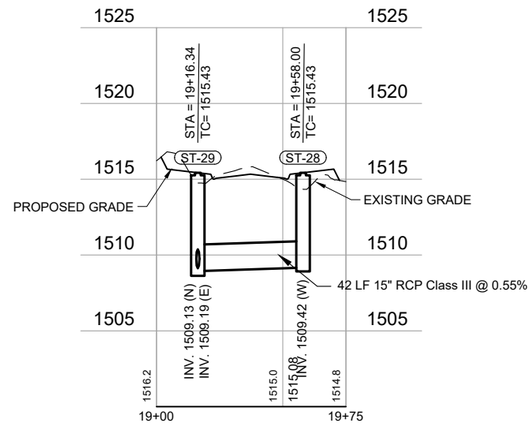




PRAIRIE FLOWER ROAD







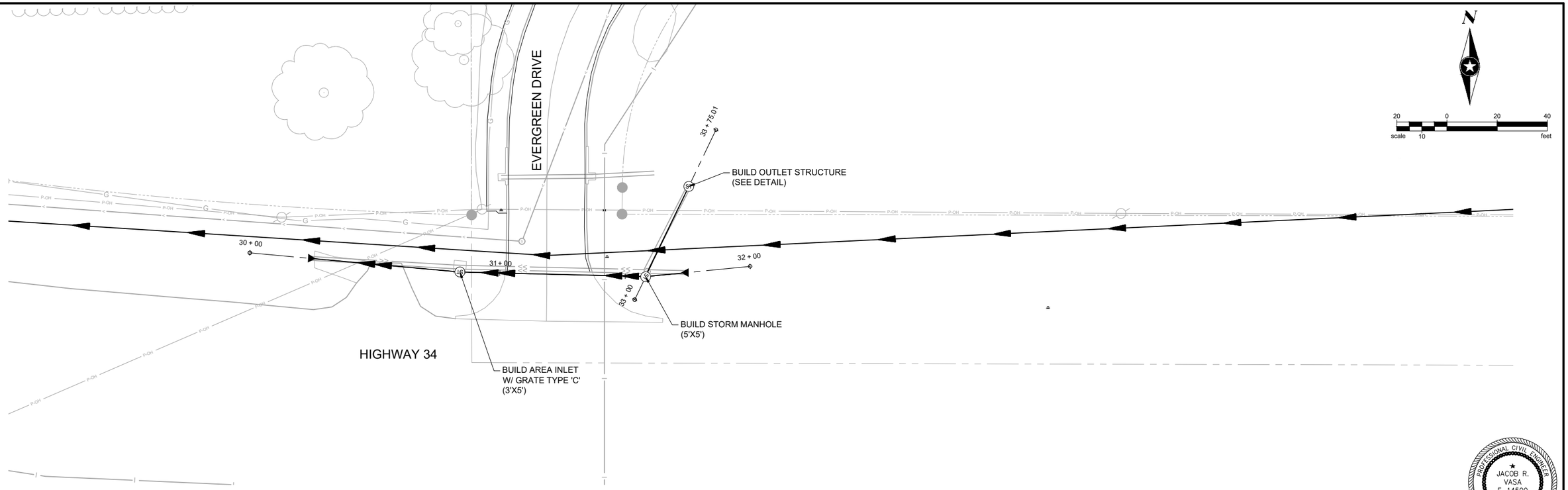
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EAST SEWARD STREET

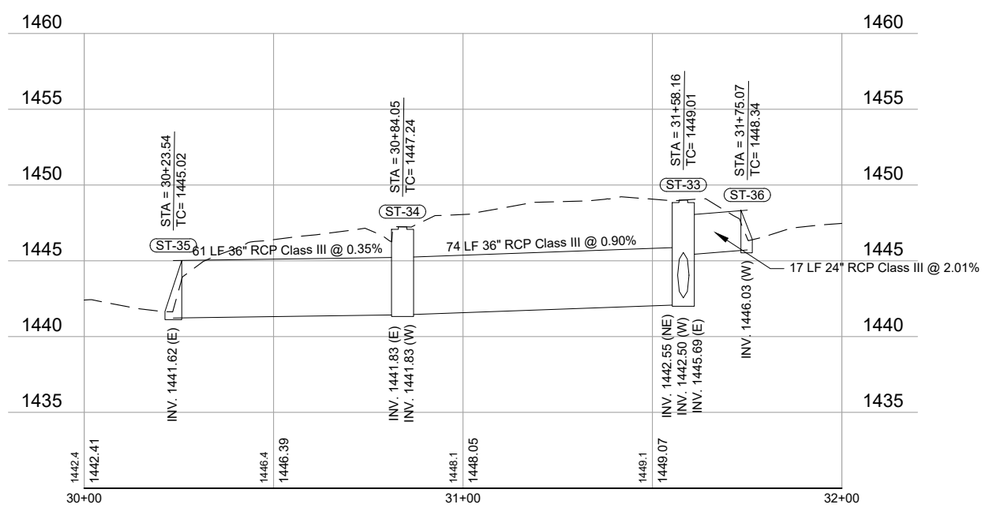
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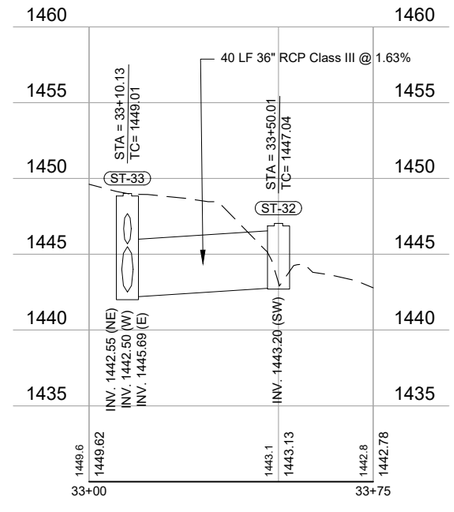
STORM SEWER PLAN & PROFILE
EAST SEWARD ST

Save: 3/31/2022 9:36 AM arice Plot: 3/31/2022 11:55 AM X:\PTI\SI\SEWAC\160685\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\SE160685_STORM.dwg



EVERGREEN DRIVE

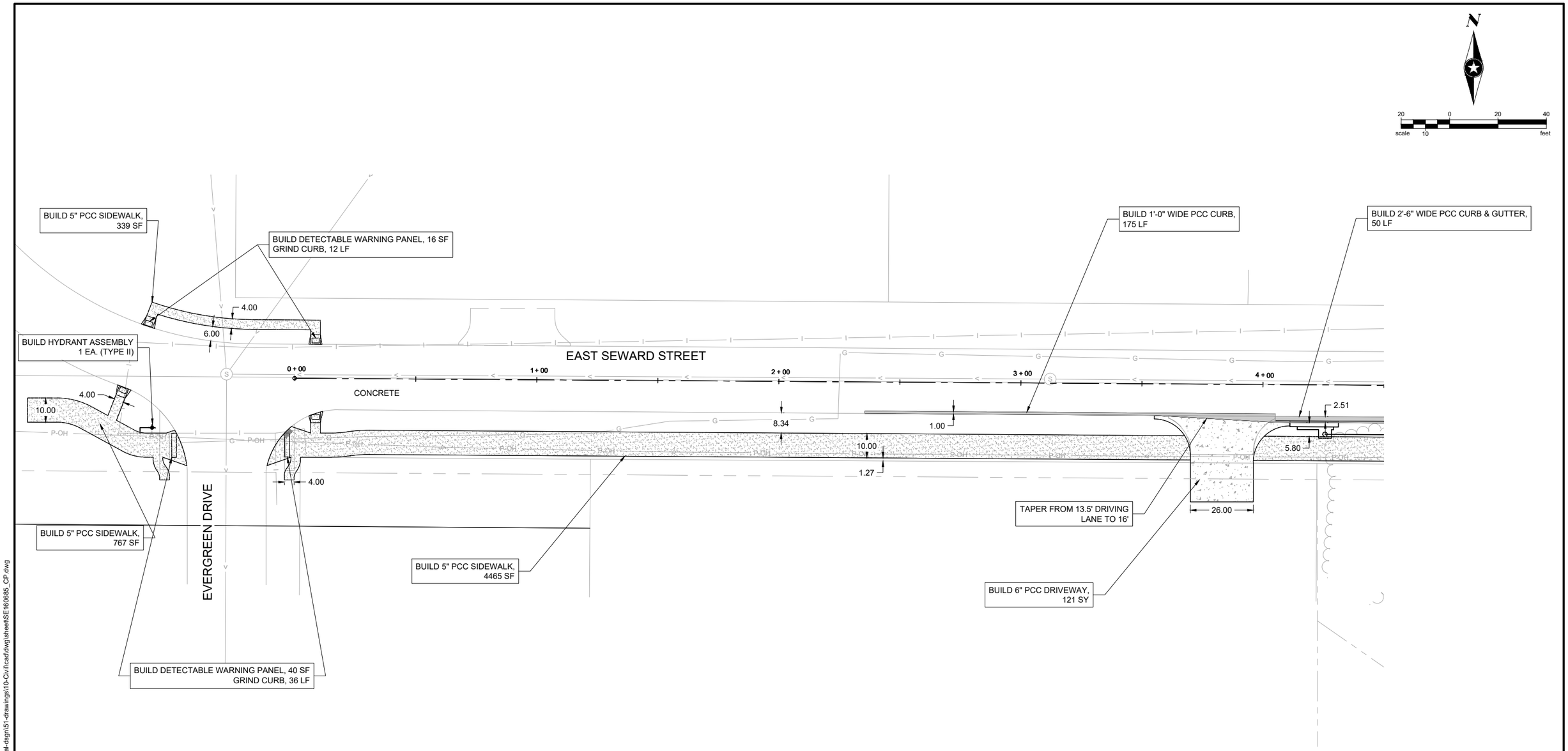




JACOB R. VASA
E-14500
PROFESSIONAL CIVIL ENGINEER
STATE OF NEBRASKA

SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	EAST SEWARD STREET	STORM PLAN & PROFILE EAST SEWARD ST
Drawn By	ACR	.			.			SEWARD, NEBRASKA	33
Designed By		.			.				of 65
Checked By	JRV	.			.				

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LEGEND

- BUILD 8" PCC PAVEMENT
- BUILD 6" PCC DRIVEWAY
- BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

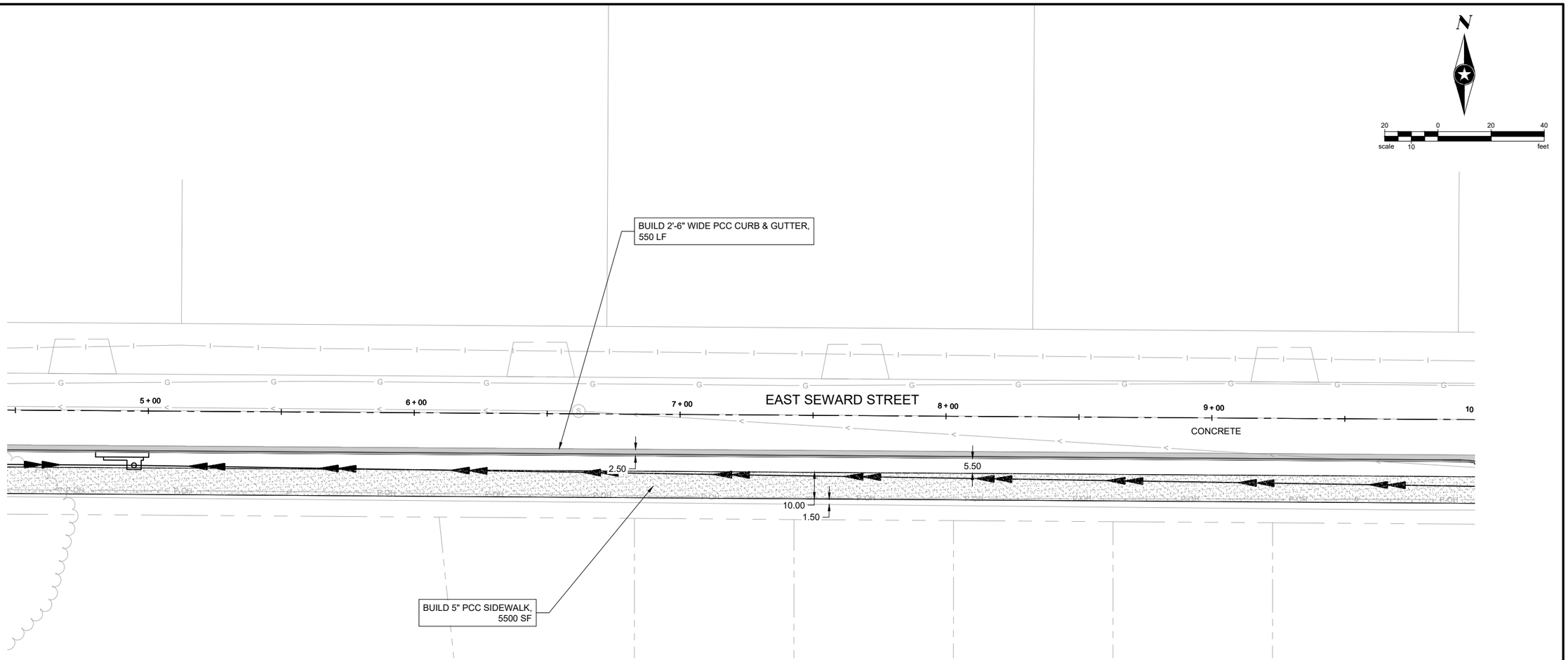
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SEH Project	160685	.			.		
Drawn By	ACR	.			.		
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EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

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BENCHMARK EL.

LEGEND

- BUILD 8" PCC PAVEMENT
- BUILD 6" PCC DRIVEWAY
- BUILD 5" PCC SIDEWALK

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E-14500
STATE OF NEBRASKA

SEH Project	160685
Drawn By	ACR
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Checked By	JRV

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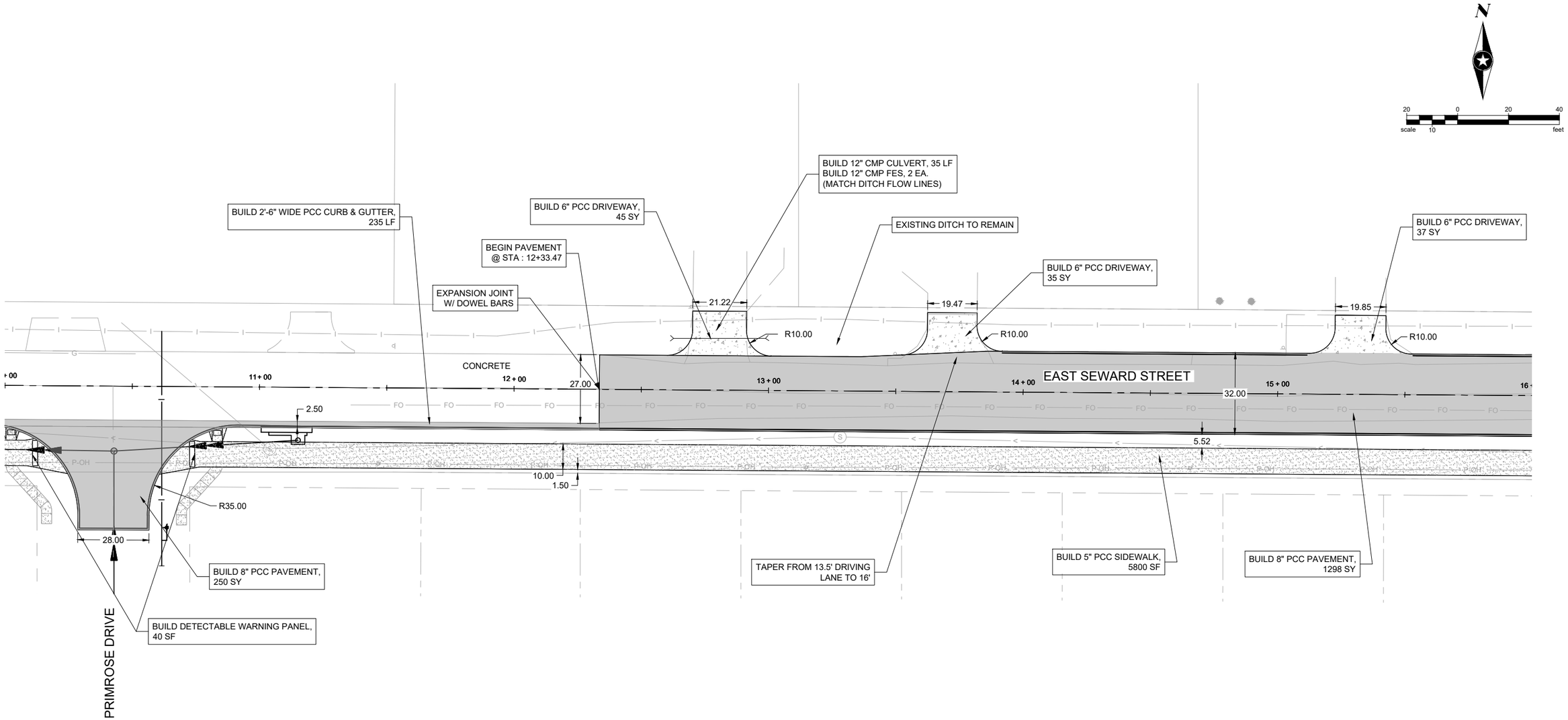
EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

35 of 65

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BENCHMARK EL.

LEGEND

- BUILD 8" PCC PAVEMENT
- BUILD 6" PCC DRIVEWAY
- BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER — JACOB R. VASA — E-14500 — STATE OF NEBRASKA

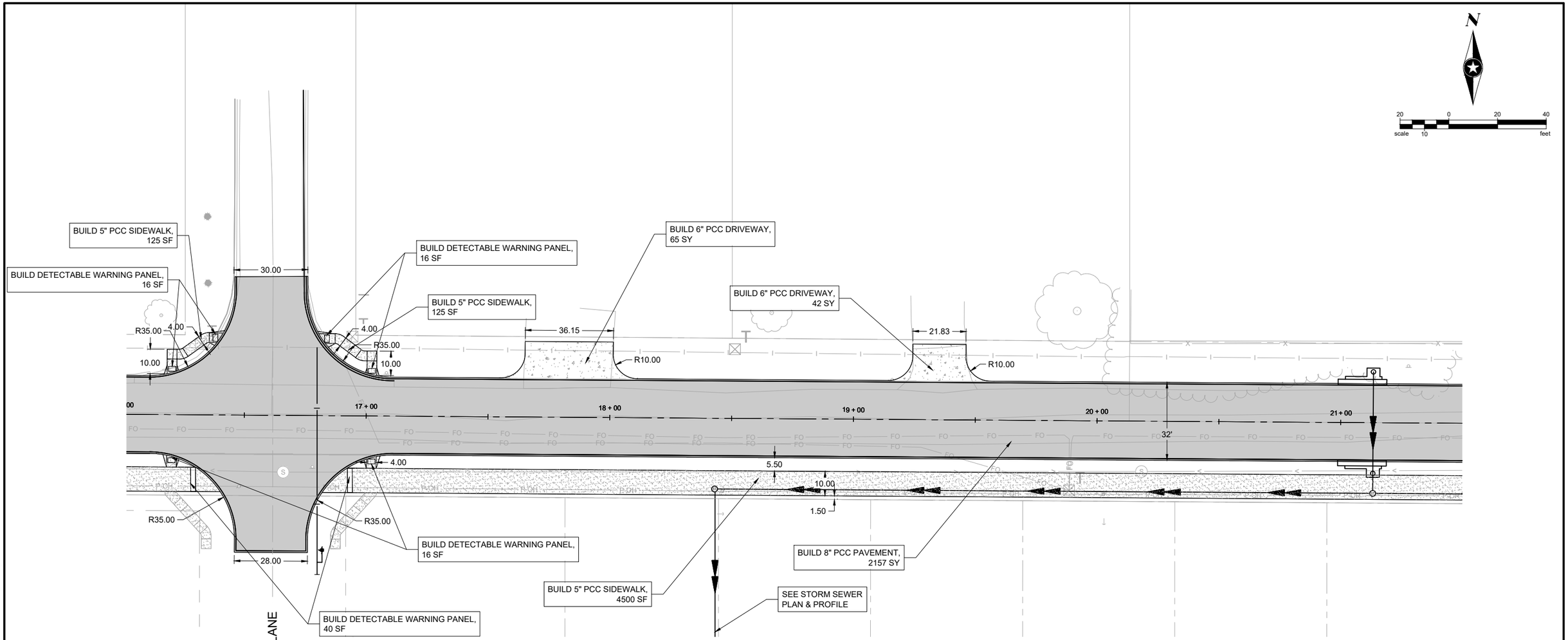
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EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

Save: 3/31/2022 10:21 AM arice Plot: 3/31/2022 11:56 AM X:\PT\S\SEWAC\160685\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\SE160685_CP.dwg



LEGEND

- BUILD 8" PCC PAVEMENT
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- BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

BENCHMARK EL.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

SEH Project	160685
Drawn By	ACR
Designed By	
Checked By	JRV

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Rev.#	Revision Issue Description	Date
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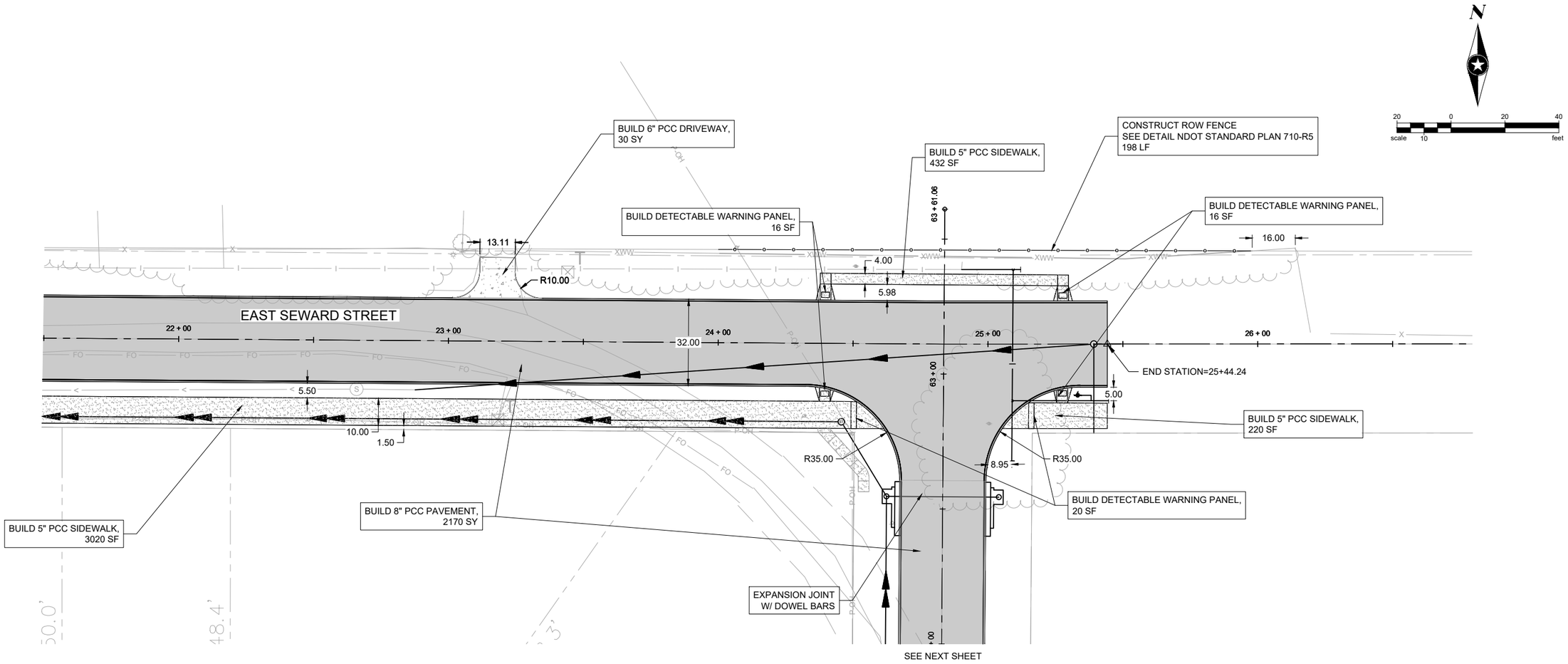
EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

37 of 65

Save: 3/31/2022 10:21 AM anice Plot: 3/31/2022 11:56 AM X:\PT\S\SEWAC\160685\5-final-dsgn\51-drawings\1b-Civil\cad\dwg\sheet\SE160685_CP.dwg



LEGEND

- BUILD 8" PCC PAVEMENT
- BUILD 6" PCC DRIVEWAY
- BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER JACOB R. VASA E-14500 STATE OF NEBRASKA

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	.			.		
Drawn By	ACR	.			.		
Designed By		.			.		
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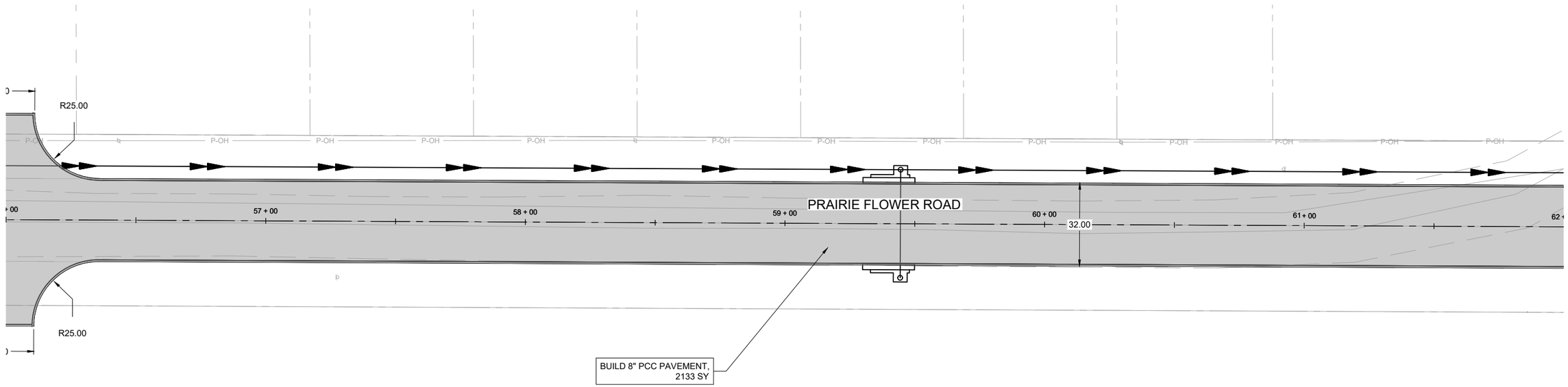
SEH

EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

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20 0 20 40
scale 10 feet

BENCHMARK EL.

LEGEND

BUILD 8" PCC PAVEMENT

BUILD 6" PCC DRIVEWAY

BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

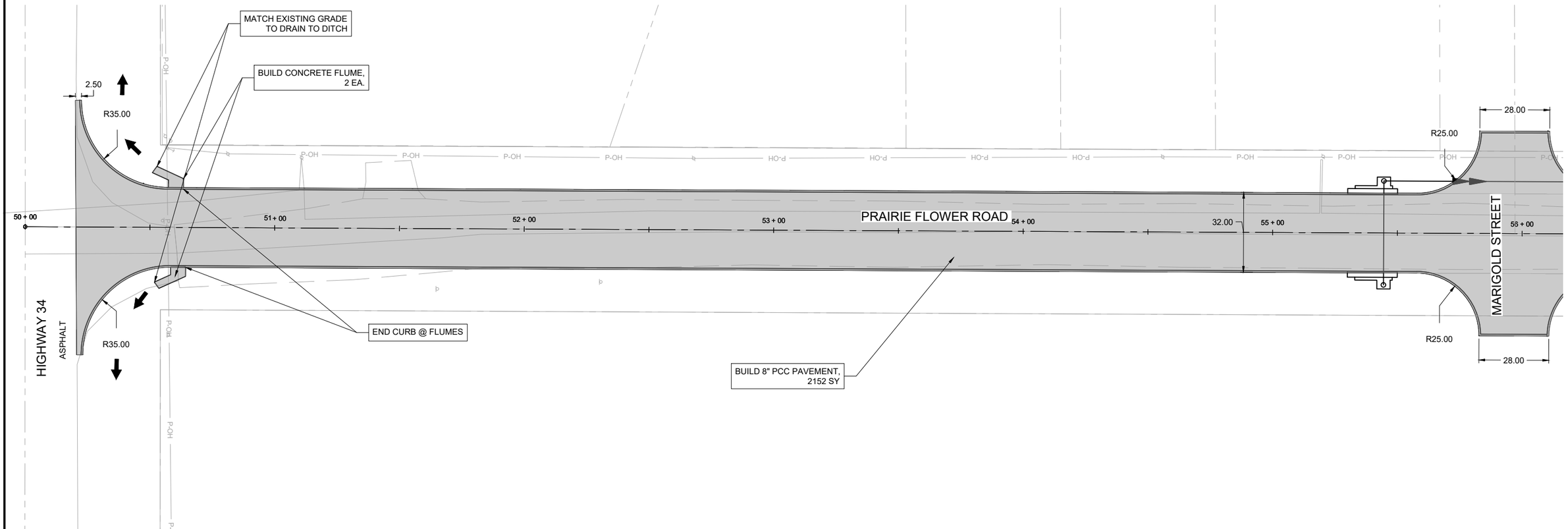
SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH	I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF NE.
Drawn By	ACR	.			.				
Designed By		.			.				LICENSED NAME
Checked By	JRV	.			.				LICENSE SIGN DATE E-14500

EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

Save: 3/31/2022 10:21 AM arice Plot: 3/31/2022 11:56 AM X:\PTS\SEWA\C1\60685\5-final-dsgn\51-drawings\10-Civil\cad\dwg\sheet\SE160685_CP.dwg



20 0 20 40
scale 10 feet

LEGEND

- BUILD 8" PCC PAVEMENT
- BUILD 6" PCC DRIVEWAY
- BUILD 5" PCC SIDEWALK

811 Know what's below. Call before you dig.

PROFESSIONAL CIVIL ENGINEER
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E–14500
STATE OF NEBRASKA

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Designed By		.			.		
Checked By	JRV	.			.		

SEH

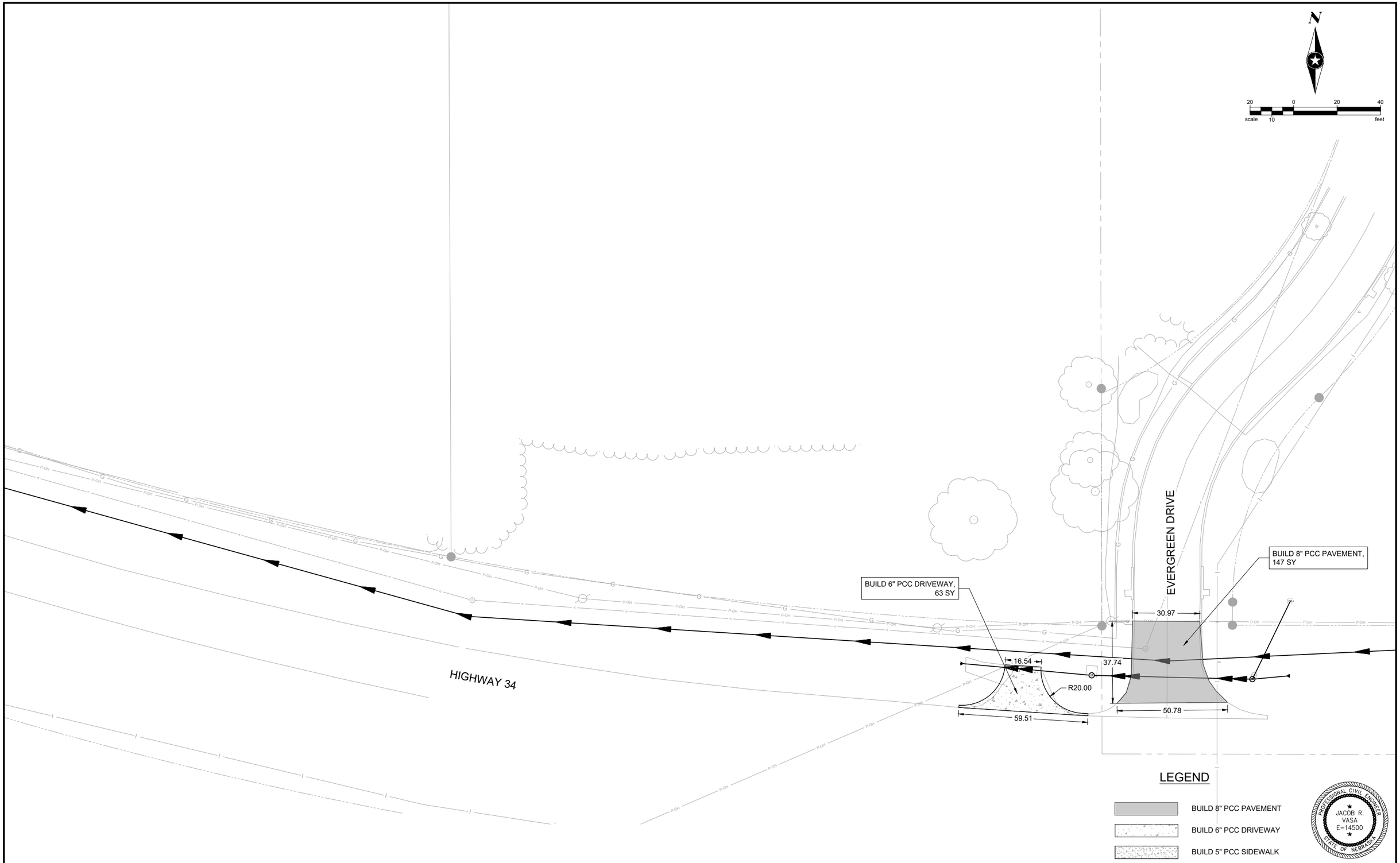
EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION
EAST SEWARD ST

40
of 65

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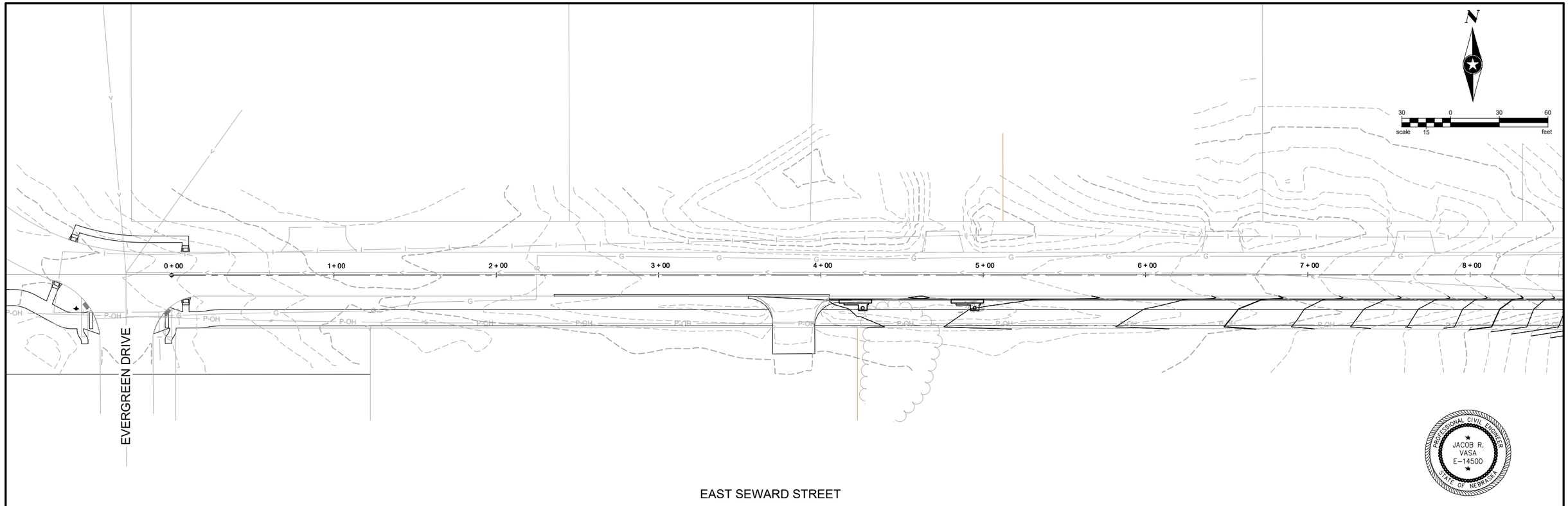
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Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

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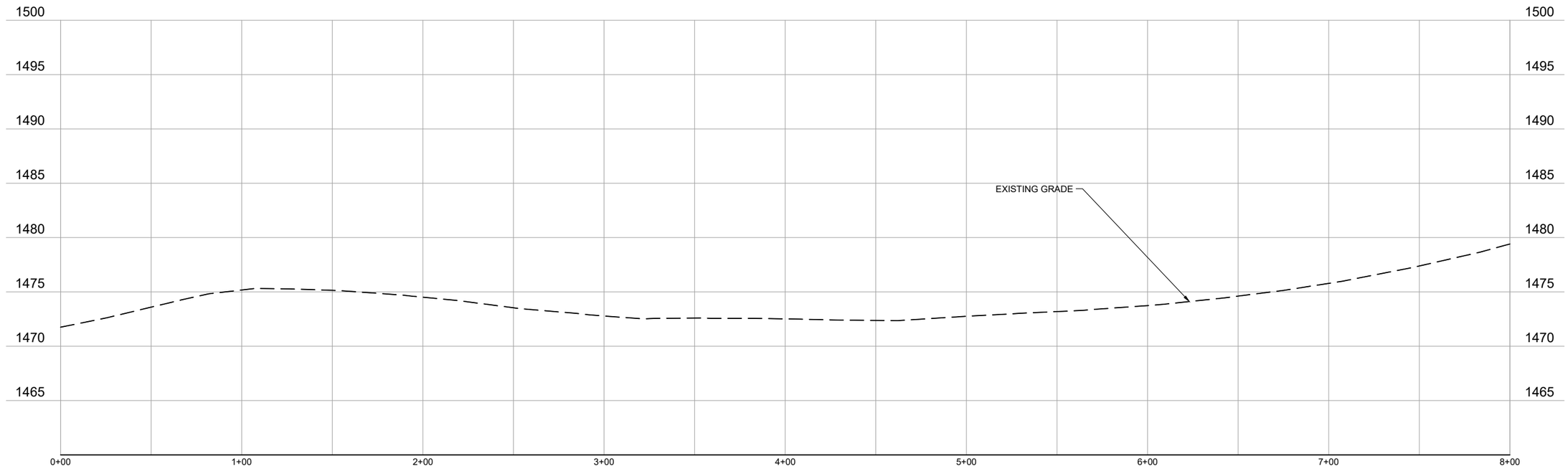
EAST SEWARD STREET

SEWARD, NEBRASKA

CONSTRUCTION PLAN
EAST SEWARD STREET



PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA



SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	ACR						
Designed By							
Checked By	JRV						

SEH

EAST SEWARD STREET

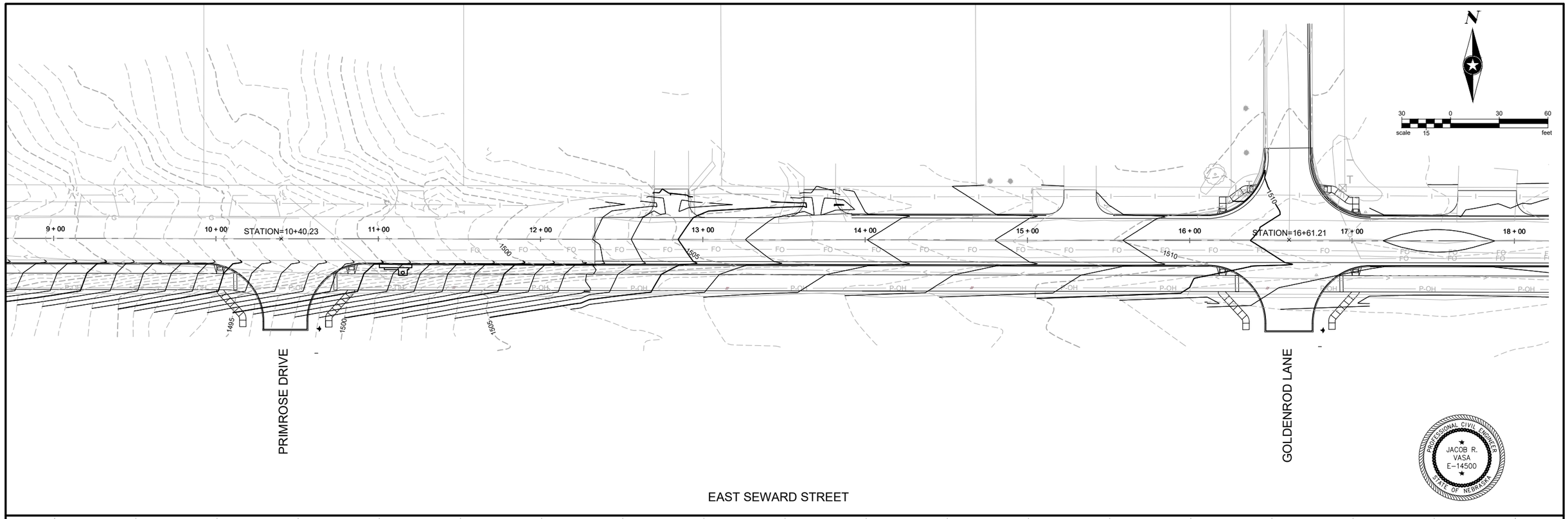
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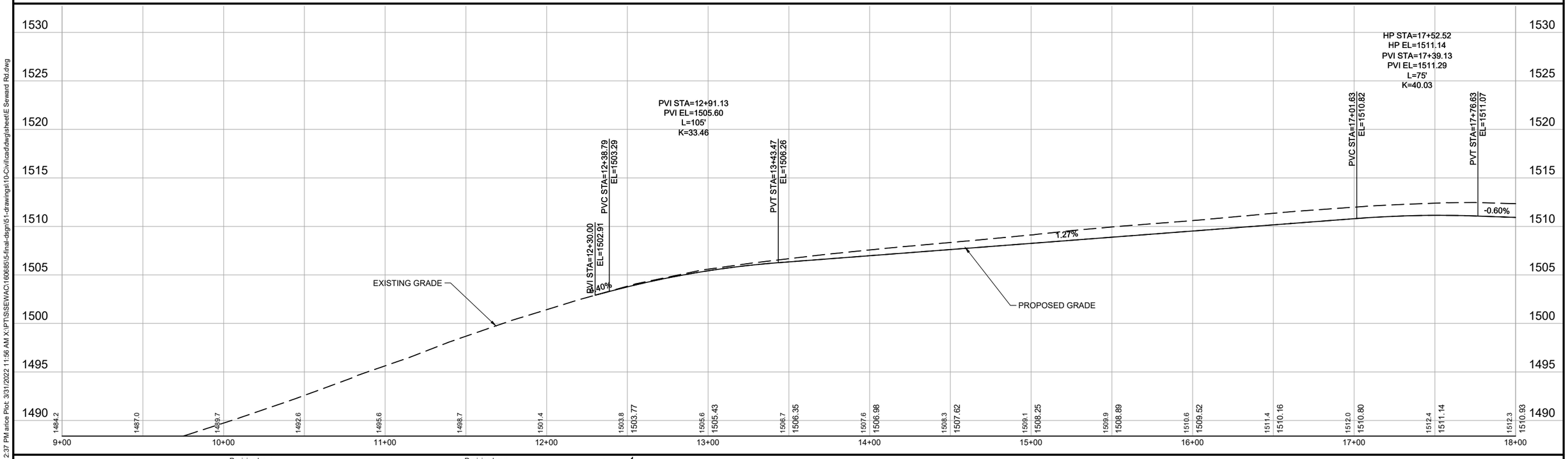
PAVING PLAN AND PROFILE EAST SEWARD STREET

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of 65

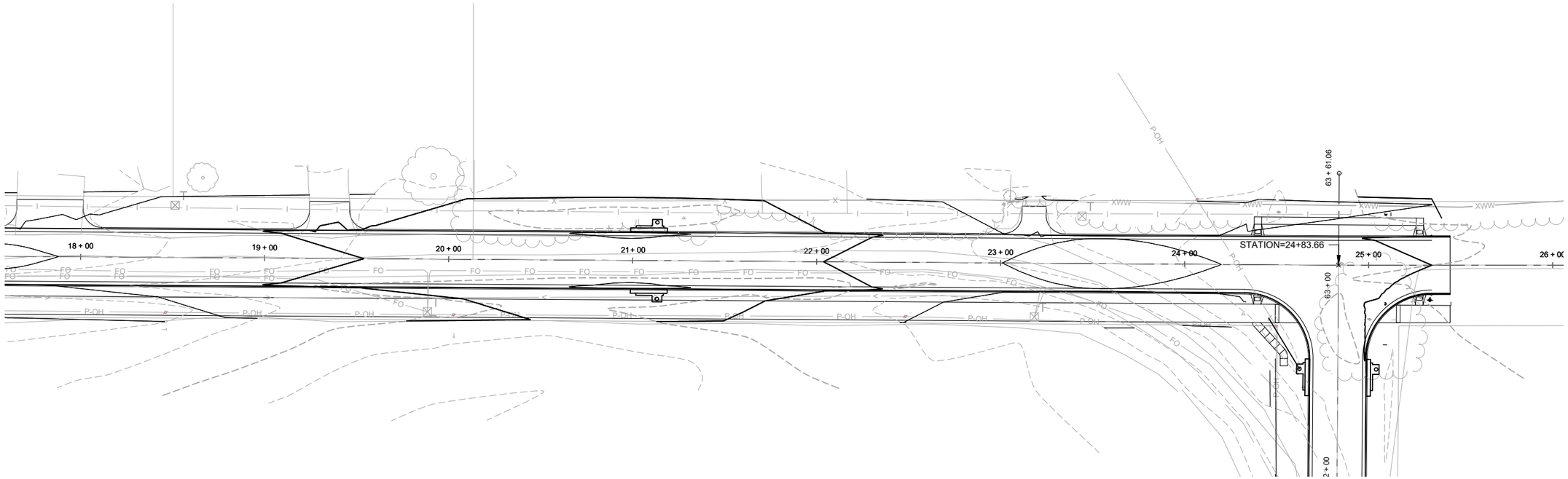
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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	EAST SEWARD STREET SEWARD, NEBRASKA
Drawn By	ACR	.			.			**PAVING PLAN AND PROFILE EAST SEWARD STREET**
Designed By		.			.			43 of 65
Checked By	JRV	.			.			

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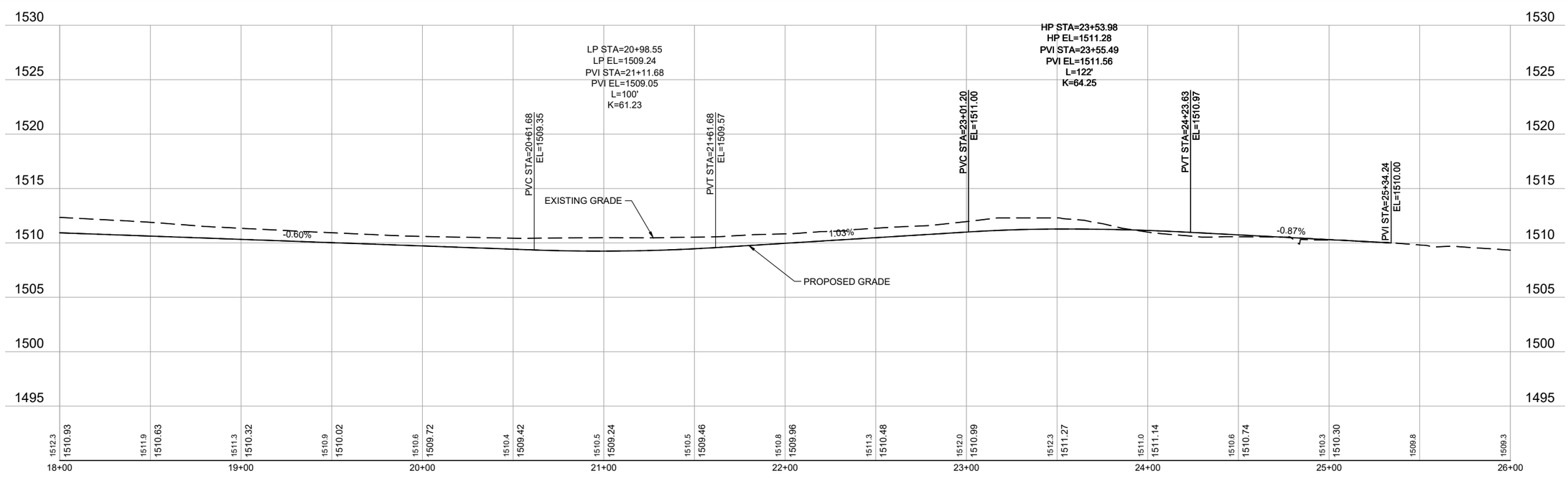


EAST SEWARD STREET

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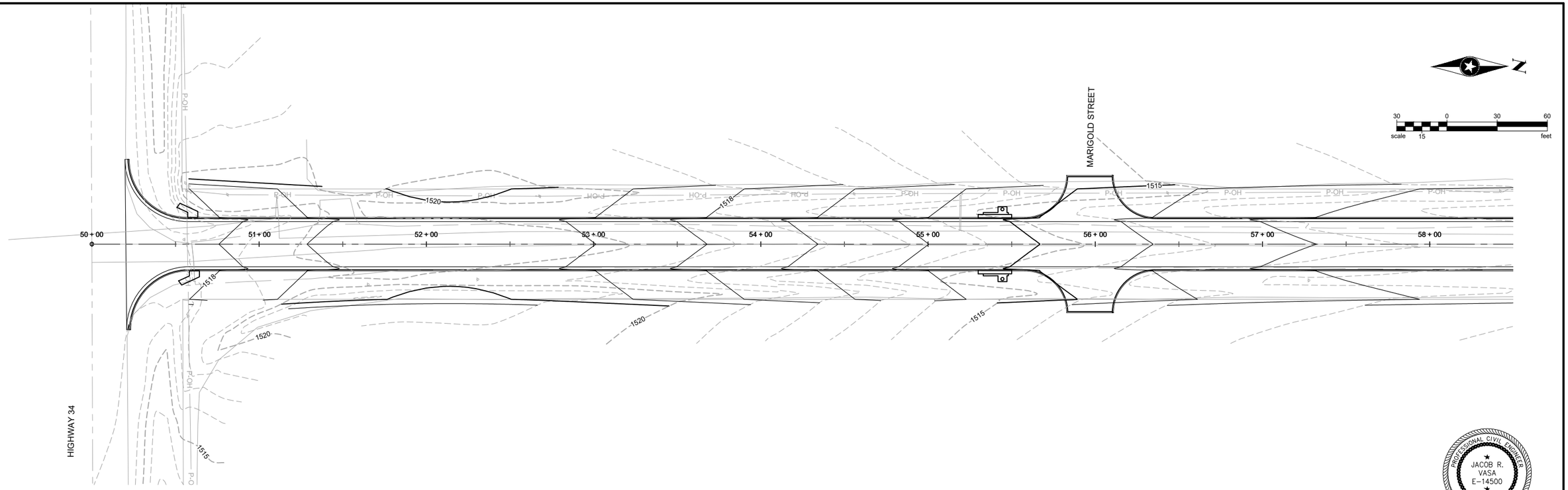
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PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

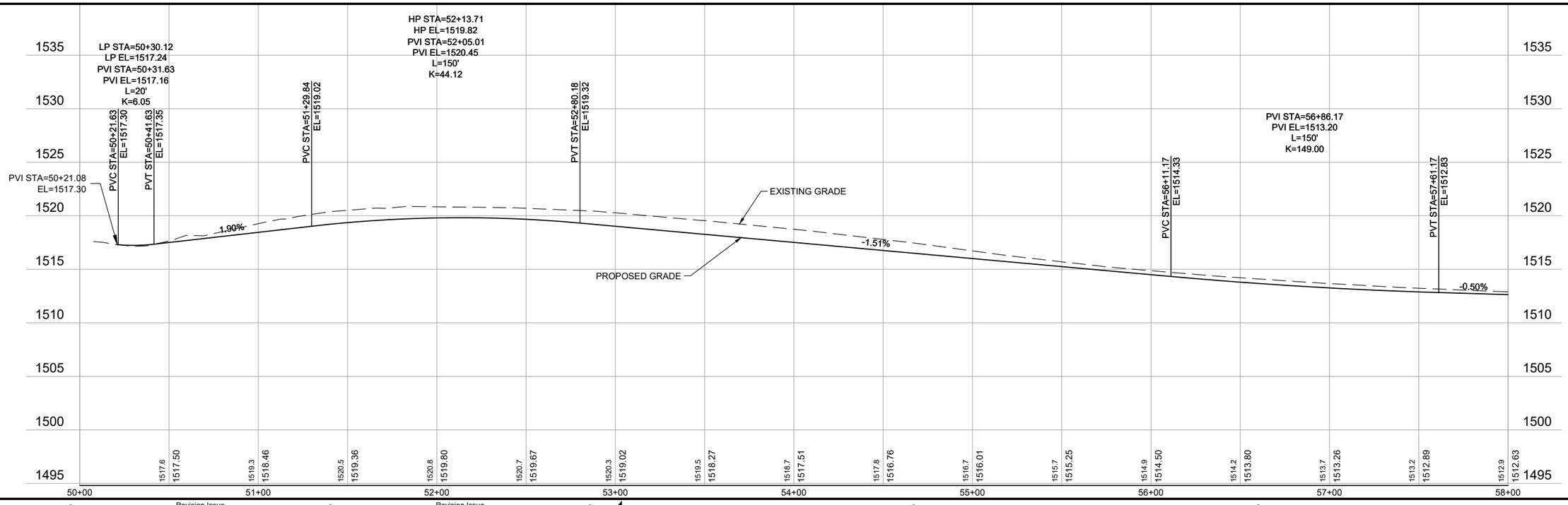


SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	EAST SEWARD STREET	PAVING PLAN AND PROFILE EAST SEWARD STREET
Drawn By	ACR							SEWARD, NEBRASKA	
Designed By									
Checked By	JRV								

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PRAIRIE FLOWER ROAD



PROFESSIONAL CIVIL ENGINEER
JACOB R. VASA
E-14500
STATE OF NEBRASKA

SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

SEH

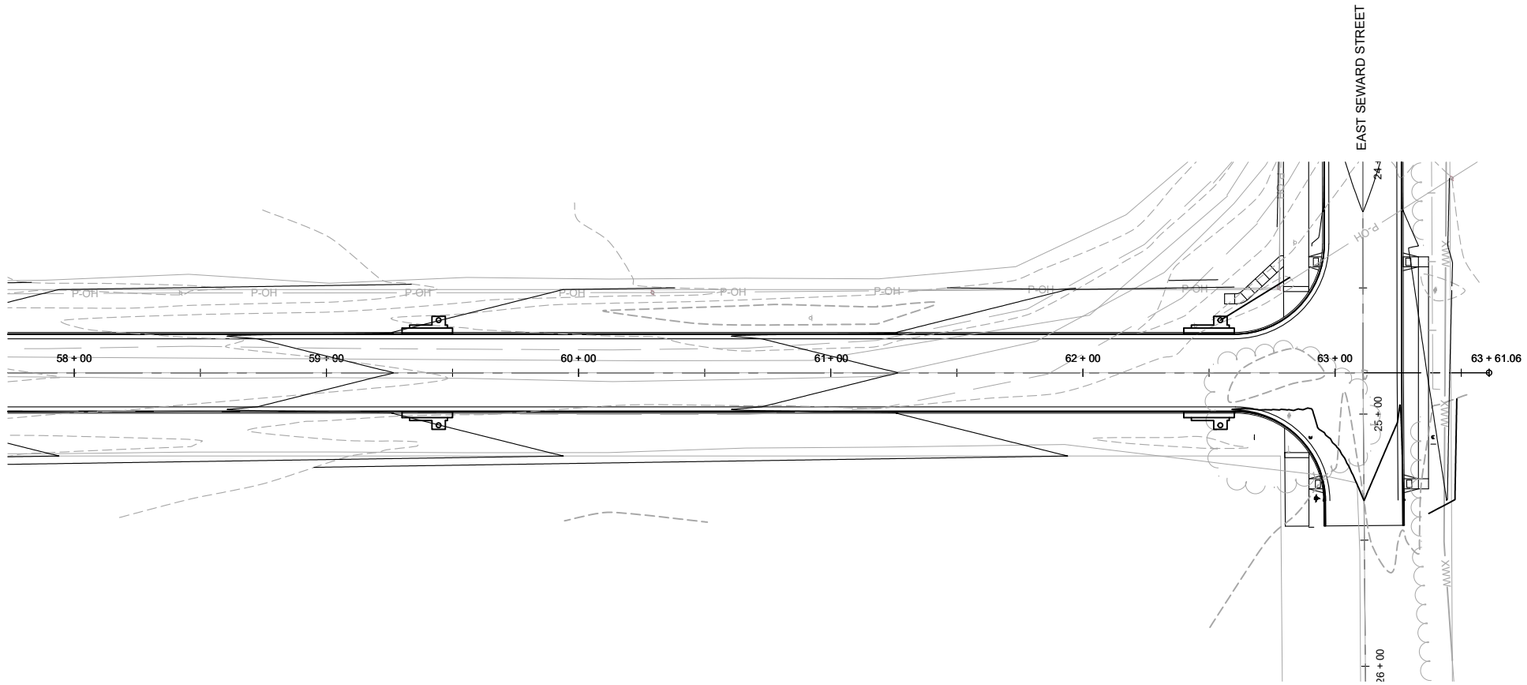
EAST SEWARD STREET

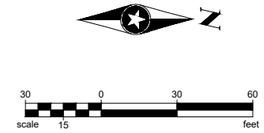
SEWARD, NEBRASKA

PAVING PLAN AND PROFILE EAST SEWARD STREET

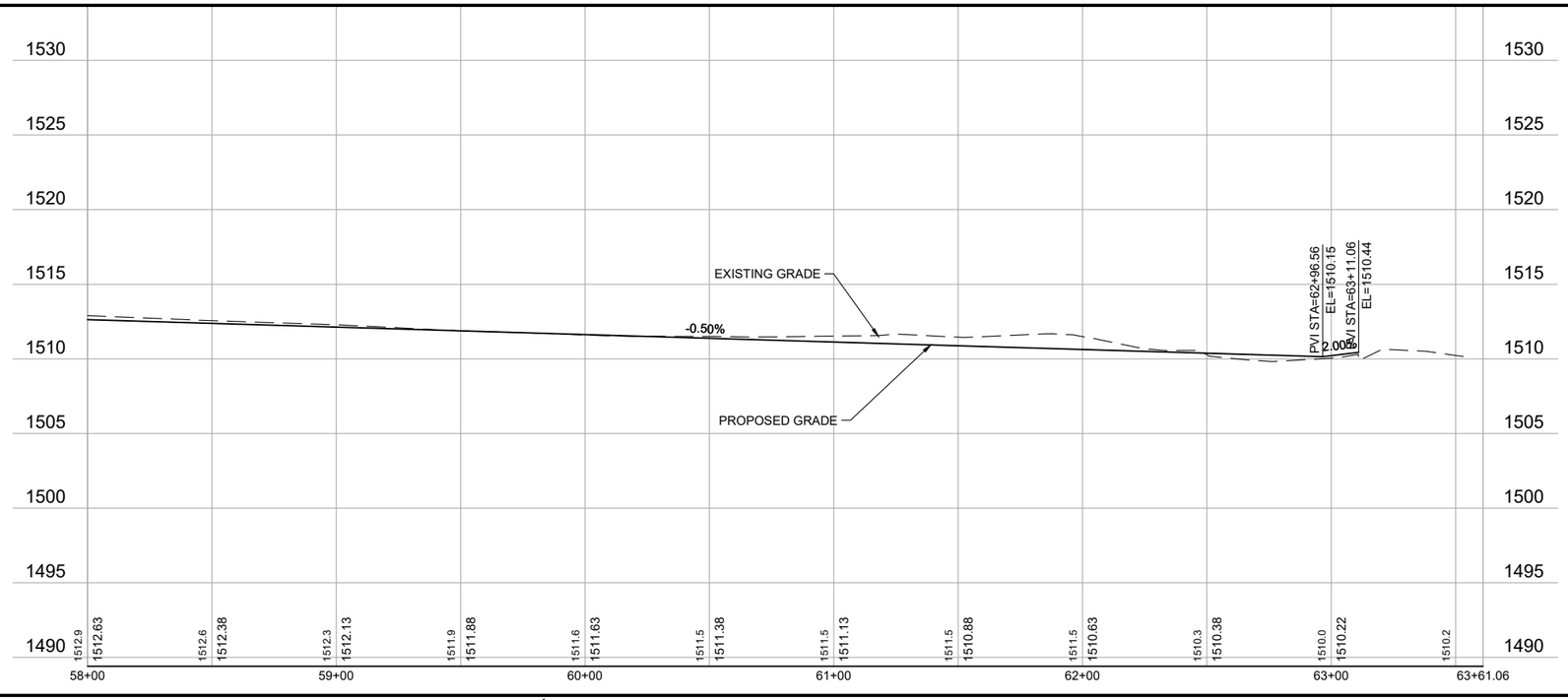
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PRAIRIE FLOWER ROAD





SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Designed By		.			.		
Checked By	JRV	.			.		

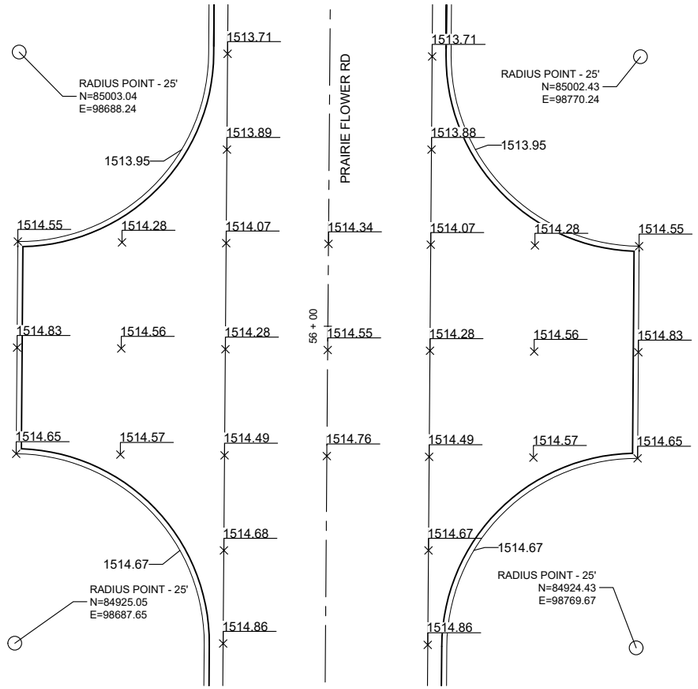
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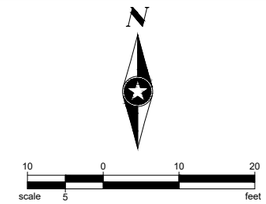
SEWARD, NEBRASKA

PAVING PLAN AND PROFILE
EAST SEWARD STREET

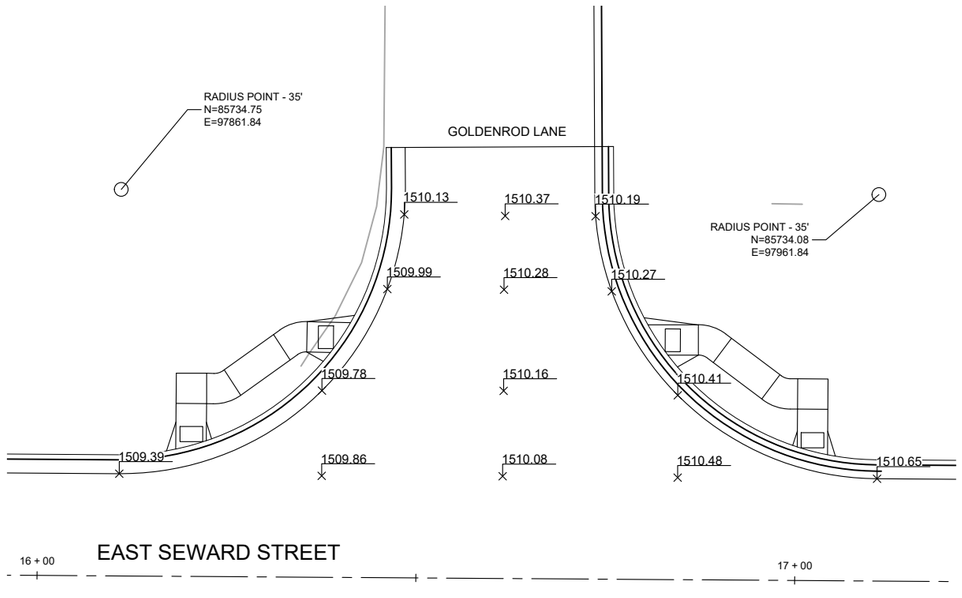
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of 65

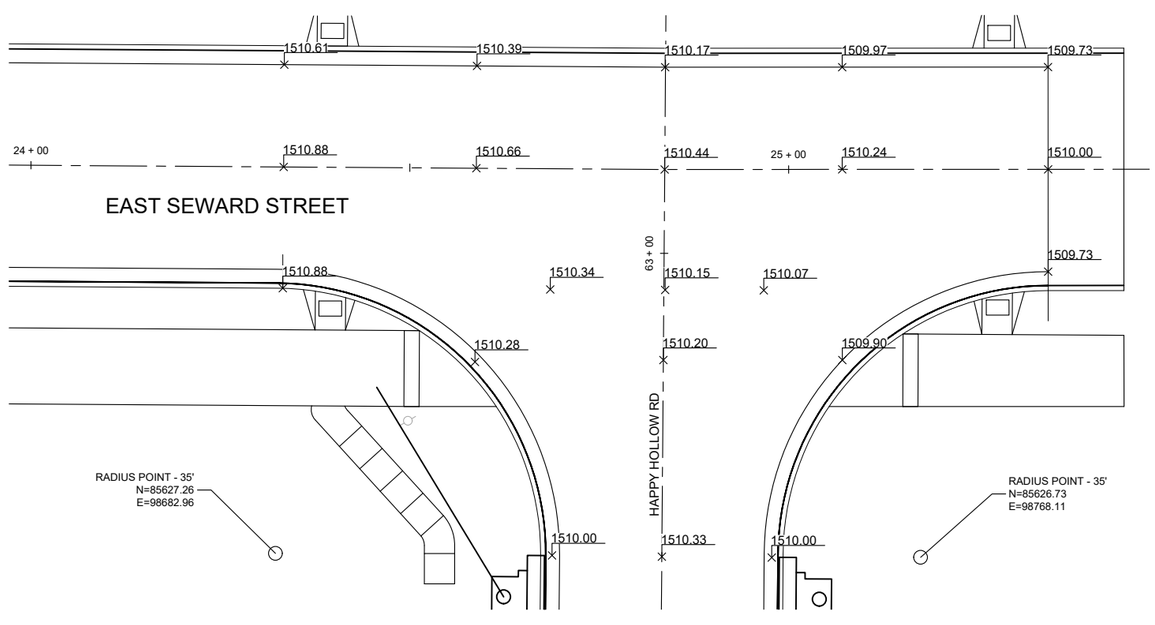
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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
Drawn By	ACR	.			.		
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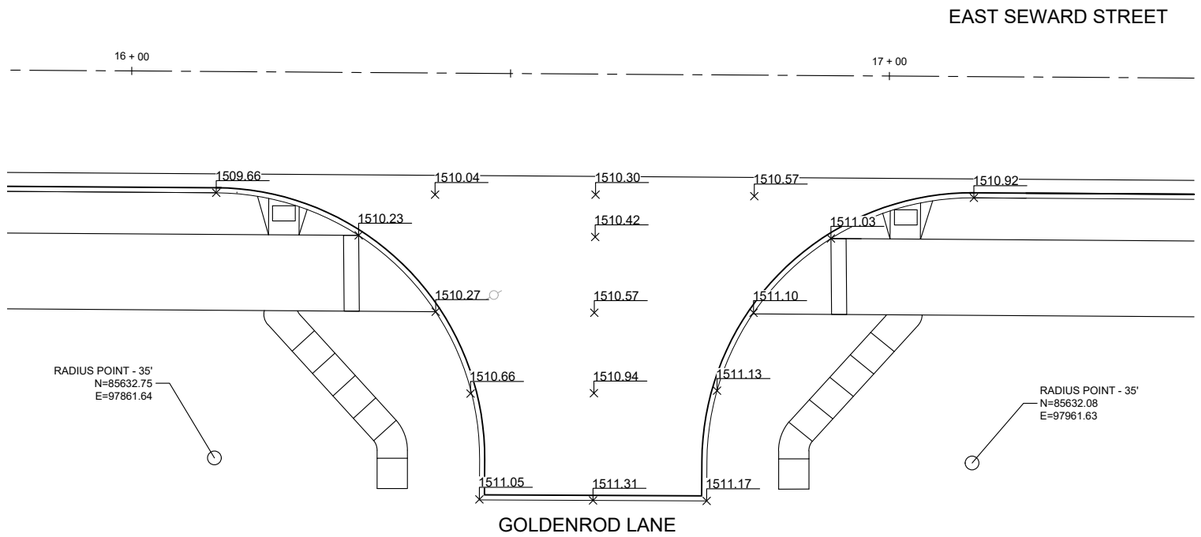
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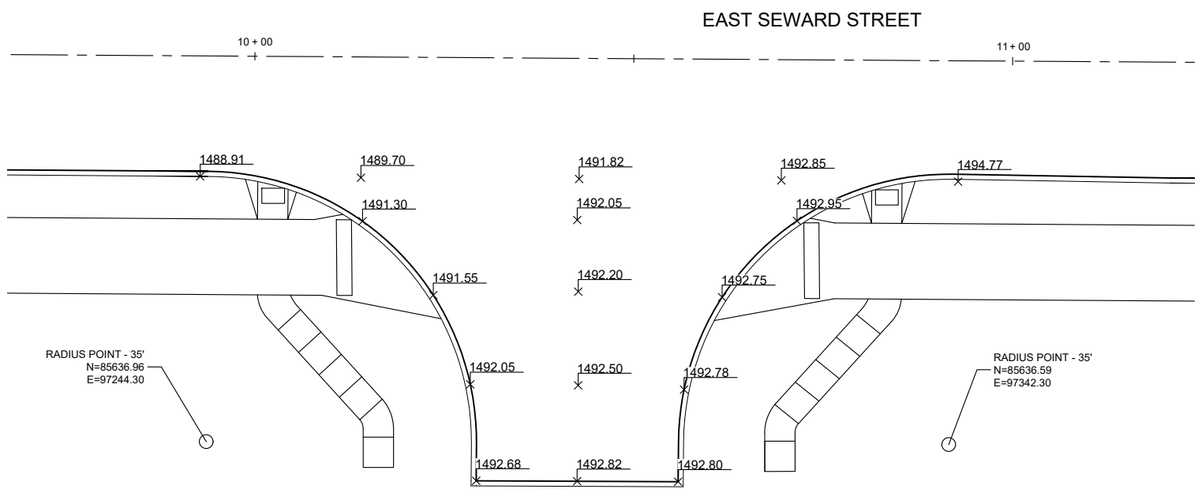
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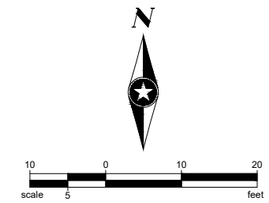
SEWARD, NEBRASKA

INTERSECTION DETAILS
EAST SEWARD STREET

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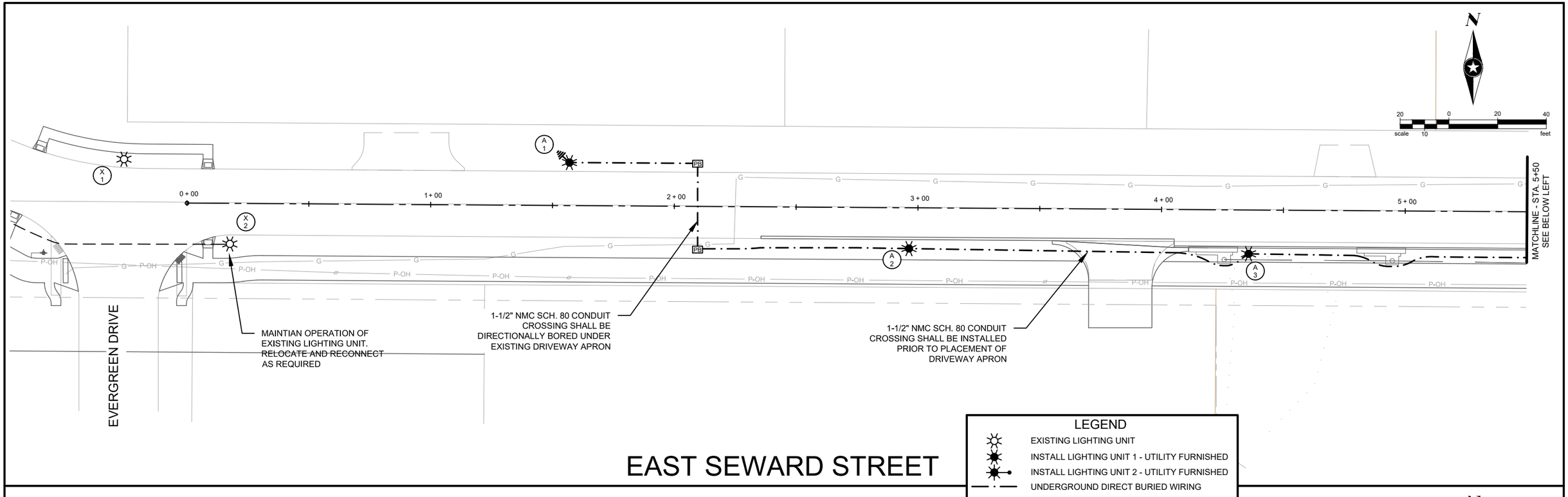
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SEH Project	160685	Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date	SEH
Drawn By	ACR	.			.			
Designed By		.			.			
Checked By	JRV	.			.			

EAST SEWARD STREET

SEWARD, NEBRASKA

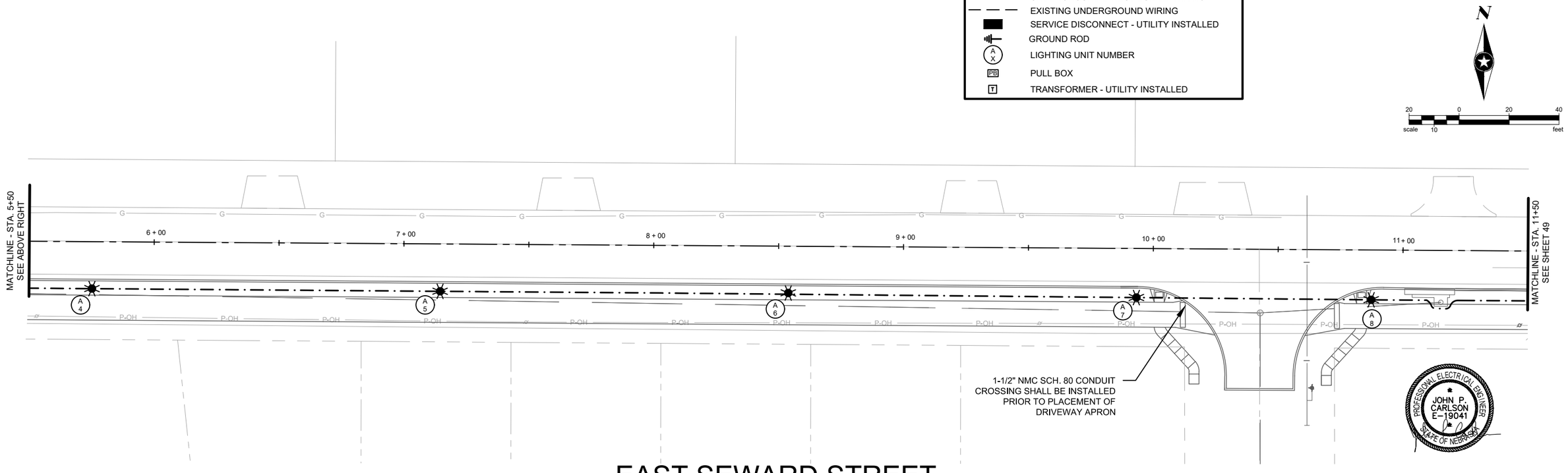
INTERSECTION DETAILS
EAST SEWARD ST



EAST SEWARD STREET

LEGEND

- EXISTING LIGHTING UNIT
- INSTALL LIGHTING UNIT 1 - UTILITY FURNISHED
- INSTALL LIGHTING UNIT 2 - UTILITY FURNISHED
- UNDERGROUND DIRECT BURIED WIRING
- EXISTING UNDERGROUND WIRING
- SERVICE DISCONNECT - UTILITY INSTALLED
- GROUND ROD
- A X — LIGHTING UNIT NUMBER
- PB — PULL BOX
- T — TRANSFORMER - UTILITY INSTALLED



EAST SEWARD STREET

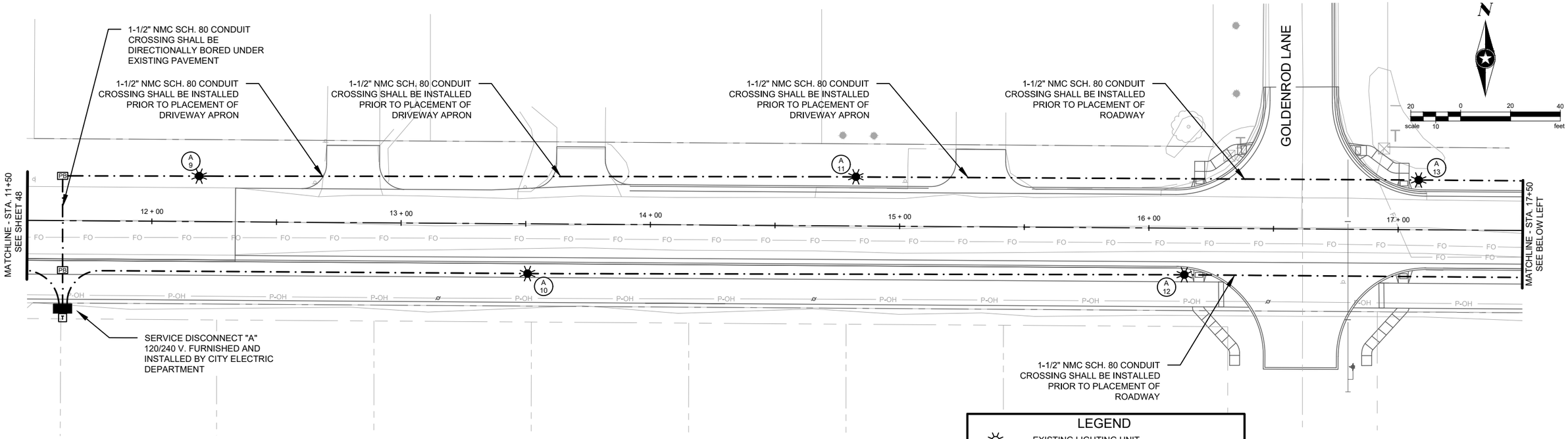
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Drawn By	NGL	1	DESIGN REVISIONS	03/07/2022				
Designed By	KST							
Checked By	AKF							

EAST SEWARD STREET

SEWARD, NEBRASKA

LIGHTING PLAN
EAST SEWARD ST

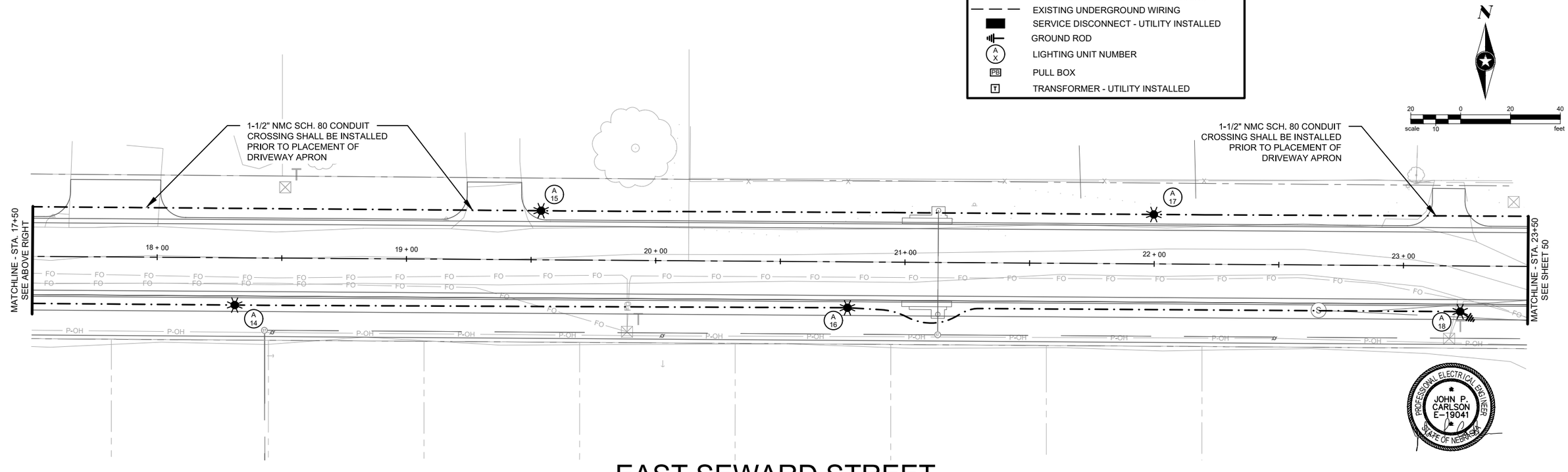
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EAST SEWARD STREET

LEGEND

- EXISTING LIGHTING UNIT
- INSTALL LIGHTING UNIT 1 - UTILITY FURNISHED
- INSTALL LIGHTING UNIT 2 - UTILITY FURNISHED
- UNDERGROUND DIRECT BURIED WIRING
- EXISTING UNDERGROUND WIRING
- SERVICE DISCONNECT - UTILITY INSTALLED
- GROUND ROD
- A X — LIGHTING UNIT NUMBER
- PB — PULL BOX
- T — TRANSFORMER - UTILITY INSTALLED



EAST SEWARD STREET

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
SEH Project	160685	1	DESIGN REVISIONS	03/07/2022			
Drawn By	NGL						
Designed By	KST						
Checked By	AKF						

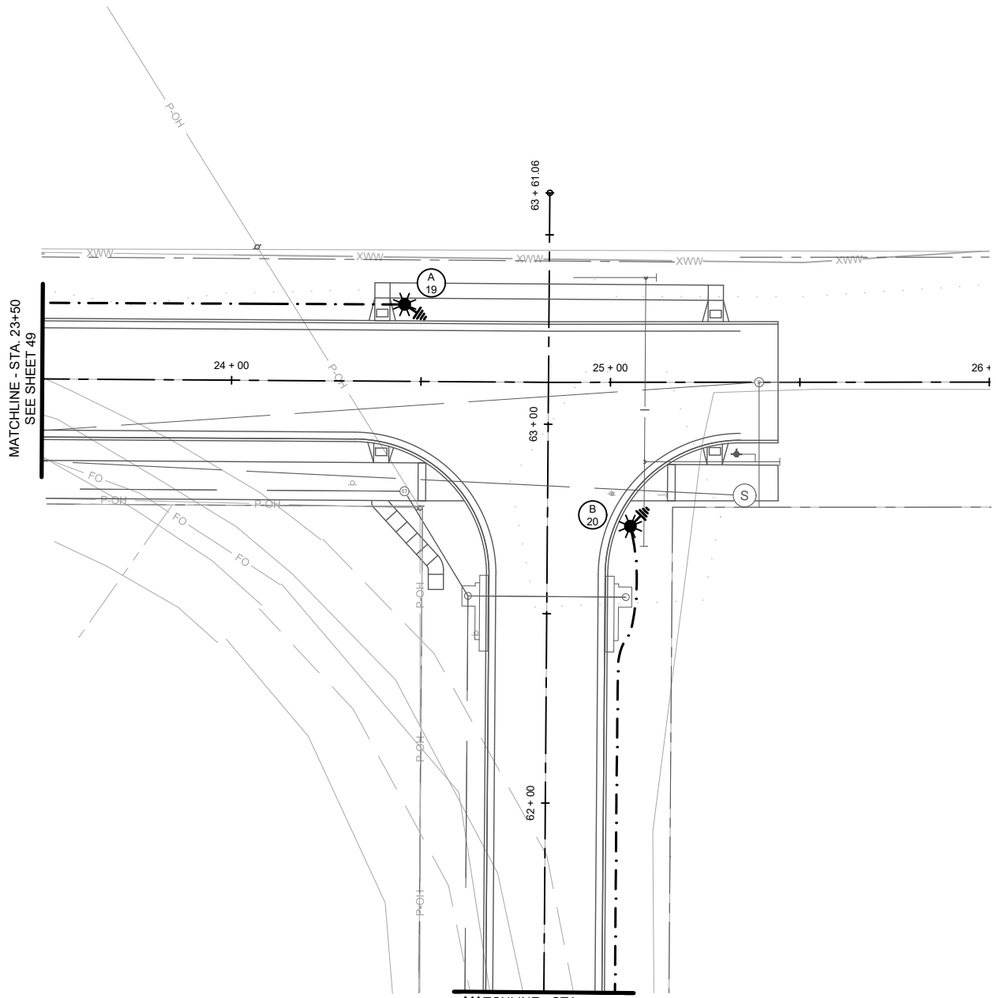
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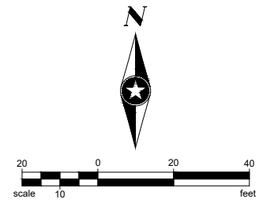
SEWARD, NEBRASKA

LIGHTING PLAN
EAST SEWARD ST

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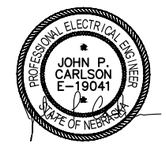




LIGHTING UNIT SCHEDULE				
UNIT NO.	STATION	TYPE	DIMENSION "W"	REMARKS
1	STA 01+56.95	LIGHTING UNIT 1		
2	STA 02+96.33	LIGHTING UNIT 1		
3	STA 04+35.71	LIGHTING UNIT 1		
4	STA 05+75.09	LIGHTING UNIT 1		
5	STA 07+14.47	LIGHTING UNIT 1		
6	STA 08+53.85	LIGHTING UNIT 1		
7	STA 09+93.23	LIGHTING UNIT 1		
8	STA 10+87.23	LIGHTING UNIT 1		
9	STA 12+18.97	LIGHTING UNIT 1		
10	STA 13+50.71	LIGHTING UNIT 1		
11	STA 14+82.45	LIGHTING UNIT 1		
12	STA 16+14.21	LIGHTING UNIT 1		
13	STA 17+08.21	LIGHTING UNIT 1		
14	STA 18+31.12	LIGHTING UNIT 1		
15	STA 19+54.03	LIGHTING UNIT 1		
16	STA 20+76.94	LIGHTING UNIT 1		
17	STA 21+99.85	LIGHTING UNIT 1		
18	STA 23+22.76	LIGHTING UNIT 1		
19	STA 24+45.66	LIGHTING UNIT 1		
20	STA 62+73.06	LIGHTING UNIT 1		
21	STA 61+44.58	LIGHTING UNIT 1		
22	STA 60+16.12	LIGHTING UNIT 1		
23	STA 58+87.66	LIGHTING UNIT 1		
24	STA 57+59.20	LIGHTING UNIT 1		
25	STA 56+30.74	LIGHTING UNIT 1		
26	STA 55+60.08	LIGHTING UNIT 1		
27	STA 54+38.05	LIGHTING UNIT 1		
28	STA 53+16.01	LIGHTING UNIT 1		
29	STA 51+93.98	LIGHTING UNIT 1		
30	STA 50+71.94	LIGHTING UNIT 2		
31	STA 50+71.94	LIGHTING UNIT 2		

LEGEND

- EXISTING LIGHTING UNIT
- INSTALL LIGHTING UNIT 1 - UTILITY FURNISHED
- INSTALL LIGHTING UNIT 2 - UTILITY FURNISHED
- UNDERGROUND DIRECT BURIED WIRING
- EXISTING UNDERGROUND WIRING
- SERVICE DISCONNECT - UTILITY INSTALLED
- GROUND ROD
- LIGHTING UNIT NUMBER (A / X)
- PB PULL BOX
- T TRANSFORMER - UTILITY INSTALLED



EAST SEWARD STREET

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Drawn By	NGL						
Designed By	KST						
Checked By	AKF						

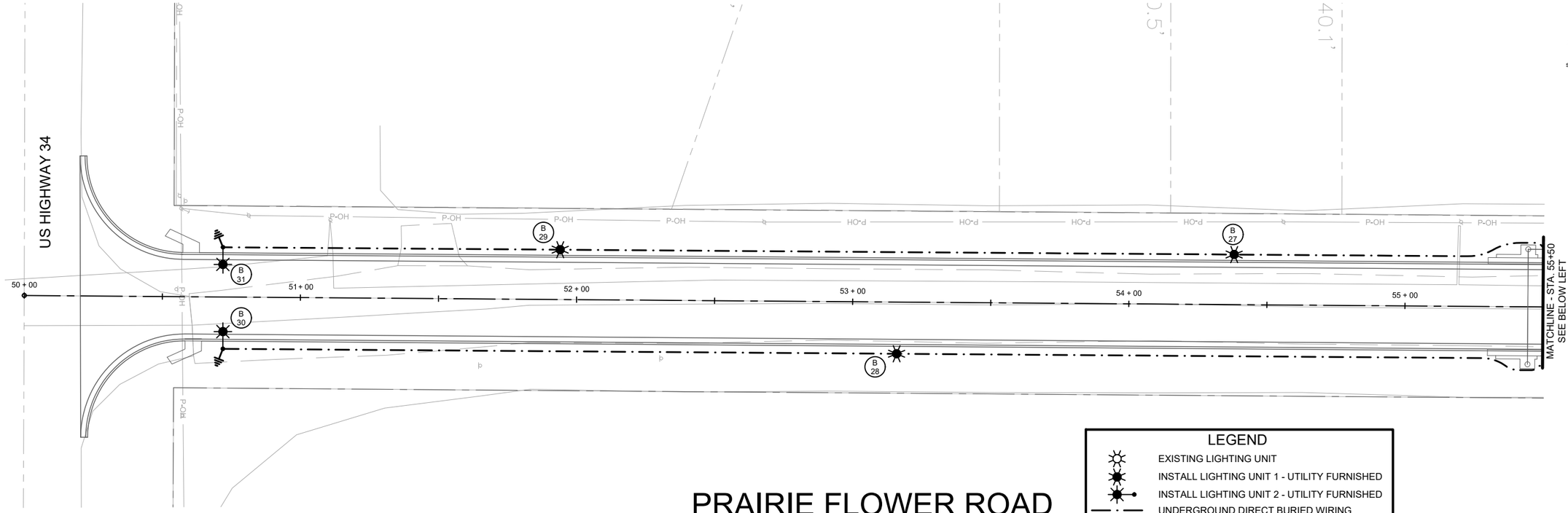
EAST SEWARD STREET

SEWARD, NEBRASKA

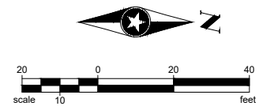
LIGHTING PLAN
EAST SEWARD ST

51 of 65

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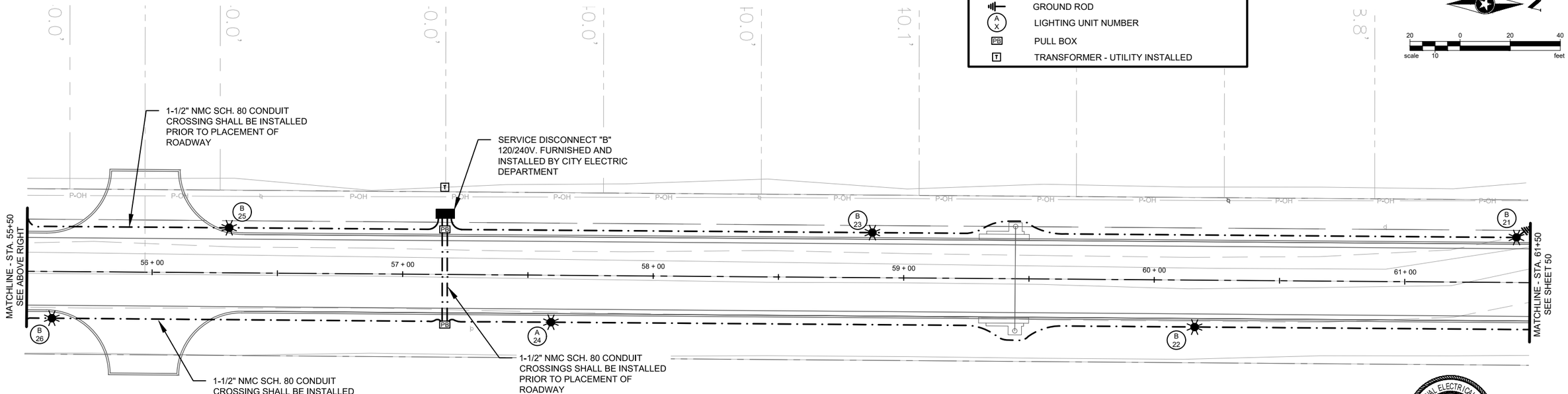


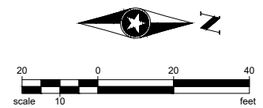
PRAIRIE FLOWER ROAD

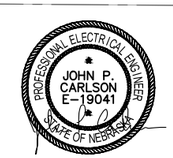


LEGEND

- EXISTING LIGHTING UNIT
- INSTALL LIGHTING UNIT 1 - UTILITY FURNISHED
- INSTALL LIGHTING UNIT 2 - UTILITY FURNISHED
- UNDERGROUND DIRECT BURIED WIRING
- EXISTING UNDERGROUND WIRING
- SERVICE DISCONNECT - UTILITY INSTALLED
- GROUND ROD
- A X — LIGHTING UNIT NUMBER
- PB — PULL BOX
- T — TRANSFORMER - UTILITY INSTALLED







PRAIRIE FLOWER ROAD

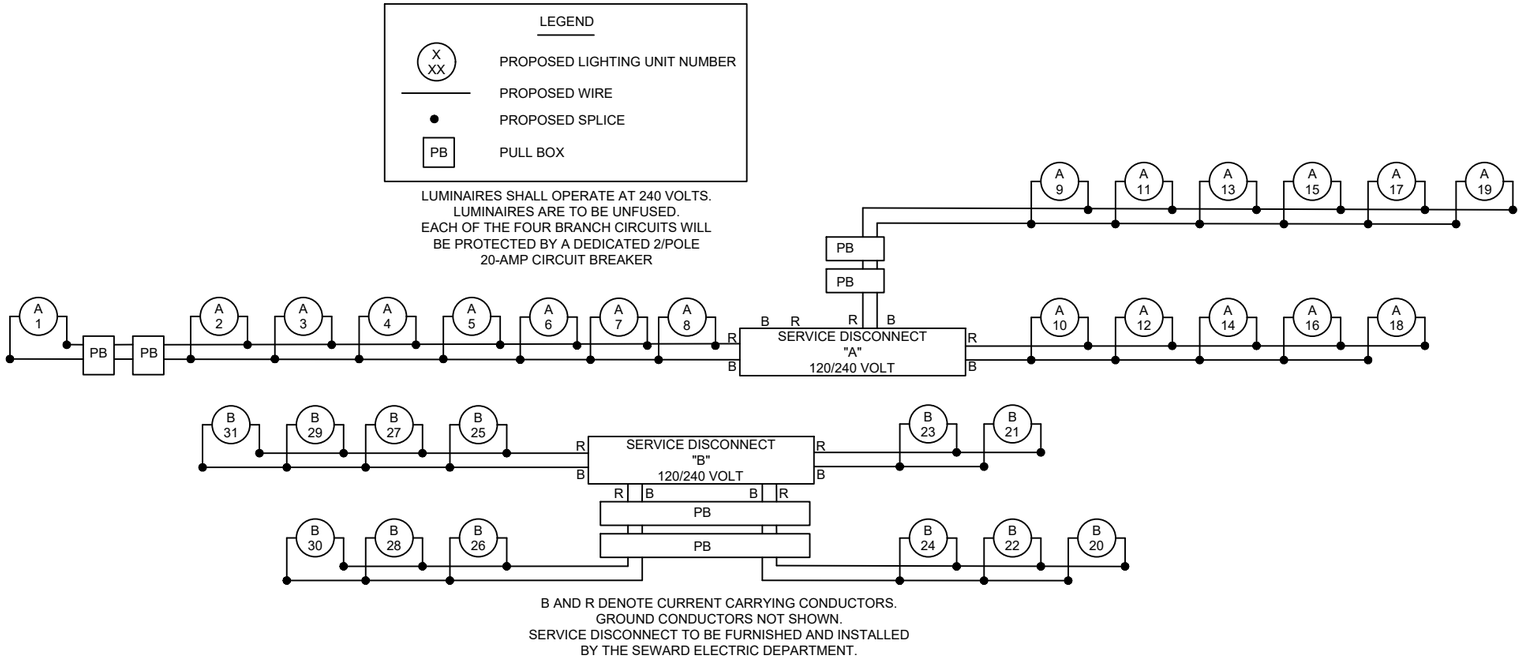
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SEH Project	160685	1	DESIGN REVISIONS	03/07/2022			
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Checked By	AKF						

EAST SEWARD STREET

SEWARD, NEBRASKA

LIGHTING PLAN
EAST SEWARD ST

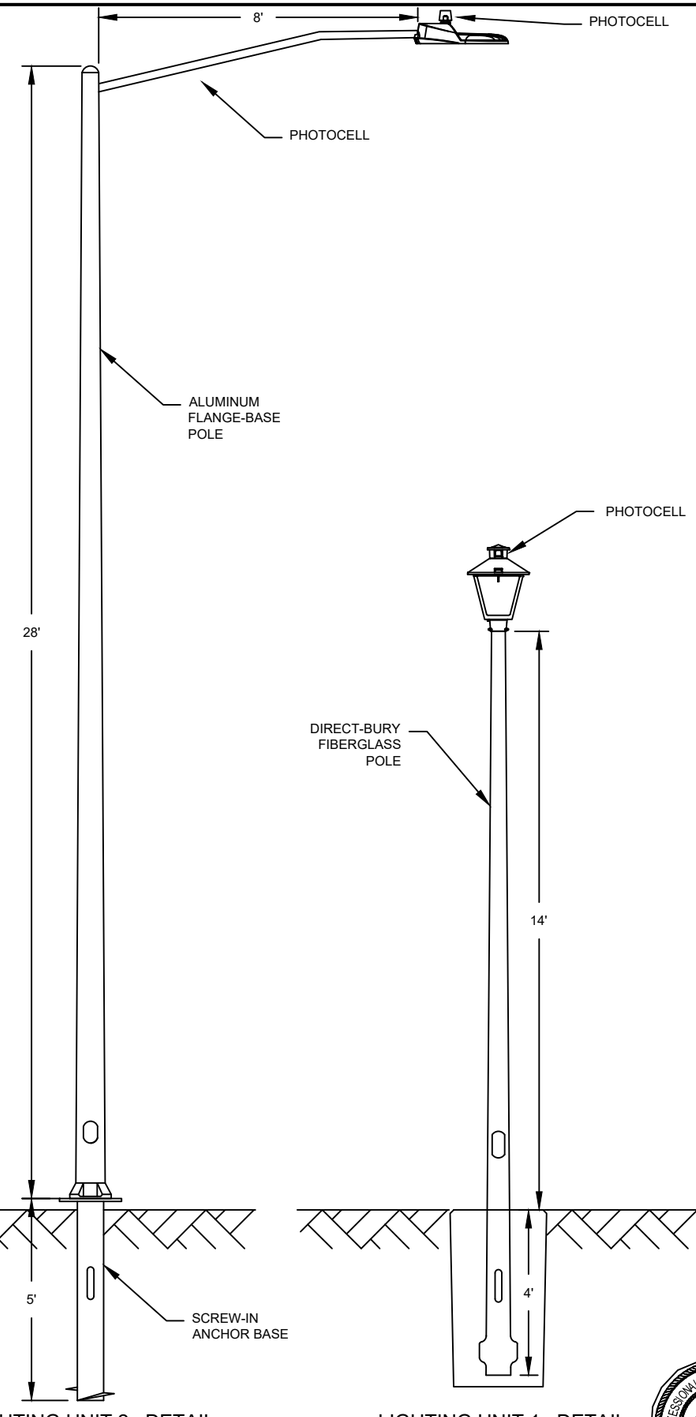
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LIGHTING WIRING DIAGRAM

NOTES:

1. THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE CONSTRUCTION OF A COMPLETE AND OPERATIONAL LIGHTING SYSTEM.
2. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND UTILITY COORDINATION.
3. ALL MATERIAL AND WORK SHALL BE IN ACCORDANCE WITH THE N.E.C. ALL MATERIAL SHALL BE UL LISTED.
4. CONTRACTOR SHALL COORDINATE HIS ACTIVITIES WITH ALL OTHER PARTIES OCCUPYING THE SITE SO AS TO NOT IMPEDE OR DELAY CONSTRUCTION PROGRESS. CONTRACTOR SHALL ATTEND REGULARLY SCHEDULED CONSTRUCTION PROGRESS MEETINGS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE AMONG SUPPLIERS AND CONTRACTORS PROVIDING EQUIPMENT FOR THE PROJECT. THE COORDINATION SHALL INCLUDE, BUT NOT BE LIMITED TO, OPERATORS, POWER REQUIREMENTS, ETC. COOPERATE WITH OTHER TRADES TO AVOID INTERFERENCES IN THE INSTALLATION OF THIS WORK. INSTALL ALL EQUIPMENT AND SYSTEMS SO AS NOT TO DELAY PROGRESS OF CONSTRUCTION, AND CORRELATE WITH OTHER TRADES TO AVOID DELAY. SHOULD DIFFERENCES OF OPINION DEVELOP; THE ENGINEER'S DECISION WILL BE FINAL. CONTRACT UNIT PRICES SHALL REFLECT ALL CONSTRUCTION COSTS.
5. THE CONTRACTOR SHALL SUBMIT A COMPLETE SET OF SHOP DRAWINGS FOR ALL PROPOSED EQUIPMENT (CONDUCTORS, CONDUIT AND SPLICING HARDWARE) TO THE OWNER AND ENGINEER FOR REVIEW. THE SUBMITTED ITEMS MUST BE APPROVED PRIOR TO COMMENCEMENT OF WORK.
6. LOCATIONS OF NEW LIGHTING UNITS SHALL BE STAKED BY THE CONTRACTOR AND VERIFIED BY THE FIELD BY THE ENGINEER OR CITY.
7. LIGHTING UNITS SHALL BE SET BACK 3' FROM BACK OF CURB TO CENTER OF POLE SHAFT, OR AS DIRECTED BY THE ENGINEER OR CITY.
8. ALL CONDUIT CROSSINGS SHALL BE 1-1/2" NMC SCHEDULE 80 UNLESS OTHERWISE NOTED. ALL UNDERGROUND BRANCH CONDUCTORS SHALL BE DIRECT BURIED COPPER, TYPE USE-2, (2)#8 & (1)#8 GND.
9. ALL CONDUCTORS AND CONDUIT SHALL BE PLACED A MINIMUM OF 24" DEEP, AND BE PLACED BY TRENCHING, PLOWING OR DIRECTIONAL BORING.
10. SPLICING SHALL BE PERFORMED USING BURNDY UNITAP SPLICING HARDWARE OR APPROVED EQUAL. WIRE NUTS ARE NOT AN APPROVED METHOD OF SPLICING WITHIN POLE BASES.
11. PROVIDE (3)#12 STRANDED XHHW-2 COPPER CONDUCTORS FROM BRANCH CONDUCTORS IN THE POLE BASE TO EACH LUMINAIRE.
12. PROVIDE A MINIMUM OF 10 INCHES OF CONDUCTOR LENGTH TO ENABLE SPLICES TO BE REMOVED FROM POLE HANDHOLE FOR MAINTENANCE.
13. THE CONTRACTOR SHALL COAT ALL THREADED HARDWARE WITH AN APPROVED ZINC-BASED ANTI-SEIZE COMPOUND PRIOR TO ASSEMBLY - THIS INCLUDES LUMINAIRE MOUNTING SET SCREWS AND POLE HANDHOLE BOLTS.
14. A 10-FOOT 5/8" COPPER CLAD STEEL GROUND ROD SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE PLAN.
15. NEW SERVICE DISCONNECT PEDESTAL WILL BE FURNISHED AND INSTALLED BY THE SEWARD ELECTRIC DEPARTMENT. COORDINATE CONNECTIONS TO THE SERVICE DISCONNECT WITH LARRY RUETHER: 402.646.0200.
16. THE CONTRACTOR IS RESPONSIBLE TO REPLACE AND COMPACT THE SUBGRADE MATERIAL AND REPLACE THE PERMANENT SURFACE MATERIAL IN KIND (EXACTLY AS THE EXISTING). COMPACT SOIL AROUND DIRECT-BURY POLES PER MANUFACTURER'S REQUIREMENTS, AND TO THE SATISFACTION OF THE ENGINEER AND CITY.
17. LIGHT POLES, LUMINAIRES, PHOTOCELLS AND SCREW-IN BASES WILL BE FURNISHED TO THE CONTRACTOR BY THE SEWARD ELECTRIC DEPARTMENT. THE CONTRACTOR SHALL INSTALL THIS EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. COORDINATE ACQUISITION OF EQUIPMENT WITH LARRY RUETHER.
18. CONTRACTOR SHALL MAINTAIN OPERATION OF THE EXISTING LIGHTING DURING NIGHTTIME HOURS. OVERNIGHT OUTAGES ARE NOT ALLOWED.
19. THE CONTRACTOR SHALL GUARANTEE THE OPERATION OF THE INSTALLATION AND THAT THE MATERIALS AND WORKMANSHIP OF THE EQUIPMENT BE FREE FROM DEFECTS FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF ACCEPTANCE, PROVIDING THE EQUIPMENT HAS BEEN OPERATED AND MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. IF A DISPUTE EXISTS REGARDING WHETHER THE EQUIPMENT HAS BEEN MAINTAINED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, THE ENGINEER'S DECISION WILL BE FINAL. THE GUARANTEE SHALL INCLUDE ALL PARTS AND LABOR NECESSARY TO RETURN THE SYSTEM TO NORMAL OPERATION. THE GUARANTEE ON ALL EQUIPMENT SHALL START AFTER FORMAL ACCEPTANCE OF EQUIPMENT AS DEFINED BY THE GENERAL CONDITIONS AND AFTER SUCCESSFUL COMPLETION OF STARTUP PROCEDURES.
20. CONTRACTOR SHALL SUPPLY ACCURATE AS-BUILT DRAWINGS OF THE PROJECT TO THE CITY. DRAWINGS SHALL INDICATE LOCATION AND SETBACK OF CONDUIT, SERVICE DISCONNECT, AND POLE LOCATIONS ALONG THE ROADWAY MEASURED FROM A RELIABLE LOCATION. THE CONTRACTOR SHALL COLLECT, GATHER AND ASSEMBLE INTO ONE BOOK, THE INSTALLATION DETAILS, INSTRUCTIONS, SCHEMATICS OF ACTUAL EQUIPMENT AND OPERATIONS DIRECTIONS SUPPLIED BY THE MANUFACTURER WITH ALL EQUIPMENT. FINAL ACCEPTANCE OF THE WORK WILL BE WITHHELD UNTIL SUCH DATA HAS BEEN PRESENTED COMPLETE TO THE CITY. THE MANUAL SHALL BE AVAILABLE FOR INSTRUCTION OF OPERATIONS AND MAINTENANCE OF EQUIPMENT AND SYSTEMS.



LIGHTING UNIT 2 DETAIL

LUMINAIRE, POLE, PHOTOCELL, AND SCREW-IN BASES FURNISHED TO THE CONTRACTOR BY THE SEWARD ELECTRIC DEPARTMENT
NOT TO SCALE

LIGHTING UNIT 1 DETAIL

LUMINAIRE, POLE, AND PHOTOCELL FURNISHED TO THE CONTRACTOR BY THE SEWARD ELECTRIC DEPARTMENT
NOT TO SCALE

PROFESSIONAL ELECTRICAL ENGINEER
JOHN P. CARLSON
E-19041
STATE OF NEBRASKA

		Rev.#	Revision Issue Description	Date	Rev.#	Revision Issue Description	Date
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Drawn By	NGL						
Designed By	KST						
Checked By	AKF						

SEH

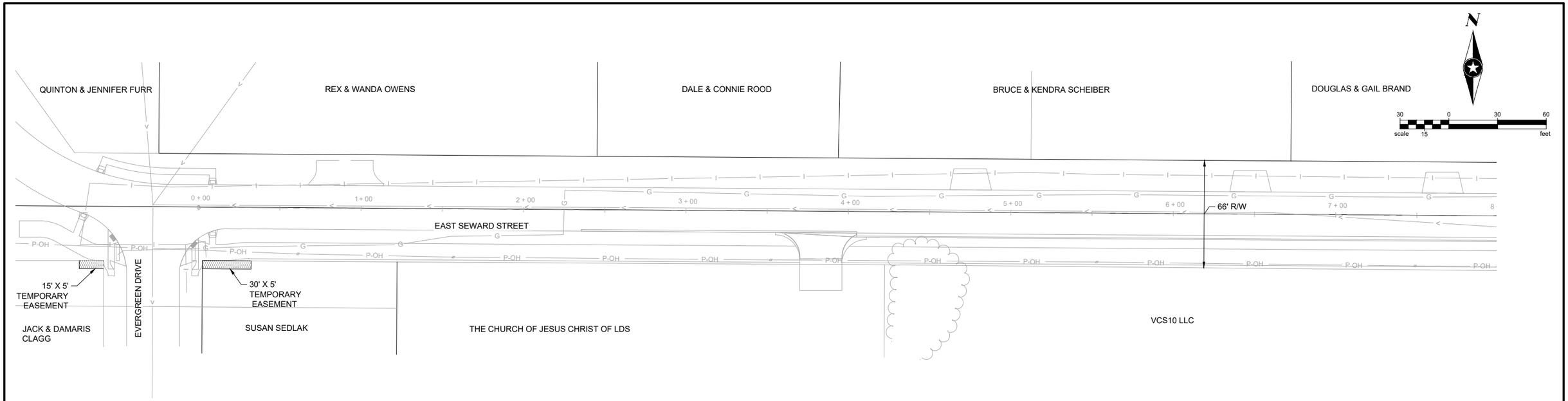
EAST SEWARD STREET

SEWARD, NEBRASKA

LIGHTING PLAN - DETAILS & WIRING DIAGRAMS
EAST SEWARD ST

53
of 65

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PROPOSED

- STREET CENTERLINE (6+00)
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN (FM)
- SANITARY SERVICE AND CLEANOUT
- WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
- WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
- WATER SERVICE AND CURB STOP BOX
- STORM SEWER, MANHOLE AND CATCH BASIN
- CULVERT AND APRON ENDWALL
- DRAIN TILE
- DITCH / SWALE
- RIPRAP
- STREET NAME SIGN
- SIGN (NON STREET NAME)
- RETAINING WALL

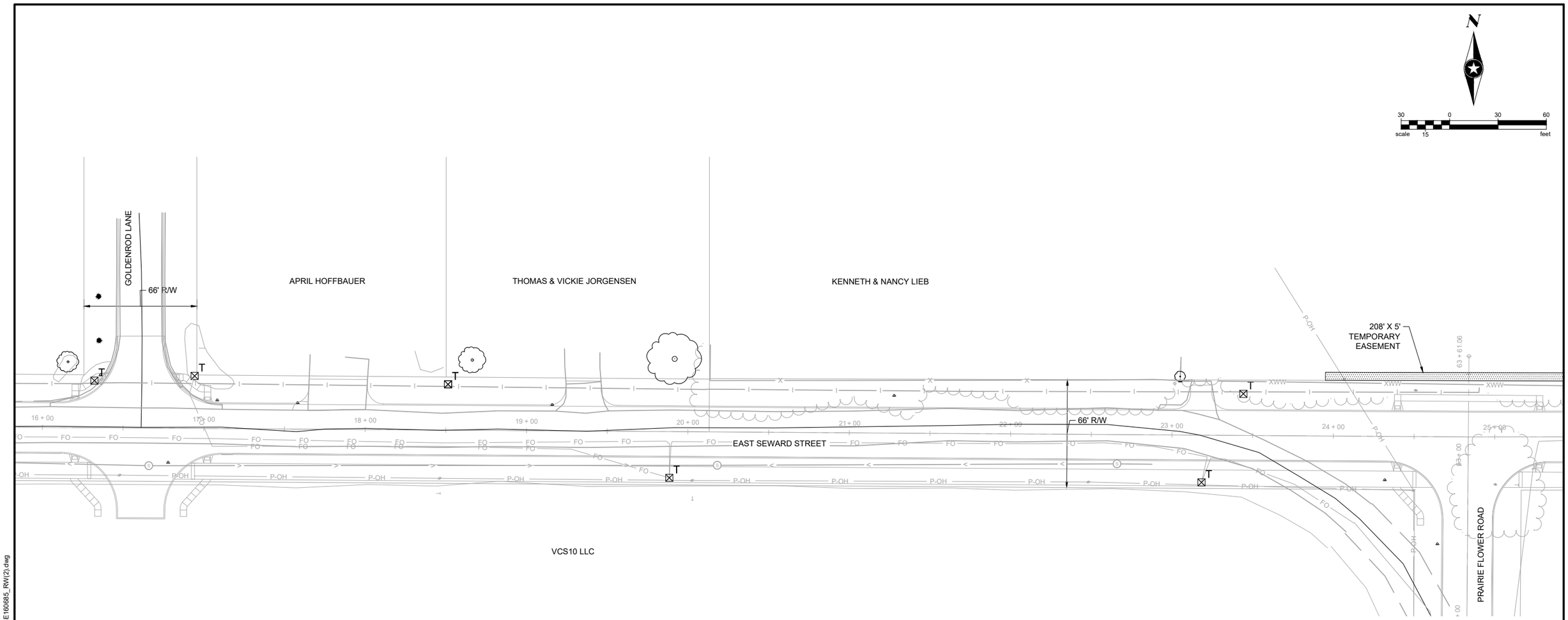
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Drawn By	ACR	.			.		
Designed By		.			.		
Checked By	JRV	.			.		

EAST SEWARD STREET

SEWARD, NEBRASKA

ROW PLAN
EAST SEWARD ST

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PROPOSED

- STREET CENTERLINE (6+00)
- RIGHT-OF-WAY
- PERMANENT EASEMENT
- TEMPORARY EASEMENT
- CONSTRUCTION LIMITS
- SANITARY SEWER, BULKHEAD AND MANHOLE
- FORCE MAIN
- SANITARY SERVICE AND CLEANOUT
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- STREET NAME SIGN
- SIGN (NON STREET NAME)
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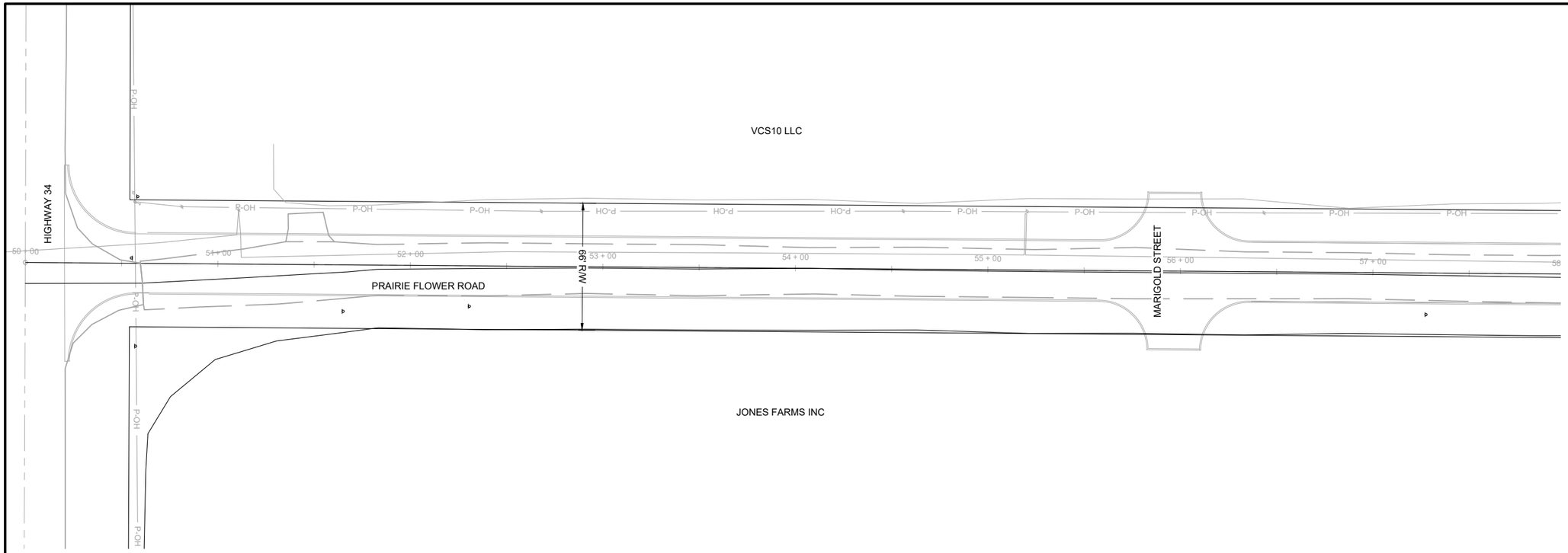
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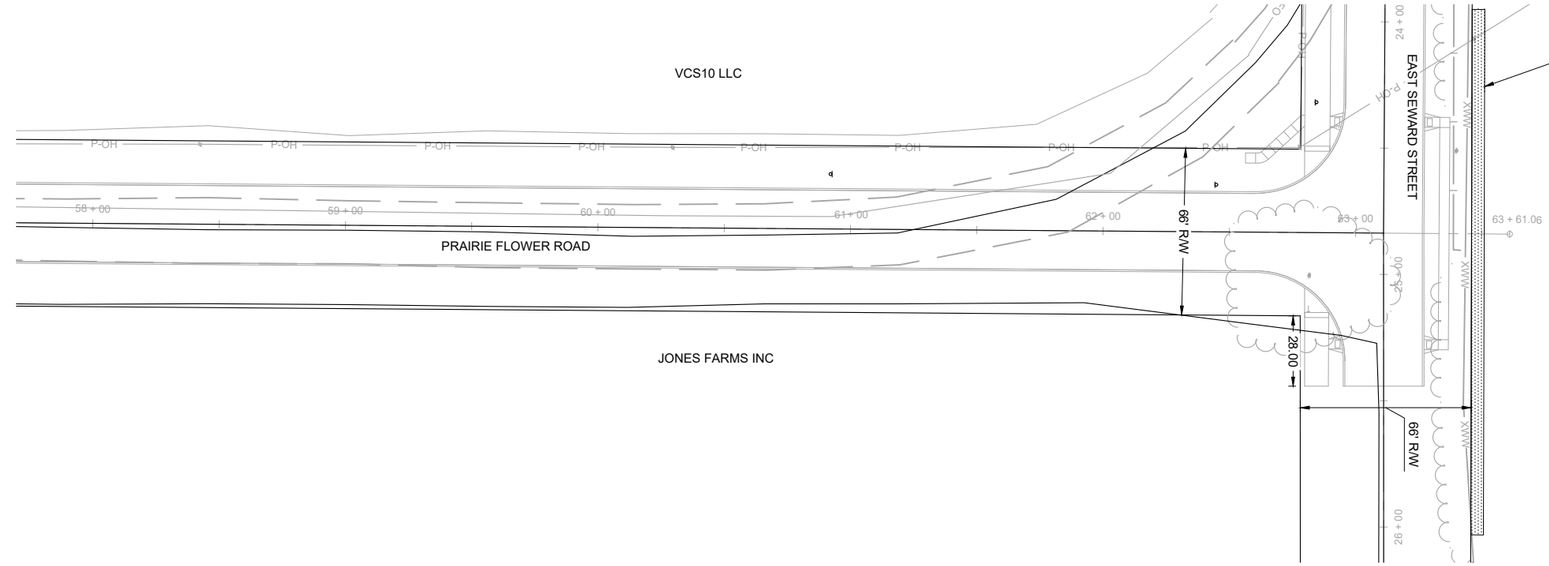
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SEWARD, NEBRASKA

ROW PLAN
EAST SEWARD ST

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scale 15 feet

PROPOSED

6+00 STREET CENTERLINE
RIGHT-OF-WAY
PERMANENT EASEMENT
TEMPORARY EASEMENT
CONSTRUCTION LIMITS
SANITARY SEWER, BULKHEAD AND MANHOLE
FM FORCE MAIN
SANITARY SERVICE AND CLEANOUT
WATER MAIN, TEE, HYDRANT, BULKHEAD AND VALVE
WATER VALVE MANHOLE, REDUCER, BEND AND CROSS
WATER SERVICE AND CURB STOP BOX
STORM SEWER, MANHOLE AND CATCH BASIN
CULVERT AND APRON ENDWALL
DRAIN TILE
DITCH / SWALE
RIPRAP
STREET NAME SIGN
SIGN (NON STREET NAME)
RETAINING WALL

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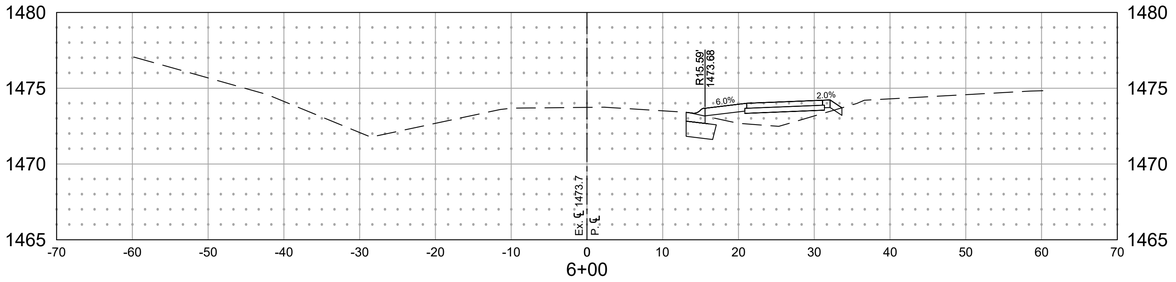
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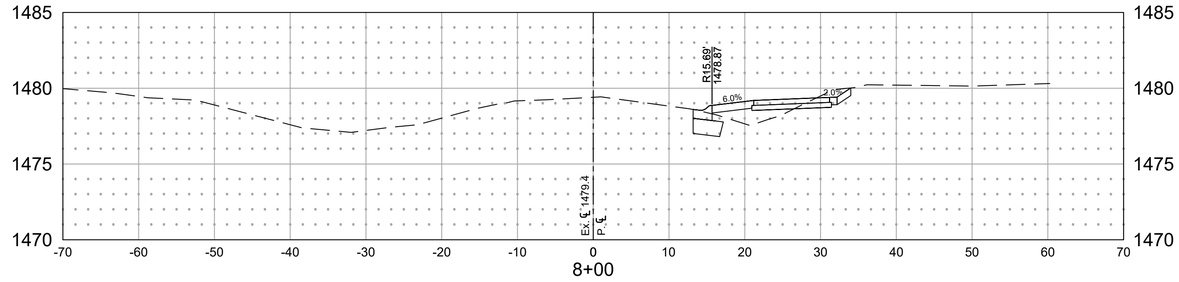
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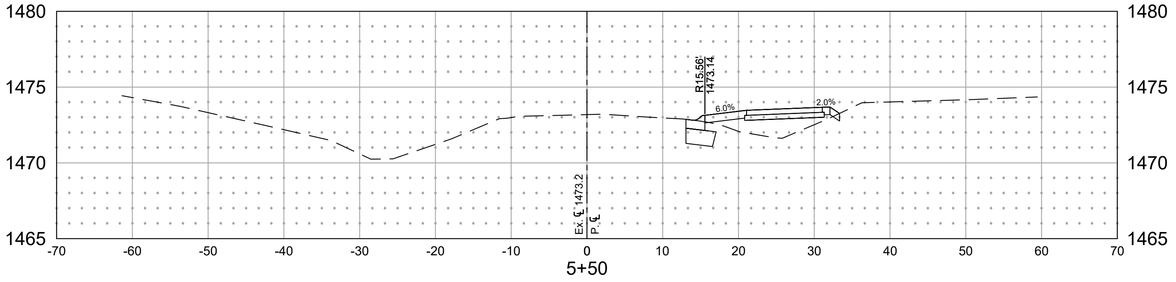
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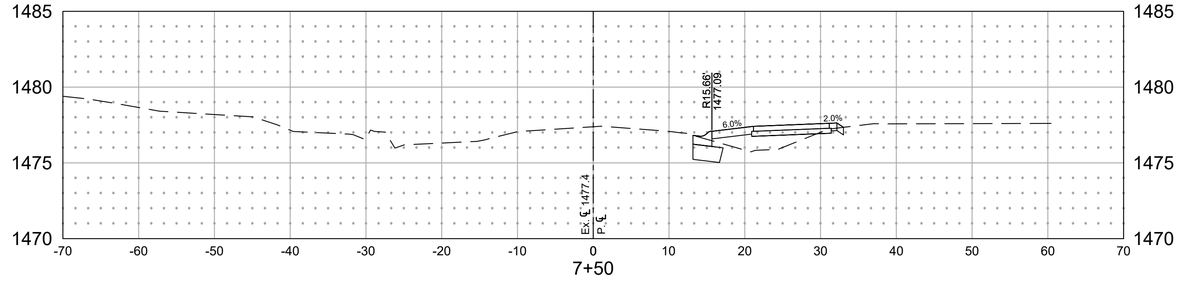
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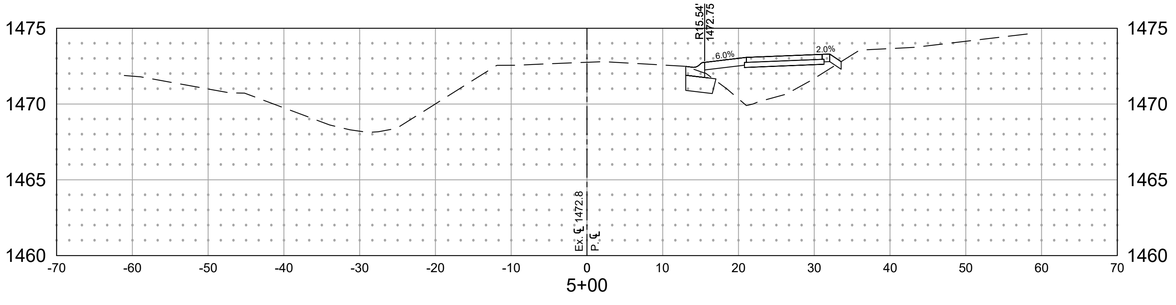
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EAST SEWARD ST

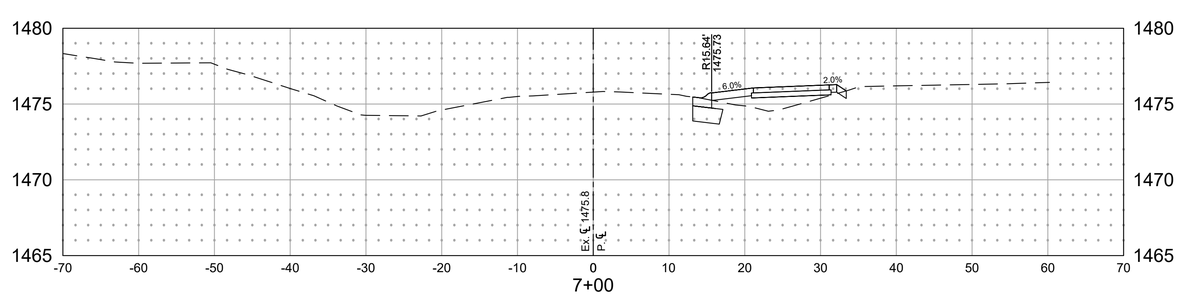


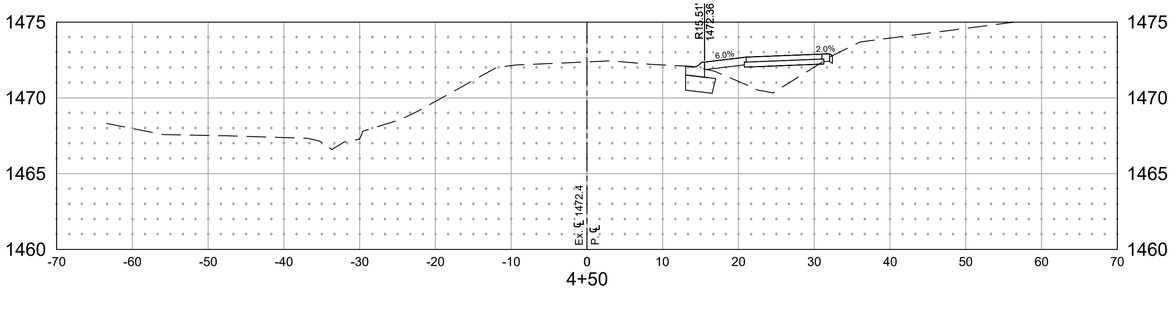


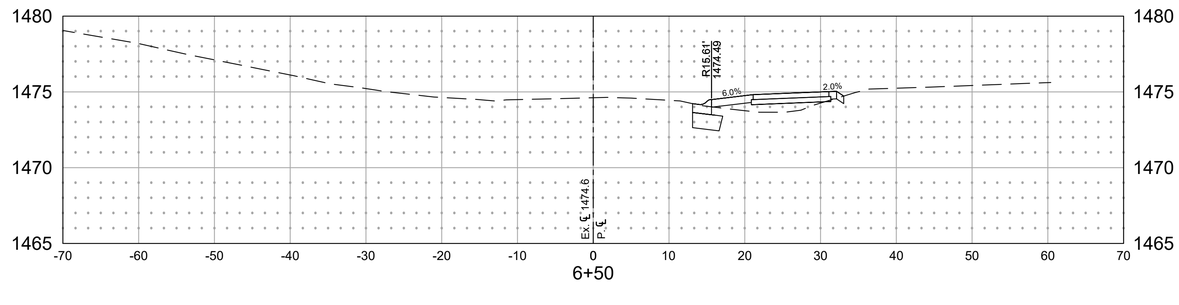






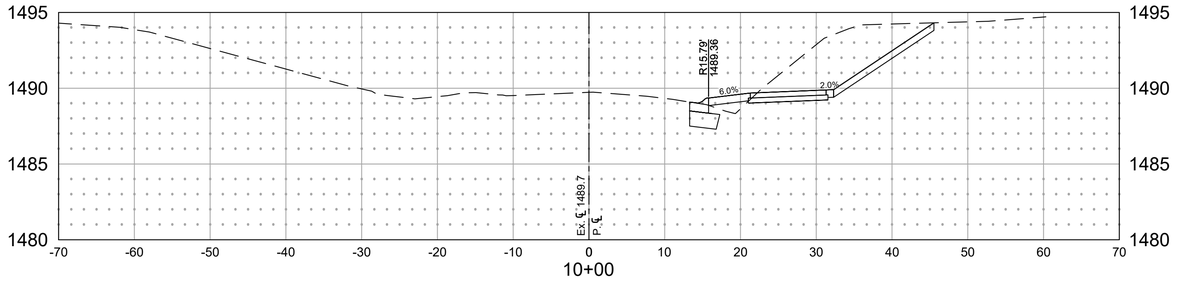




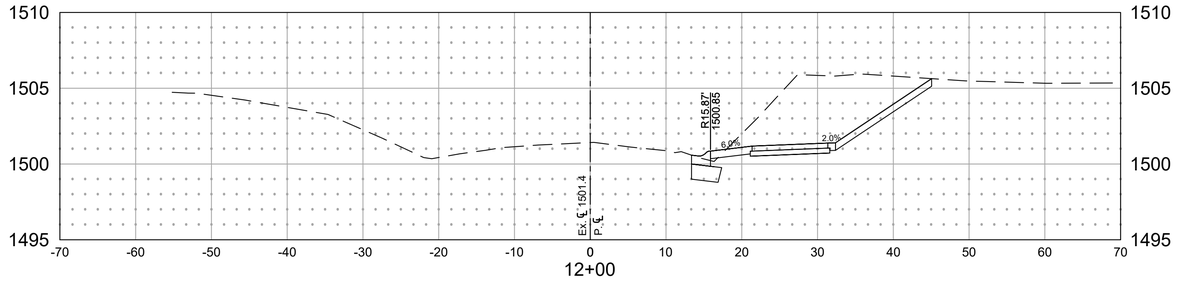


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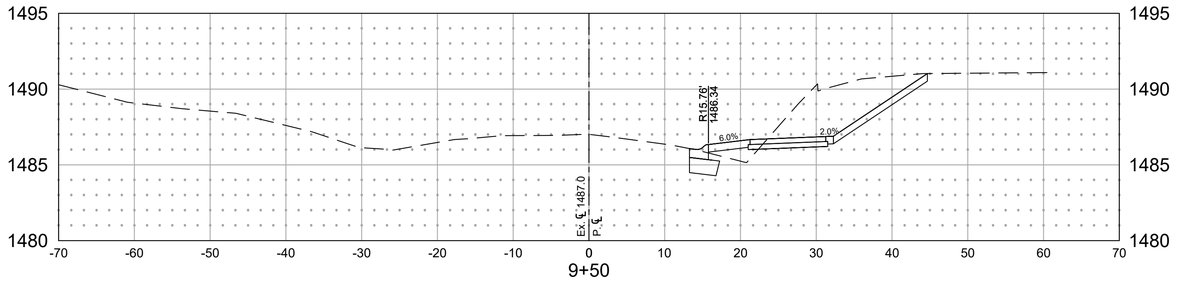
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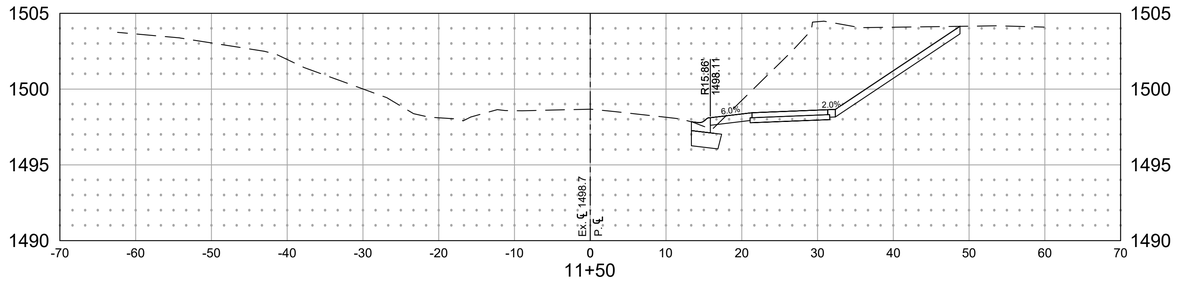
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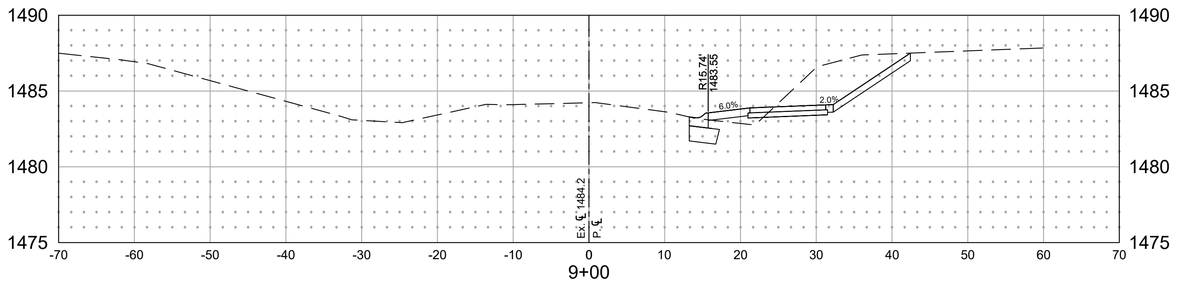
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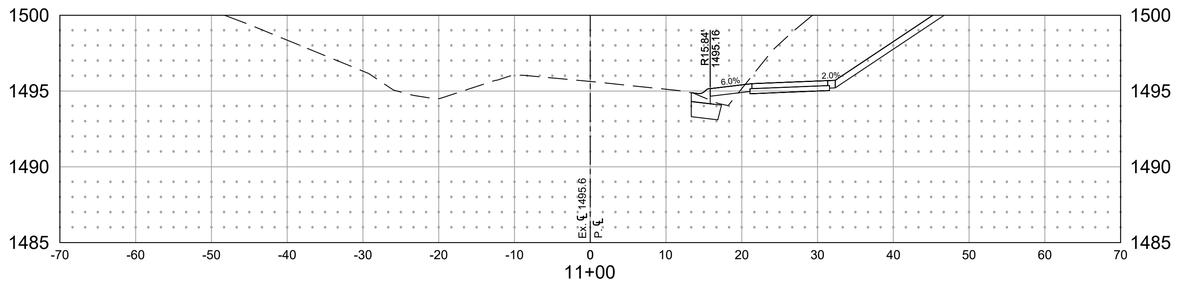
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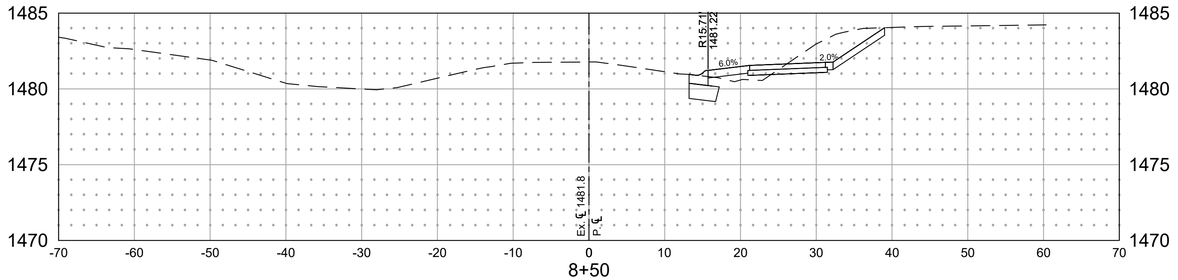
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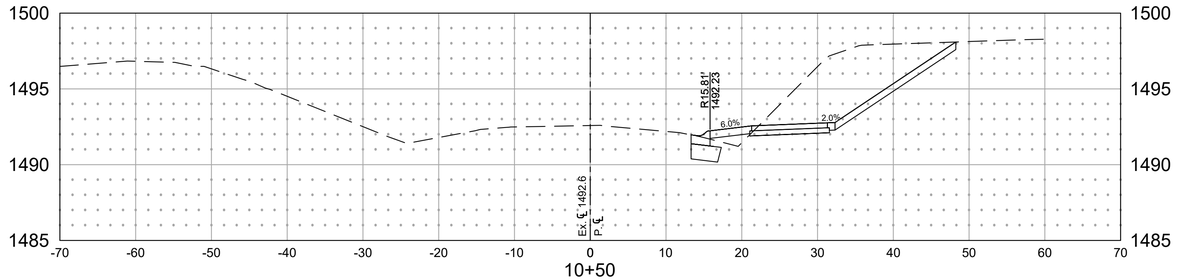
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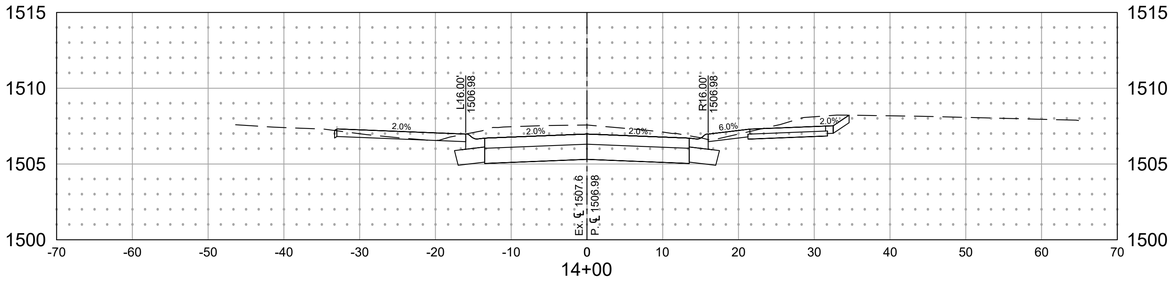


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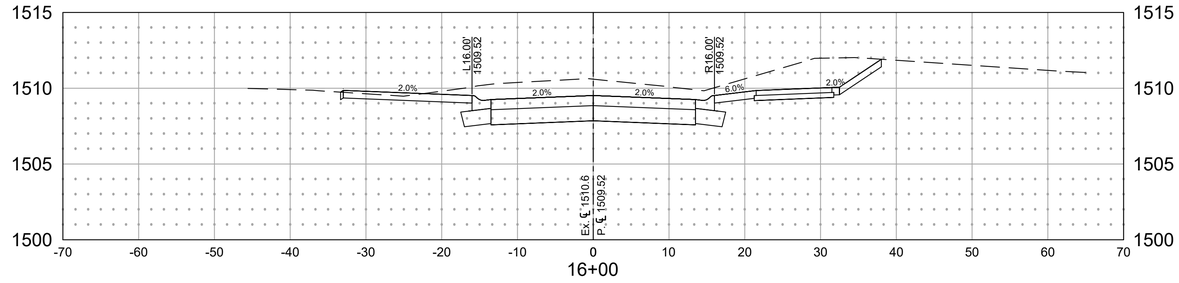


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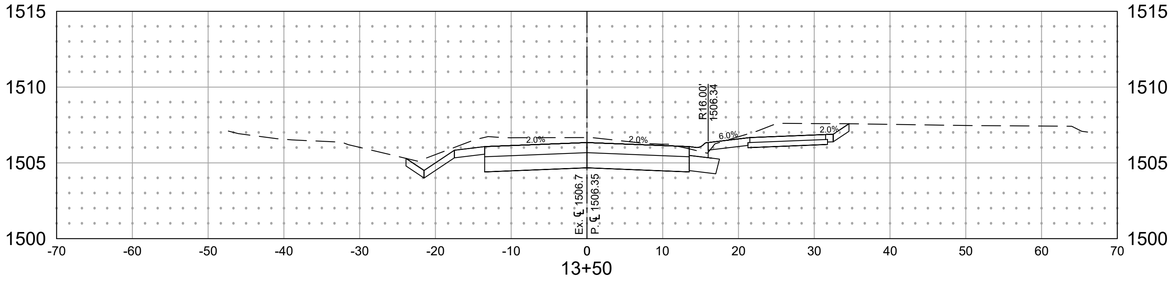
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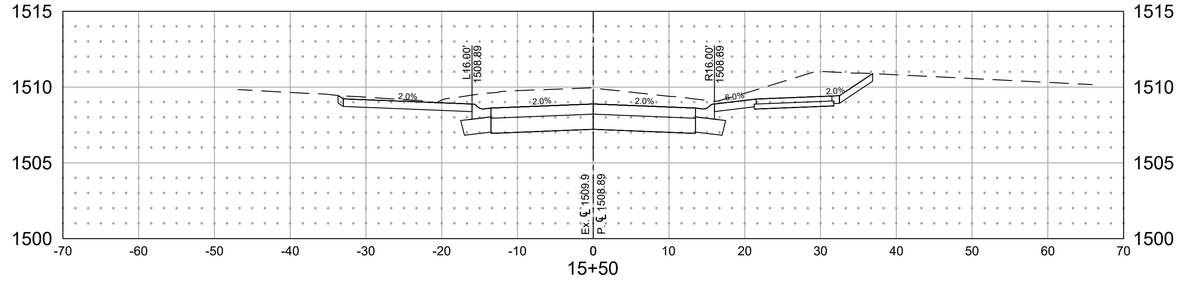
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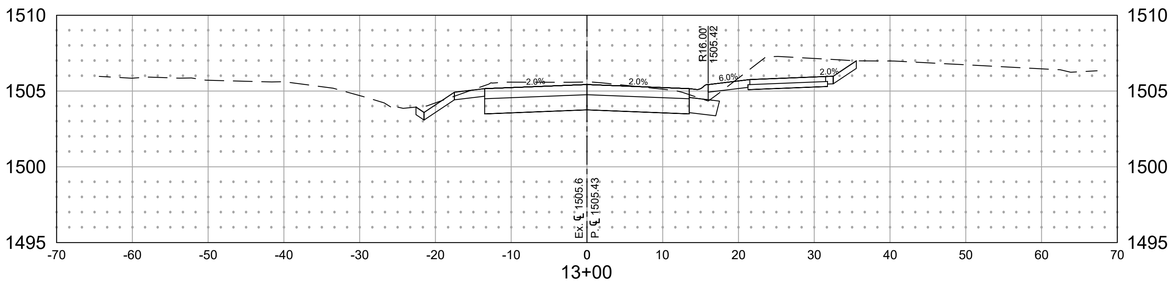
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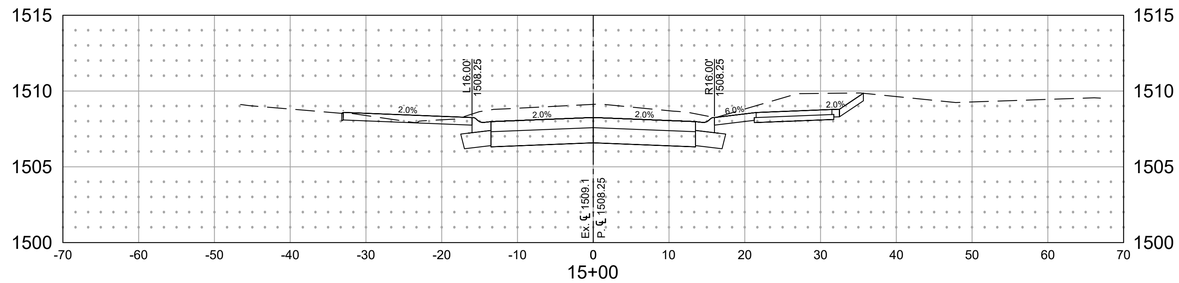
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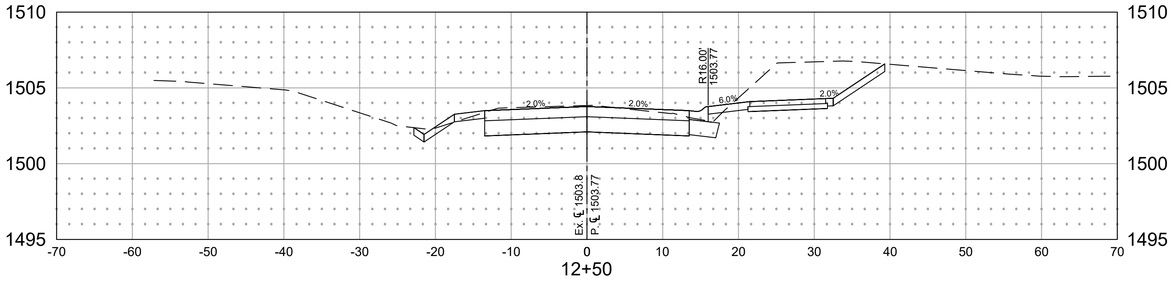
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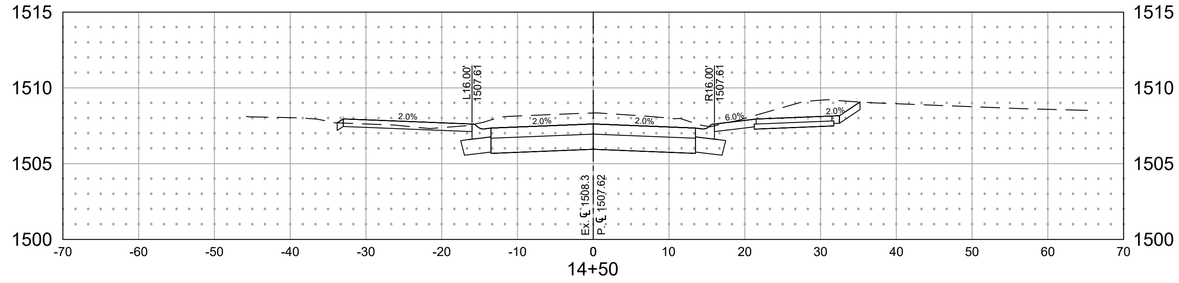
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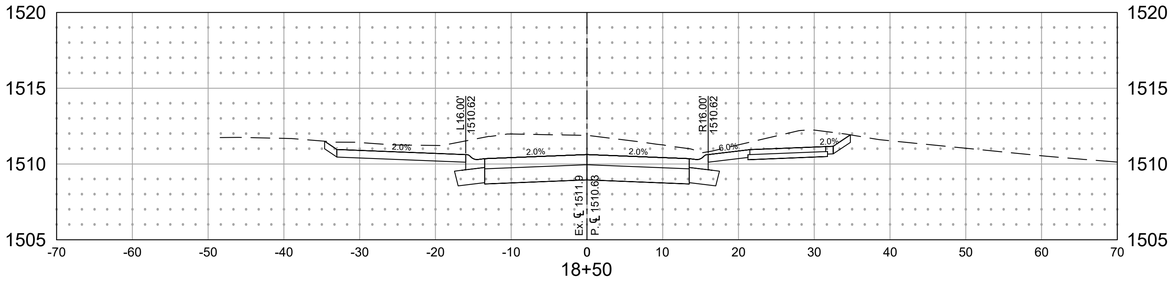


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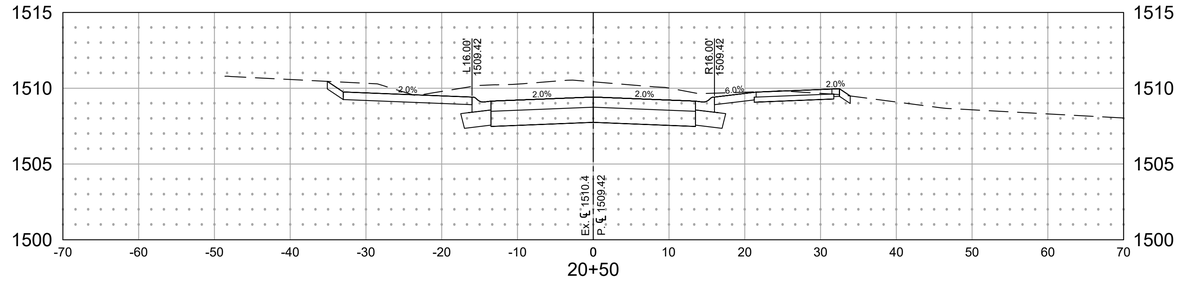
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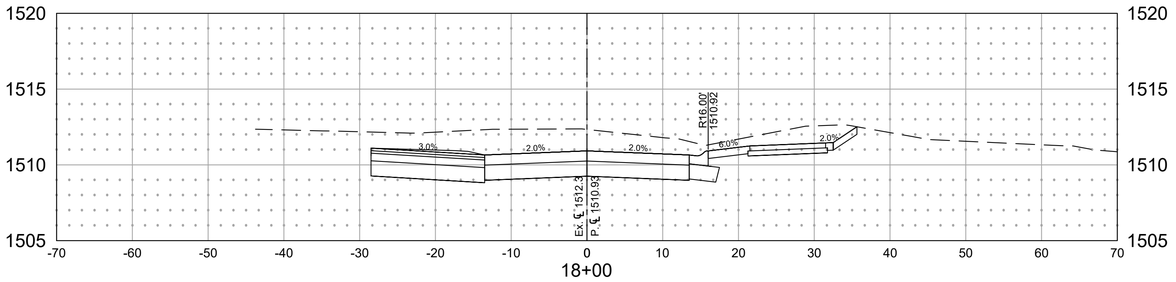
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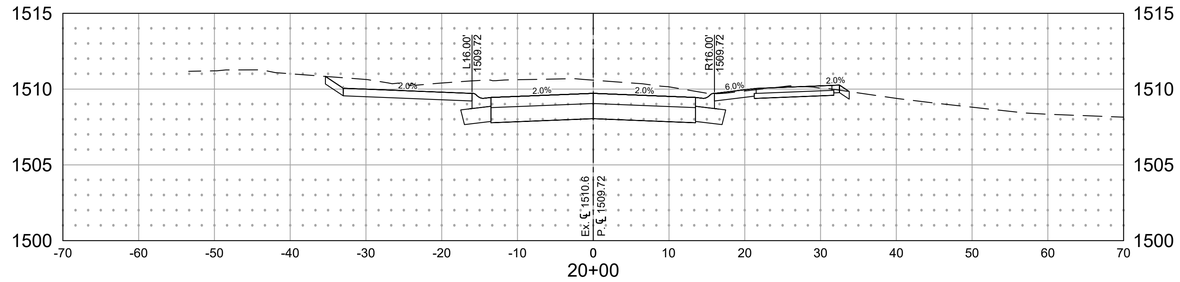
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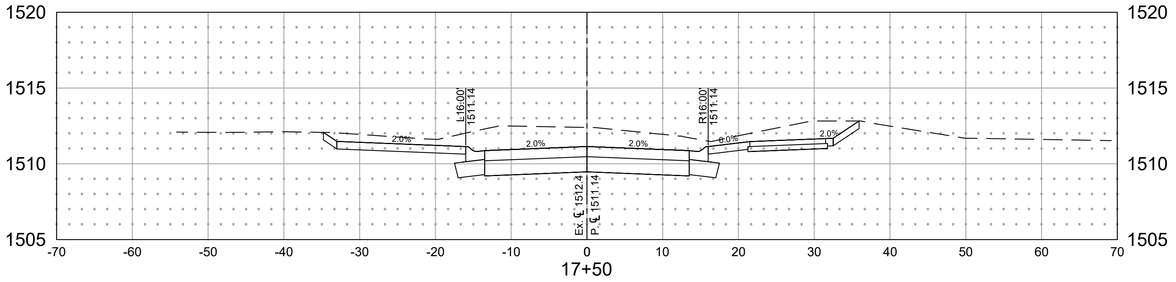
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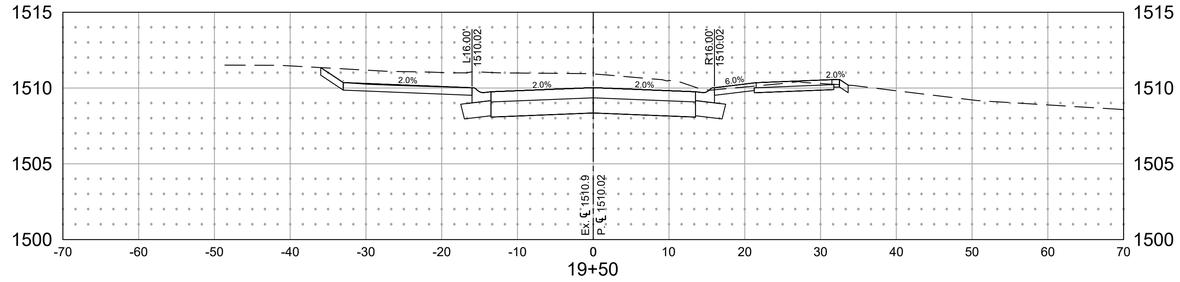
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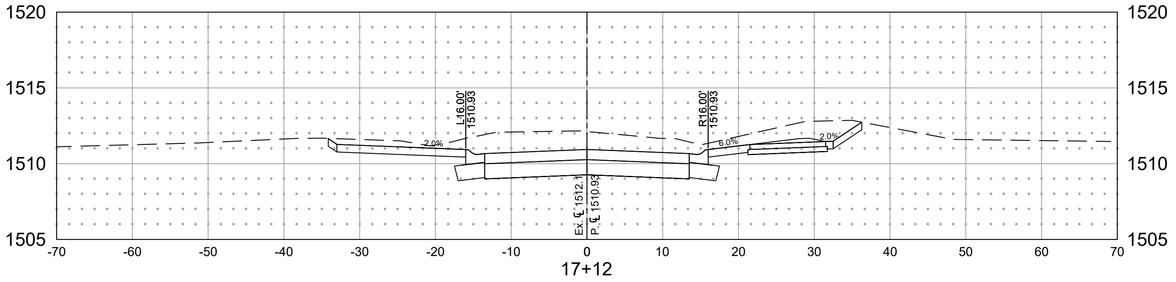
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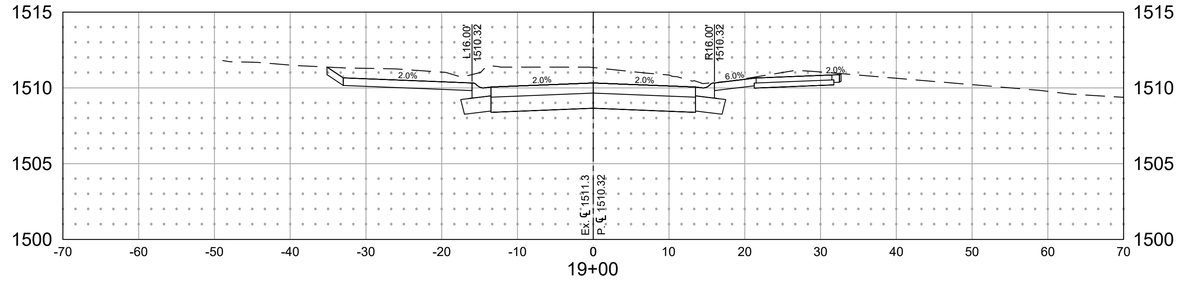
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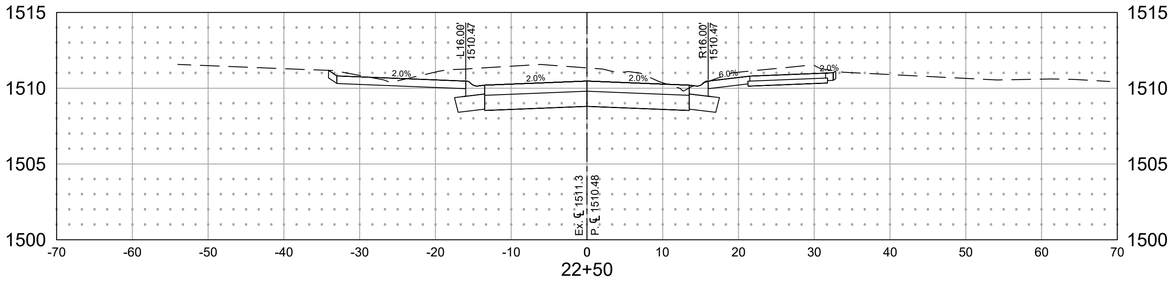


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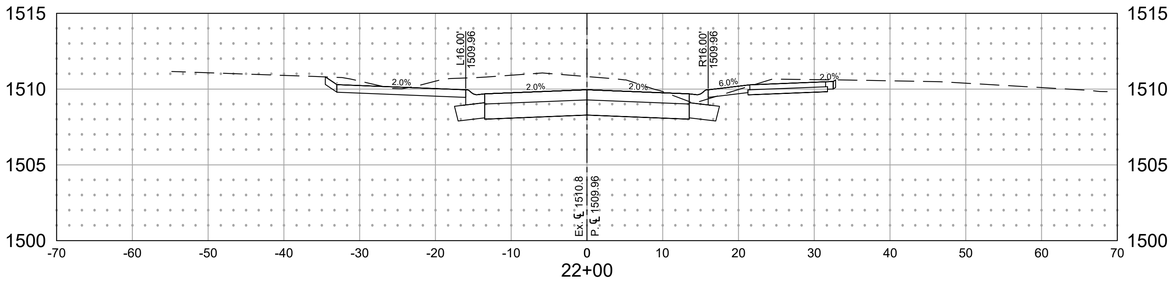
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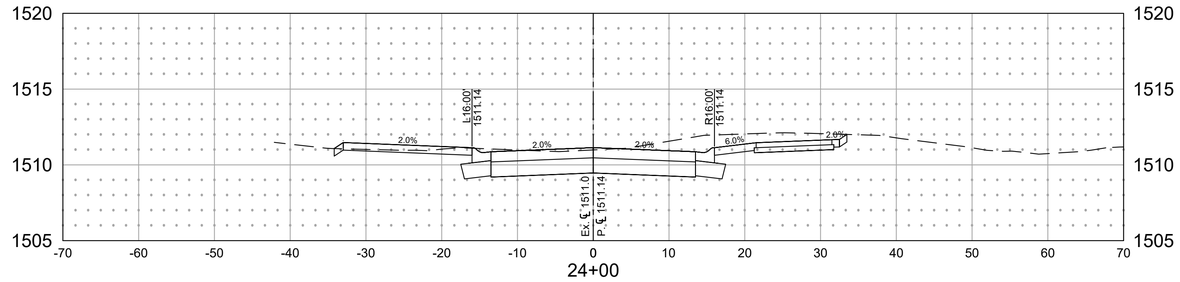
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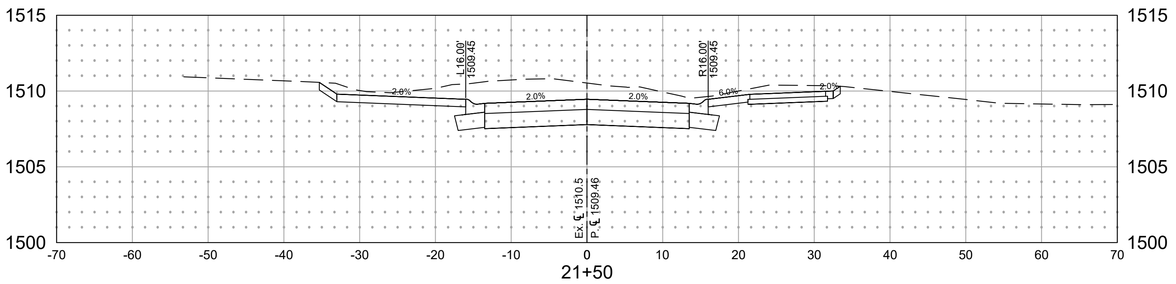
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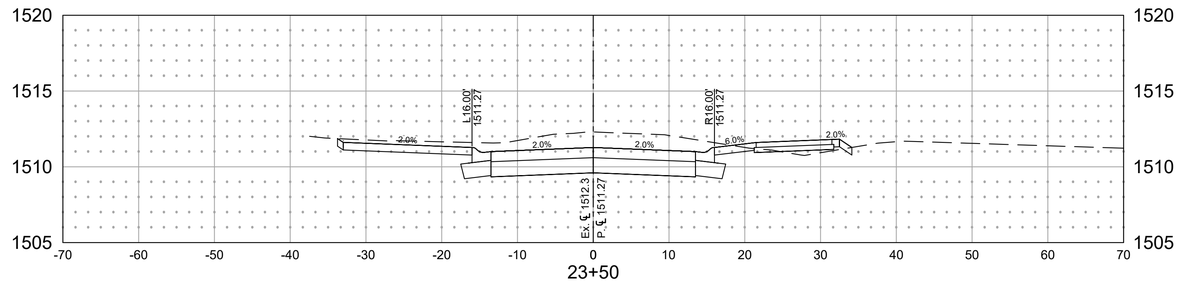
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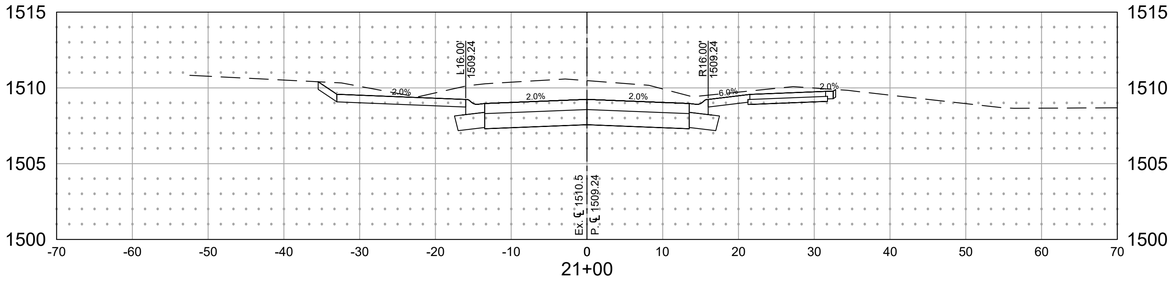
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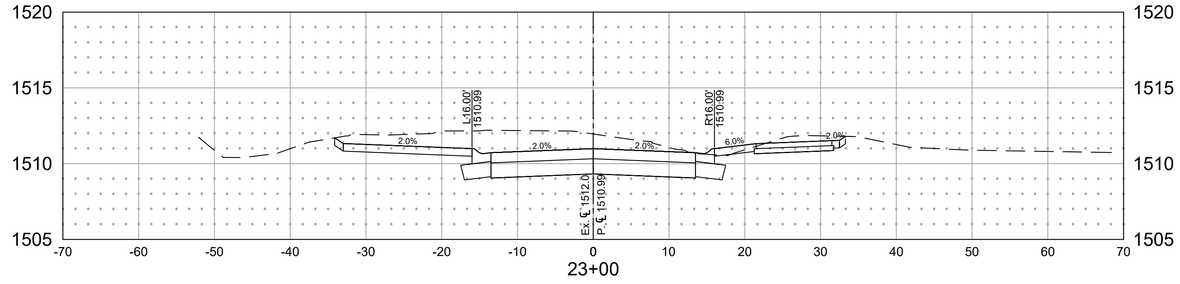
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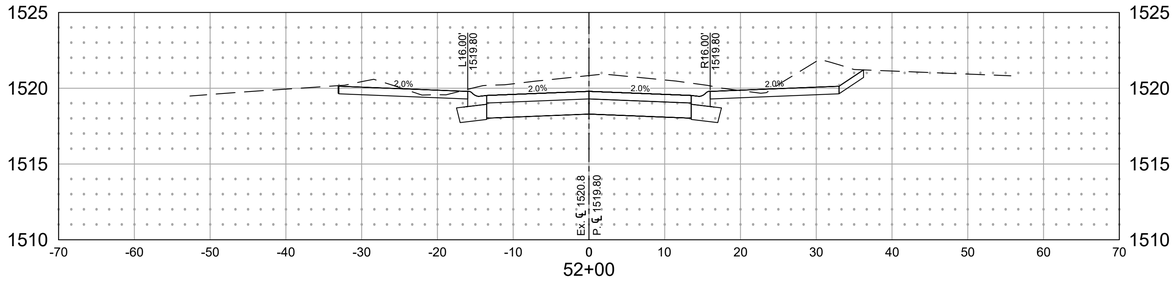


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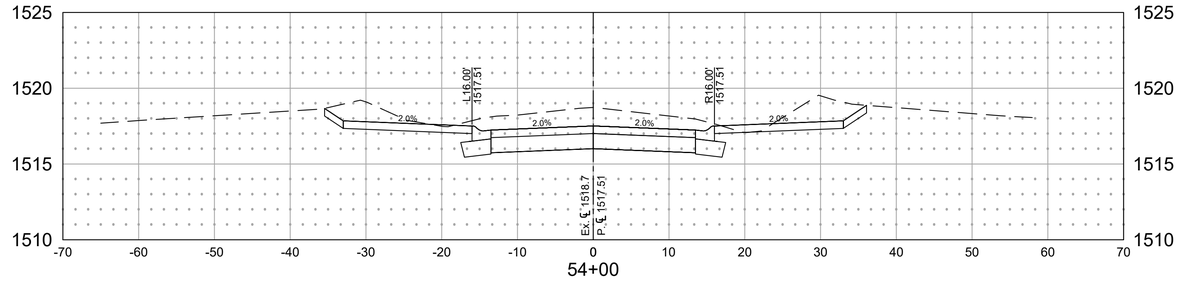


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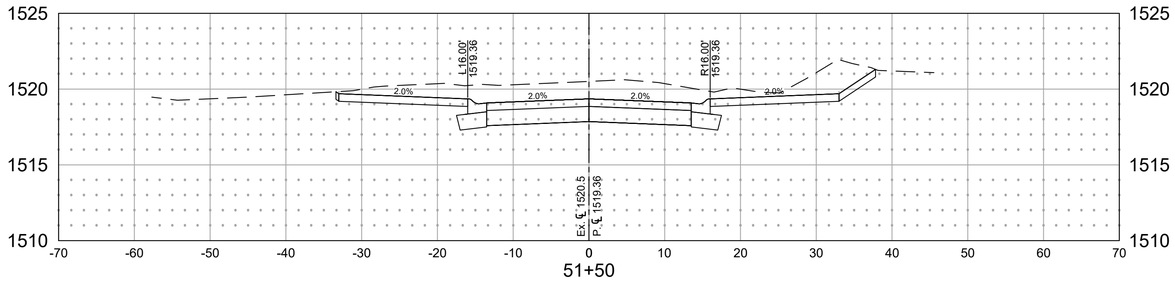
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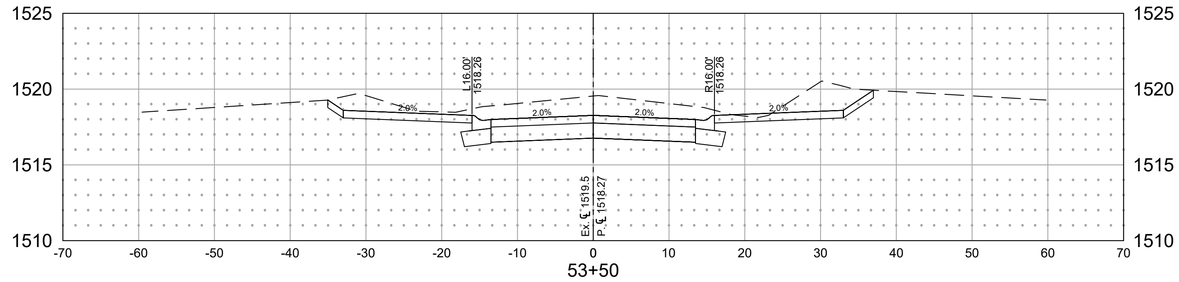
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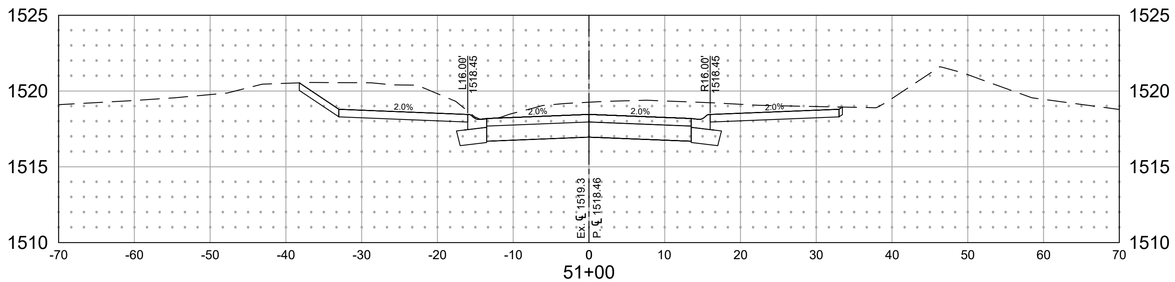
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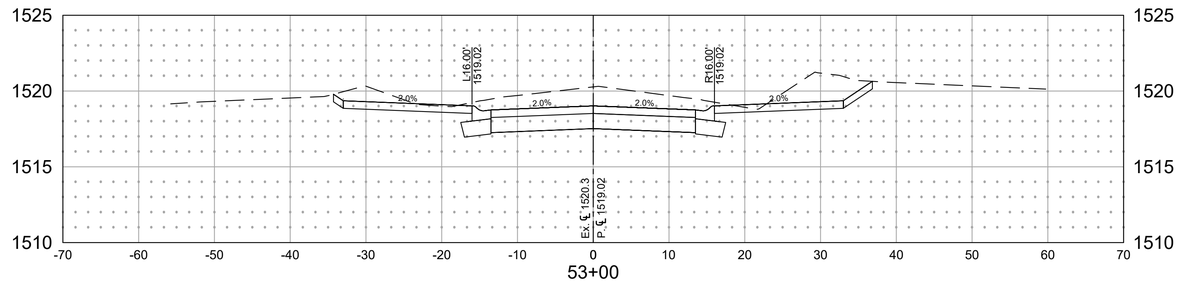
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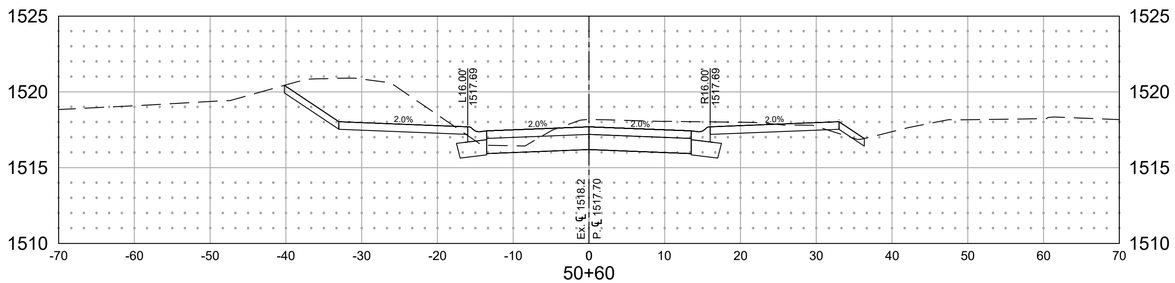
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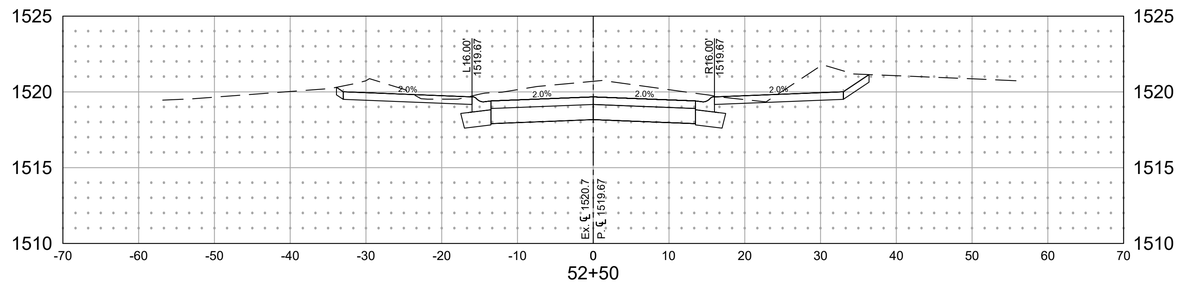
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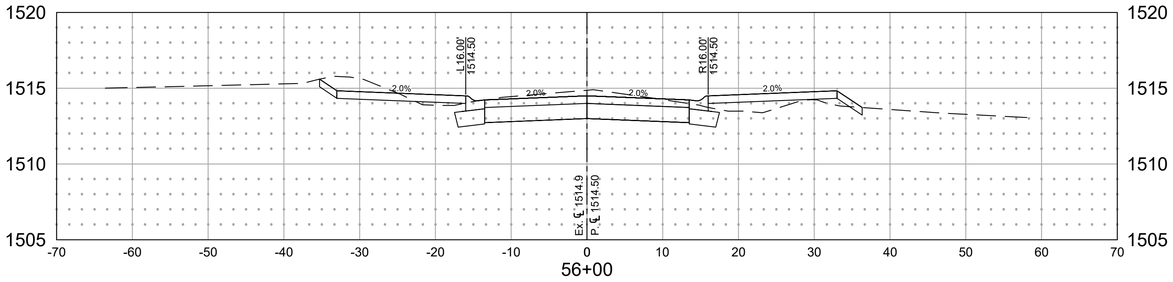


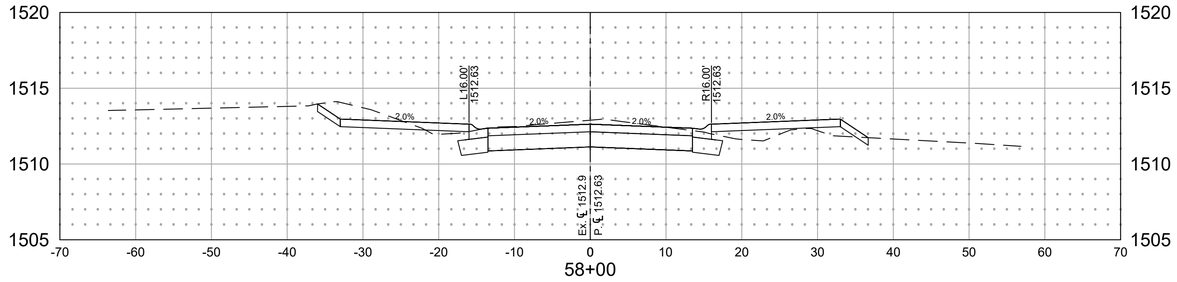
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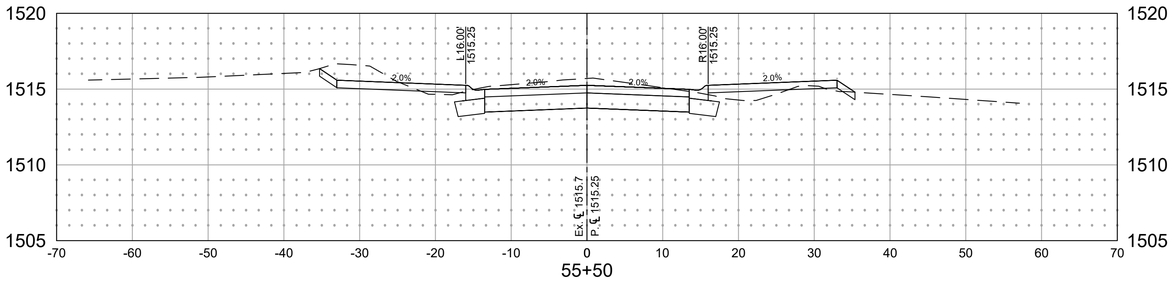


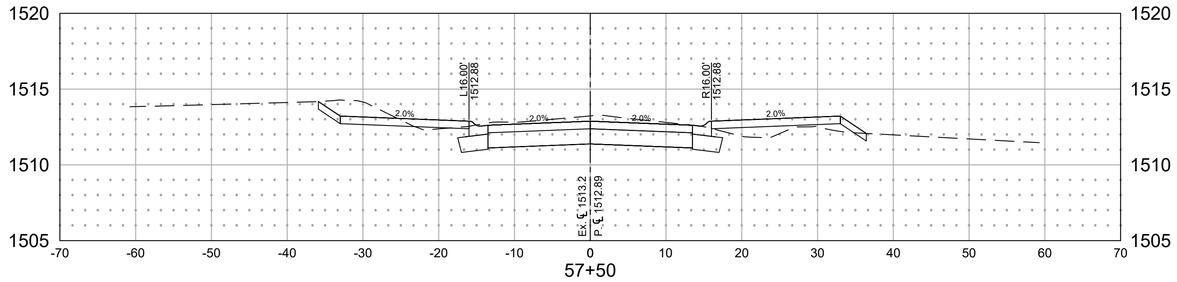
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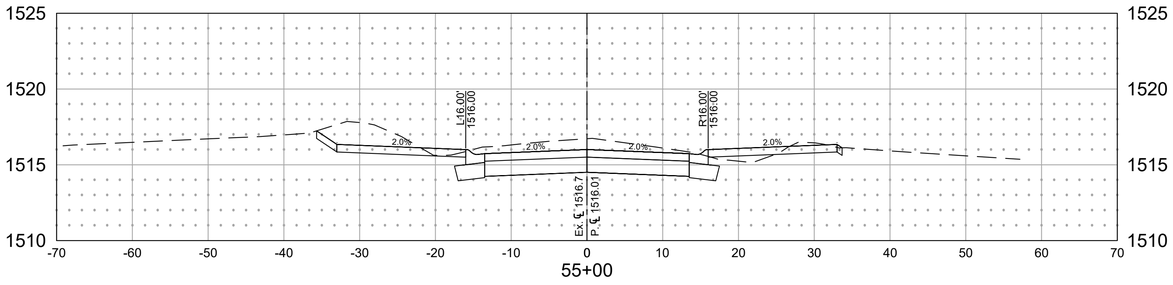
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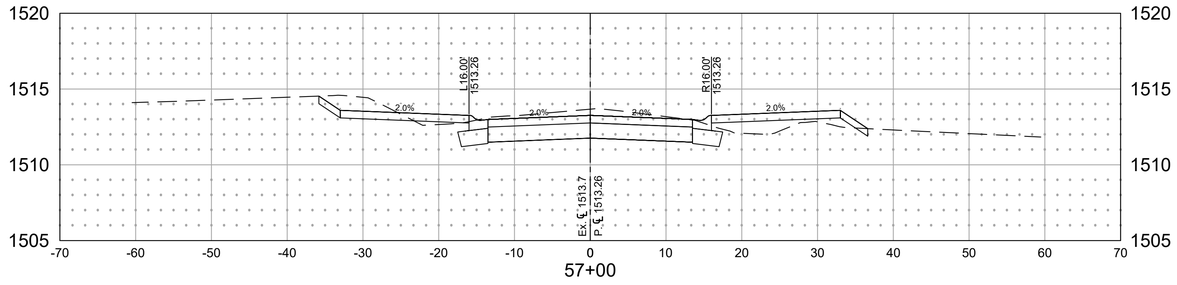


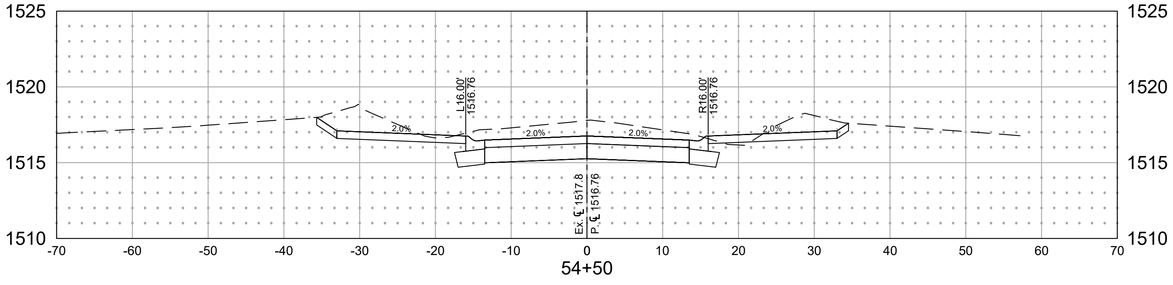


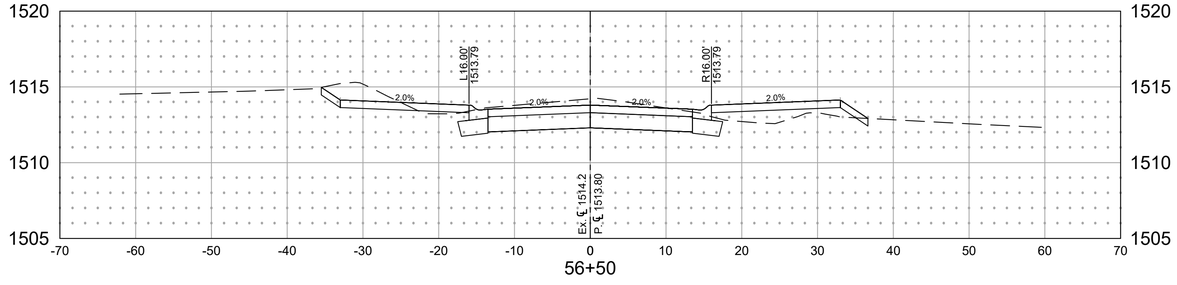




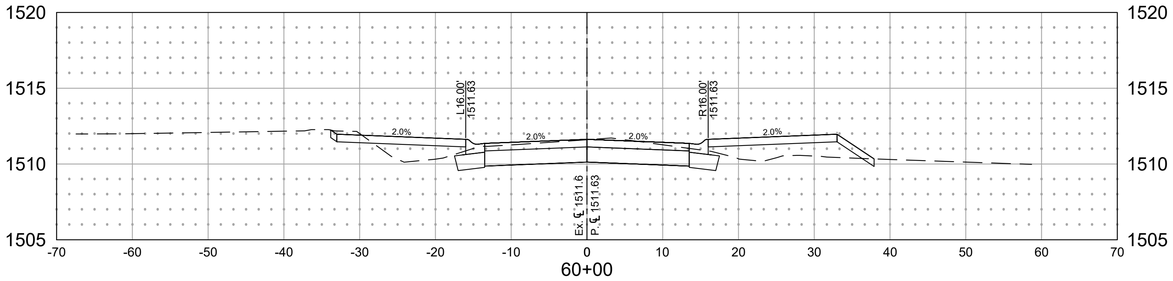




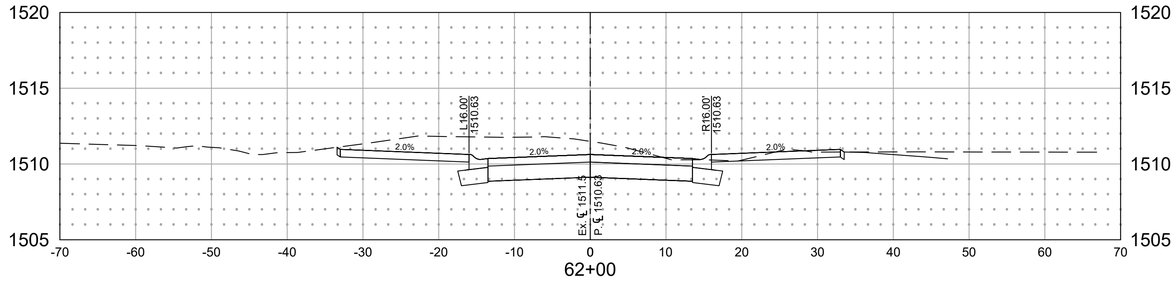




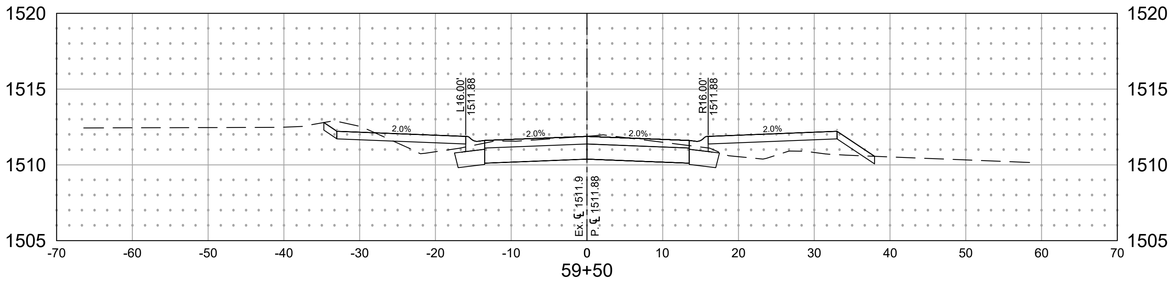
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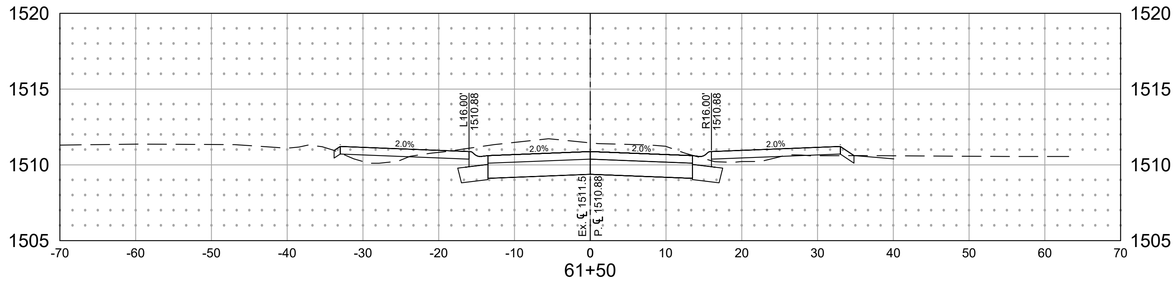
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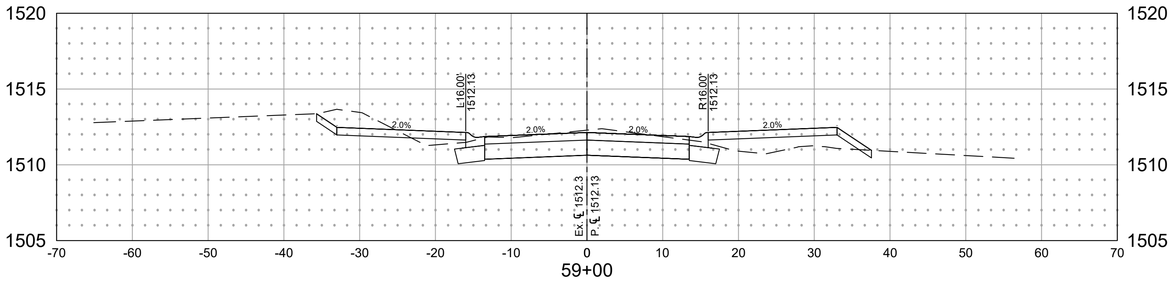
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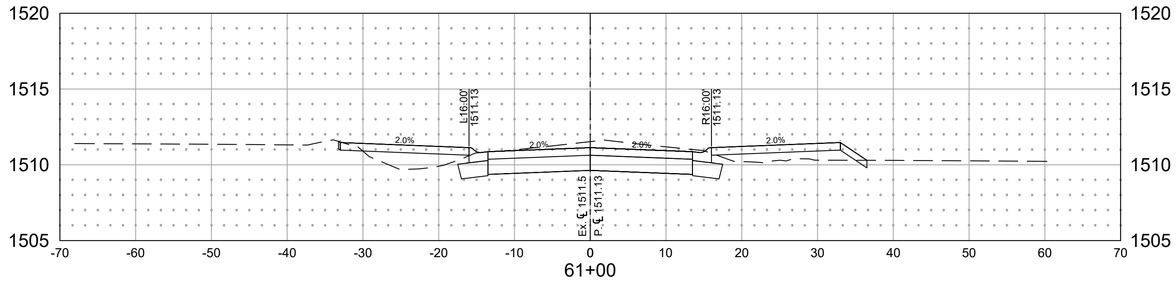
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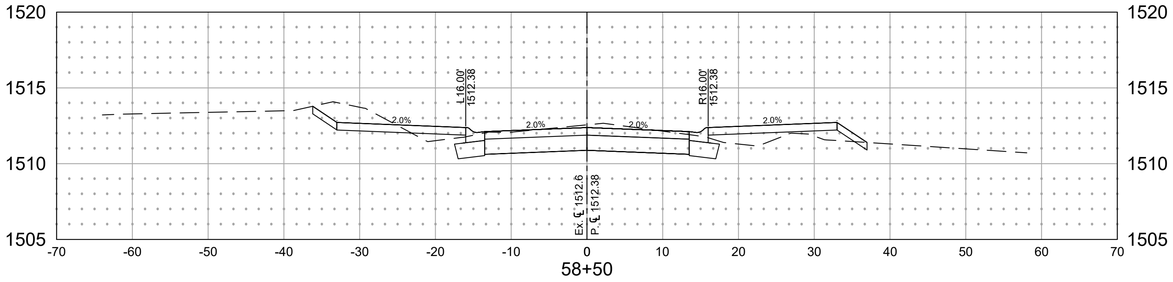
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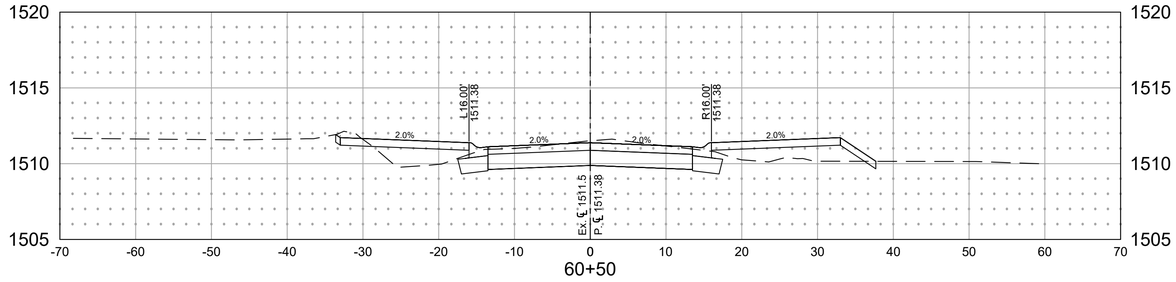
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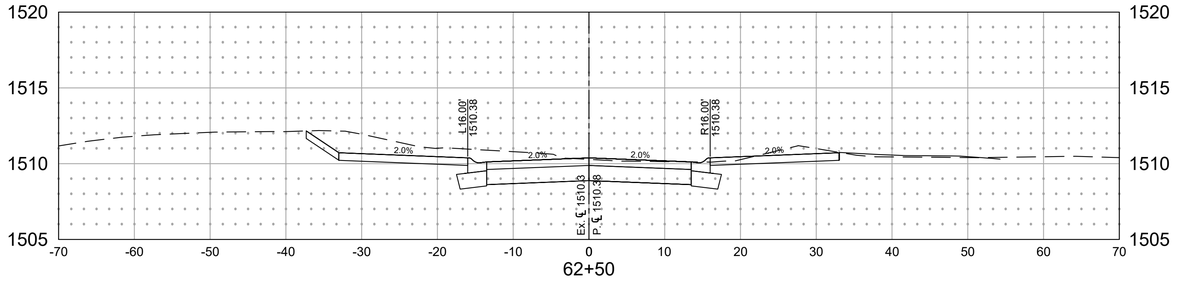


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Project Manual

East Seward Street Improvements

Seward, Nebraska

SEH No. SEWAC 160685

April 4, 2022

SEH®
Building a Better World
for All of Us®
Engineers | Architects | Planners | Scientists

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CERTIFICATION

I hereby certify that this specification was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Nebraska.

Jake Vasa, PE

Date: April 4, 2022 License. No. E-14500

END OF SECTION



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PROJECT DIRECTORY

Project Name: East Seward Street Improvements **Location:** Seward, Nebraska

Owner

Name: City of Seward
Address: 537 Main Street
Seward, NE 68434
Contact: Greg Butcher, Administrator
Phone: 402.643.2928
Fax:
E-mail: greg.butcher@cityofsewardne.gov

Engineer

Name: Short Elliott Hendrickson Inc.
Address: 13140 Lincoln Road, Suite 101
Omaha, NE 68138-4126
Contact: Jake Vasa, PE
Phone: 402.480.4096
Fax: 888.908.8166
E-mail: jvasa@sehinc.com

END OF DOCUMENT

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ADVERTISEMENT FOR BIDS

East Seward Street Improvements
Seward, Nebraska
SEH No. SEWAC 160685

Notice is hereby given that Sealed Bids will be received by the City of Seward until 10:00 a.m., May 17th, 2022, at City Hall located at 537 Main Street, Seward, NE 68434, at which time they will be publicly opened and read aloud, for the furnishing of all labor and material for the construction of East Seward Street Improvements. The Bidding Documents may be seen at City Hall. Bid security in the amount of 5 percent of the Bid must accompany each Bid in accordance with the Instructions to Bidders. The project description is to construct approximately 10,000 square yards of paving, and associated trail, storm sewer, and sanitary sewer improvements on East Seward Street from Highway 34 to 400' west of Goldenrod Lane, and 1,600 linear feet 24" sanitary trunk sewer along Highway 34.

The City of Seward reserves the right to reject any and all Bids, to waive irregularities and informalities therein and to award the Contract in the best interests of the Owner.

Greg Butcher
City Administrator
City of Seward, NE

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INSTRUCTIONS TO BIDDERS

ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders will have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Issuing Office* - The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Authorized sets of the Bidding Documents may be obtained digitally or by paper copy as directed in the Advertisement for Bids.

2.02 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete or unauthorized sets of Bidding Documents.

2.03 Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, after submitting its bid and within 5 days of Owner's request, Bidder shall submit (a) Bidders Proof of Responsibility, and (b) such other data as may be deemed necessary by the Owner.

3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.

3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

(a) those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.

(b) those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

(c) reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

(d) Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. Underground Facilities

1. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data:

1. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 5.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

A. On request, and to the extent Owner has control over the Site, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

B. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

C. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavations and utility locates.

4.04 *Other Work at the Site*

A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding documents, including Addenda;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy itself as to all federal, state, and local Laws and Regulations that may affect cost, progress, or performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder; information commonly known to Contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

J. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 6 – PRE-BID CONFERENCE

6.01 A pre-Bid conference will not be held for this Project.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than 10 days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, supplement, or change the Bidding Documents.

ARTICLE 8 – BID SECURITY

8.01 A bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a certified check, bank money order, or a Bid bond issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited. Such forfeiture shall be Owner's exclusive remedy if Bidder defaults.

8.03 The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.

ARTICLE 9 – CONTRACT TIMES

9.01 The number of days within which, or the dates by which milestones are to be achieved and the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the bidding and Contract award process of possible substitute or "or-equal" items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or "or-equal" item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers.

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor,

Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 – PREPARATION OF BID

13.01 The Bid Form and attachments are included in the Bidding Documents. Photocopies of these documents should be made for the purpose of submitting the Bid.

13.02 All blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternative, adjustment unit price item, and unit price item listed therein. A bid price must be entered for each alternative listed in the Bid Form.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names shall be typed or printed in ink below the signatures.

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID; EVALUATION OF BIDS

14.01 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.

B. The “Bid Price” (sometimes referred to as the extended price) for each unit price Bid item will be the product of the “Estimated Quantity” (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding “Bid Unit Price” offered by the Bidder. The total of all unit price Bid items will be the sum of these “Bid Prices”; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 15 – SUBMITTAL OF BID

15.01 The Bid Form is included with the Bidding Documents. A photocopy of the Bid Form is to be completed and submitted with all the attachments as required in the Bid Form.

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement for Bids and shall be enclosed in an opaque sealed package plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation “BID ENCLOSED.” A mailed Bid shall be addressed to Owner at address in Article 1.01 of Bid Form.

15.03 The submitted Bid Bond shall bear original signatures and the seal of the Surety.

15.04 Submission of Bid Forms and/or Bid Bonds by electronic transmission (such as Fax or e-mail) will be a cause for rejection.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 – OPENING OF BIDS

17.01 Bids will be opened at the time and place indicated in the Advertisement for Bids and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base bids and major alternates, if any, will be made available to Bidders after the opening of bids.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional bids. Owner will reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, then the Owner will reject the Bid as nonresponsive. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 If Owner awards the Contract for the Work, such award shall be to the responsible Bidder submitting the lowest responsive Bid. Owner may also reject the Bid of any bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder.

19.03 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.04 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner shall announce to all bidders a "Base Bid plus alternates" budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

C. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

19.05 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Bidding Documents.

19.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within 10 days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

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GEOTECHNICAL DATA

PART 1 GENERAL

1.01 FOUNDATION BORING NOTES

A. Data shown on boring logs is for the Bidders' information. Bidder should be cognizant that materials between borings can vary from that shown on logs. Final and complete identification of all materials between borings can be verified only by Site excavation. Bidder shall assume full responsibility for excavating all materials encountered during construction regardless of density or groundwater condition.

B. The boring logs are an exact copy of the originals made by photo process reproduction. This information was obtained for design purposes and is made available to Bidders so they may have the same information the designers used. This information is not intended as a substitute for Bidder's personal investigations, interpretations, or judgment. Bidder may make his own soils investigation, but he must first obtain Engineer's approval. Failure of Bidder to conduct his own investigation or to analyze available data shall not relieve Bidder of any responsibility in excavating difficult materials.

C. Water levels indicated on the boring logs are subject to seasonal and/or annual variations.

D. The original investigation report is available for Bidder's inspection at Owner's office.

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Geotechnical Engineering Report

East Seward Street
4611 S 96th St, Ste 222
Seward, Nebraska
June 28, 2021
Terracon Project No. A3215037

Prepared for:
Short Elliott Hendrickson Incorporated
Omaha, Nebraska

Prepared by:
Terracon Consultants, Inc.
Lincoln, Nebraska



June 28, 2021

Short Elliott Hendrickson Incorporated
4611 S 96th St, Ste 222
Omaha, Nebraska 68127

Attn: Mr. Jake Vasa
P: (402) 480 4096
E: jvasa@sehinc.com

Re: Geotechnical Engineering Report
East Seward Street
West of Goldenrod Ln to McKelvie Road - East Seward Street Reconstruction
Seward, Nebraska
Terracon Project No. A3215037

Dear Mr. Vasa:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PA3215037 dated May 11, 2021. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of pavements and storm sewers for the proposed East Seward Street project.

We appreciate the opportunity to be of service to you on this project. Please contact us if you have any questions concerning this report or if we may be of further service.

Sincerely,
Terracon Consultants, Inc.

Sajjad Satvati, Ph.D., E.I.
Senior Staff Engineer

Bradley A. Levich, P.E.
Senior Principal

Distribution: Addressee (pdf)

REPORT TOPICS

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Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Geotechnical Engineering Report

East Seward Street
West of Goldenrod Ln to McKelvie Road - East Seward Street Reconstruction
Seward, Nebraska

Terracon Project No. A3215037
June 28, 2021

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed East Seward Street to be located at West of Goldenrod Ln to McKelvie Road - East Seward Street Reconstruction in Seward, Nebraska.

The field exploration included eight soil borings to depths of approximately 15 feet below existing grades. Maps showing the site and boring locations are shown on **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained during the field exploration are included on the boring logs in **Exploration Results**.

Our work was completed in general accordance with Terracon proposal-agreement no. PA3215037 dated May 11, 2021.

The purposes of this exploration and report are to provide information and geotechnical engineering recommendations relative to:

- Soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Pavement design and construction
- Frost considerations

SITE CONDITIONS

Item	Description
Alignment Information	The project is located at West of Goldenrod Ln to McKelvie Road - East Seward Street Reconstruction in Seward, Nebraska. Latitude, Longitude (approximate): 40.9050° N, 97.0731° W. See **Site Location**
Existing Improvements / Current Ground Cover	Gravel on the surface. Tree line north of E Seward Rd. Farm field east of the site. Asphalt pavement on the surface in E Seward Rd and McKelvie Rd intersection and what appears to be new Portland cement concrete to the west of the project.
Existing Topography	Ground surface elevation on north of the site appear to be within ±1' of 1,512', then it slopes downward with about 4' of elevation change to the east (farm), slopes downward with about 13 feet to the west of Goldenrod Ln, and slopes upward with about 7 feet of elevation change to the south based on Topographic Plan developed by JEO.

PROJECT DESCRIPTION

Item	Description
Information Provided	Site plan and information through email provided by SEH, dated April 13, 2021. Topographic Plan, developed by JEO, dated June 2, 2021.
Project Description	The project will include reconstruction of existing surfacing with new concrete pavement, storm sewer, and possibly water main.
Grading/Slopes	Final slopes of 3H:1V (Horizontal: Vertical) or flatter are expected.
Pavements	Portland cement concrete (PCC) paving. Anticipated traffic is as follows: ■ Autos/light trucks: 1,000 vehicles per day ■ Light delivery and trash collection vehicles: 10 vehicles per week ■ Tractor-trailer trucks: <1 vehicle per week The pavement design period is 20 years.

GEOTECHNICAL CHARACTERIZATION

Subsurface Profile

We have developed a general characterization of the soil and groundwater conditions based upon our review of the boring information, the geologic setting, and our understanding of the project. This characterization, termed GeoModel, forms the basis for our geotechnical evaluations and recommendations for site preparation, earthwork, and pavement options. Conditions encountered at each boring location are indicated on the individual boring logs. The GeoModel and individual logs are provided in **Exploration Results**.

The GeoModel is based upon our boring information. Variations can occur between borings and across the site. Previous construction and grading may have created additional variations.

Groundwater Conditions

The borings were monitored while drilling and after completion for the presence and level of groundwater. Groundwater was not observed in the borings. However, this does not necessarily mean the borings terminated above the water table. Due to the low permeability of the cohesive soils encountered in the borings, a relatively long period of time may be necessary for a groundwater level to develop and stabilize in a borehole. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define groundwater levels in soils of this type.

Fluctuations of the groundwater level can occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

We anticipate that minor amounts of cuts/fills (i.e., less than 1 foot) will be needed to develop the design grades for the proposed pavement. We analyzed the pavement subgrade conditions based on the data obtained from the field and laboratory testing programs. We recommend treating the upper subgrade zone with Portland cement to help provide more uniform stable subgrade beneath the proposed pavements and reduce shrink-swell potential of the moderate plasticity clays. We present below our geotechnical recommendations related to subgrade preparation, pavements, and other geotechnical aspects of the project.

We encountered moderate to high plasticity native clay soils within top 3 feet of Borings B-2, B-4, B-7, and B-8, within top 8 feet of Boring B-3, and between 3 to 8 feet of Boring B-5. High and moderate plasticity clay soils are considered expansive and have the potential to shrink and swell with variations in moisture content, causing adverse pavement performance including cracking and deterioration of pavements.

Below pavements, it is our experience and recommendation that reasonable pavement performance can be achieved by implementing one of the following alternatives. The alternatives in order of our recommendations for best subgrade performance include:

- Providing a drained granular base with subdrains.
- Chemical stabilization of at least 12 inches of on-site lean to fat clays with lime or Portland cement. We recommend additional testing be completed on desired admixture to evaluate strength or reduction in plasticity. Consideration could be given to using recycled asphalt mixed into the clay if desired.
- Removing a layer of the lean to fat clays and replacing it with at least 18 inches of compacted imported low-plasticity cohesive fill.

If a drained granular base is selected, Terracon could provide additional recommendations. The most preferred alternative is drained base but the most expensive alternative. Our next preferred alternative is chemical stabilization with slurry injected Portland cement followed by imported lean clay.

Cohesive subgrades below distressed pavement may be moist and unstable. Also, the near surface subgrade materials could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier time of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations including subgrade improvement and fill placement are provided in the **Earthwork** section.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

Earthwork will include removing any organic topsoil (if any) and pulverizing/mixing or removal of the existing asphalt pavement and gravel. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria as necessary to render the site in the state considered in our geotechnical engineering evaluation for pavements.

Site Preparation

Stripping of all gravel, existing pavements, organic topsoil, and other materials unsuitable for re-use as engineered fill should be performed within all cut, fill, and paving areas. A typical stripping depth of about 6 to 12 inches is expected to be adequate in most areas. However, areas of both deeper and shallower stripping could be encountered. Stripping could be limited to areas of the field area if full depth reclamation is planned to be mixed along the entire site. A Terracon geotechnical representative should evaluate actual stripping depths at the time of construction. We recommend that site stripping and subgrade preparation procedures extend at least 2 feet beyond the edges of the proposed pavements.

Tree and shrub root systems should be thoroughly removed from the pavement areas. This applies both to trees currently on the site and to trees removed in the past several years. An effort should be made to locate records, plats or photographs indicating the past location of trees or other large vegetation. In addition, some of the natural soils may have been desiccated by the tree roots. Desiccated clays present a significant risk of heave if left in-place below slabs. Therefore, any soils desiccated by trees or shrub roots should be removed and replaced with approved fill.

The samples from the borings did not indicate very wet soils below pavement at the time of our field investigation, However, it is our experience that a saturated zone often develops immediately below existing pavements, and in low areas such as around storm drain intakes. The saturated zone forms when surface water infiltrates through cracks in the paving, and then is prevented from draining by the underlying clay and from evaporating by the paving. It is our experience that this saturated zone typically is not more than about 6 inches thick, but it may be necessary to scarify and recompact this layer where encountered.

Following overexcavation of observed soft areas within the pavement area and removal of any desiccated or blocky clay, the pavement areas should be proofrolled in the presence of a Terracon geotechnical representative. Proofrolling should also be completed prior to placing any fill or prior to stabilization. Proofrolling aids in providing a firm base for compaction of fill and delineating soft, or disturbed areas that may exist below subgrade level. Unsuitable areas observed at this time should be improved by scarification and recompaction or by undercutting and replacement with structural fill. Proofrolling may be accomplished with a fully loaded, tandem-axle, dump truck with a minimum gross weight of 25 tons or other equipment providing an equivalent subgrade loading.

A Terracon representative should provide observation and testing during site preparation and grading to help evaluate the required extent of removal and the need for any additional corrective measures that become apparent during construction.

Chemical Stabilization Option

The chemical stabilization procedure, if selected, should form at least a 12-inch thick stabilized subgrade below the pavement. The final subgrade should be constructed of modified subgrade by blending hydrated lime, or Portland cement. In addition, consideration be given to reuse of the existing gravel and asphalt by milling and mixing with the soils. After proofrolling and repairing/replacing any deep subgrade deficiencies and prior to mixing cementitious agent, the subgrade should be pulverized using high speed rotary pulverization equipment that can mix the material to a depth of about 12 inches below grade. If cementitious slurry is used, we recommend the moisture content of the recommended modified zone of the roadway surface be adequately lower than the optimum moisture content to account for the water in the slurry. Materials mixed with cementitious agent should be compacted to at least 98 percent of the maximum dry density per ASTM D698 and at moisture contents within two percentage points of their optimum moisture content.

The modified zone should extend at least 1 foot beyond the edge of the roadway. Soils mixed with cementitious slurry should be compacted and finished within 5 hours after thoroughly mixing soil/aggregate. Dry Portland cement shall be mixed within 1 hour of placement and grading and final compaction shall be completed within 3 hours after thoroughly mixing into soil. Mixing should only be performed when soil has a minimum temperature of 45 degrees F and the air temp is rising.

Dry Portland cement should be distributed uniformly by a cyclone, screw-type, or pressure manifold distributor. The dry Portland cement shall not be applied when wind conditions create problems in adjacent areas or create hazards. Due to houses in the area slurry should be considered to reduce dust and hazards to nearby residents.

We recommend applying the cementitious agent at an application rate sufficient to achieve a minimum unconfined compressive strength on the order of 200 psi at 7 days. We estimate approximately 5 to 7 percent Portland cement by dry weight depending on if granular or pulverized asphalt is used.

Materials modified with cementitious agent may not achieve their design if mixed at moisture contents greater than 2 percent above optimum moisture content or if not allowed to properly cure after placement due to the moisture content being less than 2 percentage points below the optimum moisture content. Therefore, it is important that the recommended moisture content of the modified zone be maintained within 2 percentage points of its optimum during compaction and curing period. As a check, we recommend the moisture content be evaluated the day before

the mixing operations and for at least 3 days after placement to confirm adequate moisture conditions.

Construction traffic should not be allowed on stabilized materials during curing except as required for sprinkling. Heavy loaded vehicles operating on the stabilized surfaces could cause significant damage resulting in sever deterioration and life reduction.

Storm Sewer Trench Excavations

Installation of the new storm sewer is expected to typically require excavations extending about 7 to 10 feet below grade. The boring information indicates the excavations should encounter primarily cohesive soils, consisting of lean, lean and fat clays. It appears that most of the excavations in the 7 to 10 foot range would encounter relatively strong cohesive soils.

Groundwater seepage could significantly affect trench stability and constructability. The majority of the excavations are anticipated to be entirely in cohesive soils, therefore, excavations slightly below the groundwater level may be possible. It is anticipated that seepage may be controllable by pumping from the trench. However, if seepage or perched water causes instability near or above the top of the trench shield, the sideslopes of the upper portion of the excavation should be flattened. If subgrade instability occurs due to the groundwater level, special subgrade stabilization measures, such as the use of a geogrid and increased thickness of crushed rock, may be necessary.

All excavations should comply with requirements of OSHA 29 CFR, Part 1926, Subpart P, "Excavations and Trenches" and other applicable codes. Reference to this OSHA requirement should be included in the job specifications. It should be noted that identification and classification of the individual soil types will require close attention whenever opening new sections of trench. In addition, variations in soil conditions can occur between the widely-spaced borings. OSHA regulations state that excavation safety is the responsibility of the contractor. However, a Terracon representative could be present during excavation to help identify and classify the soil layers exposed in trench side-slopes.

The natural soils generally appeared to be relatively strong in the soil samples. Therefore, these soils are expected to be relatively stable during construction. In stable subgrade areas, we recommend following the standard City of Seward or State NDOT specification pipe bedding details. Terracon should be contacted if soft or sensitive soils are encountered in the storm sewer area.

Fill Material Types

Structural fill should meet the following material property requirements:

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Low-plasticity, cohesive soil	CL (LL ≤ 45 and 10 ≤ PI ≤ 25) [2]	All locations and elevations below pavements.
Moderate-plasticity, cohesive soil	CL (LL ≤ 50 and 10 ≤ PI ≤ 32) [2]	More than 24 inches below pavement subgrade level unless stabilized with chemical agent
On-Site Soils [3]	CL	Some of the low plasticity on-site soils, free of organic matter and debris, appear suitable for reuse as engineered fill. However, additional testing maybe required

1. Structural fill should consist of approved materials that are free of organic matter or debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. Each proposed fill material should be sampled and evaluated by the geotechnical engineer prior to its delivery and/or use.
2. LL = Liquid Limit, PI = Plasticity Index. Fill meeting a PI of 10 to 20 is preferred; however, based on our knowledge and experience in Seward area, we anticipate that finding fill soils meeting a PI of 20 or less may be difficult. Utilizing lean clay soils with a liquid limit of less than 45 percent and a plasticity index between 20 and 25 percent is generally accepted in the area, although this will somewhat increase the risk of shrink-swell movement due to the fill soils.
3. Sorting of topsoil and on-site soils containing debris, organics, etc., will be necessary. Delineation of unsuitable on-site soils should be performed in the field by a Terracon representative. Moisture conditioning of the on-site soils will be necessary to facilitate compaction.

Terracon should be retained to evaluate proposed fill materials, including sampling and performing laboratory tests on proposed fill to evaluate compliance with the project specifications. We can also review data for proposed materials which are generated by the contractor or suppliers.

Fill Compaction Requirements

Structural fill should meet the following compaction requirements.

Item	Structural Fill
Maximum Lift Thickness	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-operated equipment (i.e. jumping jack or plate compactor) is used
Minimum Compaction Requirements [1] ■ **Subgrade below pavement**	98% of the materials maximum standard Proctor dry density (ASTM D 698)
Water Content Range [2]	Low plasticity cohesive: -2% to +2% of optimum Moderate plasticity cohesive: -1 to +4% of optimum if below stabilized or upper 1.5 feet.

1. We recommend that engineered fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proofrolled or containing excess water (ponding).

Terracon should be retained to monitor fill placement and to perform field density tests as each lift of fill is placed in order to evaluate compliance with the design requirements. Terracon should be retained to observe and test pavement subgrades immediately prior to paving.

Construction Considerations

Any areas of standing surface water should be drained as far in advance of construction as possible. Any saturated soils should be removed prior to placing fill or proceeding with construction.

The clays encountered in the borings will be sensitive to disturbance from construction activity and water seepage. If precipitation occurs immediately prior to or during construction, the near-surface clay soils could increase in moisture content and become more susceptible to disturbance. Construction activity should be monitored, and should be curtailed if the construction activity is causing subgrade disturbance. A Terracon representative can help with monitoring and developing recommendations to avoid subgrade disturbance.

Surface water should not be allowed to pond and soak into the soil during construction. Construction staging should provide drainage of surface water and precipitation away from the pavement areas. Any water that collects over or adjacent to construction areas should be promptly removed, along with any softened or disturbed soils. Surface water control in the form of sloping surfaces, drainage ditches and trenches, and sump pits and pumps will be important to avoid ponding and associated delays due to precipitation and seepage.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of pavements. Construction traffic over the completed subgrade should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to pavement construction.

As a minimum, all temporary excavations should be sloped or braced as required by Occupational Safety and Health Administration (OSHA) regulations to provide stability and safe working conditions. Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

Construction Observation and Testing

The earthwork efforts should be monitored and tested by the Geotechnical Engineer. Monitoring should include documentation of adequate removal of fill, proof-rolling, and mitigation of areas delineated by the proof-roll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts.

In addition to the documentation of the essential parameters necessary for construction, the continued involvement of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

PAVEMENTS

General Pavement Comments

Pavement and subgrade should be prepared in accordance with the recommendations presented in **Earthwork**. Typical construction in this area is not to place a granular base below pavements for this type of project. Rather, the pavements are supported directly on the cohesive or stabilized subgrade soils. If the project design results in a granular base being installed below pavements, Terracon should be retained to provide additional recommendations. For example, subdrains are recommended in conjunction with a granular base to prevent water from ponding in the granular base. Installing "finger drains" around area intakes and in low areas of the pavements will also improve pavement performance.

Pavement Design Recommendations

We performed a California Bearing Ratio (CBR) test on a composite sample of the native brown lean clay soils from Boring B-6. This test measured a CBR value of 5% at 0.1 inch of penetration. Due to environmental effects (e.g., saturation of the soils immediately below the pavement through surface water infiltration, freeze-thaw cycles), we recommend a CBR value of 3 be used for design of pavement sections.

We understand Portland cement concrete paving is planned for this project. The pavement design included the following subgrade values for the Portland cement concrete pavement analyses.

- Reliability - 75 percent,
- Overall deviation - 0.35,
- Modulus of rupture - 580 psi,
- Modulus of elasticity - 3,600,000 psi,
- Load transfer coefficient - 4.1 (non-doweled concrete),
- Modulus of subgrade reaction (k) - 30 pci,
- Drainage coefficient - 0.9,
- Initial serviceability - 4.5, and,
- Terminal serviceability - 2.5.

Using the expected pavement thickness provided by SHE and the above factors, we calculated the following traffic volume information for a 25-year design life.

PCC Pavement Thickness (in.)	Approx. Estimated Traffic (ESAL's)
8 (min)	0.525 Million

A PCC mix design with a minimum modulus of rupture of 580 psi should be used for concrete pavements. This is roughly equivalent to a 28-day compressive strength of 4,000 psi. In addition, PCC pavement should contain about 5 to 7 percent entrained air and a maximum water to cement ratio of about 0.45.

We recommend the PCC meet the requirements of Nebraska Department of Roads' Section 1002, Class "47B-3500" Concrete.

Construction traffic can cause significant damage to pavements. If the pavements will be subject to traffic by construction equipment/vehicles, the pavement thicknesses should be increased to consider the effects of the additional loading.

Construction Considerations

Construction scheduling often involves grading and paving by separate contractors and can involve a time lapse between the end of grading operations and the commencement of paving. Disturbance, desiccation or wetting of the subgrade soils between grading and paving can result in deterioration of the previously completed subgrade. A non-uniform subgrade can result in poor pavement performance and local failures relatively soon after pavements are constructed. We recommend the moisture content and density of the subgrade be evaluated within two days prior to commencement of actual paving operations. A proof roll using heavy equipment similar to that required for pavement construction is recommended to verify subgrade stability for pavement construction. Scarification and recompaction may be required.

Areas not in compliance with the required ranges of moisture or density should be moisture conditioned and recompacted. If significant precipitation occurs after the evaluation or if the surface becomes disturbed, the subgrade condition should be reviewed by Terracon personnel immediately prior to paving.

Drainage and Maintenance Considerations

Preventing subgrade saturation is an important factor in maintaining the subgrade strength. Water allowed to pond on or next to pavements could saturate the subgrade and cause premature pavement deterioration. Positive surface drainage should be provided away from the edges of paved areas, and all pavements should be sloped to provide rapid surface drainage. Pavements should drain toward the edges rather than the center, and perimeter subsurface drains should be installed next to irrigated planters or other areas where surface water could pond.

Periodic maintenance will extend the service life of the pavements and should include patching and repair of deteriorated areas, crack sealing, and surface sealing.

GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications, so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing. Terracon also should be retained to provide observation and testing services during grading, excavation, construction, and other earth-related construction phases of the project. Site safety, excavation support, and dewatering requirements are the responsibility of others.

The analysis and recommendations presented in this report are based upon our understanding of the project, the data obtained from the borings performed at the indicated locations, and from other information discussed in this report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Any information we convey prior to the report completion is for informational purposes only and should not be used for decision-making purposes or final design.



ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Boring Layout and Elevations: Terracon personnel provided the boring layout using a handheld GPS unit (estimated horizontal accuracy of about ±20 feet). Ground elevations were obtained from the topographic plan provided by JEO. The locations and elevations should be considered accurate only to the degree implied by these methods.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted drill rig using continuous flight augers. Samples were obtained using thin-walled tube sampling procedure. In the thin-walled tube sampling method, a thin-walled, 3-inch OD, seamless steel tube with a sharp cutting edge is pushed hydraulically into the ground to obtain relatively undisturbed samples of cohesive or moderately cohesive soils.

Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Typed boring logs were prepared from the field logs, and represent the engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

Water content tests were performed on the samples, and density determinations were performed on the thin-walled tube samples. Unconfined compression tests were performed on selected thin-walled tube samples. The unconfined compressive strength of many samples was estimated with a hand penetrometer test. In addition, one standard Proctor test and one California Bearing Ratio test were performed on a bulk sample, and Atterberg Limits tests were performed on three samples. The results of these laboratory tests are provided on the boring logs or on the standard Proctor and California Bearing Ratio tests data plots.

The samples were classified in the laboratory based on visual observation and texture. Additional laboratory testing could be performed to more accurately classify the samples. The soil descriptions presented on the boring logs for native soils are in general accordance with the General Notes and Unified Soil Classification System (USCS), both of which are included in **Exploration Results**. The estimated group symbol for the USCS is also shown on the boring logs, and a brief description of the USCS is included in **Exploration Results**.

Procedural standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

SITE LOCATION

East Seward Street ■ Seward, NE

June 28, 2021 ■ Terracon Project No. A3215037

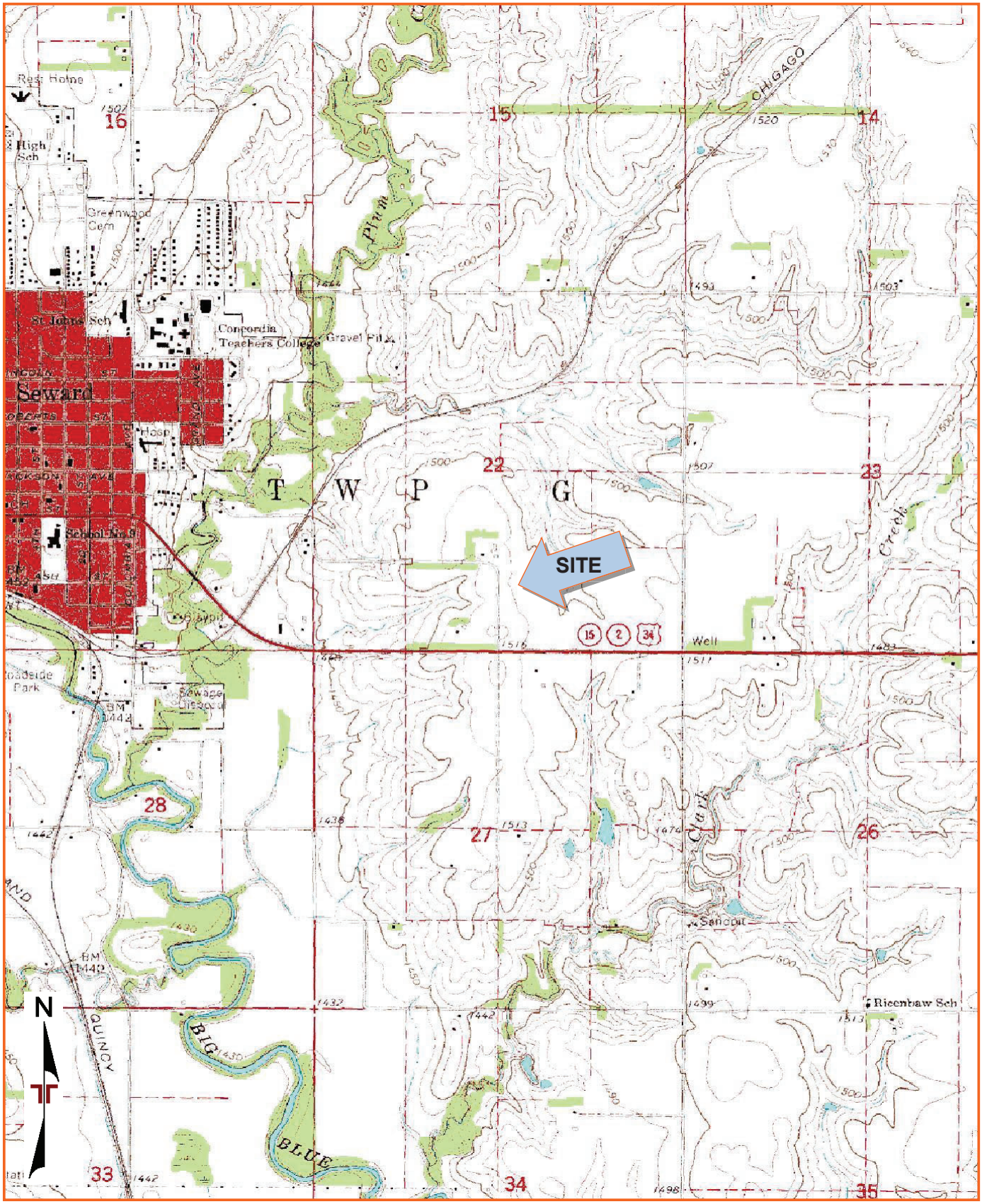


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY
QUADRANGLES INCLUDE: SEWARD, NE (1/1/1964).

EXPLORATION PLAN

East Seward Street ■ Seward, NE

June 28, 2021 ■ Terracon Project No. A3215037

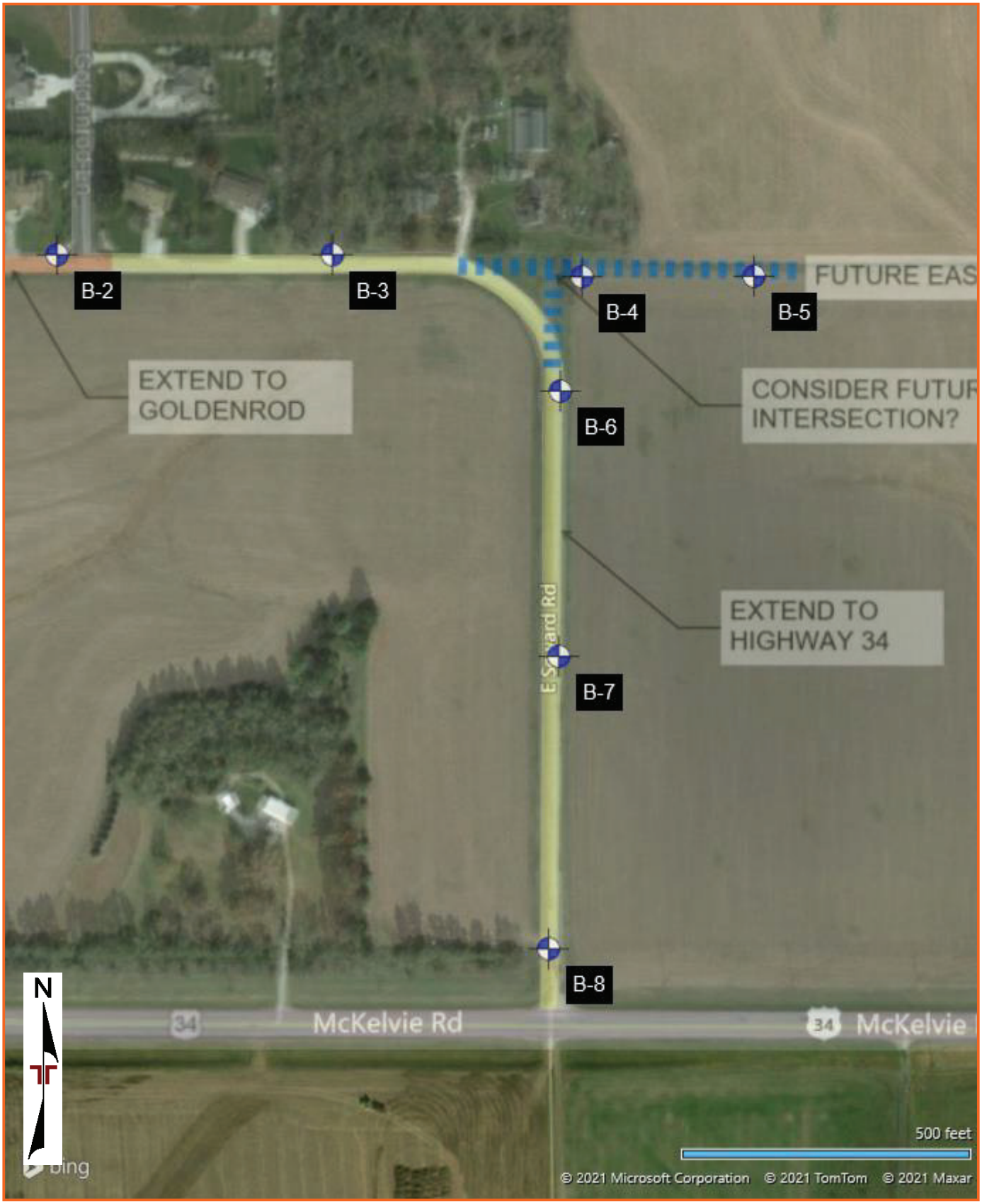


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

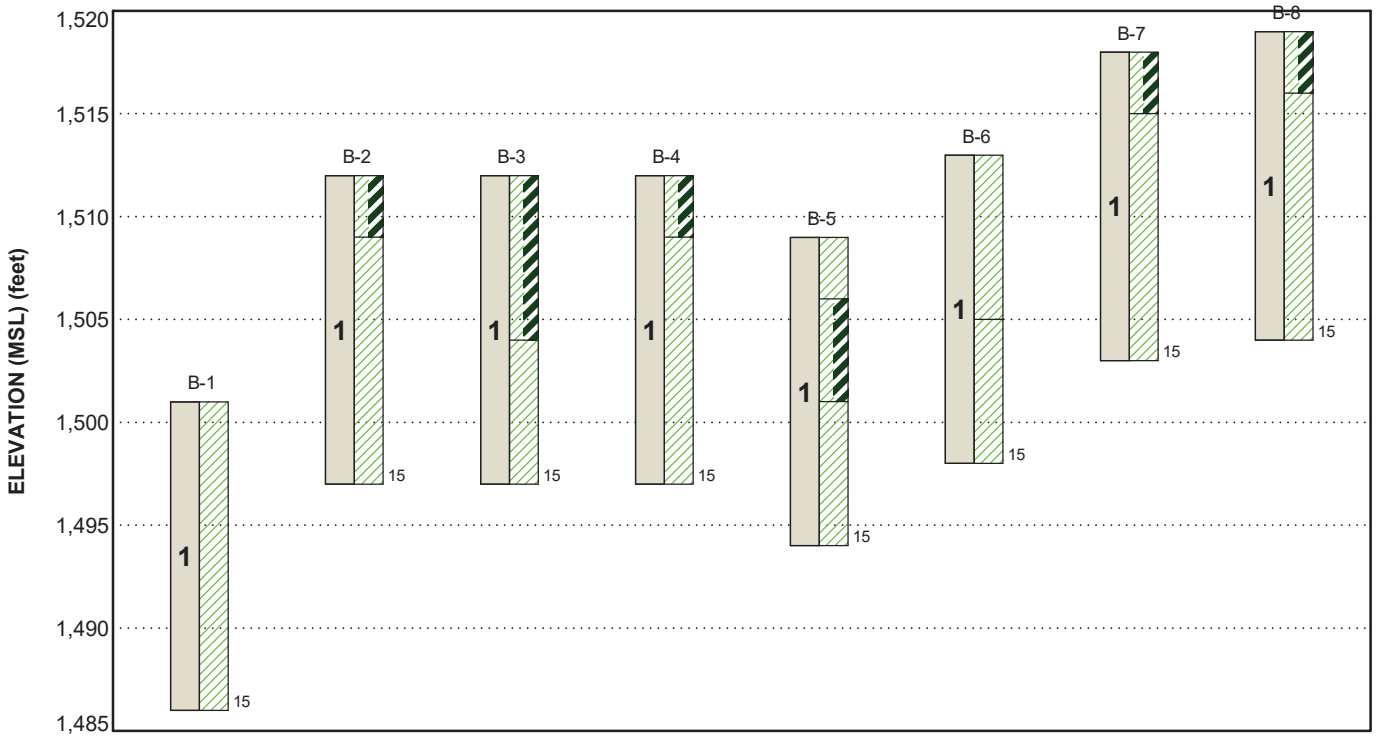
EXPLORATION RESULTS

Contents:

GeoModel
Boring Logs (B-1 through B-8)
Atterberg Limits
CBR
Moisture Density Relationship

GEOMODEL

East Seward Street ■ Seward, NE
Terracon Project No. A3215037



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more information.

Model Layer	Layer Name	General Description
1	Native	Lean Clay, Lean to Fat Clay

LEGEND

Lean Clay

Lean Clay/Fat Clay

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

BORING LOG NO. B-1

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9051° Longitude: -97.0774°

Surface Elev.: 1501 (Ft.)

DEPTH | ELEVATION (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		0							
					5000 (HP)	4400	23.3	99	47-17-30
					5500 (HP)		25.2	94	
		5			6000 (HP)		26.4	91	
					3500 (HP)	2270	26.7	92	
		10							
					3000 (HP)	2220	28.5	91	
		15							

6" gravel

LEAN CLAY (CL), trace sand, grayish brown, very stiff to stiff

15.0 1486

Boring Terminated at 15 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-2

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9051° Longitude: -97.0760°

Surface Elev.: 1512 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		0.0	1512	0							
							8000 (HP)		23.0	99	
		3.0	1509								
							5000 (HP)	3620	21.8	97	
				5			6000 (HP)		22.6	95	
							3000 (HP)	2940	24.6	94	
				10							
							3500 (HP)	2710	25.6	91	
		15.0	1497	15							

6" asphalt
LEAN TO FAT CLAY (CL/CH), trace sand, dark brown, very stiff

LEAN CLAY (CL), trace sand, grayish brown, stiff

Boring Terminated at 15 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-3

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9051° Longitude: -97.0743°

Surface Elev.: 1512 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		0.0	1512								
							9000+ (HP)		15.1	85	
							9000+ (HP)	6580	17.6	102	50-18-32
				5			9000+ (HP)	9450	19.1	102	
							7000 (HP)		23.0	96	
				10							
							4000 (HP)	2850	26.4	91	
		15.0	1497	15							

6" asphalt

LEAN TO FAT CLAY (CL/CH), trace sand, dark brown, very stiff to hard, root hairs

LEAN CLAY (CL), trace sand, grayish brown, very stiff to stiff

Boring Terminated at 15 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-4

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9050° Longitude: -97.0727°

Surface Elev.: 1512 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		5" corn **LEAN TO FAT CLAY (CL/CH)**, trace sand, dark brown, hard					9000+ (HP)		22.2	102	
		3.0	1509								
		LEAN CLAY (CL), trace sand, dark brown, hard to very stiff, blocky and root hairs at about 3 to 5 feet					9000+ (HP)	10430	14.6	104	
		becoming light brown below about 5 feet		5			9000+ (HP)	13130	14.9	104	
							9000+ (HP)		15.9	82	
				10							
							9000+ (HP)		18.7	97	
		15.0	1497	15							
		Boring Terminated at 15 Feet									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-5

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9050° Longitude: -97.0716°

Surface Elev.: 1509 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
			5" corn								
1			**LEAN CLAY (CL)**, trace sand, dark brown, stiff, root hairs				3500 (HP)		24.1	95	
		3.0	1506								
			LEAN TO FAT CLAY (CL/CH), trace sand, brown, very stiff	5			7500 (HP)	7010	22.3	102	
							9000+ (HP)	4430	18.5	94	
		8.0	1501								
			LEAN CLAY (CL), trace sand, grayish brown, stiff	10			3500 (HP)	2870	26.8	93	
							3000 (HP)	3000	29.2	90	
		15.0	1494	15							
			Boring Terminated at 15 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-6

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9044° Longitude: -97.0728°

Surface Elev.: 1513 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		0.0	1513								
							5000 (HP)		24.7	95	40-19-21
				5			7500 (HP)	7380	19.9	103	
							8000 (HP)	7940	20.5	103	
				10			3000 (HP)	3530	25.2	96	
							1500 (HP)	1900	27.9	92	
		15.0	1498	15							

9" asphalt

LEAN CLAY (CL), trace sand, dark brown, very stiff

8.0 1505

LEAN CLAY (CL), trace sand, grayish brown, stiff to medium stiff

15.0 1498

Boring Terminated at 15 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-7

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9032° Longitude: -97.0728°

Surface Elev.: 1518 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1		9" gravel **LEAN TO FAT CLAY (CL/CH)**, trace sand, dark brown, very stiff					7500 (HP)	5190	23.5	98	
		3.0	1515								
		LEAN CLAY (CL), trace sand, grayish brown, very stiff					8500 (HP)	7250	21.7	101	
				5			6500 (HP)		23.0	98	
							4000 (HP)		27.5	93	
				10							
		becoming medium stiff below about 13 feet					1500 (HP)	2300	29.3	89	
		15.0	1503								
		Boring Terminated at 15 Feet		15							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

BORING LOG NO. B-8

PROJECT: East Seward Street

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

LOCATION See Exploration Plan

Latitude: 40.9018° Longitude: -97.0729°

Surface Elev.: 1519 (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	LABORATORY HP (psf)	UNCONFINED COMPRESSIVE STRENGTH (psf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
1											
							8500 (HP)		21.2	105	
		3.0	1516								
							6000 (HP)		24.0	92	
				5							
							6000 (HP)		25.8	87	
							5500 (HP)	3290	25.9	93	
				10							
							3000 (HP)		26.9	90	
		15.0	1504	15							

9" gravel
LEAN TO FAT CLAY (CL/CH), trace sand, dark brown, very stiff

LEAN CLAY (CL), trace sand, grayish brown, very stiff to stiff

Boring Terminated at 15 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Power Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

Energy Transfer Ratio 96.3%. Hammer Efficiency Correction 1.61 (March, 2021).
Bulk samples obtained from augur flights from depths of 0.5 to 5 feet

WATER LEVEL OBSERVATIONS

Not encountered while drilling

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

Boring Started: 05-13-2021 | Boring Completed: 05-13-2021

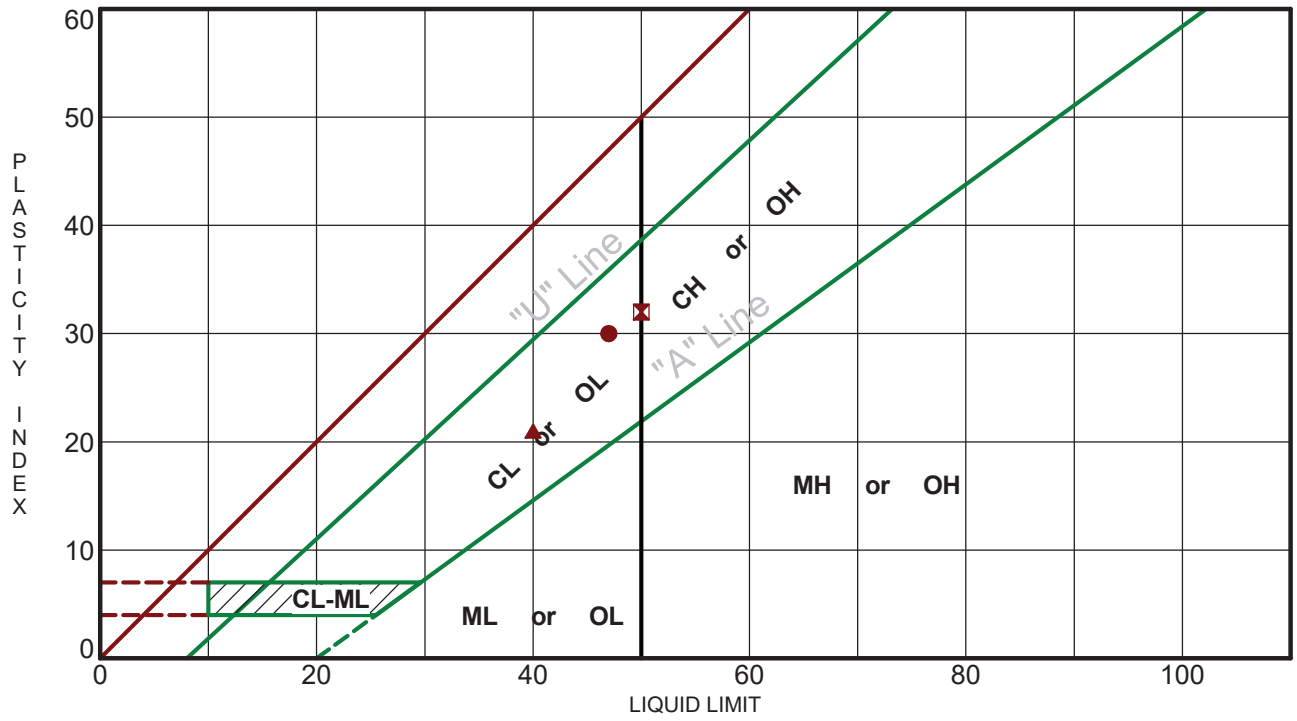
Drill Rig: 618 | Driller: J. McGargill

Project No.: A3215037

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	B-1	1 - 3	47	17	30			
⊠	B-3	3 - 5	50	18	32			
▲	B-6	1 - 3	40	19	21			

PROJECT: East Seward Street

PROJECT NUMBER: A3215037

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

California Bearing Ratio Test (CBR)

15080 A Circle
Omaha, Nebraska 68144
(402) 330-2202

Client Name:	Short Elliot Hendrickson Inc.	Project No.:	A3215037	Date:	6/9/2021
Project Name:	East Seward Street				
Location:	Seward, NE				
Boring Number	B-6				
Depth	0.5' - 5.5'				
Sample Description:	Dark Brown Clay with Sand & Gravel				

Proctor Compaction Data:

Proctor Test Procedure:	D698	
Maximum Dry Density	107.1	pcf
Optimum Moisture Content	15.0	%
USCS Classification	CL	

CBR Specimen Compaction Data:

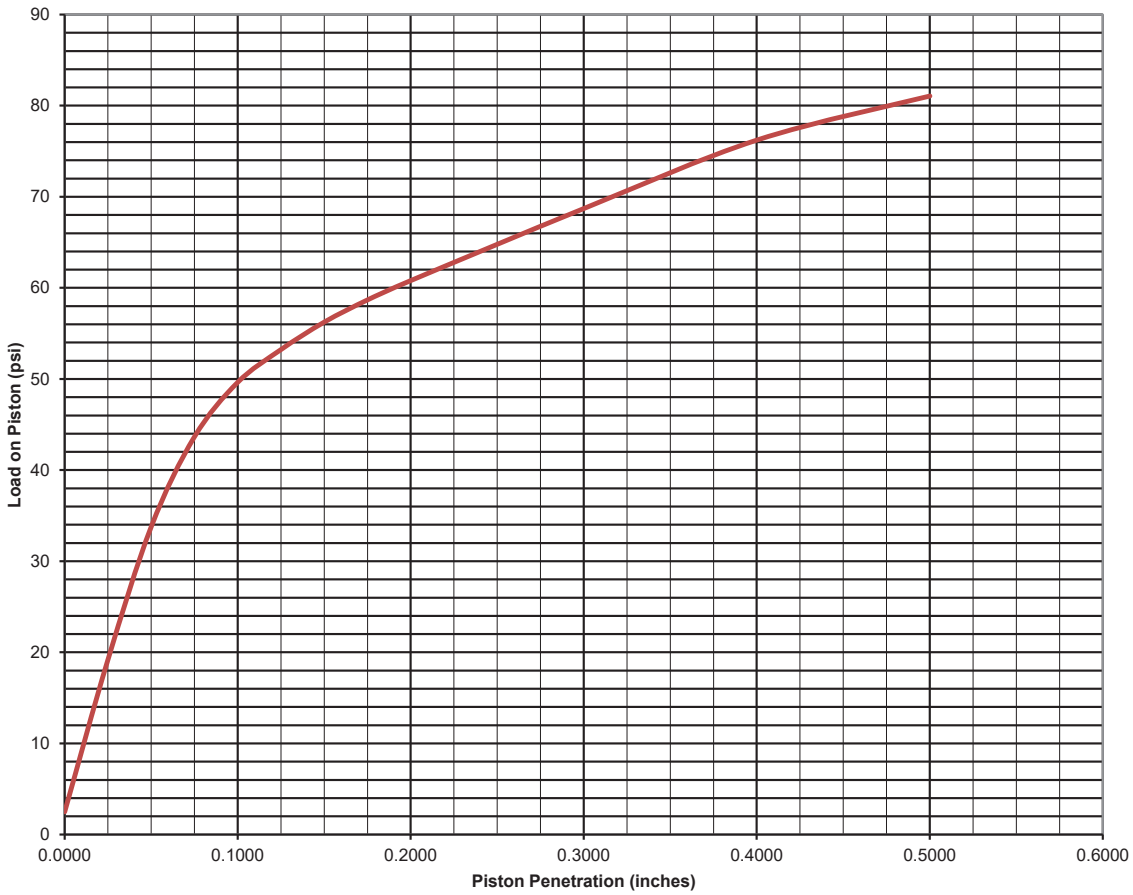
CBR Test Procedure:	ASTM D 1883	
Initial Moisture Content	16.9	%
Dry Density Before Soaking	101.5	pcf
Percent Compaction	94.7%	%
Moisture Content After Compaction	16.5	%
Dry Density After Soaking	99.7	pcf
Moisture Content After Soaking	24.0	%
CBR at 0.100 inches penetration	5.0	%
CBR at 0.200 inches penetration	4.1	%

Soil Index Properties:

Liquid Limit:	N/A	% Passing No. 200	N/A %
Plasticity Index:	N/A		
Plastic Limit:	N/A		

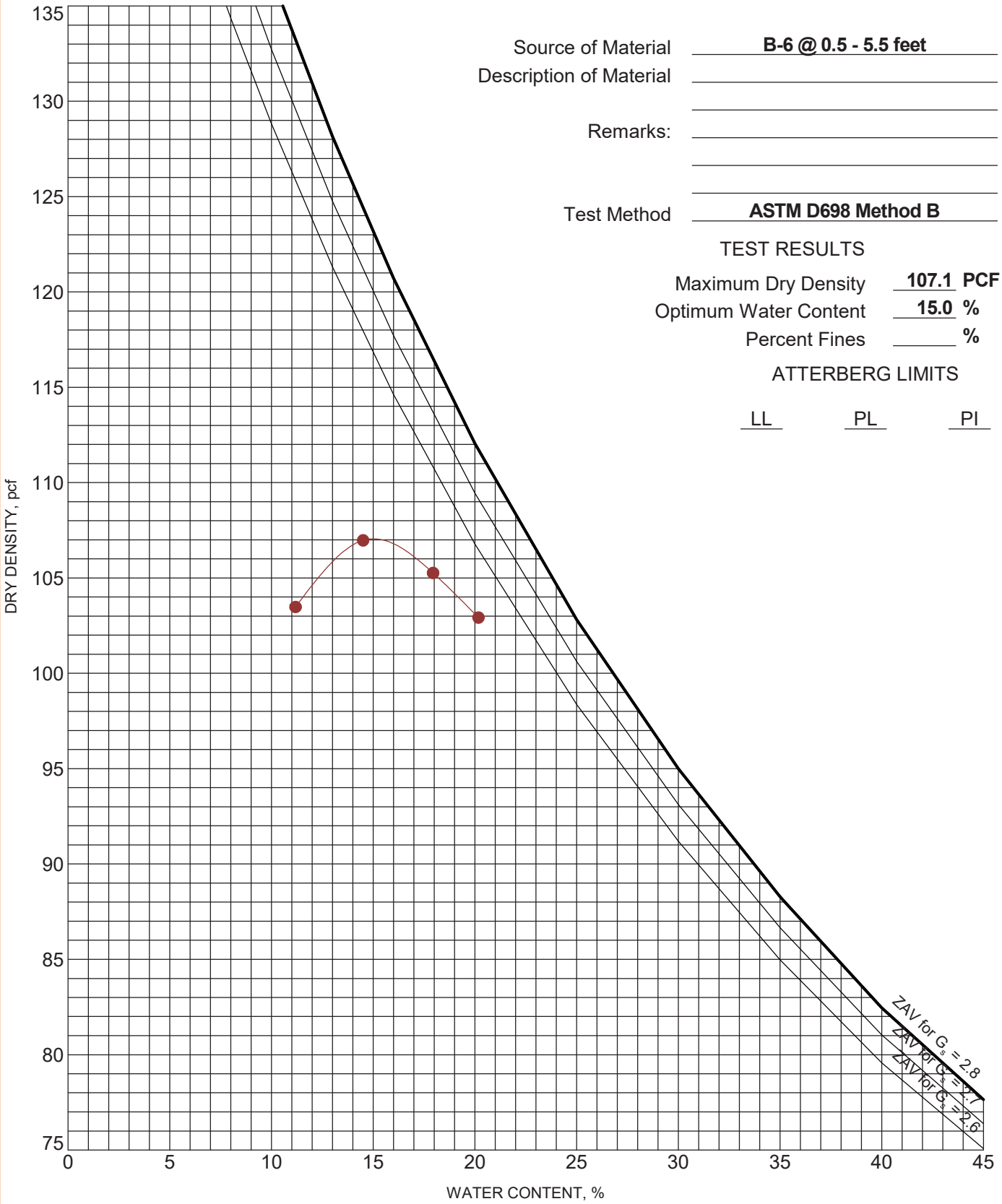
Specimen Swell Data:

Surcharge Load	15	lb
Compaction	93.1	%
Swell (96 Hours)	1.48	%



MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **B-6 @ 0.5 - 5.5 feet**

Description of Material:

Remarks:

Test Method: **ASTM D698 Method B**

TEST RESULTS

Maximum Dry Density	**107.1**	**PCF**
Optimum Water Content	**15.0**	**%**
Percent Fines		**%**

ATTERBERG LIMITS

LL	PL	PI

PROJECT: East Seward Street

PROJECT NUMBER: A3215037

SITE: W of Goldenrod Ln to McKelvie Rd - E Seward St Reconstruction
Seward, NE

Terracon
3220 N 20th St, Ste 3
Lincoln, NE

CLIENT: Short Elliott Hendrickson Incorporated
Omaha, NE

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V2 A3215037 EAST SEWARD STREE.GPJ TERRACON_DATATEMPLATE.GDT 6/15/21

SUPPORTING INFORMATION

Contents:

General Notes
Unified Soil Classification System

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
East Seward Street ■ Seward, NE
Terracon Project No. A3215037

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Auger Cuttings Shelby Tube	**Water Initially Encountered** **Water Level After a Specified Period of Time** **Water Level After a Specified Period of Time** **Cave In Encountered** Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	**N** Standard Penetration Test Resistance (Blows/Ft.) **(HP)** Hand Penetrometer **(T)** Torvane **(DCP)** Dynamic Cone Penetrometer **UC** Unconfined Compressive Strength **(PID)** Photo-Ionization Detector **(OVA)** Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (psf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 500	0 - 1
Loose	4 - 9	Soft	500 to 1,000	2 - 4
Medium Dense	10 - 29	Medium Stiff	1,000 to 2,000	4 - 8
Dense	30 - 50	Stiff	2,000 to 4,000	8 - 15
Very Dense	> 50	Very Stiff	4,000 to 8,000	15 - 30
		Hard	> 8,000	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Terracon GeoReport

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

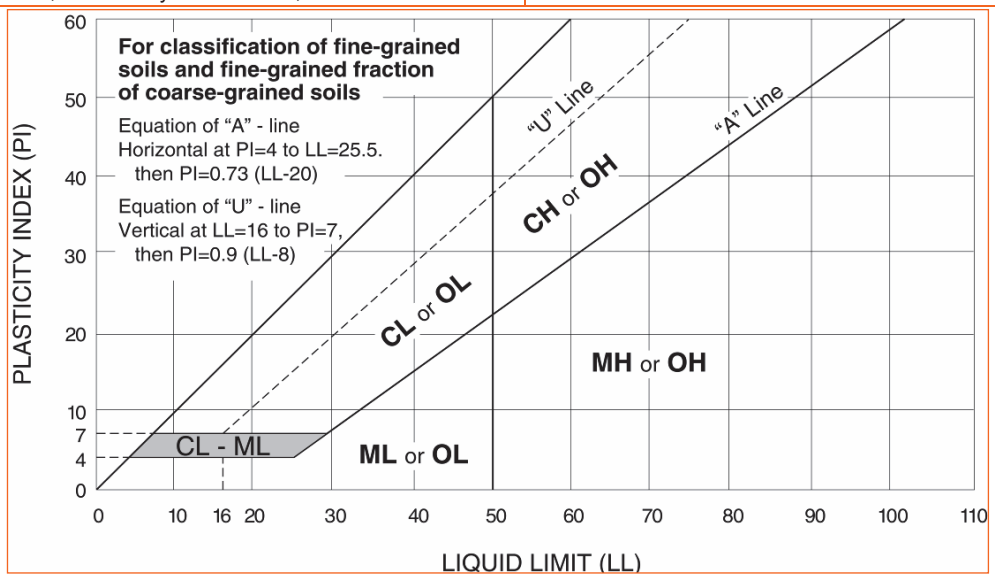
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



The Bid is to be submitted on photocopies of this Bid Form and the attachments provided

DOCUMENT 00 41 00

BID FORM

Total Amount of Bid $_____

Contractor's Name _____

Start Date _____

PROJECT IDENTIFICATION: **East Seward Street Improvements**
Seward, NE
SEH No. SEWAC 160685

BIDS TO BE OPENED: **10:00 a.m., Tuesday, May 17th, 2022**

TABLE OF ARTICLES

Article 1 – Bid Recipient 1
Article 2 – Attachments to this Bid 1
Article 3 – Basis of Bid 2
Article 4 – Time of Completion 5
Article 5 – Bidder's Acknowledgements: Acceptance Period, Instructions, and Receipt of Addenda 5
Article 6 – Bidder's Representation and Certifications 5
Article 7 – Defined Terms 6
Article 8 – Bid Submittal 7

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to: **The City of Seward**
537 Main Street
Seward, NE 68434

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – ATTACHMENTS TO THIS BID

2.01 The following documents are attached to and made a condition of this Bid:

A. Required Bid security

B. List of Proposed Subcontractors.

C. List of Proposed Suppliers.

D. List of Project References.

E. Affidavit of Non-Collusion.

F. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids.

ARTICLE 3 – BASIS OF BID

3.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

UNIT PRICE BID					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Bid Unit Price**	**Bid Price**
GROUP A - PAVING					
1	Mobilization	LS	1		
2	Excavation (Established Quantity)	CY	11,150		
3	Embankment (Established Quantity)	CY	721		
4	Grind Concrete Curb	LF	30		
5	Remove Pavement	SY	3,495		
6	Remove Driveway Pavement	SY	648		
7	Remove Gravel/Rock Surfacing	SY	3,510		
8	Remove Sidewalk	SF	200		
9	Remove CMP Culvert	LF	89		
10	Remove RCP Storm Pipe	LF	192		
11	Remove & Reset Mailbox	EA	5		
12	Remove & Reset Sign	EA	7		
13	Remove Sign	EA	4		
14	Remove Existing Fire Hydrant & Valve	EA	2		
15	Remove Area Inlet	EA	1		
16	Remove Junction Box	EA	1		
17	Remove Concrete Flume	EA	1		
18	Build Concrete Flume	EA	2		
19	Rip-Rap (River Rock)	TON	40		
20	Expansion Joint with Dowel Bars	LF	64		
21	Build 8" PCC Pavement	SY	10,232		
22	Build 1.0' Wide PCC Curb & Gutter (8")	LF	175		
23	Build 2.5' Wide PCC Curb & Gutter (8")	LF	835		
24	Build 6" PCC Trail	SF	24,554		
25	Build 6" PCC Driveway	SY	460		
26	Build 7” PCC Driveway	SY	63		
27	Build 5" PCC Sidewalk	SF	1,896		
28	8" Subgrade Preparation	SY	3,251		

UNIT PRICE BID					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Bid Unit Price**	**Bid Price**
29	12" Stabilized Subgrade Preparation	SY	10,232		
30	Install Detectable Warning Panel	SF	288		
31	Install 4" Double Yellow Wet Reflective Polyurea Pavement Markings, Grooved	LF	2272		
32	Install White Cross-Walk Bar Markings, Grooved	SF	160		
33	Install Sign post	EA	7		
34	Install Sign	SF	51.75		
35	Install Silt Fence	LF	1050		
36	Irrigation Replacement	LS	1		
37	Construction Entrance	EA	2		
38	Straw Wattle	LF	180		
39	Concrete Washout	EA	1		
40	Storm Drain Inlet Protection	EA	14		
41	Seeding - Super Turf II w/ S75 Erosion Control Blanket	SY	6200		
42	Seeding - Low Grow Grass Mix w/ Hay Mulch	SY	9950		
43	SWPP Information Sign	EA	1		
44	Install Street Tree	EA	12		
45	Temporary Access Road	LS	1		
46	Traffic Control	LS	1		
			TOTAL GROUP A		
GROUP B - STORM SEWER & UTILITIES					
47	Connect to Existing Sanitary Sewer Stub	EA	1		
48	Connect to Existing Sanitary Sewer Trunk 24" VCP	EA	1		
49	Build 8" PVC Sanitary Sewer Main SDR 26	LF	317		
50	Build 24" VCP Sanitary Sewer Trunk Main	LF	1590		
51	Build 60" Sanitary Sewer Manhole	VF	62.25		
52	Install External Frame Seal	EA	4		
53	Construct Manhole Ring Collar	EA	4		
54	Build 8" PVC Sanitary Cap	EA	2		
55	Adjust Manhole to Grade	EA	3		
56	Connect to Existing Water Main	EA	3		

UNIT PRICE BID					
Item No.	**Description**	**Unit**	**Estimated Quantity**	**Bid Unit Price**	**Bid Price**
57	Install 8" Gate Valve	EA	6		
58	Install 8"x8" Tee	EA	4		
59	Install 8" Plug	EA	5		
60	Install 8" PVC C900 Water Main	LF	225		
61	Install 8" PVC C900 Water Main (Bored - Certa Lok)	LF	93		
62	Type II Hydrant Assembly, L=5.5'	EA	4		
63	Build Outlet Structure	EA	1		
64	Build Storm Sewer Junction Box	EA	7		
65	Build 8'x6' Storm Sewer Manhole	EA	1		
66	Build Area Grate Inlet w/ Type C Grate	EA	1		
67	Build NDOT Curb Inlet - (Y = 8')	EA	8		
68	Build NDOT Curb Inlet - (Y = 10')	EA	3		
69	15" RCP Storm Sewer Pipe	LF	625		
70	18" RCP Storm Sewer Pipe	LF	1081		
71	24" RCP Storm Sewer Pipe	LF	854		
72	36" Round Equivalent RCP Storm Sewer Pipe	LF	172		
73	24" RCP FES	EA	1		
74	36" Round Equivalent RCP FES	EA	1		
			TOTAL GROUP B		
GROUP C - LIGHTING					
69	NMC SCH. 80 1-1/2-INCH	LF	840		
70	NMC SCH. 80 1-1/2-INCH - DIRECTIONAL BORE	LF	200		
71	ELECTRICAL WIRE #12 AWG	LF	1530		
72	DIRECT BURY ELECTRICAL WIRE #8 AWG	LF	22400		
73	INSTALL LIGHTING UNIT	EACH	30		
			TOTAL GROUP C		
			GRAND TOTAL BID		
50A	ALTERNATE ITEM – Build 24” HOBAS Sanitary Sewer Trunk Main	LF	1590		

Unit Prices have been computed in accordance with Paragraph 13.03 of the General Conditions.

Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4 – TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

Bidder's Acknowledgements: Acceptance Period, Instructions, and Receipt of Addenda

4.03 Bid Acceptance Period

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. The Bid will remain subject to acceptance for 60 days after the day of Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

4.04 Instructions to Bidder

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid Security.

4.05 Receipt of Addenda

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum No.	Addendum Date

ARTICLE 5 – BIDDER'S REPRESENTATION AND CERTIFICATIONS

5.01 Bidders Representations

A. In submitting this Bid, Bidder represents that:

1. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents.

2. Bidder has visited the site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress and performance of the Work.

4. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

5. Bidder has carefully studied reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in

the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, and (3) Bidder's safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

5.02 Bidder certifies that:

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

3. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 7.02.A:

a. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

b. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

c. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

d. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 6 – DEFINED TERMS

6.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions

ARTICLE 7 – BID SUBMITTAL

7.01 The Bid submitted by:

If Bidder is:

An Individual

Name (typed or printed):_____

By:_____ (SEAL)
(Individual's signature)

Doing business as:_____

A Partnership

Partnership Name:_____ (SEAL)

By:_____
(Signature of general partner - attach evidence of authority to sign)

Name (typed or printed):_____

A Joint Venture

Name of Joint Venturer:_____

First Joint Venturer Name:_____ (SEAL)

By:_____
(Signature of first joint venture partner - attach evidence of authority to sign)

Name (typed or printed):_____

Title:_____

Second Joint Venturer Name:_____ (SEAL)

By:_____
(Signature - attach evidence of authority to sign)

Name (typed or printed):_____

Title:_____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

A Corporation

Corporation Name:_____

State of Corporation:_____

Name (General Business, Professional, Service, Limited Liability):_____

By:_____
(Signature - attach evidence of authority to sign)

Name (typed or printed):_____

Title:_____
(CORPORATE SEAL)

Attest:_____
(Signature of Corporate Secretary)

Date of Qualification to do business in _____ is ____/____/____.
(State Where Project is Located)

Contact Information

Bidder's Business Address:_____

_____

Phone:_____ Facsimile: _____ E-mail: _____

Submitted on _____, 20_____.

State Contractor License No. _____. (If applicable)

END OF DOCUMENT

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

BID BOND (PENAL SUM FORM)

Bidder Name: **[Full formal name of Bidder]** Address *(principal place of business)*: **[Address of Bidder's principal place of business]**	**Surety** Name: **[Full formal name of Surety]** Address *(principal place of business)*: **[Address of Surety's principal place of business]**
Owner Name: **[Full formal name of Owner]** Address *(principal place of business)*: **[Address of Owner's principal place of business]**	**Bid** Project *(name and location)*: **[Owner project/contract name, and location of the project]** Bid Due Date: **[Enter date bid is due]**
Bond Penal Sum: **[Amount]** Date of Bond: **[Date]**	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ *(Full formal name of Bidder)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature) (Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title:	Title:
Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint ventures, if necessary.	

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1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond will be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder occurs upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation will be null and void if:
    3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
    3.2 All Bids are rejected by Owner, or
    3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
1. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
2. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions does not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
3. No suit or action will be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety, and in no case later than one year after the Bid due date.
4. Any suit or action under this Bond will be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
5. Notices required hereunder must be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Postal Service registered or certified mail, return receipt requested, postage pre-paid, and will be deemed to be effective upon receipt by the party concerned.
6. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
7. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond will be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute governs and the remainder of this Bond that is not in conflict therewith continues in full force and effect.
8. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

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DOCUMENT 00 43 36

LIST OF PROPOSED SUBCONTRACTORS

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

Company _____ Telephone No. _____
Name of Contact _____
Address _____
Type of Construction _____

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DOCUMENT 00 43 37

LIST OF PROPOSED SUPPLIERS

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

Company _____ Telephone No. _____

Name of Contact _____

Address _____

Material/Equipment to be Supplied _____

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DOCUMENT 00 44 14

PROJECT REFERENCES

Below is a listing of the 5 most recent projects of a similar nature to this project which we have completed.

1. Contracting Agency _____
   Description of Work _____
   Agency Representative _____
   Title _____ Phone _____ Date of Contract _____

2. Contracting Agency _____
   Description of Work _____
   Agency Representative _____
   Title _____ Phone _____ Date of Contract _____

3. Contracting Agency _____
   Description of Work _____
   Agency Representative _____
   Title _____ Phone _____ Date of Contract _____

4. Contracting Agency _____
   Description of Work _____
   Agency Representative _____
   Title _____ Phone _____ Date of Contract _____

5. Contracting Agency _____
   Description of Work _____
   Agency Representative _____
   Title _____ Phone _____ Date of Contract _____

Name of Bidder _____

By _____

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DOCUMENT 00 45 19

AFFIDAVIT OF NON-COLLUSION

STATE OF _____

COUNTY OF _____

I Hereby swear (or affirm) under the penalty of perjury:

1) That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership) or an officer or employee of the bidder corporation having authority to sign on its behalf (if the bidder is a corporation);

2) That the attached bid or bids have been arrived at by the bidder individually and have been submitted without collusion with, and without any agreement, understanding or planned common course of action with any other vendor of materials, supplies, equipment or services described in the invitation to bid designed to limit individual bidding or competition;

3) That the contents of the bid or bids have not been communicated by the bidder or its employees or agents to any person not an employee or agent of the bidder or its surety on any bond furnished with the bid or bids, and will not be communicated to any such person, prior to any official opening of the bid or bids; and

4) That I have fully informed myself regarding the accuracy of the statements made in this affidavit.

Subscribed and sworn to before me this

_____ day of _____, 20_____

_____
Bidder's Signature

_____
Notary

_____
Title

(Seal)

_____
Company

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DOCUMENT 00 51 00

NOTICE OF AWARD

To: _____ Date: _____

_____

_____

Contract: East Seward Street Improvements, Seward, NE

SEH Project No: SEWAC 160685

You are notified that your Bid dated _____ __, 20__ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a Contract for the above referenced project.

The Contract Price is _____.

Base Bid	$ _____
Alternates	$ _____
TOTAL	**$ _____**

Copies of the proposed Agreement accompany this Notice of Award. Additional sets of Project Manuals and Drawings will be sent to you under separate cover and are not part of this Notice.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award; that is by _____ __, 20__.

1. Email the following documents to the Engineer:
   - Notice of Award
   - Agreements
   - Performance Bonds and Payment Bonds
   - Certificates of Insurance

2. (List other conditions). N/A

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award, and to declare your bid security forfeited.

Within fifteen days after you comply with the above conditions, OWNER will return to you one fully-executed counterpart of the Contract Documents.

SEH
By: _____
Title: Engineer

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____, this ____ day of _____, 2020.

By _____

Title _____

c: City of Seward

END OF DOCUMENT

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DOCUMENT 00 52 00

STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
ON THE BASIS OF A STIPULATED PRICE

THIS AGREEMENT is by and between the CITY OF SEWARD, NEBRASKA (Owner) and _____ (Contractor).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

East Seward Street Improvements
Seward, NE
SEWAC 160685

ARTICLE 2 – THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Street Improvements.

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by Short Elliott Hendrickson Inc. (SEH®).

3.02 The Owner has retained SEH (Engineer) to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Dates*

A. The Work will be substantially completed on or before July 1, 2023, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before August 1, 2023.

B. The Contractor shall have 240 Calendar Days for the Base Bid to be substantially completed. Substantially complete shall be defined as completion of all infrastructure improvements and placing of sanitary sewer, storm sewer, paving and sidewalks in service.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly,

instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. Substantial Completion: Contractor shall pay Owner $500 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.

2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner $250 for each day that expires after such time until the Work is completed and ready for final payment.

3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work, at the prices stated in Contractor's Bid attached hereto as Document 00 41 00.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

A. Subject to the provisions of SC-15.01.C, Owner shall make monthly progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications of Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract:

a. 95 percent of Work completed (with the balance being retainage).

b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

6.04 *Interest*

All amounts not paid when due shall bear interest at the commercial prime rate in effect on the date the payment becomes due.

ARTICLE 7 – CONTRACT DOCUMENTS

7.01 *Contents*

A. The Contract Documents consist of the following:

1. Addenda (numbers 00 00 1__ to 00 00 1__, inclusive).
2. This Agreement (pages 00 52 00-1 to 00 52 00-6, inclusive).
3. Performance Bond (Document 00 61 13).
4. Payment Bond (Document 00 61 14).
5. General Conditions (pages 00 72 00-1 to 00 72 00-66, inclusive).
6. Supplementary Conditions (pages 00 73 00-1 to 00 73 00-11, inclusive).
7. Specifications as listed in the table of contents of the Project Manual.
8. The Drawings listed in the index located on Drawings Sheet 1.
9. Exhibits to this Agreement (enumerated as follows).
    a. Contractor's Bid (Document 00 41 00).
    b. Documentation submitted by Contractor prior to Notice of Award (pages ___ to ___, inclusive).
    c. Certificate of Insurance.
10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
    a. Notice to Proceed.
    b. Field Order(s).
    c. Work Change Directive(s).
    d. Change Order(s).

B. The documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 7.

D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 8 – REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 *Contractor's Representations*

A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:

1. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
2. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

3. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

4. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

5. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

6. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

7. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.

8. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

9. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

10. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 9 – MISCELLANEOUS

9.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

9.02 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.03 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on _____, _____ (which is the Effective Date of the Contract).

OWNER:

CITY OF SEWARD, NEBRASKA

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for Giving Notices:

537 Main Street

Seward, NE 68434

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of Owner-Contractor Agreement).

Designated Representative:

Name: _____

Title: _____

Address: _____

Phone: _____

Facsimile: _____

CONTRACTOR:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for Giving Notices:

License No. _____
(Where Applicable)

Agent for service of process: _____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

Designated Representative:

Name: _____

Title: _____

Address _____

Phone: _____

Facsimile: _____

END OF DOCUMENT

DOCUMENT 00 55 00

NOTICE TO PROCEED

CITY OF SEWARD, NE
EAST SEWARD STREET IMPROVEMENTS
SEH NO. SEWAC 160685

TO: Contractor

ADDRESS: Address
City, State Zip

You are hereby notified to proceed with the Work on the project. The Contract Times, as described in Article 4 of the Agreement, will commence to run on _____.

Prior to starting any work on the site, the following must be completed:

1. _____
2. _____
3. _____

GIVEN BY:	ACCEPTED BY:
_____	_____
Owner	Contractor
_____	_____
Signature	Signature
_____	_____
Title	Title
_____	_____
Date	Date

c: SEH

END OF DOCUMENT

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PERFORMANCE BOND

Contractor	**Surety**
Name:	Name:
Address *(principal place of business)*:	Address *(principal place of business)*:
Owner	**Contract**
Name:	Description *(name and location)*:
Mailing address *(principal place of business)*:	Contract Price:
	Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____	_____
(Full formal name of Contractor)	*(Full formal name of Surety) (corporate seal)*
By: _____	By: _____
(Signature)	*(Signature)(Attach Power of Attorney)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____
Attest: _____	Attest: _____
(Signature)	*(Signature)*
Name: _____	Name: _____
(Printed or typed)	*(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint ventures. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:

    3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;

    3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

    3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

    5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

    5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

    5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

    5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

        5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

        5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in

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whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

    7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

    7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

    7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.

12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

    14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

    14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

    14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

    14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

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14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

16. Modifications to this Bond are as follows:

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PAYMENT BOND

Contractor	**Surety**
Name: Address *(principal place of business)*:	Name Address *(principal place of business)*:
Owner	**Contract**
Name: Mailing address *(principal place of business)*:	Description *(name and location)*: Contract Price: Effective Date of Contract:

Bond

Bond Amount:

Date of Bond:

(Date of Bond cannot be earlier than Effective Date of Contract)

Modifications to this Bond form:

☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

Contractor as Principal	Surety
_____ *(Full formal name of Contractor)*	_____ *(Full formal name of Surety) (corporate seal)*
By: _____ *(Signature)*	By: _____ *(Signature)(Attach Power of Attorney)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____
Attest: _____ *(Signature)*	Attest: _____ *(Signature)*
Name: _____ *(Printed or typed)*	Name: _____ *(Printed or typed)*
Title: _____	Title: _____

Notes: (1) Provide supplemental execution by any additional parties, such as joint ventures. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.

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1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.

4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.

5. The Surety's obligations to a Claimant under this Bond will arise after the following:

    5.1. Claimants who do not have a direct contract with the Contractor

        5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

        5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).

    5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).

6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.

7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

    7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

    7.2. Pay or arrange for payment of any undisputed amounts.

    7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.

9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all

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funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
    16.1. *Claim*—A written statement by the Claimant including at a minimum:
        16.1.1. The name of the Claimant;
        16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
        16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
        16.1.4. A brief description of the labor, materials, or equipment furnished;
        16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
        16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
        16.1.7. The total amount of previous payments received by the Claimant; and
        16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
    16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute

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against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
5. *Bidder*—An individual or entity that submits a Bid to Owner.
6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
10. *Claim*

a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

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b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.

c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.

d. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.

13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.

15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.

17. *Cost of the Work*—See Paragraph 13.01 for definition.

18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.

21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

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24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.

    a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.

    b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.

    c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.

25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.

28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.

29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.

32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals.

36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

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37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.

39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers' instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.

42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.

44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

46. *Technical Data*

    a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.

    b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of

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subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.

c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.

47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.

48. *Unit Price Work*—Work to be paid for on the basis of unit prices.

49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*: The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:

1. does not conform to the Contract Documents;

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2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

3. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).

E. *Furnish, Install, Perform, Provide*

1. The word "furnish," when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. *Contract Price or Contract Times*: References to a change in "Contract Price or Contract Times" or "Contract Times or Contract Price" or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term "or both" is not expressed.

G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).

B. *Evidence of Contractor's Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.

C. *Evidence of Owner's Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

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2.02 *Copies of Documents*

A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

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3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.

B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.

C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

G. Nothing in the Contract Documents creates:

1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or

2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

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3.02 *Reference Standards*

A. *Standards Specifications, Codes, Laws and Regulations*

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

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b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

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4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. Abnormal weather conditions;

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3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and

4. Acts of war or terrorism.

D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:

1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.

2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.

E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:

1. The circumstances that form the basis for the requested adjustment;

2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;

3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;

4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and

5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.

G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

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B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

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D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;

2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and

3. Technical Data contained in such reports and drawings.

B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;

3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or

4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;

2. is of such a nature as to require a change in the Drawings or Specifications;

3. differs materially from that shown or indicated in the Contract Documents; or

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4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.

C. *Owner's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

E. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

    a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

    b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

    c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

    a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

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b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

c. Contractor failed to give the written notice required by Paragraph 5.04.A.

3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:

1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;

2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;

4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and

5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.

C. *Engineer's Review*: Engineer will:

1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

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2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;

3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and

4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *Owner's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Early Resumption of Work*: If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.

F. *Possible Price and Times Adjustments*

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

   b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and

   c. Contractor gave the notice required in Paragraph 5.05.B.

2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface

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Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;

2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and

3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the

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Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.

H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

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ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.

B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.

C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.

E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.

F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.

G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

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C. Alternative forms of insurance coverage, including but not limited to self-insurance and "Occupational Accident and Excess Employer's Indemnity Policies," are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.

D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.

F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

H. Contractor shall require:

1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and

2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.

I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

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J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.

K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.

M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.

N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

A. *Required Insurance*: Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.

B. *General Provisions*: The policies of insurance required by this Paragraph 6.03 as supplemented must:

1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;

3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;

4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and

5. include all necessary endorsements to support the stated requirements.

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C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:

1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.

C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.

E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

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6.05 *Property Losses; Subrogation*

A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.

2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.

C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.

D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

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6.06 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.

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C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

A. *Contractor's Request; Governing Criteria*: Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:

    a. in the exercise of reasonable judgment Engineer determines that the proposed item:

        1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

        2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

        3) has a proven record of performance and availability of responsive service; and

        4) is not objectionable to Owner.

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b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times; and

2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.

B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:

a. will certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design;

2) be similar in substance to the item specified; and

3) be suited to the same use as the item specified.

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b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from the item specified; and

2) available engineering, sales, maintenance, repair, and replacement services.

d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

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7.07 *Concerning Subcontractors and Suppliers*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.

B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.

E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.

G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.

J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.

K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.

L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.

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M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

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B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.

C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.

B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.

C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

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D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.

F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.

H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).

J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

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7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:

a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determine and verify:

1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;

c. confirm that the Submittal is complete with respect to all related data included in the Submittal.

2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.

1. *Shop Drawings*

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.

2. *Samples*

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.

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3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Engineer's Review of Shop Drawings and Samples*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. *Resubmittal Procedures for Shop Drawings and Samples*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.

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3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:

a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.

b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.

c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.

2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03. 2.04, and 2.05.

F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.

B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:

1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and

2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.

C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

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D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;
2. Recommendation by Engineer or payment by Owner of any progress or final payment;
3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
4. Use or occupancy of the Work or any part thereof by Owner;
5. Any review and approval of a Shop Drawing or Sample submittal;
6. The issuance of a notice of acceptability by Engineer;
7. The end of the correction period established in Paragraph 15.08;
8. Any inspection, test, or approval by others; or
9. Any correction of defective Work by Owner.

E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.

B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

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7.19 *Delegation of Professional Design Services*

A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.

B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.

C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.

E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:

1. Checking for conformance with the requirements of this Paragraph 7.19;
2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.

F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.

G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

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C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.

D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. An itemization of the specific matters to be covered by such authority and responsibility; and

3. The extent of such authority and responsibilities.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other

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contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.

1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.

2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.

C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

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9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.

B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

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10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.

B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

A. Engineer has the authority to reject Work in accordance with Article 14.

B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.

D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will

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not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.

C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

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11.02 *Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders covering:

1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;

3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and

4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.

B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

B. If Owner has issued a Work Change Directive and:

1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.

2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.

B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

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11.05 *Owner-Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.

B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.

C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;

b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;

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c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;

d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and

f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.

B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content*: Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal*: Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.

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2. *Supporting Data*: The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.

    a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.

    b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

    The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review*: Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.

4. *Engineer's Full Review and Action on the Change Proposal*: Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.

C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

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ARTICLE 12—CLAIMS

12.01 *Claims*

A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:

1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;

2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and

4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*

1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.

2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim

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is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.

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3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
5. Other costs consisting of the following:
    a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
    b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
        1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.
    c. *Construction Equipment Rental*
        1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
        2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
        3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
    d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

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e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. The cost of purchasing, renting, or furnishing small tools and hand tools.

3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

6. Expenses incurred in preparing and advancing Claims.

7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:

a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.

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b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:

1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.

2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.

2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.

C. *Owner's Contingency Allowance*: Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

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C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:

a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.

2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.

3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.

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C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;

2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

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F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

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14.06 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.

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2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
    a. the Work has progressed to the point indicated;
    b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
    c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
    a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
    b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

    a. to supervise, direct, or control the Work;

    b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;

    c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;

    d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

    e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:

    a. the Work is defective, requiring correction or replacement;

    b. the Contract Price has been reduced by Change Orders;

    c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

    d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

    e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:

    a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

    b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

    c. Contractor has failed to provide and maintain required bonds or insurance;

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d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. The Work is defective, requiring correction or replacement;

g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. The Contract Price has been reduced by Change Orders;

i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;

j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or

l. Other items entitle Owner to a set-off against the amount recommended.

2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

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C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.

2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

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3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
    a. all documentation called for in the Contract Documents;
    b. consent of the surety, if any, to final payment;
    c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
    d. a list of all duly pending Change Proposals and Claims; and
    e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

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B. *Engineer's Review of Final Application and Recommendation of Payment*: If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.

D. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.

E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such adjacent areas;

2. correct such defective Work;

3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and

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4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.

B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.

D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);

2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;

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3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or

4. Contractor's repeated disregard of the authority of Owner or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and

2. enforce the rights available to Owner under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.

D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

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3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and

2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this article, Owner or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:

1. in person, by a commercial courier service or otherwise, to the recipient's place of business;

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2. by registered or certified mail, postage prepaid, to the recipient's place of business; or

3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

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18.09 *Successors and Assigns*

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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DOCUMENT 00 73 00

SUPPLEMENTARY CONDITIONS

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These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract, EJCDC® C-700 (2018 Edition). All provisions that are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions will have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

SC-2.02 Copies of Documents

Delete Paragraph 2.02.A in its entirety and insert the following:

A. Owner shall furnish to Contractor 2 printed copies of the Contract Documents (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished on request at the cost of reproduction.

SC-4.03 Reference Points

Add a new paragraph immediately after Paragraph 4.03.A to read as follows:

B. Reference points from which Contractor shall be responsible for laying out the Work are included on the project drawings.

SC-5.03 Subsurface and Physical Conditions

Add the following new paragraph(s) immediately after Paragraph 5.03.B:

C. The following reports of explorations and tests of subsurface conditions at or adjacent to the Site are known to Owner:

1. Report dated June 28, 2021, prepared by Terracon, titled: Geotechnical Engineering Report – East Seward Street, consisting of 37 pages. The Technical Data contained in such report upon which Contractor may rely are those indicated in the definition of Technical Data in the General Conditions**.**

D. Copies of reports and drawings identified in SC-5.03.C are included with the Bidding Documents as Document 00 31 32.

SC-5.05.A Underground Facilities

Delete Paragraph 5.05.A.1 in its entirety and insert the following in its place:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data. All responsibility for the accuracy and completeness thereof is expressly disclaimed; and

SC-5.05.A Underground Facilities

Delete Paragraph 5.05.A.2.b in its entirety and insert the following:

b. locating all existing Underground Facilities shown or indicated in the Contract Documents in advance of excavating or trenching, by contacting the Owners thereof and prospecting;

SC-5.05.A Underground Facilities

Add the following paragraphs immediately after Paragraph 5.05.A.2.d:

e. The Contractor shall use his own information and shall not rely solely upon information shown on the drawings concerning existing underground installations.

f. Any delay, additional work, or extra cost to the Contractor caused by locating existing underground facilities not shown on the plans shall not constitute a claim for extra work, additional payment, or damages.

SC-5.06 Hazardous Environmental Conditions

Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

SC-6.01 Performance, Payment and Other Bonds

Amend Paragraph 6.01.A by adding the following language at the end of the first sentence:

The Performance Bond and Payment Bond shall guarantee faithful performance and the payment of all bills and obligations arising from the performance of the contract. Such bonds shall be conditioned upon the faithful performance of all the terms and conditions of the Contract Documents, including the holding harmless of Owner, and including the making good of any and all guarantees which the Contract Documents may require; and such bonds shall be further conditioned upon the payment of all laborers and materialmen who provide labor, materials, etc., actually used or rented in the performance of the contract, including insurance premiums and interest. Such bonds shall be approved by Owner.

SC-6.02 Insurance – General Provisions

Add the following paragraphs immediately after Paragraph 6.02.J:

K. Contractor shall not commence work under this contract until all insurance required under this section has been obtained, nor shall Contractor allow any subcontractor to commence work on any subcontract until all similar insurance required of the subcontractor has been so obtained.

L. All certificates of insurance shall be filed with Owner on the standard ACORD CERTIFICATE OF INSURANCE form, or a similar form if acceptable to the Owner, showing the specific limits and provisions of insurance coverage required by the Contract Documents. In addition, Contractor shall provide Owner and Engineer prompt written notice should any required insurance be cancelled, non-renewed, materially changed or coverage or limits reduced for any reason. Owner will deliver to Contractor evidence of insurance required of Owner, but only if specifically requested in writing by Contractor.

SC-6.03 Contractor's Insurance

Add the following new paragraph immediately after Paragraph 6.03.C.5:

D. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation and related coverages under Paragraphs 6.03 of the General Conditions:

a.	State:	Statutory
b.	Federal, if applicable (e.g., Longshoreman's):	Statutory
c.	Employer's Liability:	
	1) Bodily injury, each accident	$1,000,000
	2) Bodily injury by disease, each employee	$1,000,000
	3) Bodily injury/disease, aggregate	$1,000,000

2. Contractor's Commercial General Liability under Paragraphs 6.03.B and 6.03.C of the General Conditions:

a.	General Aggregate	$2,000,000
b.	Products - Completed Operations Aggregate	$1,000,000
c.	Personal and Advertising Injury	$1,000,000
d.	Each Occurrence (Bodily Injury and Property Damage)	$1,000,000
e.	Fire Damage Limit (any one fire)	$50,000
f.	Medical Damage Limit (any one person)	$5,000

g. The insurance must include the following features:

i. Coverage shall be on an occurrence form and not claims made.
ii. Coverage for all premises and operations. Policy shall be endorsed to provide the aggregate per project endorsement.
iii. Personal and advertising injury.
iv. Operations by independent Contractors.
v. If work to be performed by Contractor includes construction or demolition operations within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass, or crossing, then such policy will include coverage for work done within 50 feet of a railroad right of way.
vi. Coverage for demolition of any building or structure, collapse, explosion, blasting, excavation and damage to property below surface of ground (XCU coverage)

vii. Any fellow employee exclusions shall be deleted as it applies to managerial and supervisory employees.
viii. Policy shall not contain a total or absolute pollution exclusion. Coverage shall be provided for pollution exposures arising from products and completed operations.
ix. Products and completed operations shall be maintained for duration of work, and shall be further maintained for a minimum period of 2 years after final acceptance and payment, unless modified in the Special Provisions.
x. Contractual liability coverage will also include contractually assumed defense costs in addition to policy limits.
xi. Broad form blanket contractual liability to be included.
xii. Policy shall include a waiver of subrogation in favor of Owner and Engineer.

3. Automobile Liability under Paragraph 6.03.C of the General Conditions:

   a. Automobile liability insurance, which shall be at least as broad as and no less restrictive than ISO form CA 0001, covering all owned, non-owned, hired and leased vehicles with a minimum combined single limit for bodily injury and property damage of $1,000,000 per accident. Insurance must include contractual liability coverage. Any fellow employee exclusion shall be deleted as it applies to managerial and supervisory employees. Policy shall provide auto cargo pollution endorsement (ISO CA 99 48, or equivalent), if requested in special provisions. If work to be performed by Contractor includes construction or demolition operations within 50 feet of any railroad property and affecting any railroad bridge or trestle, tracks, road beds, tunnel, underpass, or crossing, then such policy will include coverage for work done within 50 feet of a railroad right of way. Policy shall include a waiver of subrogation in favor of Owner and Engineer.

4. Excess or Umbrella Liability:

   a. General Aggregate $2,000,000

   b. Each Occurrence $2,000,000

5. Contractor's Pollution Liability:

   a. Each Occurrence $1,000,000

   b. General Aggregate $1,000,000

6. Additional Insureds: In addition to Owner and Short Elliott Hendrickson Inc., include as additional insureds the following:

   a. None.

SC-6.05 Property Losses; Subrogation

Delete Paragraph 6.05.A in its entirety and substitute the following in its place:

A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof. Contractor shall be responsible for any deductible or self-insured retention. This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, Engineer and any other individuals or entities identified herein, and the officers, directors, members, partners, employees, agents and other consultants and subcontractors of any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or loss payee.

2. be written on a Builder's Risk/Installation Floater "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other

than that caused by flood), and such other perils or causes of loss as may be specifically required by these Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of Engineers and Architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup;

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued; and

8. Comply with the requirements of Paragraph 6.05.B of the General Conditions

SC-7.03 Labor; Working Hours

Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be specified in Section 01 11 00.

SC-7.08 Permits

Add the following to Paragraph 7.08.B:

B. The Contractor shall be responsible for acquiring the following permit(s):

1. None.

The Contractor shall be solely responsible for implementing and maintaining all measures of these permits. To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless Owner, Engineer, and Engineer's Consultants, and the officers, directors, partners, employees, agents, other consultants, and subcontractors of each and any of them from and against all claims, losses, and damages (including but not limited to all fees and charges of Engineers, Architects, Attorneys, and other professionals and all court, arbitration, or other dispute resolution costs) arising out of or relating to the Contractor's failure to comply with the conditions and requirements of these permits.

SC-10.03 Resident Project Representative

Add the following new paragraphs immediately after Paragraph 10.03.B:

C. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions.

1. *General:* RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. The RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. *Schedules*: Review the progress schedule, schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.

3. *Conferences and Meetings*: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.

4. *Liaison*:

    a. Serve as Engineer's liaison with Contractor, working principally through Contractor's authorized representative or designee, assist in providing information regarding the intent of the Contract Documents.

    b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

    c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. *Shop Drawings and Samples*:

    a. Record date of receipt of Samples and approved Shop Drawings.

    b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

    c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been approved by Engineer.

7. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. *Review of Work and Rejection of Defective Work*:

    a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

    b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress is defective, will not produce a completed Project that conforms generally to the Contract Documents, or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.

9. *Inspections, Tests, and System Startups*:

    a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

    b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

10. *Records*:

    a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

c. Maintain records for use in preparing Project documentation.

11. *Reports*:

a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.

c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.

12. *Payment Requests:* Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. *Completion*:

a. Participate in Engineer's visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.

b. Participate in Engineer's final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the Work.

D. The RPR shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

SC-15.01.B Applications for Payments

Add the following language at the end of Paragraph 15.01.B.1:

Supporting documentation to accompany each Application for Payment shall include:

a. Updated Project Schedule.

b. Updated list showing current status of submittals.

c. Documentation showing payment by Contractor for materials and/or equipment stored.

d. Documentation showing insurance coverage for materials and/or equipment stored.

SC-15.01.C Review of Applications

Delete Paragraph 15.01.C.1 in its entirety and insert the following:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

SC-15.03 Substantial Completion

Add a new paragraph immediately after Paragraph 15.03.A which reads as follows:

1. For this Work, Substantial Completion is further defined as follows:

   a. Piping work complete and tested.

   b. Paving work completed, and streets open to traffic.

   c. Final grading and sidewalks, and trail complete.

SC-15.03 Substantial Completion

Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, shall be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

SC-15.05 Final Inspection

Add the following language after the second sentence of Paragraph 15.05.A:

If, after such measures are taken, subsequent inspections by Engineer reveal that any of the previously identified particulars remain incomplete or defective, Engineer will again notify Contractor in writing of the remaining particulars. All costs associated with any subsequent inspections in which said remaining particulars are revealed, will be documented by Engineer and paid by Contractor to Owner.

SC-15.08 Correction Period

Delete Paragraph 15.08.A in its entirety and insert the following in its place:

A. If within two years after the date of Final Payment (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has

arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

SC-17.01 Methods and Procedures

Delete Paragraph 17.01.B in its entirety and insert the following in its place:

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, the Owner shall have the right, within its sole discretion, to choose one of the following dispute resolution processes and Contractor shall submit to and be bound by the process chosen by the Owner:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
2. submit the dispute to a court of competent jurisdiction in the state in which the Project is located; or
3. agree with the Contractor to submit the dispute to another dispute resolution process.

SC-18 Miscellaneous

Add the following paragraphs immediately after Paragraph 18.08:

SC-18.09 Historical or Archaeological Deposits

A. If, during the course of construction, evidence of deposits of historical or archaeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner who shall notify the State, c/o Nebraska Historical Society, State Preservation Officer, P.O. Box 82554, Lincoln, Nebraska 68508, Toll Free (800) 833-6747. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner that he may proceed. The Owner will issue a notice to proceed only after the state official has surveyed the find and make a determination to the Owner. Compensation to the Contractor, if any, for lost time or change in construction to avoid the find, shall be determined in accordance with changed site conditions or change order provisions of the specifications.

SC-18.10 Record Drawings

A. The Contractor shall keep one copy of all specifications, drawings, addenda, modifications, and shop drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the Engineer and shall be delivered to him for the Owner upon completion of the Project with final Application for Payment.

SC-18.11 Liquidated Damages

A. Should Contractor fail to achieve milestones, Substantial Completion or Final Completion of the Work within the periods of time stipulated in the Agreement, Contractor shall pay to Owner, as liquidated damages and not as a penalty, the amounts stipulated in the Agreement per day of delay unless Contract Time is extended by Owner. Owner shall deduct the liquidated damages from the Contractor's Final Payment; rates shall be as stated in the Agreement.

SC-18.12 Underground Installations

A. Existing underground installations such as water mains, sewers, telephone lines, power lines, and buried structures in the vicinity of the work to be done hereunder are indicated on the drawings only to the extent such information has been made available to or discovered by the Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness of such information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

B. The Contractor shall be solely responsible for locating all existing underground installations in advance of excavating or trenching, by contacting the Owners thereof and prospecting.

C. The Contractor shall use his own information and shall not rely solely upon information shown on the drawing concerning existing underground installations.

D. Any delay, additional work, or extra cost to the Contractor caused by existing underground installations shall not constitute a claim for extra work, additional payment, or damages.

SC-18.13 Compliance with the Migratory Bird Treaty Act

A. This Federal Act (16 U.S.C. 703-712: Ch. 128 as amended) makes illegal those construction activities that kill (take) migratory birds or destroys eggs, young or active nests. The construction Contractor should make reasonable effort to avoid occupied bird nests with eggs or young during clearing and grubbing of trees or trenching and backfilling or other construction activities. Although the provisions of the MBTA are applicable year-round, most migratory bird nesting activity in Nebraska occurs during the period April 1 to July 15. However, some migratory birds are known to nest outside of the aforementioned primary nesting season period. Raptors can be expected to nest in woodland habitats during February 1 through July 15. Sedge wrens, which occur in some wetland habitats normally, nest from July 15 to September 10. If the construction may result in the taking of nesting migratory birds, U.S. Fish and Wildlife Service (USFWS) recommends that the construction Contractor arrange to have a qualified biologist conduct a field survey of the affected habitats. The USFWS's Nebraska Field Office should be contacted immediately for further guidance if a field survey identifies the existence of one or more active bird nests, which cannot be avoided by the planned construction activities. Adherence to these guidelines will help to avoid the unnecessary take of migratory birds and the possible need for law enforcement action. The USFWS address and phone number is the following:

United States Department of the Interior
Fish and Wildlife Service
Nebraska Field Office
203 West Second Street
Grand Island, NE 68801
(308) 382-6468
E-mail: john_cochnar@fws.gov

Ground Nesting Birds in Nebraska covered by MBTA:
Lark Buntings (Calamospiza melanocorys), nest beneath shrubs or bunch grasses[1]
McCown's Longspurs (Calcarius mccownii), nest in sparse ground cover[1]
Horned Larks (Eremophilia alpestris), nest in sparse ground cover[1]
Grasshopper Sparrow (Ammodramus savannarum), [2]
Western Meadowlark (Sturnella neglecta), [2]
Dickcissel (Spiza americana), CRP[3]
Brown-headed cowbird (Molothrus ater), CRP[3]
Red-winged blackbird (Agelaius phoeniceus), CRP[3]
Common yellowthroat (Geothlypis trichas), CRP[3]
Sedge wren (Cistothorus platensis), CRP[3]
Bobolink (Dolichonyx oryzivorus), CRP[3]
Mourning dove (Zenaida macroura), CRP[3]
Piping plover (Charadrius melodus), Endangered Species

Interior least tern (Sterna antillarum), Endangered Species
Sandhill crane (Grus Canadensis)
Whooping crane (Grus Americana), Endangered Species

Above Ground Nesting Birds (Raptors) in Nebraska covered by MBTA
Bald Eagle (Haliaeetus leucocephalus) Threatened Species
Peregrine Falcon (Falco peregrine)
Red-tailed Hawk (Buteo jamaicensis)

FOR THE FULL COMPREHENSIVE LIST OF BIRDS COVERED BY MBTA SEE:
http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php

1. With, K.A. & D.R. Webb, Microclimate of Ground Nests: The relative Importance of Radiative Cover and Wind Breaks for Three Grassland Species, The Condor 95:401-413, 1993.
2. Nebraska Games and Parks Website (2005)
3. D. H. Johnson, USGS Report: Grassland Bird Use of Conservation Reserve Program Fields in the Great Plains, (701) 253-5539 http://www.npwrc.usgs.gov/resource/birds/glbuse/glbuse.pdf

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SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Work Included in Contract Documents
   2. Contract Information
   3. Work Under Other Contracts
   4. Work Sequence
   5. Contractor Use of Premises
   6. Occupancy Requirements
   7. Products Ordered in Advance
   8. Owner Furnished Products
   9. Work Restrictions

1.02 WORK INCLUDED IN CONTRACT DOCUMENTS

A. Description of the Project:
   1. East Seward Street Improvements.

1.03 CONTRACT INFORMATION

A. Type of Contract: Owner will award a Single Prime Contract.

B. Scope of Contract:
   1. This Contractor is solely responsible for the Work.
   2. The Contract will include:
      a. Contract Forms:
         1) Agreement
         2) Performance Bond
         3) Payment Bond
         4) Certificates
      b. Conditions of the Contract:
         1) General Conditions
         2) Supplementary Conditions
      c. Specifications:
         1) Division 1 - General Requirements
         2) Applicable Technical Sections
      d. Addenda
      e. Contract Modifications

1.04 WORK UNDER OTHER CONTRACTS

A. Other Work at Site:
   1. Owner reserves the right to let other separate contracts for Work of the Project, or to pursue other Work at the Site with its own personnel.
   2. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.
   3. Coordinate the Work of this Contract with work performed under separate contracts.

B. Work Not Included:
   1. Work not included is either marked “NIC,” or “by others,” on Drawings or is noted in each section of Specifications.
   2. Provide all labor and materials required unless so specifically noted or marked.
   3. Install Work indicated to be furnished by others or Owner unless specifically stipulated to be furnished and installed by others or Owner.

1.05 WORK SEQUENCE

A. Construct Work in stages to accommodate Owner’s requirements during the construction period. Coordinate construction schedule and operations with Owner and Engineer:

B. Owner will continue operation of the existing wastewater treatment facility during the entire construction period.

1.06 CONTRACTOR USE OF PREMISES

A. Confine operations at Site to areas permitted under contract or as directed by Owner **or** E/A.

B. Conform to site rules and regulations affecting Work while engaged in Project construction.

C. Construction personnel may park only in areas designated by the Owner.

D. Damaged Property:
   1. Patch and/or clean existing improvements and restore damage of property on, or adjacent to Site occasioned by this Work, including, but not limited to, lawns, walks, curbs, pavements, roadways, structures, and utilities which are cut or damaged by operations and are not designated for removal, relocation, or replacement in the course of construction.
   2. Public Property or Utilities: Comply with laws, ordinances, rules, regulations, standards, orders of utility owner or any public authority having jurisdiction.
   3. Provide written acceptance of restoration work by authority or Owner.

1.07 OCCUPANCY REQUIREMENTS

A. General Requirements:
   1. Cooperate with Owner to minimize conflict and to facilitate Owner’s operations.
   2. Schedule the Work to accommodate this requirement.
   3. Coordinate activities which could cause interruption to Owner’s activities.
   4. Provide not less than 72 hours’ notice to Owner of activities that will affect Owner’s operations.

B. Owner Occupation During Construction:
   1. Owner will occupy Site during the Work.

C. Owner Occupancy of Completed Areas of Construction:
   1. Owner reserves the right to place and install equipment as necessary in completed areas of the facilities and to occupy such completed areas prior to Substantial Completion in accordance with the Supplementary Conditions. Such use shall not constitute acceptance of such portions of the Work or relieve the Contractor of any obligations except for improper use or damage caused by employees or agents of Owner.
   2. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner occupancy.
   3. Mechanical and electrical systems shall be fully operational and required tests and inspection successfully completed.
   4. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of building.
   5. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of building.

1.08 PRODUCTS ORDERED IN ADVANCE

A. Storage:
   1. Products will not be allowed to be stored at the Site prior to commencement of construction activities.
   2. Contractor shall store such items as directed by Owner.

1.09 OWNER FURNISHED PRODUCTS

A. Items furnished by Owner will be identified in the Specification sections.

B. Owner's Responsibilities:
   1. Arrange for, and deliver Owner reviewed Shop Drawings, Product Data and samples to Contractor.
   2. Arrange and pay for product delivery to Site.
   3. At time of delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective or deficient items.
   5. Arrange for manufacturer's warranties, inspections and service.

C. Contractor's Responsibilities:
   1. Review Owner reviewed Shop Drawings, Product Data and samples.
   2. Receive and unload products at Site; inspect for completeness or damage, jointly with Owner.
   3. Provide support systems to receive Owner's equipment.
   4. Protect Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
   5. Install and otherwise incorporate Owner-furnished items into the Work.
   6. Repair or replace items damaged after receipt, except that damage caused by Owner's employees or agents.

1.10 WORK RESTRICTIONS

A. On-Site Work Hours:
   1. Normal business working hours of 7:00 a.m. to 7:00 p.m. Monday through Friday.

B. Existing Utility Interruption:
   1. Do not interrupt utilities serving facilities occupied by Owner or others without written permission by Owner.
   2. Notify Owner not less than 2 days in advance of proposed utility interruptions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 12 16

WORK SEQUENCE

PART 1 GENERAL

1.01 SUMMARY

A. General identification of Work sequence.

B. Related Sections:
   1. Section 01 33 00 - Submittal Procedures

1.02 QUALITY ASSURANCE

A. Coordinate all equipment shutdowns, startups, and general scheduling with Owner and Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 GENERAL

A. Construct Work in phases to allow for Owner's continuous occupancy as required for normal operation of the wastewater treatment facility.

B. Under any emergency condition, modification and connections are to be pursued on a 24-hour per day basis and 7 days per week.

C. Determine type and extent of temporary facilities the Project requires to maintain continuous operation.

D. Provide all temporary connections, parallel temporary lines, temporary power, temporary bulkheads, temporary equipment, and temporary operations necessary to perform Work.

E. Submit a detailed Phasing Schedule in accordance with Section 01 33 00. Schedule to include:
   1. Construction dates for each component of Work identified in each phase.
   2. Description of Work sequence.
   3. Description of interaction with existing plant facilities.
   4. Temporary pumping, piping, and utility services to maintain operability for facility.
   5. Resubmit until approved by Engineer.

F. Review existing facility with Owner to become familiar with potentially difficult items that must remain in service. No Work procedures will be permitted that require shutting down of any portion of existing facility, except as authorized by Engineer.

3.02 SEQUENCING REQUIREMENTS

A. Keep existing piping in service or provide bypass until operation of new piping and metering flume have been reliably demonstrated.

B. Do not commence with demolition of existing facilities without consent of Owner and Engineer.

C. According to the wastewater treatment facility's NPDES permit, they are not required to meet an E. coli limit from October 1 – April 30. Therefore, the UV structure could be bypassed during this time to allow for construction.

D. It will be the contractor's responsibility to setup and maintain bypass operations to allow for construction. The Bypass Plan must be submitted and approved by the Engineer and Owner prior to commencing with the Work. Effluent sampling operations must be maintained during construction. The sampler suction is in the UV structure. Effluent metering may be shut down for a short period of time as agreed to by Owner.

END OF SECTION

SECTION 01 25 13

PRODUCT SUBSTITUTION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Administrative and procedural requirements for handling requests for substitutions.

B. The following is not included in this Section:
   1. Procedural requirements governing Contractor's selection of product options (Section 01 60 00).

1.02 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment and methods of construction required by Contract Documents proposed by Contractor.

C. The following are not considered substitutions:
   1. Revisions to Contract Documents requested by Owner or Engineer.
   2. Specified options of products and construction methods included in Contract Documents.
   3. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.03 SUBMITTALS

A. All substitutions permitted on addenda must meet or exceed requirements of the specifications including, but not limited to:
   1. Warranty.

B. Substitution Request After Bid: Requests for substitution will be considered if received within 60 days after commencement of the work. Requests received more than 60 days after commencement of the work may be considered or rejected at the discretion of Engineer.
   1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for change order proposals.
   2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related specification section and Drawing numbers.
   3. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
      a. Product data, including drawings and descriptions of products, fabrication and installation procedures.
      b. Samples, where applicable or requested.
      c. A detailed comparison of significant qualities of the proposed substitution with those of the work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
      d. Coordination information, including a list of changes or modifications needed to other parts of the work and to construction performed by Owner and separate contractors, that will become necessary to accommodate the proposed substitution.
      e. A statement indicating the substitution's effect on Contractor's construction schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall contract time.
      f. Cost information, including a proposal of the net change, if any in the contract sum.

g. Certification by Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated.
h. Include Contractor's waiver of rights to additional payment or time, which may subsequently become necessary because of the failure of the substitution to perform adequately.

C. Substitution Conditions:
1. Contractor's substitution request will be received and considered by Engineer when one or more of the following conditions are satisfied, as determined by Engineer, otherwise requests will be returned without action except to record noncompliance with these requirements:
a. Extensive revisions to Contract Documents are not required.
b. Proposed changes are in keeping with the general intent of Contract Documents.
c. The request is timely, fully documented and properly submitted.
d. Contractors and suppliers will be expected to provide the specified product unless prior approval is received from Engineer's office in sufficient time so that all bidders can be notified through an addendum.
e. The specified product or method of construction cannot be provided within the contract time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the work promptly or coordinate activities properly.
f. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
g. A substantial advantage is offered to Owner, in terms of cost, time, energy conservation, or other considerations of merit, after deducting offsetting responsibilities Owner may be required to bear. Additional responsibilities for Owner may include additional compensation to Engineer for redesign and evaluation services, increased cost of other construction by Owner, or separate contractors, and similar considerations.
h. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where Contractor certifies that the substitution will overcome the incompatibility.
i. The specified product or method of construction cannot be coordinated with other materials, and where Contractor certifies that the proposed substitution can be coordinated.
j. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where Contractor certifies that the proposed substitution provides the required warranty.
k. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the work, provide uniformity and consistency, and to assure compatibility of products.

D. Limitations: Contractor's submittal and Engineer's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

E. Substitution Causing Redesign: Engineer time for redesign as a result of substitution, will be charged to Owner, then deducted by Construction Change Directive from Contract Amount.

F. Engineer's Action:
1. Request Prior to Bid: If approved, substitution will be included in an addendum.
2. Request After Bid:
a. If necessary, within one week of receipt of the request for substitution, Engineer will request additional information or documentation necessary for evaluation of the request.
b. Within two weeks of receipt of the request, or one week of receipt of the additional information or documentation, whichever is later, Engineer will notify Contractor of acceptance or rejection of the proposed substitution.
c. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name.
d. Acceptance will be in the form of a change order.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SUBSTITUTION REQUEST FORM

TO: Attn: Jake Vasa
Short Elliott Hendrickson Inc.
13140 Lincoln Road, Suite 101
Omaha, NE 68138
jvasa@sehinc.com

PROJECT: East Seward Street Improvements, Seward, NE

SECTION NO.	ARTICLE NO.	SPECIFIED PRODUCT	PROPOSED SUBSTITUTION

A. Does the substitution affect dimensions shown on Drawings? Yes ☐ No ☐

B. Does the substitution affect other trades? Yes ☐ No ☐

C. Does the manufacturer's guarantee differ from that specified? Yes ☐ No ☐

D. If you indicated "Yes" to Items A, B, or C above, attach a thorough explanation on your company letterhead.

E. If there are other differences between proposed substitution and specified product, attach a thorough explanation on your company letterhead. If differences are not noted and acknowledged in writing by Engineer, product must comply with specification requirements.

F. The proposed substitution was used within the last 24 months on the following project:

Project Name _____

Location _____

Engineer _____

Telephone No. _____

G. Has the proposed substitution been used on an SEH project within the last 12 months? Yes ☐ No ☐

If yes, which project? _____

All questions must be answered. Incomplete forms will not be reviewed.
Include a self-addressed, <u>stamped</u> envelope for reply.

Submitted By: _____

_____
Signature

_____
Firm

_____
Address

_____
Date

_____
Phone

_____
E-mail

For Use by Design Consultant

☐ Not Accepted, Not Enough Information
☐ Not Accepted, Does Not Appear to be Equal
☐ Accepted ☐ Accepted as Noted
☐ Received Too Late

By _____
Date _____
Remarks _____
_____
_____

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Administrative and procedural requirements for handling and processing Contract modifications:
   1. Request for Interpretation
   2. Minor Changes in Work
   3. Work Changes Proposal Requests
   4. Work Change Directive
   5. Change Order Procedures

B. Related Documents:
   1. Section 01 23 00 - Alternates
   2. Section 01 25 13 - Product Substitution Procedures
   3. Section 01 27 00 - Unit Prices for Contingent Items

1.02 REQUEST FOR INTERPRETATION (RFI)

A. Contractor's tool to request information.

B. Submit on form at end of this Section or on Contractor's form approved by Engineer.

C. If latent or unforeseen conditions require modifications to Contract, Contractor may propose changes by submitting request for a change to Engineer.
   1. Provide a complete description of proposed change, including a statement outlining reasons for the change and the effect of the change on the Work.
   2. Indicate the effect of the proposed change on Contract Sum and Contract Time.
   3. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of Contract Time.
   6. Comply with requirements in Section 01 25 13 if proposed change requires substitution of a product or system for product or system specified.

D. Report to Engineer on this form any Contract Document requirements known to be in nonconformance with applicable laws, statutes, ordinances, building codes, and rules and regulations.

1.03 MINOR CHANGES IN WORK

A. Engineer will issue supplemental instructions authorizing minor changes in Work, not involving adjustment to Contract Sum or Contract Time, on EJCDC® C942 "Field Order."

1.04 WORK CHANGES PROPOSAL REQUESTS (PR)

A. Owner-Initiated:
   1. Engineer will issue a detailed description of proposed changes in Work that may require adjustment to Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and specifications.
   2. Proposal Requests are for information only. Do not consider them instructions either to stop Work in progress or to execute the proposed change.

3. After receipt of Proposal Request, submit a quotation estimating cost adjustments to Contract Sum and Contract Time necessary to execute change.
    a. Submit response within time specified in Proposal Request.
    b. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of Contract Time.

1.05 WORK CHANGE DIRECTIVE

A. Engineer may issue a Work Change Directive on EJCDC® C-940. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
    1. Contains a complete description of change in the Work and designates method to be followed to determine change in Contract Sum or Contract Time.
    2. Refer to General Conditions for further information on Work Change Directives.

B. Documentation: Maintain detailed records on a time and material basis of work required by Work Change Directive.

C. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to Contract.

1.06 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Engineer will issue a Change Order for signatures of Owner and Contractor.

B. Proposed Work is not authorized until complete execution of Change Order.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

REQUEST FOR INTERPRETATION

Project: East Seward Street Improvements, Seward, NE RFI No.: _____

SEH Project Manager: Jake Vasa SEH Project No.: SEWAC 160685

Requested by: _____ Date: _____

Specification Section: Paragraph: Drawing Reference: Detail:

Request:

Engineer Response: **Date Received:** _____

See PR # _____

☐ Attachments

Signed: _____ Date Returned: _____

Distribution: ☐ Owner ☐ Consultant ☐ Contractor ☐ Other _____

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SECTION 01 29 10

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SUMMARY

A. Procedures for Administration of Applications for Payment:
   1. Schedule of Values:
      a. Coordination.
      b. Format and Content.
      c. Breakdown Detail.
      d. Schedule Updating.
   2. Application for Payment:
      a. Coordination.
      b. Format.
      c. Typical Application.
   3. Additional Requirements:
      a. Initial Application.
      b. Substantial Completion.
      c. Final Payment.

B. Related Sections:
   1. Document 00 73 00 - Supplementary Conditions
   2. Section 01 33 00 - Submittal Procedures
   3. Section 01 74 19 - Construction Waste Management (LEED)
   4. Section 01 74 20 - Construction Waste Management
   5. Section 01 77 00 - Closeout Procedures

1.02 SCHEDULE OF VALUES

A. Coordinate preparation of Schedule of Values with preparation of Construction Schedule.

B. Format and Content:
   1. Include following Project identification on Schedule of Values:
      a. Project name and location.
      b. Name of Engineer.
      c. Engineer’s Project number.
      d. Contractor’s name and address.
      e. Date of submittal.
   2. Use Project Manual Table of Contents as guide to establish format for Schedule of Values.
   3. Arrange Schedule of Values in tabular form with separate columns to indicate following for each item listed:
      a. Generic name.
      b. Related specification Section.
      c. Name of subcontractor, if any.
      d. Name of manufacturer or fabricator.
      e. Name of supplier.
      f. Change Orders (numbers) that affect value.
      g. Dollar value.
      h. Round amounts to nearest whole cent; total to equal Contract Sum.
      i. Percentage of Contract Sum to nearest 1 percent, adjusted to total 100 percent.

C. Breakdown Detail:
   1. Provide breakdown of Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports.

2. Break principal subcontract amounts down into several line items.

D. Schedule Updating: Update and resubmit Schedule of Values when Change Orders or Work Change Directives result in change in Contract Sum.

1.03 APPLICATIONS FOR PAYMENT

A. Coordination: Each application for payment shall be consistent with previous applications and payments as certified by Engineer and paid by Owner.

B. Application for Payment Forms: Provided by Engineer.

C. Typical Application:
1. Payment Application Times: Each progress payment date is indicated in either the Supplementary Conditions, the Agreement, or as set at the Preconstruction Meeting.
2. Period of Work Covered: Length of time for construction Work covered by each Application for Payment is indicated in the Agreement or as set at the Preconstruction Meeting.
3. Preparation:
   a. Complete every entry on form, including notarization and execution by person authorized to sign legal documents on behalf of Contractor.
   b. Incomplete applications will be returned without action.
   c. Entries must include data on Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
   d. Include amounts of Change Orders and Work Change Directives issued prior to last day of construction period covered by application.
4. Transmittal: Submit4 executed copies of each Application for Payment to Engineer by means ensuring timely receipt.

1.04 ADDITIONAL REQUIREMENTS

A. Initial Application for Payment:
1. Coordinate submittals as required by Section 01 33 00.
2. Applications for Payment will not be considered if copies of required submittals have not been received by Engineer.

B. Substantial Completion:
1. Coordinate submittals as required by Sections 01 33 00 and 01 77 00.
2. Following issuance of Certificate of Substantial Completion, submit Application for Payment.
3. Applications for Payment will not be considered if copies of required submittals have not been received by Engineer.

C. Final Payment Application:
1. Coordinate submittals as required by Sections 01 33 00 and 01 77 00.
2. Administrative actions which must precede or coincide with submittal of final Application for Payment include:
   a. Completion of Project requirements.
   b. Completion of items specified for completion after Substantial Completion.
   c. Assurance that unsettled claims will be settled.
   d. Assurance that Work not complete and accepted will be completed without undue delay.
   e. Removal of temporary facilities and services.
   f. Removal of surplus materials, rubbish, similar elements.
   g. Final cleaning.
3. Applications for Payment will not be considered if copies of required submittals have not been received by Engineer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 31 13

COORDINATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Project Coordination
   2. Job Site Administration

1.02 COORDINATION BY GENERAL CONTRACTOR

A. Coordinate use of premises under direction of Owner.

B. Coordinate scheduling, submittals, and Work to ensure efficient and orderly sequence of installation.
   1. Coordinate activities for mutual benefit and cooperate to facilitate the general progress of the Work.
   2. Each subcontractor shall be thoroughly familiar with all provisions governing the Work of other contractors, and shall obtain from such contractors all information as may be required to coordinate Work with theirs.
   3. Each trade shall perform its Work in proper sequence and arrangement in relation to other activities and shall join his Work to that of others in accordance with the intent of the Drawings and specifications.
   4. Each trade shall give due notice and proper information for any special provisions necessary in the placing or setting of Work that may come in contact with Work of other contractors.

C. Inspect the Contract Documents for Work of others that is inter-related, and afford other trades every reasonable opportunity for the installation of their Work. Coordinate Work of various specification sections having interdependent responsibilities.

D. Prepare coordination drawings where off-site fabricated products and materials are by separate entities and must accurately interface. Coordination drawings shall indicate how Work, shown by separate Shop Drawings, will interface and shall indicate sequence for installation.

E. Coordinate space requirements and installation of mechanical and electrical Work.
   1. Follow routing shown for pipes, ducts, and conduit as closely as practicable; place runs parallel with line of building.
   2. Utilize space efficiently to maximize accessibility for other installations, maintenance, and repairs.
   3. Conceal pipes, ducts, and wiring within the construction in finished areas, except as otherwise indicated.
   4. Coordinate locations of fixtures and outlets with finish elements.
   5. All final decisions as to the right-of-way and run of interfering pipes, ducts, etc., shall be made by Engineer at Project meetings.

1.03 JOB SITE ADMINISTRATION

A. Supervise and direct the Work. Employ and maintain a full time, qualified supervisor or superintendent to act as Contractor’s representative at the Site.

B. Enforce good order and conduct among contractors, installers, and construction employees.

C. Require installers to inspect conditions under which Work is to be performed. Installer shall report all unsatisfactory conditions in writing to Contractor. Do not proceed with Work until unsatisfactory conditions have been corrected.

D. Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the Contract Documents. Where manufacturer provides contradictory instructions, notify Engineer immediately and request clarifications.

E. Recheck measurements and dimensions of the Work, as an integral step of starting each installation.

F. Coordinate enclosure of Work with required inspections and tests, so as to minimize necessity of uncovering Work for that purpose.

G. Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting heights for the particular application indicated. Refer questionable mounting height choices to Engineer.

H. Supervise performance of the Work to ensure that none of the Work, whether completed or in progress, will be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

I. Clean and perform maintenance as frequently as necessary throughout construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Coordinate completion and clean up of Work.

1.04 SUBMITTALS

A. Provide listing of Contractor's principal staff assignments and consultants, including name, home and work addresses, and telephone numbers.

B. Provide supervisor's or superintendent's name, home and work address, and telephone numbers.

C. Provide names, work address, telephone numbers, samples of signature, and limits of authority of each individual authorized to sign change orders, field modifications, and monthly pay requests for Contractor.

1.05 FIELD CONDITIONS

A. Before ordering material or commencing Work, check and verify all dimensions and conditions. Notify Engineer of any omissions or discrepancies immediately.

B. Field measurements shall be furnished in a timely manner to suppliers and fabricators who require them to complete their Work. Ascertain the requirement for such measurements at the earliest practical date and make every reasonable effort to expedite the affected Work.

C. Conflicts: Engineer has exercised reasonable professional care to ensure there are no conflicts between the Work of the various trades. Such conflicts, however, may exist and no warranty to the contrary is made or implied.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 GENERAL

1.01 SUMMARY

A. Procedures for Administration of Project Meetings:
   1. Preconstruction Conference
   2. Progress Meetings
   3. Preinstallation Conferences

B. Related Sections:
   1. Document 00 21 13 - Instructions to Bidders
   2. Section 01 31 13 - Coordination
   3. Section 01 33 00 - Submittal Procedures

1.02 PRECONSTRUCTION/SITE MOBILIZATION CONFERENCE

A. Scheduled by Engineer after Notice of Award, prior to commencement of construction for:
   1. Execution of Owner-Contractor Agreement and exchange of preliminary submittals if not previously completed.
   2. Clarification of Owner and Contractor responsibilities in use of the Site and review of administrative procedures.

B. Attendees: Owner, Engineer, Consultants, Contractors, major subcontractors, other concerned parties represented by persons familiar with and authorized to conclude matters relating to Work.

C. Agenda:
   1. Items of significance that could affect progress including, but not limited to:
      a. Submittal of executed bonds and insurance certificates.
      b. Execution of Owner-Contractor Agreement if not previously completed.
      c. Distribution of Contract Documents.
      d. Use of premises by Owner and Contractor:
         1) Owner’s requirements and occupancy.
         2) Construction facilities provided by Owner (if any).
         3) Temporary utilities provided by Owner (if any).
         4) Use of premises office, work, and storage areas.
      e. Security and housekeeping procedures.
      f. Submittals:
         1) Final list of subcontractors, suppliers, products.
         2) Schedule of Values.
         3) Progress Schedule.
         4) Designation of responsible personnel:
            a) Contractor’s principal staff and consultants.
            b) Contractor’s superintendent or job foreman acting as Contractor’s Site representative.
            c) Owner’s and Contractor’s designated individuals authorized to sign Change Orders, field modifications, and monthly pay requests.
      g. Procedures for processing:
         1) Field decisions.
         2) Submittals:
            a) Shop Drawings.
            b) Product Data.
            c) Samples.

3) Substitutions.
4) Applications for Payments.
5) Proposal requests.
6) Change Orders.
7) Contract Closeout.

h. Schedules:
1) Tentative construction schedule.
2) Critical Work sequencing.
3) Progress meetings.

i. Procedures for testing.

j. Procedures for maintaining Record Documents.

k. Requirements for startup of equipment: Inspection and acceptance of equipment put into service during construction period.

l. Equipment deliveries and priorities.

m. Contractor responsibilities:
1) Safety procedures.
2) First aid.

1.03 PROGRESS MEETINGS

A. Contractor:
1. Schedule and administer weekly construction progress meetings throughout progress of Work.
2. Make physical arrangements, prepare agenda and distribute with notice of each meeting to participants and to Engineer, 4 days in advance of meeting date.
3. Preside at meetings, record meetings and distribute copies (2 to Engineer) within 2 days to participants, and entities affected by decisions at the meetings.
4. If Contractor does not preside, record, and distribute meeting notes, Engineer will do so at Engineer's standard hourly rate submitted to Owner. An equivalent amount will be deleted from Contract by Work Change Directive.

B. Attendees:
1. Contractor, job superintendent, subcontractors and suppliers, other entity concerned with current progress or involved in planning, coordination or performance of future activities; Owner, Engineer, professional consultants as appropriate to agenda.
2. Attendees shall be familiar with Project and authorized to conclude matters relating to progress.

C. Agenda:
1. Items of significance that could affect progress, including topics for discussion as appropriate to current status of Project, minimally:
a. Approval of minutes of last meeting.
b. Review of Work progress.
c. Field observations, problems and decisions.
d. Identifications of problems which impede planned progress.
e. Review of submittal schedule and status of submittals.
f. Review of off-site fabrication and delivery schedules.
g. Maintenance of progress schedule.
h. Corrective measures to regain projected schedules.
i. Planned progress during succeeding Work period.
j. Coordination of projected progress.
k. Maintenance of quality and work standards.
l. Effect of proposed changes on progress schedule and coordination.
m. Other business relating to Work.

1.04 PREINSTALLATION CONFERENCES

A. When required in individual specification sections, or as requested by Contractor, convene a preinstallation conference at Site prior to commencing Work of the Section.

B. Attendees: Require attendance of entities directly affecting, or affected by, Work of the Section, including manufacturer's representative.

C. Notification: Notify Engineer 4 days in advance of meeting date.

D. Contractor Duties:
   1. Prepare agenda, preside at conference, record minutes, and distribute copies (2 to Engineer) within 2 days.
   2. If Contractor does not preside, record, and distribute meeting notes, Engineer will do so at Engineer's standard hourly rate submitted to Owner. An equivalent amount will be deleted from Contract by Work Change Directive.

E. Agenda:
   1. Review conditions of installation.
   2. Review preparation and installation procedures.
   3. Coordinate with related Work.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 32 16

PROGRESS SCHEDULES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Format
   2. Content
   3. Revisions to Schedules
   4. Submittals

B. Related Sections:
   1. Section 01 11 00 - Summary of Work
   2. Section 01 29 10 - Applications for Payment
   3. Section 01 33 00 - Submittal Procedures

1.02 FORMAT

A. Prepare schedules as a horizontal bar chart with separate bar for each major portion of Work or Operation, identifying first workday of each week.

B. Sequence of Listings: The Table of Contents of this Project Manual. The chronological order of the start of each item of work.

C. Scale and Spacing: To provide space for notations and revisions.

D. Sheet Size: Minimum 11 by 17 inches. Multiples of 8-1/2 by 11 inches.

1.03 CONTENT

A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.

B. Identify each item by specification section number.

C. Identify Work of separate stages, separate floors, and other logically grouped activities.

D. Provide sub-schedules for each stage of Work identified in Section 01 11 00.

E. Provide sub-schedules to define critical portions of the entire schedule.

F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.

G. Provide separate schedule of submittal dates for Shop Drawings, Product Data, and Samples, including Owner furnished products and products identified under Allowances, and dates reviewed. Submittals will be required from Engineer. Indicate decision date for selection of finishes.

H. Indicate delivery dates for Owner furnished products and products identified under Allowances.

I. Coordinate content with Schedule of Values specified in Section 01 29 10.

1.04 REVISIONS TO SCHEDULES

A. Indicate progress of each activity to date of submittal, and projected completion date of each activity.

B. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.

C. Provide narrative report to define problem areas, anticipated delays, and impact on schedule. Report corrective action taken, or proposed, and its effect including the effect of changes on schedules of separate contractors.

1.05 SUBMITTALS

A. Submit initial schedules within 10 days after date of Notice to Proceed. After review, resubmit required revised data within 10 days.

B. Submit revised Progress Schedule with each Application for Payment.

C. Submit 4 copies which will be retained by Engineer.

D. Distribute copies of reviewed schedules to Site file, subcontractors, suppliers, and other concerned parties.

E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Requirements Included:
   1. Procedures
   2. Schedule of Values
   3. Shop Drawings
   4. Product Data
   5. Samples
   6. List of Proposed Subcontractors
   7. List of Proposed Suppliers
   8. Material Safety Data Sheets
   9. Payment Schedule

1.02 PROCEDURES

A. Deliver submittals to Engineer at address listed in Project Manual with a Transmittal.

B. Transmit each item under Engineer-accepted form.
   1. Identify Project, Contractor, subcontractor, major supplier.
   2. Identify pertinent Drawing sheet and detail number, and specification Section number.
   3. Identify deviations from Contract Documents.
   4. Provide space for Engineer and consultant review stamps.

C. Submit initial progress schedules and schedule of values in duplicate within 10 days after date of Owner-Contractor Agreement. After review by Engineer, revise and resubmit as required.

D. Submit revised schedules with each Application for Payment, reflecting changes since previous submittal.

E. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.

F. After Engineer review of submittal, revise and resubmit as required, identifying changes made since previous submittal.

G. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.

1.03 SCHEDULE OF VALUES

A. Submit typed schedule on Contractor’s standard form.

B. Format:
   1. Table of Contents of this Project Manual.
   2. Identify each line item with number and title of the major technical sections.

C. Include in each line a directly proportional amount of Contractor’s overhead and profit.

D. Revise schedule to list Change Orders for each application for payment submittal.

1.04 SHOP DRAWINGS

A. Shop Drawings will not be accepted for review by Engineer until after they have been checked and approved by the Contractor as evidenced by his approval stamp and signature.

B. Submit the number of opaque reproductions Contractor requires, plus 4 copies that will be retained by Engineer.

C. Submit showing system fabrication, installation drawings including plans, elevations, section details of components, and configuration between system and adjoining systems.

1.05 PRODUCT DATA

A. Mark each copy to identify applicable products, models, options, testing compliance, warranty, and other data; supplement manufacturers' standard data to provide information unique to the Work.

B. Submit the number of copies which Contractor requires plus 4 copies that will be retained by Engineer.

C. Submit manufacturer's printed instructions for delivery, storage, assembly, installation start-up, adjusting, finishing, and maintenance.

1.06 SAMPLES

A. Submit full range of manufacturer's standard colors, textures, and patterns for Engineer's selection. Submit samples for selection of finishes within 10 days after date of Contract.

B. Submit samples to illustrate functional characteristics of the product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing Work.

C. Include identification on each sample, giving full information.

D. Submit the number specified in respective specification section; 1 will be retained by Engineer. Reviewed samples that may be used in the Work are indicated in the technical sections.

E. Field Samples:
   1. Provide field samples of finishes as required by individual technical section.
   2. Install sample complete and finished.
   3. Acceptable samples in place may be retained in completed Work.

1.07 LIST OF PROPOSED SUBCONTRACTORS

A. Submit a list of subcontractors who will provide Work on the Project.

B. The submitted list shall include:
   1. Name of Subcontractor
   2. Address
   3. Type of work to be provided
   4. Contact list for administrative and supervisory personnel.

1.08 LIST OF PROPOSED SUPPLIERS

A. Submit a list of suppliers who will provide materials, equipment or components principle to the Work.

B. The submitted list should include:
   1. Name of supplier.
   2. Address.
   3. Equipment, material or component to be provided.
   4. Contact list for administrative and supervisory personnel.

1.09 MATERIAL SAFETY DATA SHEETS

A. Submit MSDS to the Site on all products with chemical emissions and as called for in individual technical sections.

1.10 PAYMENT SCHEDULE

A. Submit anticipated monthly payment schedule within 30 days after award of Contract, when requested by Engineer.

B. Update whenever payment requests vary from the schedule by more than 10 percent.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 35 45

HAZARDOUS SUBSTANCES AND CONDITIONS

PART 1 GENERAL

1.01 SUMMARY

A. Sections Includes:
   1. Unusual safety substances or conditions.

B. Related Sections:

1.02 REFERENCES

A. Code of Federal Regulations (CFR):
   1. 29 CFR 1910.1000 - Occupational Safety and Health Act (OSHA)

1.03 SUBMITTALS

A. Submit procedures and techniques to be used for each “EXISTING CONDITION(S)” mentioned below. Identify equipment to be used in monitoring these existing conditions.

B. Submit with Project Record Documents logs or reports required for monitoring purposes.

1.04 PREINSTALLATION CONFERENCE

A. Meet with Engineer and Owner authorized personnel 48 hours prior to commencing work in areas where “EXISTING CONDITION(S)” mentioned below may occur.

B. Discuss and develop mutual understandings relative to safety in these areas with Engineer and other Owner authorized personnel.

1.05 EXISTING CONDITION(S)

A. In addition to the Contractor’s safety responsibilities, as contained in Document 00 72 00, General Conditions, Article 7, the Contractor’s attention is specifically called to the “EXISTING CONDITION(S)” listed below which are unique to the wastewater treatment industry. This list may not necessarily be all inclusive, but represents Engineer’s best knowledge of unusual or hazardous substances and conditions applicable to this Project.

B. Bulk Chemicals, including:
   1. Chlorine.
   2. Sulfur Dioxide.
   3. Polymers.
   4. Sodium Hypochlorite.

C. Wastewater related material which may contain infectious agents, produce noxious gases, contain flammable or hazardous substances, produce flammable gases, create oxygen deficient environments, or produce slippery conditions, including:
   1. Hydrogen Sulfide.
   2. Methane.
   3. Raw Wastewater.
   4. Sludge.
   5. Scum.
   6. Grit.

D. Noise levels above 85 decibels (dbA).

E. Equipment operated by remote control.

F. Equipment supplied with emergency power source or multiple power sources.

G. Laboratory chemicals and fume hood exhausts.

H. Unusual fire extinguishing systems, including:
   1. Halon.
   2. Foam.
   3. Dry Chemical.

I. Stored petroleum products and lubrication supplies.

J. Extreme temperatures and pressures in pipes and vessels.

1.06 SEQUENCING AND SCHEDULING

A. Provide Engineer with written notice no less than 7 calendar days prior to commencing work in any area when the “EXISTING CONDITION(S)” may occur.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of conditions listed below are established as the minimal requirements. Nothing contained herein shall be construed to limit, modify, or otherwise change the Contractor’s obligations as contained in Document 00 72 00, General Conditions, Article 7.

B. Oxygen in the atmosphere of the work area shall be not less than 19.5 percent by volume and not more than 23.0 percent by volume.

C. Test atmosphere continuously for oxygen content, toxic gases, and explosive vapors. Remove personnel from area and inform Engineer immediately when atmosphere exceeds OSHA permissible exposure limits (PEL.) in accordance with 29 CFR 1910.1000, Tables Z-1, Z-2 and Z-3.

D. Review with Engineer existing equipment that is operated by remote control or which is supplied with emergency power source or multiple power sources.

E. Locate within the working areas existing fire extinguishing systems. Review with Engineer under what circumstances these systems become active.

F. Identify existing stored petroleum products, lubrication supplies, and pipe and vessels with extreme temperatures and pressures.

G. Verify that the work area is within OSHA PEL levels at the beginning and end of each working day and every 2 hours when working in any of these “EXISTING CONDITION(S);” record in separate daily log.

3.02 APPLICATION

A. Supply monitoring equipment to detect oxygen content, toxic gases, and explosive vapors.

B. Provide monitoring equipment to detect areas in which noise levels might exceed 85 decibels.

C. Comply with existing Owner's safety rules and plans.

D. Smoking, open flames, burning, grinding, welding, cutting, or drilling shall not be permitted within 20 feet of these "EXISTING CONDITION(S)."

END OF SECTION

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SECTION 01 42 15

SPECIFICATION FORMAT, DEFINITIONS AND ABBREVIATIONS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Specification Format and Content Explanation
   2. Definitions
   3. Industry Standards
   4. Abbreviations and Names

B. Related Sections:
   1. Document 00 72 00 - General Conditions
   2. Section 01 42 18 - Reference Standards for Infrastructure Improvements

1.02 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into divisions and sections based on the Construction Specifications Institute's *MASTERFORMAT* numbering system.

B. Specification Content:
   1. This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
      a. Abbreviated language:
         1) Language used in Specifications and other Contract Documents is the abbreviated type.
         2) Implied words and meanings will be appropriately interpreted.
         3) Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.
      b. Imperative and streamlined language:
         1) The Specifications generally use the imperative mood and streamlined language.
         2) Requirements expressed in the imperative mood are to be performed by Contractor.
         3) At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
         4) The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.03 DEFINITIONS

A. Reference: Basic Contract definitions are included in Document 00 72 00.

B. General Definitions:
   1. Indicated:
      a. The term "indicated" refers to graphic representations, notes, schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents.
      b. Where terms such as "shown," "noted," "scheduled," and "specified" are used, it is to help the reader locate the reference; no limitation on location is intended.
   2. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean "directed by the Engineer," "requested by the Engineer," and similar phrases.

3. Approved: The term “approved,” where used in conjunction with the Engineer’s action on the Contractor’s submittals, applications, and requests, is limited to the Engineer’s duties and responsibilities, as stated in General and Supplementary Conditions.
4. Regulations: The term “Regulations” includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
5. Furnish: The term “furnish” is used to mean “supply and deliver to the Site, ready for unloading, unpacking, assembly, installation, and similar operations.”
6. Install: The term “install” is used to describe operations at Site including the actual “unloading, unpacking, storage at Site, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.”
7. Provide: The term “provide” means “to furnish and install, complete and ready for the intended use.”
8. Installer:
    a. An “Installer” is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations.
    b. Installers are required to be experienced in the operations they are engaged to perform:
    c. The term “experienced” when used with the term “Installer” means having a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the precautions required, and having complied with requirements of the authority having jurisdiction.
9. Trades:
    a. Use of titles such as “carpentry” is not intended to imply that certain construction activities must be performed by accredited or unionized individual of a corresponding generic name, such as “carpenter.”
    b. It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.
10. Assignment of Specialists:
    a. Certain sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed.
    b. The specialists must be engaged for those activities, and assignments are requirements over which Contractor has no choice or option.
    c. Nevertheless, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
    d. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.
11. Site:
    a. The space available to Contractor for performance of construction activities, either exclusively or in conjunction with, others performing other Work as part of the Project.
    b. The extent of the Site is shown on the Drawings or will be discussed at the Preconstruction Meeting and may or may not be identical with the description of the land upon which the Project is to be built.
12. Testing Laboratories: A “testing laboratory” is an independent entity engaged to perform specific inspections or tests, either at the Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
13. PDF: The acronym “PDF” is used to include any industry standard digital image file format.

1.04 INDUSTRY STANDARDS

A. Refer to Section 01 42 18.

1.05 ABBREVIATIONS AND NAMES

A. Trade Names:
    1. Trade association names and titles of general standards are frequently abbreviated.
    2. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating

organization, authority having jurisdiction, or other entity applicable to the context of the text provision.

3. If the acronyms or abbreviations are not included in the referenced industry standards above, refer to the “Encyclopedia of Associations,” published by Gale Research Co., available in most libraries.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 42 18

REFERENCE STANDARDS FOR INFRASTRUCTURE IMPROVEMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Quality Assurance.

B. List of References.

1.02 QUALITY ASSURANCE

A. For products or workmanship specified by Association, trade, or federal and state standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents.

C. Obtain copies of standards when required by Contract Documents.

D. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.

E. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.03 LIST OF NATIONAL REFERENCES

AABC
Associated Air Balance Council
1518 K Street NW
Washington, DC 20005
202.737.0202 www.aabc.com

AASHTO
Am. Assoc. of State Hwy. & Transportation Officials
444 N. Capital Street NW, Ste. 249
Washington, DC 20001
202.624.5800 www.transportation.org

ABMA
American Bearing Manufacturers Association
2025 M Street, NW, Suite 800
Washington, DC 20036
202.367.1155

ACC
American Chemistry Council
700 Second Street NE
Washington, DC 20002
202.249.7000
www.plastics.americanchemistry.com

ACEC
American Council of Engineering Companies
1015 15th Street, 8th Floor, NW
Washington DC 20005-2605
202.347.7474 www.acec.org

ADA
Americans with Disabilities Act
US Dept. of Justice
950 Pennsylvania Avenue NW
Civil Rights Division/Disability Rights Section - NYA
Washington, DC 20530
800.514.0301 www.ada.gov

AGA
American Gas Assoc.
400 N. Capitol Street NW
Washington, DC 20001
202.824.7000 www.aga.org

AGC
Associated General Contractors of America
2300 Wilson Boulevard., Ste. 400
Arlington, VA 22201
703.548.3118 www.agc.org

AI
Asphalt Institute
2696 Research Park Drive
Lexington, KY 40511-8480
859.288.4960 www.asphaltinstitute.org

AISI
American Iron & Steel Institute
1140 Connecticut Avenue NW, Ste. 705
Washington, DC 20036
202.452.7100 www.steel.org

ANSI	American National Standards Institute 1819 L Street NW, 6th Floor Washington, DC 20036 202.293.8020 www.ansi.org
ARRA	Asphalt Recycling & Reclaiming Assoc. #3 Church Circle – PMB 250 Annapolis, MD 21401 410.267.0023 www.arra.org
ASCE	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191-4400 800.548.2723 www.asce.org
ASTM	American Society for Testing and Materials 100 Barr Harbor Drive West Conshohocken, PA 19428-2959 610.832.9500 www.astm.org
AWMA	Air & Waste Management Assoc. One Gateway Center, 3rd Floor 420 Fort Duquesne Blvd. Pittsburgh, PA 15222-1435 412.232.3444 www.awma.org
AWWA	American Water Works Assoc. 6666 W. Quincy Avenue Denver, CO 80235 800.926.7337 www.awwa.org
CDA	Copper Development Assoc. 260 Madison Avenue New York, NY 10016 212.251.7200 www.copper.org
CPI	Concrete Paver Institute, a division of NCMA See ICPI
CLFMI	Chain Link Fence Manufacturers Institute 10015 Old Columbia Rd, Ste. B-215 Columbia, MD 21046 410.290.6267 www.chainlinkinfo.org
CMRA	Construction Materials Recycling Assoc. 1001 I Street, PO Box 40125 Sacramento, CA 95812-4025 916.341.4027 www.calrecycle.ca.gov/RCP
CRSI	Concrete Reinforcing Steel Institute 933 North Plum Grove Road Schaumburg, IL 60173-4758 847.517.1200 www.crsi.org
CSI	Construction Specifications Institute 110 South Union Street, Ste. 100 Alexandria VA 22314 800.689.2900 www.csinet.org
DOE	U.S. Department of Energy 1000 Independence Ave. SW Washington DC 20585 202.586.5000 www.energy.gov
DOT	U.S. Department of Transportation 1200 New Jersey Ave, SE Washington, DC 20590 202.366.4000 www.dot.gov
EEOC	Equal Employment Opportunity Commission 131 M Street NE Washington, DC 20507 800.669.4000 www.eeoc.gov
EIMA	EIFS Industry Members Assoc. 513 West Broad Street, Ste. 210 Falls Church, VA 22046-3257 800.294.3462 www.eima.com
EJCDC®	Engineers' Joint Contract Documents Committee® See ACEC, AGC, ASCE, and NSPE www.ejcdc.org
EPA	U.S. Environmental Protection Agency Ariel Rios Building 1200 Pennsylvania Ave. NW Washington, DC 20004 202.272.0167 www.epa.gov
FEMA	Federal Emergency Management Assoc. 500 C Street SW Washington, DC 20472 800.621.3362 www.fema.gov
FMG	FM Global (Factory Mutual System) 270 Central Avenue, PO Box 7500 Johnston, RI 02919 401.275.3000 www.fmglobal.com
Green Seal	Green Seal 1001 Connecticut Avenue NW, Ste. 827 Washington, DC 20036-5525 202.872.6400 www.greenseal.org
Green-e	Green-e Program Center for Resource Solutions 1012 Torney Avenue, Second Floor PO Box 29512 San Francisco, CA 94129 415.561.2100 www.green-e.org
Green Guard	Greenguard Environmental Institute 2211 Newmarket Parkway, Ste. 110 Marietta, GA 30067 800.427.9681 www.greenguard.org
GRI	Geosynthetic Research Institute See GSI
GSI	Geosynthetic Institute 475 Kedron Avenue Folsom, PA 19033-1208 610.522.8440 www.geosynthetic-institute.org
ICEA	Insulated Cable Engineers Association, Inc. P.O. Box 1568 Carrollton, GA 30112 www.icea.net
ICPI	Interlocking Concrete Pavement Institute 13921 Park Center Road, Ste. 270 Herndon VA 20171 703.657.6900 www.icpi.org
IMI	International Masonry Institute 42 East Street Annapolis, MD 21401 410.280.1305 www.imiweb.org
IPBA	International Pipe Bursting Assoc. Division of NASSCO 410.486.3500 www.nassco.org/about_nassco/an_div_ipba.html
LEED	Leadership in Energy and Environmental Design See USGBC

MIA	Masonry Institute of America 22815 Frampton Avenue Torrance, CA 90501-5034 800.221.4000 www.masonryinstitute.org
MSS	Manufacturers Standardization Society of the Valve and Fitting Industry 127 Park St NE Vienna, VA 22180-4602 703.281.6613 www.mss-hq.com
MUTCD	Manual on Uniform Traffic Control Devices www.mutcd.fhwa.dot.gov
NACE	National Assoc. of Corrosion Engineers 1440 S. Creek Drive Houston, TX 77084-4906 281.228.6200 www.nace.org
NCMA	National Concrete Masonry Assoc. 13750 Sunrise Valley Drive Herndon, VA 20171-4662 703.713.1900 www.ncma.org
NEC	National Electric Code See NFPA
NEBB	National Environmental Balancing Bureau 8575 Grovemont Circle Gaithersburg, MD 20877 301.977.3698 www.nebb.org
NEMA	National Electrical Manufacturers Assoc. 1300 N. 17th Street., Ste. 1752 Rosslyn, VA 22209 703.841.3200 www.nema.org
NFPA	National Fire Protection Assoc. 1 Batterymarch Park Quincy, MA 02169-7471 617.770.3000 www.nfpa.org
NIOSH	National Institute for Occupational Safety and Health Centers for Disease Control and Prevention 1600 Clifton Road Atlanta, GA 30333 800.232.4636 www.cdc.gov/niosh
NPCA	National Precast Concrete Assoc. 1320 City Center Drive, Suite 200 Carmel, IN 46032 800.366.7731 www.precast.org
NPDES	National Pollutant Discharge Elimination System www.epa.gov
NSF	NSF International 789 N. Dixboro Road, PO Box 130140 Ann Arbor, MI 48113-0140 800.673.6275 www.nsf.org
NSPE	National Society of Professional Engineers 1420 King Street Alexandria, VA 22314-2794 703.684.2800 www.nspe.org
NSWMA	National Solid Wastes Management Assoc. 4301 Connecticut Avenue NW, Ste. 300 Washington, DC 20008 800.424.2869 www.environmentalistseveryday.org/about-nswma-solid-waste-management
NSSGA	National Stone, Sand & Gravel Assoc. 1605 King Street Alexandria, VA 22314 703.525.8788 www.nssga.org
OSHA	U. S. Occupational Safety and Health Administration 200 Constitution Avenue NW Washington, DC 20210 800.321.6742 www.osha.gov
PCA	Portland Cement Assoc. 5420 Old Orchard Road Skokie, IL 60077 847.966.6200 www.cement.org
PCI	Precast/Prestressed Concrete Institute 200 W. Adams Street, #2100 Chicago, IL 60606 312.786.0300 www.pci.org PCI Midwest 952.806.9997 www.midwestprecast.com
PPI	Plastics Pipe Institute 105 Decker Court, Ste. 825 Irving TX, 75062 469.499.1044 www.plasticpipe.org
SSPC	Society for Protective Coatings 40 24th Street, 6th Floor Pittsburgh, PA 15222-4656 877.281.7772 www.sspc.org
TMS	The Masonry Society 105 South Sunset Street, Ste. Q Longmont, Colorado, 80501-6172 303.939.9700 www.masonrysociety.org
TPI	Turfgrass Producers International 2 East Main Street East Dundee, IL 60118 800.405.8873 www.turfgrasssod.org
UL	Underwriters' Laboratories, Inc. 2600 N.W. Lake Rd. Camas, WA 98607-8542 877.854.3577 www.ul.com
USACE	U.S. Army Corps of Engineers Publication Department 2803 52nd Avenue Hyattesville, MD 20781-1102 301.394.0081 www.usace.army.mil
USGBC	U.S. Green Building Council 2101 L Street, Ste. 500 Washington DC 20037 800.795.1747 www.usgbc.org
WQA	Water Quality Assoc. 4151 Naperville Road Lisle, IL 60532-3696 630.505.0160 www.wqa.org

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL FOR STREET AND UTILITY CONSTRUCTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements for quality control.
   2. Inspection and testing services to assist in determination of work with specifications and regulations.
   3. Requirements for Contractor cooperation.
   4. Responsibility for payment.
   5. Schedule of required tests.

B. Contractor Responsibility: These required services do not relieve Contractor of responsibility for compliance with any requirements.

C. Related Sections:
   1. Section 01 31 19 - Project Meetings

1.02 REFERENCES

A. ASTM:
   1. D3740 - Minimum Requirements for Agencies Engaged in Testing or Inspection of Soil and Rock
   2. E329 - Requirements for Agencies Engaged in Testing or Inspection of Materials Used in Construction

1.03 DEFINITIONS

A. Quality Control: Inspections, tests, related actions including reports, performed by independent agencies and governing authorities, as well as directed by Contractor.

1.04 SUBMITTALS

A. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards (NBS) during most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Specialist and responsible officer.

C. After each inspection and test, submit two written copies of report to Engineer and to Contractor no later than 3 working days after completion of inspection or test. Include:
   1. Date issued
   2. Project title and number
   3. Name of inspector
   4. Date and time of sampling or inspection
   5. Identification of product and Specifications Section
   6. Location in the Project
   7. Type of inspection or test
   8. Date of test
   9. Results of tests
   10. Conformance with Contract Documents

D. When requested by Engineer, provide interpretation of test results.

1.05 QUALITY ASSURANCE

A. Testing:
   1. Contractor shall employ and pay for services of an independent testing laboratory to perform specified inspection and testing.
   2. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

B. Laboratory Qualifications:
   1. Authorized to operate in state in which Project is located.
   2. Qualified in accordance with referenced ASTM standard to acceptance of Engineer.
   3. Staff: Maintain a full time registered Engineer Specialist on staff to review services.
   4. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.

C. Regulatory Requirements: Comply with requirements of ASTM D3740 and E329.

1.06 RESPONSIBILITIES

A. Contractor Responsibility:
   1. Quality control testing or inspections scheduled to be Contractor's responsibility.
   2. Code Compliance Testing: Quality control required by codes or ordinances, or by plan approval authority, made by legally constituted authority unless otherwise provided in Contract Documents.
   3. Verification of conformance of the Work within specified construction tolerances.
   4. Contractor's Convenience Testing.
   5. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring inspections and testing services.
   6. Provide incidental labor and facilities to:
      a. Provide access to Work to be tested.
      b. Obtain and handle samples at the Site or at source of products to be tested.
      c. Facilitate tests and inspections, and storage and curing of test samples.
   7. Coordinate with each independent agency the sequence of activities to accommodate required services with minimum delay in progress of Work and to avoid removing and replacing Work. Schedule times for quality control.

B. Owner Responsibility:
   1. Quality control not specifically indicated as Contractor's responsibility, or to be provided by another identified entity.

C. Laboratory Responsibility:
   1. Ascertain compliance of materials and mixes with requirements of Contract Documents.
   2. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or Products.
   3. Perform additional inspections and tests required by Engineer.
   4. Limits on Laboratory Authority:
      a. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
      b. Laboratory may not approve or accept any portion of the Work.
      c. Laboratory may not assume any duties of Contractor.
      d. Laboratory has no authority to stop the Work.

D. Retest Responsibility:
   1. Where results of quality control prove unsatisfactory and do not indicate compliance of related Work with requirements of the Contract Documents, retests are responsibility of Contractor, regardless of whether the original test was Contractor's responsibility.

2. Retest of Work revised or replaced by Contractor is Contractor's responsibility, where required tests were performed on original Work.
3. Retesting costs will be deducted from Contract amount by Change Order.
4. Provide 2 retests for each failed test.

E. Responsibility for Associated Services:
1. Cooperate with independent agencies performing required quality control.
2. Provide such auxiliary services as reasonably requested.
3. Notify testing agency sufficiently in advance of operations to permit assignment of personnel.
4. These auxiliary services include, but are not necessarily limited to:
   a. Cooperate with independent agencies performing required quality control.
   b. Provide such auxiliary services as reasonably requested.
   c. Notify testing agency sufficiently in advance of operations to permit assignment of personnel.
   d. Providing access to Work.
   e. Taking samples or assistance with taking samples.
   f. Delivery of samples to test laboratories.
   g. Security and protection of samples and test equipment at Site.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 ADJUSTING

A. Upon completion of quality control performed on Work, repair damaged Work, restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

3.02 PROTECTION

A. Protect Work exposed by or for quality control service activities, and protect repaired Work.

3.03 RESPONSIBILITY FOR ADJUSTING AND REPAIR

A. Contractor's responsibility, regardless of assignment of responsibility for quality control.

3.04 FIELD QUALITY CONTROL

A. Secure inspection and acceptance of subgrades and fill layers before subsequent construction is permitted.

B. As a minimum, the following tests will be required:
1. 20 each Densities of compacted trench backfill at random depths.
2. 2 each Densities of prepared roadway subgrade.
3. 2 each Densities of compacted aggregate base.
4. 1 each Gradation of aggregate base per source.
5. 6 each Concrete air and slump tests.
6. 6 each Concrete cylinder tests (3 cylinders per test).
7. Air and deflection testing of sanitary sewer.
8. Standard proctors as required.
9. Bacteriological testing of water main.
10. Hydrostatic testing of water main.

C. Provide laboratory testing in accordance with the following schedule:
   1. A minimum of 1 compaction test and associated laboratory Proctor Tests where directed by Engineer, for each 250 linear feet of trench backfilling.
   2. Immediately prior to construction of aggregate base, a minimum of 1 compaction test for each 200 linear feet of subgrade with corresponding Proctor Tests if the subgrade material varies, as determined by Engineer.
   3. A minimum of 1 compaction test for each 200 linear feet of aggregate and additional tests if the gradation varies, as determined by Engineer.
   4. A minimum of 2 tests on all other testing designated by Engineer.

Quality Control Testing Schedule

Specification Section	Product	Type of Test	Location		Responsibility	Frequency
			Source	Field		

END OF SECTION

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SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Temporary utility services and facilities including, but not limited to:
   1. Temporary water supply system.
   2. Construction water.
   3. Electric power service.
   4. Lighting.
   5. Telephone services and Internet Access.
   6. Heat.
   7. Sanitary facilities.

B. Related Requirements:
   1. Section 01 57 00 - Temporary Controls

1.02 PRICE AND PAYMENT PROCEDURES

A. Temporary Utilities are incidental to the installation of proposed applicable permanent utility improvements and include:
   1. Devices required by Section 01 57 00.
   2. Costs associated with required tests and inspections.
   3. Costs associated with bypass pumping related to maintaining sewer flows.

1.03 REFERENCES

A. ANSI - A10 Series Safety Requirements Standards

B. AWWA - C651 Disinfecting Water Mains

C. FM Global

D. NECA - NJG-6 - Temporary Job Utilities and Services

E. NEMA

F. NFPA:
   1. 70 - National Electrical Code
   2. 241 - Safeguarding Construction, Alteration, and Demolition Operations

G. Underwriter’s Laboratory (UL)

1.04 COORDINATION

A. Contractor shall coordinate tests and inspections required by state and local health departments and AWWA C651.

B. Utility interruptions required for tie-ins:
   1. Determine requirements, time constraints, etc. for installing temporary service to the Site, or to make connections to existing service.
      a. Shall be requested by Contractor in writing to Engineer.
      b. Shall not commence until Contractor has received written response from Engineer.

c. Engineer reserves the right to restrict the time and duration of interruption.

2. Arrange with utility companies for service interruption, where necessary, to make connections for temporary services.

1.05 QUALITY ASSURANCE

A. Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary utilities and related services.

B. Comply with requirements of NECA NJG-6, NFPA 241, ANSI A10, AWWA C651 Series Standards.

C. Comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electric service.

D. Where local laws and regulations conflict with the requirements of NEMA, NFPA, ANSI, AWWA, or NECA, comply with the most stringent requirements.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Provide all required materials and equipment for temporary utilities, services, and facilities.

B. Used materials and equipment may be used, if acceptable to Engineer.

C. Provide only materials and equipment that are suitable for intended use and comply with appropriate standards.

2.02 UTILITIES

A. Where local utility company provides only a portion of temporary utility, provide remainder with matching, compatible materials and equipment. Comply with utility company's recommendations and requirements.

PART 3 EXECUTION

3.01 INSTALLATION

A. Provide each temporary service and facility ready for use at each location when service or facility is first needed.

B. Locate temporary utilities where they will serve Project and result in minimum interference with performance of the Work.

C. Maintain, relocate, modify, and extend utilities as required during course of Work.

D. Use qualified tradepersons for installation of temporary utilities.

3.02 TEMPORARY WATER SUPPLY SYSTEM

A. During construction, maintain potable water service to existing users on a continuous basis until service from newly installed mains can be constructed, tested, and placed into service.

B. Contractor will pay for water used in the temporary water distribution system.

C. Connection to water supply shall be approved by Owner where usage can be metered and system sanitation can be maintained.

D. Verify location of and obtain temporary water supply at or near site and install piping, hoses, fittings, etc. required to distribute it as required by the Work.

E. Maintain temporary distribution system to avoid damage to existing or new permanent distribution system.

F. Damages to existing or new permanent distribution systems related to connection of temporary water supply system shall be corrected and paid for by the Contractor.

G. Damages to permanent plumbing related to temporary building connections shall be corrected and paid for by the Contractor.

H. Disinfect temporary service lines, headers, connections, and appurtenances in accordance with Minnesota Health Department and AWWA C651 rules and regulations.

I. Protect temporary water system from freezing.

3.03 CONSTRUCTION WATER

A. Contractor will pay for water used for construction purposes.

B. Secure water necessary for construction and testing and pay service connection charges.

C. Install water service and distribution piping of sizes and pressures adequate for construction purposes.

D. Where available supply of potable water is inadequate, provide non-potable water for purposes other than drinking and washing.

E. Where non-potable water is used, provide warning signs on the discharge end of each length of hose and at the shut-off nozzles.

F. Where shut-off nozzles are used at water hose discharge, provide heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system.

G. Trades needing a larger source of water are responsible for the source and distribution.

H. Exercise control over usage to conserve water.

I. Sterilize temporary water piping for potable water prior to use.

J. Maintain distribution system to avoid damage to existing or new construction.

K. Avoid damage to permanent plumbing at source of temporary water.

3.04 ELECTRIC POWER SERVICE

A. Provide a weatherproof, grounded temporary electric power service and distribution system of sufficient size, capacity, and power characteristics to accommodate performance of Work.

B. Contractor shall pay for electricity used for construction purposes.
   1. Electrical service shall be provided and installed by Contractor.
   2. Any Trade requiring power with different characteristics than provided shall arrange and pay for access to such power.

C. When permanent power and lighting systems are in operation, they may be used for construction purposes.

D. Whenever an overhead floor or roof deck has been installed, install temporary lighting adequate to provide sufficient illumination for safe work and traffic conditions in area of Work.

E. Install service and grounding in compliance with NFPA 70. Include necessary meters, transformers, overload protected disconnect, and main distribution switch gear.

F. Connect temporary service to local electric power company main as directed by electric company officials.

G. Install temporary service with an automatic ground-fault interrupter feature, activated from circuits of the system.

H. Install circuits of adequate size and proper characteristics for each use.
   1. Run wiring overhead and rise vertically where wiring will be least exposed to damage from construction operations.
   2. Install rigid steel conduit or equivalent raceways for wiring that must be exposed on grade, floors, decks, or other areas of possible damage or abuse.

I. Provide identification/warning signs at power outlets that are other than 110 to 120 volt power.

J. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110 to 120 volt plugs into higher voltage outlets.

K. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for plug-in connection of power tools and equipment.

L. Use only grounded extension cords.
   1. Use “hard-service” cords where exposed to abrasion and traffic.
   2. Use single lengths or waterproof connectors to connect separate lengths of electric cords.

3.05 LIGHTING

A. Install local switching of temporary lighting, spaced to allow lighting to be turned off in patterns to conserve energy and retain light suitable for work-in-progress, access traffic, security check, and Project lock-up.

B. Provide not less than one 200-watt incandescent lamp per 1,000 square feet of floor area, uniformly distributed, for general construction lighting, or equivalent illumination of a similar nature.
   1. In corridors and similar traffic areas, provide not less than one 100-watt incandescent lamp every 50 feet.
   2. In stairways and at ladder runs, locate not less than one 100-watt incandescent lamp for illuminating each landing and flight.

C. Install and operate temporary lighting that will fulfill security and protection requirements, without the necessity of operating entire temporary lighting system.

D. Provide general service incandescent lamps of wattage required for adequate illumination.

E. Protect lamps with guard cages or tempered glass enclosures.

3.06 TELEPHONE SERVICES AND INTERNET ACCESS

A. Contractor shall maintain and pay for telephone (and fax machine) on Site for use of Contractors, Engineers, Architect, and others who have legitimate need for telephone communication in pursuit of Work of this Project.

B. Arrange for local telephone company to install temporary service. Install telephone on a separate line for each temporary office and first aid station.

C. At each telephone location post a list of important telephone numbers, including:
   1. Local police and fire departments.
   2. Doctor.
   3. Ambulance service.
   4. Contractor's offices.
   5. Engineer's offices.
   6. Subcontractor's offices.

D. Long distance calls are to be by credit card.

3.07 HEAT

A. Provide temporary heat for performance of the Work, curing or drying of recently installed work, or protection of work-in-place from adverse effects of elements.

B. Provide temporary heating units, tested and labeled by UL, FM, or other recognized trade association related to the fuel being consumed.

C. Select units known to be safe and without deleterious effect upon work-in-place or being installed.
   1. Except where conditions make it necessary to use another system, and where use of the permanent heating system is available and authorized by Engineer, provide properly vented self-contained liquid propane gas or fuel oil heaters with individual space thermostatic controls for temporary heat.
   2. Do not use open burning or salamander type heating units unless authorized by Engineer.

D. Coordinate ventilation requirements to produce indicated ambient condition required, to prevent accumulations of dust, fumes, vapors or gases, and to minimize consumption of fuel or energy.

E. Coordinate use of existing facilities with Owner.

F. Temporary heating and ventilation required by Work under Contract shall be provided and paid by Contractor requiring same.

G. Extend and supplement with temporary units as required to maintain specified conditions for construction operations, and to protect materials and finishes from damage due to temperature or humidity.

3.08 SANITARY FACILITIES

A. Provided by Contractor for workers engaged in this Work. (Construction personnel may not use sanitary facilities within existing building.)

3.09 OPERATION, TERMINATION, AND REMOVAL

A. Enforce strict discipline in use of temporary services and facilities at the Site.
   1. Limit availability of temporary services and facilities to essential and intended uses to minimize waste and abuse.
   2. Do not permit temporary installations to be abused or endangered.

3. Do not allow hazardous, dangerous, or unsanitary conditions to develop or persist on Site.

B. Operate temporary services and facilities in a safe and efficient manner.
   1. Do not overload temporary services or facilities.
   2. Protect from damage by freezing temperatures and similar elements.
   3. Prevent water-filled piping from freezing by use of ground covers, insulation, draining, or by temporary heating.
   4. Maintain distinct markers for underground lines.
   5. Protect from damage during excavation operations.

C. Unless Engineer requests that it be maintained for a longer period of time, remove each temporary service and facility promptly when no longer needed, when it has been replaced by the authorized use of a permanent facility, or no later than Substantial Completion.

D. Complete or restore permanent Work which may have been delayed because of interference with temporary service or facility.

E. Repair damaged Work, clean exposed surfaces, and replace Work which cannot be satisfactorily repaired.

F. Materials and facilities that constitute temporary services and facilities are, and will remain, the property of Contractor.

G. At Substantial Completion, clean and renovate permanent services and facilities that have been used to provide temporary services and facilities during construction, including but not limited to:
   1. Replace air filters and clean inside of ductwork and housings.
   2. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
   3. Replace lighting system lamps that are burned out or noticeably dimmed.

END OF SECTION

SECTION 01 52 19

TEMPORARY SANITARY FACILITIES

PART 1 GENERAL

1.01 SUMMARY

A. Provide temporary closet or privy.

B. Maintain throughout Project duration.

C. Type and location subject to Engineer's approval.

D. Remove upon completion of Project.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 55 10

ACCESS ROADS AND PARKING AREAS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Access roads.
   2. Parking.

B. Related Sections:
   1. Section 01 11 00 - Summary of Work
   2. Section 01 31 13 - Coordination
   3. Section 01 51 00 - Temporary Utilities
   4. Section 01 57 00 - Temporary Controls

PART 2 PRODUCTS

2.01 MATERIALS

A. Temporary Construction - Contractor’s option.

B. Earthwork, base, paving and topping that will become permanent construction - as specified.

PART 3 EXECUTION

3.01 ACCESS ROADS

A. Construct and maintain temporary access roads from public thoroughfares to serve construction area, of a width and load bearing capacity to provide unimpeded traffic for construction purposes.

B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.

C. Extend and relocate as Work progress requires.

D. Provide detours as necessary for unimpeded traffic flow.

E. Locate as indicated on Drawings or approved by Engineer.

F. Provide unimpeded access for emergency vehicles.

G. Maintain 20-foot width driveways with turning space between and around combustible materials.

H. Provide means of removing mud from vehicle wheels before entering streets.

3.02 PARKING

A. Arrange for or provide temporary parking areas to accommodate use of construction personnel.

B. Designated existing on-site streets and driveways may be used for construction traffic.
   1. Tracked vehicles not allowed.
   2. Do not allow heavy vehicles or construction equipment in parking areas.

C. When Site space is not adequate, provide additional off-site parking.

D. Locate as indicated or approved by Engineer.

3.03 PERMANENT PAVEMENTS AND PARKING FACILITIES

A. Prior to Substantial Completion, base for permanent roads and parking areas may be used for construction traffic.

B. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

C. Permanent parking structures may not be used by construction personnel without permission of Owner.

3.04 MAINTENANCE

A. Maintain traffic and parking areas in a sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

B. Maintain existing and permanent paved areas used for construction.
   1. Promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

3.05 REMOVAL, REPAIR

A. Remove temporary materials and construction when permanent paving is usable or at Substantial Completion.

B. Repair facilities damaged by use to original or specified condition.

END OF SECTION

SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Drainage control.
   2. Dust control.
   3. Erosion and sediment control.
   4. Noise control.
   5. Pollution control.
   6. Barriers.
   7. Protection:
      a. Shoring and bracing.
      b. Enclosures.
      c. Installed work.
      d. Security.
      e. Fire protection.
   8. Site cleaning.

B. Related Sections:
   1. Section 01 11 00 - Summary of Work
   2. Section 01 55 10 - Access Roads and Parking Areas
   3. Section 01 57 19 - Air, Land, and Water Pollution
   4. Section 02 41 19 - Selective Demolition
   5. Section 31 11 00 - Clearing and Grubbing
   6. Section 31 23 10 - Excavation and Embankment
   7. Section 31 23 19 - Dewatering
   8. Section 31 25 10 - Stormwater Management
   9. Section 31 40 00 - Shoring, Underpinning, and Bracing
   10. Section 32 92 12 - Controlling Erosion and Establishing Vegetation

1.02 QUALITY ASSURANCE

A. Regulatory Requirements: As a minimum, comply with local, state, and federal requirements.

1.03 DRAINAGE CONTROL

A. Reference: See Section 31 23 10.

B. Maintain excavations free of water.
   1. Grade Site to drain.
   2. Provide, operate, and maintain pumping equipment.
   3. Protect Site from puddling or running water.

1.04 DUST CONTROL

A. Reference: See Section 31 25 10.

B. Execute Work by methods to minimize raising dust from construction operations.

C. Provide positive means to prevent airborne dust from dispersing into atmosphere.

1.05 EROSION AND SEDIMENT CONTROL

A. Reference: See Section 31 25 10.

B. Prevent erosion and sedimentation:
   1. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas.
   2. Minimize amount of bare soil exposed at one time.
   3. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   4. Use selective placement at construction fill and waste areas to avoid erosive surface silts or clays.
   5. Periodically inspect earthwork to detect evidence of erosion and sedimentation.
   6. Promptly apply corrective measures.

1.06 NOISE CONTROL

A. Comply with local noise ordinances.

B. Avoid use of tools or equipment that produce harmful noise.

C. Restrict use of noise-making tools and equipment to hours of use that will minimize noise complaints from persons or businesses near Site.

D. Provide noise suppression barriers or equipment used to perform the Work.

1.07 POLLUTION CONTROL

A. Reference: See Section 01 57 19.

B. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.08 BARRIERS

A. Reference: See Sections 02 41 13, and 32 92 12.

B. Provide barriers as required to:
   1. Prevent public entry to construction areas.
   2. Protect existing facilities, designated plantings and trees, and adjacent properties from damage from construction activities.

C. Construction:
   1. Type: Contractor’s option.
   2. Gates: Equip with vehicular and pedestrian gates with locks.

D. Access: Provide barricades and covered walkways as required for public rights-of-way, for public access to, and emergency egress from existing buildings.

1.09 PROTECTION

A. Shoring and Bracing:
   1. Reference: See Section 31 40 00.
   2. Provide temporary shoring, bracing, and protection as required for installation and protection of Work.
   3. Ensure adequacy of such items.
   4. Repair or replace damaged Work occasioned by inadequate temporary supports.
   5. Leave temporary shoring and bracing in place until permanent construction is complete to point where installed Work is properly supported.

B. Enclosures:
   1. Exterior:
      a. Provide temporary weather-tight closures of openings in exterior surfaces to:
         1) Provide acceptable working conditions and protection for materials.
         2) To allow for temporary heating.
   2. Interior:
      a. Provide temporary partitions and ceilings as required to:
         1) Separate Work areas from Owner-occupied areas.
         2) Prevent penetration of dust and moisture into Owner-occupied areas.
         3) Prevent damage to existing areas and equipment.
      b. Construction:
         1) Framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces.

C. Installed Work:
   1. Provide temporary protection for installed products; control traffic in immediate area to minimize damage.
   2. Provide protective coverings at walls, projections, jambs sills, and soffits of openings; protect finished floors and stairs from traffic, movement of heavy objects.
   3. Prohibit traffic and storage on waterproofed and roofed surfaces or on lawn and landscaped areas.

D. Security:
   1. Provide security program and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft.
   2. Provide doors in enclosures with self-closing hardware and locks.
   3. Provide temporary locks for doors installed in Work.

E. Fire Protection:
   1. Fire extinguishers shall be non-freeze type such as A-B-C rated dry chemical of not less than 10-pound capacity.
   2. Provide and maintain in working order during entire construction period, a minimum of 1 fire extinguisher in construction area and 1 in field office.
   3. Contractors who maintain enclosed sheds on the premises shall provide and maintain, in an accessible location, a minimum of 1 non-freezing type extinguisher in each shed.
   4. Each Contractor using open flame (i.e., welding or soldering) shall have a 10-pound minimum extinguisher within closest practical distance.

1.10 SITE CLEANING

A. Keep Site neat, clean, free of debris.

B. Prevent papers, cardboard or other debris from blowing around Site or onto adjacent property.

C. Contractor shall provide and pay for dumpsters for collection of trash.

D. Control accumulation of waste materials and rubbish. Collect and dispose of all trash from the Site at regular intervals.

E. Separate and recycle applicable materials.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Administrative and procedural requirements governing:
      a. Products.
      b. Delivery, storage and handling.
   2. The following is not included in this section: Product Substitution Procedures (Section 01 25 13).

B. Alternates: Refer to Section 01 23 00.

1.02 PRODUCT DEFINITIONS

A. Products:
   1. Unless indicated otherwise, the term “products” represents new material, machinery, components, equipment, fixtures, and systems forming the Work.
   2. Does not include machinery and equipment used for preparation, fabrication, conveying, or erection of the Work.

B. Named Products: Items identified by manufacturer’s product name, including make or model designation, indicated in the manufacturer’s published product literature, that is current as of the date of the Contract Documents.

C. Materials: Products that are substantially shaped, cut, worked, mixed, finished, refined, or otherwise fabricated, processed, or installed as part of the Work.

D. Equipment: A product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.03 PRODUCT QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

B. Limited Quantities:
   1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete Project requirements in a timely manner, consult with Engineer for a determination of the most important product qualities before proceeding.
   2. Qualities may include attributes relating to:
      a. Visual appearance.
      b. Strength.
      c. Durability.
      d. Compatibility.
   3. When a determination has been made, select products from sources that possess these qualities to the fullest extent possible.

1.04 PRODUCT REQUIREMENTS

A. Minimum Requirements: Comply with specifications and referenced standards.

B. Product Provision: Provide products complete with all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and for the intended use and effect.

C. Components: Items required to be supplied in quantity within a specification section shall be the same and shall be interchangeable.

D. Compatibility of Options: When Contractor is given the option of selecting between 2 or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

E. Existing Products: Do not use materials and equipment removed from existing premises, except as specifically required or permitted by Contract Documents.

F. Nameplates:
   1. Except for required labels and operating data, do not attach or imprint manufacturer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.
   2. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on an accessible surface that is not conspicuous.
   3. Equipment Nameplates:
      a. Provide permanent nameplate on each item of service-connected or power-operated equipment.
      b. Locate on an easily accessible surface that is inconspicuous in occupied spaces.
      c. Provide the following information and other essential operating data on nameplate:
         1) Name of product and manufacturer.
         2) Model and serial number.
         3) Capacity.
         4) Speed.
         5) Ratings.

1.05 DELIVERY, STORAGE, AND HANDLING

A. General Requirements:
   1. Deliver, store and handle products in accordance with the manufacturer's recommendations.
   2. Schedule and coordinate the delivery of materials to ensure personnel and equipment will be available at the Site.
   3. Sequence deliveries to avoid delays but minimize on-site storage.
   4. Prevent damage, deterioration, soiling, and loss, including theft.
   5. Repair or replace damaged materials at no additional cost to Owner.

B. Packing and Shipping: Deliver products to the jobsite in manufacturer's sealed containers bearing the manufacturer's name and brand, and appropriate UL labels for fire hazard and fire resistance classification.

C. Acceptance at Site:
   1. Promptly inspect shipments to ensure that:
      a. Products comply with requirements.
      b. Quantities are correct.
      c. Products are undamaged.
   2. Replace damaged or defective materials.

D. Storage and Protection:
   1. Store with manufacturer's seals and labels intact and legible.
   2. Store sensitive products in weather-tight, climate-controlled enclosures.
   3. Cover products subject to deterioration with impervious sheet covering, providing ventilation to avoid condensation.
   4. For exterior storage of fabricated products, place on sloped supports, above ground.
   5. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
   6. Provide off-site storage and protection when Site does not permit on-site storage or protection.
   7. Protect stored materials from damage by adjacent work, falling debris, or equipment.

8. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under required conditions.

1.06 PRODUCT SELECTION

A. Product selection is governed by the Contract Documents, and governing regulations by previous project experience.

B. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.

C. Semi-Proprietary Specification Requirements:
   1. Where 2 or more products or manufacturers are named, provide 1 of the products indicated. No substitutions will be permitted.
   2. Where products or manufacturers are specified by name, accompanied by the term “or equal,” or “or approved equal”, comply with Section 01 25 13 or other Contract Document provisions concerning “substitutions” to obtain approval for use of an unnamed product.
   3. Contractors and suppliers will be expected to provide the specified product unless prior approval is received from Engineer’s office in sufficient time to notify Bidders through addendum.

D. Descriptive Specification Requirements: Where specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

E. Performance Specification Requirements:
   1. Where specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated.
   2. Manufacturer’s recommendations may be contained in published product literature, or by the manufacturer’s certification of performance.
   3. General overall performance of a product is implied where the product is specified for a specific application.

F. Compliance with Standards, Codes and Regulations: Where the specifications only require compliance with an imposed code, standard or regulation, select a product that complies with applicable standards, codes and regulations.

G. Visual Matching:
   1. Where specifications require matching an established sample, Engineer’s decision will be final on whether a proposed product matches satisfactorily.
   2. Where no product available within the specified category matches satisfactorily but complies with other specified requirements, comply with provisions of the Contract Documents concerning “substitutions” for selection of a matching product, or for noncompliance with specified requirements.

H. Visual Selection: Where specified product requirements include the phrase *“…as selected from manufacturer’s standard colors, patterns, textures…”* or a similar phrase, select a product and manufacturer that comply with other specified requirements. Engineer will select the color, pattern and texture from the product line selected.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CLEANING AND PROTECTION

A. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01 71 13

MOBILIZATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes preparatory Work for construction operations.

B. Related Sections:
   1. Section 01 51 00 - Temporary Utilities
   2. Section 01 52 13 - Field Office
   3. Section 01 52 19 - Temporary Sanitary Facilities

C. Basis of Payment:
   1. Payment for mobilization shall be at the contract unit price as listed on the Bid Form. Additional mobilizations that may be required for specific work items or to conform to the provisions of the Contract Times shall be included in this item.
   2. Payment will be made as follows:

Cost Percent of Contract Completed	Percent of Mobilization Item Paid
(5)	50
(15)	75
(25)	(100)
(95)	(Final) 100

1.02 PERFORMANCE REQUIREMENTS

A. Movement of personnel, equipment, supplies, and incidentals to the Site.

B. Establishment of Contractor offices and facilities.

C. Installation of temporary sanitary facilities.

D. Commencement of Work.

1.03 SUBMITTALS

A. Required Submittals Prior to Mobilization:
   1. Approved Project Schedule.
   2. Shop Drawing Schedule.
   3. List of Proposed Subcontractors.
   4. List of Proposed Suppliers.
   5. Material and Procedural Submittals as Required.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

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SECTION 01 71 23

FIELD ENGINEERING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Field engineering provided by Contractor.
   2. Site layout.
   3. Staking.
   4. Quantity surveys and computations.

B. Related Sections:
   1. Section 01 11 00 - Summary of Work

C. Method of Measurement: All field engineering will be considered incidental to the Work.

1.02 SUBMITTALS

A. Submit name and qualifications of surveyor that will perform Work.

B. Submit log or other records of all survey Work completed.

C. Submit copies of measurement and calculations for quantity surveys.

1.03 QUALITY ASSURANCE

A. All Work in this Section shall be under the direction of a surveyor registered in the State in which the Project is located.

1.04 SITE CONDITIONS

A. Benchmarks are identified on the Drawings.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify locations of benchmarks prior to start of Work.

B. Relate information given on the Drawings to existing Site conditions.

C. Promptly advise Engineer of any discrepancies.

3.02 PREPARATION

A. Protect and preserve all benchmarks and control points.

B. Advise Engineer of the required relocation of any reference points due to grade changes or other reasons.

C. Replace dislocated reference points based on original survey control.

3.03 SURVEY REQUIREMENTS

A. Staking:
   1. Establish locations, layouts, lines and elevations by instrumentation and similar methods for the Work:
   2. Tolerances:
      a. Horizontal Distances: 1/7500
      b. Horizontal Angles: 0 degrees - 00 minutes - 00 feet - 01 inches
      c. Elevation:

      $0.050 ft. x \sqrt{length\ (miles)}$
   3. Maintain log or record book indicating all Work completed for review and submittal.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Procedures for administration of cutting and patching of existing structures and buildings.
      a. Submittals.
      b. Quality assurance.
   2. Materials.
   3. Examination: Site conditions.
   4. Preparation:
      a. Temporary Support.
      b. Protection.
   5. Construction:
      a. Special techniques.
      b. Interface with others.
   6. Cleaning.

B. Related Sections:
   1. Section 01 33 00 - Submittal Procedures
   2. Individual Specification Sections inferred by Cutting and Patching required.

1.02 SUBMITTALS

A. Refer to Section 01 33 00.

B. Schedules:
   1. Initial Schedule:
      a. 5 days prior to proposed start of work, submit to Engineer 4 copies of schedule of work involving cutting or patching with bypass plan included.
   2. Utility Schedule:
      a. Include with initial schedule the following utility information:
         1) Which utilities will be disturbed or affected, including those that will be relocated or temporarily out-of-service.
         2) Length of time service will disrupted.
   3. Revised Schedules: Submit 6 copies of updated schedules not less than once per week.

C. Structural Elements: Where cutting and patching involves addition to reinforcement to structural elements, submit 6 copies of Shop Drawings including all details and structural calculations showing how reinforcement is integrated with the original structure.

1.03 QUALITY ASSURANCE

A. Qualifications:
   1. Personnel: Employ skilled workers.

B. Regulatory Requirements:
   1. Structural Work Limitations:
      a. Do not cut and patch structural elements in manner to reduce load-carrying capacity or load-deflection ratio. Obtain acceptance of cutting and patching proposal before cutting and patching following structural elements:
         1) Foundation construction.

2) Bearing walls.
3) Structural concrete.
4) Structural steel.
5) Lintels.
6) Structural decking.
7) Miscellaneous structural metals.
8) Equipment supports.

b. Operational and Safety Limitations:
1) Do not cut and patch operating elements or safety related components in manner to reduce their capacity to perform as intended, or result in increased maintenance or decreased operational life and safety. Obtain acceptance of cutting and patching proposal before cutting operating elements or safety related systems.
2) Visual Requirements:
a) Do not cut and patch construction exposed on exterior or in occupied spaces in manner to, in Engineer's opinion, reduce structure's/building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work cut and patched in visually unsatisfactory manner. If possible, retain project contractors to patch following categories of exposed work, otherwise engage other recognized experienced, specialized firms including, but not limited to:
(1) Special concrete finishes.
(2) Masonry.
(3) Stucco and plaster.
(4) Acoustical ceilings.
(5) Ceramic tile.
(6) Flooring.
(7) Roofing.

C. Preinstallation Meetings: Before proceeding, meet at Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures, resolve potential conflicts before proceeding.

PART 2 PRODUCTS

2.01 MATERIALS

A. Identical to existing materials. If not available or not usable where exposed surfaces are involved, match existing adjacent surfaces to fullest extent possible with regard to visual effect. Use materials whose installed performance equals or surpasses that of existing materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Conditions: Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. If unsafe or unsatisfactory conditions are encountered, correct before proceeding.

3.02 PREPARATION

A. Temporary Support: Provide temporary support of work to be cut.

B. Protection:
1. Prevent damage to existing construction. Protect portions of project that might be exposed during work from adverse weather conditions.
2. Avoid interference with use of or free passage to adjoining areas.
3. Take necessary precautions to avoid cutting existing pipe, conduit, ductwork.

3.03 CONSTRUCTION

A. Special Techniques:
   1. Cutting:
      a. General:
         1) Use methods least likely to damage elements to be retained or adjoining construction. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
         2) Equipment:
            a) Hand or small power tools designed for sawing or grinding. For concrete and masonry, use cutting machine such as carborundum saw or diamond core drill.
         3) Existing finished surfaces: Avoid marring; cut or drill from exposed or finished side into concealed surfaces.
         4) Excavating and Backfilling: Comply with requirements of applicable Sections of Division 31.
         5) Utility services:
            a) Where services are shown or required to be removed, relocated or abandoned, bypass before cutting.
            b) Cut off pipe or conduit in walls or partitions to be removed.
            c) Cap, valve or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture, other foreign matter after by-passing and cutting.
      b. Patching:
         1) Seams: Durable, invisible as possible.
         2) Exposed finishes:
            a) Restore, extend finish restoration into retained adjoining construction in manner to eliminate evidence of patching and refinishing.
            b) Where finished areas extend into others, patch and repair floor and wall surfaces in new space to provide even surface of uniform color and appearance. Remove existing floor and all coverings, replace with new materials, if necessary to achieve uniform color and appearance.
            c) Where patching occurs in smooth painted surface, extend final paint coat over entire unbroken area containing patch, after patched area has received primer and second coat.
            d) Patch, repair, rehang existing ceilings as necessary to provide even plane surface of uniform appearance.

B. Interface with Others: Cut to provide for installation of other components or performance of the reconstruction activities and subsequent fitting and patching required to restore surfaces to original condition.

3.04 CLEANING

A. Thoroughly clean areas, spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty, similar items. Thoroughly clean piping, conduit, similar features before painting or other finishing is applied. Restore damaged pipe covering to original condition.

END OF SECTION

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SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 GENERAL

1.01 SUMMARY

A. Administrative and procedural requirements for contract closeout, including:
   1. Submittals.
   2. Inspection procedures.
   3. Warranties.
   4. Record document submittals.
   5. Final cleaning.

B. Related Sections:
   1. Section 01 78 23 - Operation and Maintenance Data
   2. Specific requirements for individual units of work are included in appropriate technical sections

1.02 SUBSTANTIAL COMPLETION

A. Complete the following before requesting Engineer's inspection for certification of Substantial Completion for each phase of work. List items that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Obtain, submit releases enabling Owner unrestricted use of the Work and access to services and utilities.
   3. Regulatory requirements:
      a. Where required, obtain occupancy permits, operating certificates, similar releases.
      b. Obtain elevator inspection from State Inspector.
   4. Bonding and insurance:
      a. Consent of Surety to Reduction In or Partial Release of Retainage (if Performance Bond provided).
      b. Advise Owner of pending insurance change-over-requirements (if Builder's Risk Insurance is provided by Contractor).

B. Inspection Procedures:
   1. When prerequisites are complete, submit request in writing to Engineer stating that all requirements are satisfied, and requesting inspection.
   2. Upon receipt of Contractor's request for inspection, Engineer will either proceed with inspection or advise Contractor of unfilled prerequisites.
   3. Following initial inspection, Engineer will either prepare Certificate of Substantial Completion, or advise Contractor of work which must be performed before certificate will be issued. Engineer will repeat inspection when requested and when assured that work has been substantially completed.
   4. Results of completed inspection will form the basis of requirements for Final Acceptance.

1.03 FINAL ACCEPTANCE

A. Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Submittals:
      a. Lien Waivers (from all subcontractors and suppliers).
      b. Certificate of Substantial Completion 4 copies.
      c. Contractor's Affidavit of Payment of Debts and Claims
      d. Contractor's Affidavit of Release of Liens
      e. Consent of Surety (if Performance Bond provided).
         1) To Partial Release of Retainage
         2) To Final Payment

f. Assurance that unsettled claims will be settled.
g. Proof that fees and similar obligations have been paid.
h. Evidence of final, continuing insurance coverage complying with insurance requirements.
i. Certified copy of Engineer's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been endorsed and dated by Engineer.

2. Warranties: Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, similar documents on, but not limited to, the following items:
   a. Parshall Flume and associated transducer Maintenance manuals: See Section 01 78 23
      1) Organize operating, maintenance data into suitable sets of manageable size.
      2) Bind into individual heavy-duty 2-inch, 3-ring vinyl-covered binders with pocket folders, each set of data, marked with appropriate identification on both front and spine of each binder.
      3) Include:
         a) Emergency instructions.
         b) Spare parts listing.
         c) Copies of warranties.
         d) Wiring diagrams.
         e) Recommended "turnaround" cycles.
         f) Inspection procedures.
         g) Shop Drawings and Product Data.
3. Miscellaneous Record Submittals:
   a. Refer to other sections of specifications for requirements of miscellaneous record keeping and submittals in connection with actual performance of work.
   b. Complete miscellaneous records, place in good order, properly identified and bound or filed, ready for continued use and reference.
4. Records:
   a. Startup performance reports.

B. Record Drawings: Submit to Engineer a set of record prints marked to show "as-built" conditions for work of contract.

C. Adjusting:
1. Repair and restore marred exposed finishes.
2. Touch up of painting of marred surfaces.
3. Complete final cleaning requirements.

D. Final Payment Request:
1. Include certificates of insurance for products and completed operations where required.
2. Updated final statement, accounting for final additional changes to Contract Sum.
3. Final liquidated damages settlement statement, acceptable to Owner.

E. Re-inspection Procedure:
1. Engineer will re-inspect work upon receipt of notice that work, including punch list items resulting from earlier inspections, has been completed, except for items whose completion has been delayed because of circumstances that are acceptable to Engineer.
2. Engineer will either prepare a certificate of final acceptance, or will advise Contractor of work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
3. If necessary, re-inspection procedure will be repeated.

1.04 TRANSFER OF SITE TO OWNER

A. Deliver tools, spare parts, extra materials and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.

B. Change door locks to Owner's access. Advise Owner's personnel of changeover in security provisions.

C. Advise Owner of changeover in heat and other utilities.

D. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

1.05 OPERATING AND MAINTENANCE INSTRUCTIONS/DEMONSTRATIONS

A. Arrange for each installer of operating equipment and other work requiring regular or continuing maintenance, to meet at Site with Owner's personnel to provide necessary basic instruction in proper operation and maintenance of entire work. Where installers are not experienced in required procedures, include instruction by manufacturer's representatives.

B. Provide detailed review of following items:
1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Fuels.
7. Identification systems.
8. Control sequences.
9. Hazards.
10. Cleaning materials and procedures.
11. Warranties, bonds, maintenance agreements similar continuing commitments.

C. As part of this instruction for operating equipment, demonstrate following procedures:
1. Start-up.
2. Shut-down.
3. Emergency operations.
4. Noise and vibration adjustments.
5. Safety procedures.
6. Economy and efficiency adjustments.
7. Effective energy utilization.

D. Provide a video tape of above procedures.

PART 2 PRODUCTS

2.01 CLEANING AGENTS

A. Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned.

B. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 EXECUTION

3.01 FINAL CLEANING

A. Provide final cleaning, following manufacturer's written instructions.

B. Conduct cleaning and waste-removal operations to comply with local laws and ordinances, and federal and local environmental and antipollution regulations.

C. Employ experienced workers or professional cleaners for final cleaning.

D. Comply with safety standards for cleaning.
1. Do not burn waste materials.

2. Do not bury debris or excess materials on Owner's property.
3. Do not discharge volatile, harmful, or dangerous materials into drainage systems.
4. Remove waste materials from Site and dispose of lawfully.

E. Clean Site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

F. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program.
1. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
2. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
3. Remove tools, construction equipment, machinery, and surplus material from Site.
4. Remove snow and ice to provide safe access to building.
5. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
6. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
7. Sweep concrete floors broom clean in unoccupied spaces.
8. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
9. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
10. Remove labels that are not permanent.
11. Wipe surfaces of mechanical and electrical equipment**,** elevator equipment**,** and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
12. Replace parts subject to unusual operating conditions.
13. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
14. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
15. Clean ducts, blowers, and coils if units were operated without filters during construction.
16. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.01 SUMMARY

A. Section includes administrative and procedural requirements for operation and maintenance data:
   1. Submittals.

B. Related Sections:
   1. Section 01 33 00 - Submittal Procedures
   2. Section 01 77 00 - Closeout Procedures
   3. Individual Technical Sections

1.02 SUBMITTALS

A. Refer to Section 01 33 00.

B. Form and Format:
   1. Organize operation, maintenance data for equipment prepared in the form of an instruction manual of manageable size.
   2. Bind into individual heavy-duty, 2-inch, 3-ring vinyl-covered binders with pocket folders, each set of data, marked with appropriate identification on both front and spine of each binder.
   3. Text shall be manufacturer's printed data or typewritten data on 20-pound paper; page size 8-1/2-inch by 11-inch. Computer generated data shall be by letter quality printers or laser printers.
   4. Clearly mark each sheet of product data to specify products, component parts, and data applicable to installation; delete inapplicable information.
   5. Drawings and photographs shall have reinforced, punched binder tabs. Bind in with text, folding larger drawings to size of text pages.

C. Submittal Schedule:
   1. Submit 2 individually bound copies of preliminary draft of contents no later than 45 calendar days after approval of Shop Drawings.
   2. Submit 6 individually bound copies of completed data in final form not later than 7 calendar days prior to first instruction of Owner personnel.
   3. If instruction of Owner personnel is not required, submit completed data no later than 14 calendar days prior to final inspection.
   4. Submit 6 copies of additional requested data no later than 21 calendar days following instruction of Owner personnel.

1.03 QUALITY ASSURANCE

A. Preparation of Project-specific data shall be by personnel trained and experienced in maintenance and operation of described products, equipment, systems, materials, or finishes.

B. Photocopies: Drawings shall be legible and suitable for photocopying. All materials shall be reproducible. On material that contains data on several types/sizes/models of equipment, the specific type/size/model provided shall be clearly highlighted.

1.04 CONTENTS

A. Table of Contents: Include with each volume, with each product or system description identified.

B. Directory:
   1. List names, addresses and telephone numbers of:
      a. Engineer.
      b. Contractor.
      c. Manufacturers and suppliers, including local source of supplies and replacement parts.

C. Data to be Included:
   1. Assembly, installation, alignment, inspection procedures.
   2. Critical tolerances.
   3. Startup procedures.
   4. Complete parts listing.
   5. Spare parts listing.
   6. Emergency instructions.
   7. Fabrication drawings.
   8. Copies of warranties.
   9. Recommended “turn-around” cycles.
   10. Inspection procedures.
   11. Shop Drawings and Product Data.
   12. Fixture lamping schedule.

D. Data for Equipment and Systems:
   1. Provide manufacturer’s printed operation and maintenance instructions.
   2. Provide sequence of operation and as-installed control diagrams by controls manufacturer.
   3. Provide composite wiring diagrams for supervisory control systems. Include wiring diagrams showing connections between equipment wiring, electrical wiring, and supervisory control system wiring.
   4. For equipment, include description of unit and component parts. Give function, normal operation characteristics and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replacement parts.
   5. For panelboard circuit directories, indicate electrical service characteristics, controls, and communications. Include as-installed color coded wiring diagrams.
   6. Provide manufacturer’s printed operation and maintenance instructions, including start-up, break-in, and normal operation instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operation instructions.
   7. For maintenance and preventative maintenance procedures include routine procedures; guide for “trouble-shooting;” and alignment, adjusting, balancing, and checking instructions.
   8. Provide servicing and lubrication schedule, and list of lubricants required.
   9. Provide manufacturer’s parts list, illustrations, assembly drawings, and diagrams required for maintenance. Include recommended items and quantities to be stocked as spare parts.

E. Data for Materials and Finishes:
   1. For building products, applied materials, and finishes, include manufacturer’s product data with catalog number, size, composition, and color and texture designations.
   2. List instructions for care, maintenance, and preventative maintenance; include manufacturer’s recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
   3. For moisture-protection and weather exposed products, include manufacturer’s product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 02 41 33

REMOVING PAVEMENT AND MISCELLANEOUS STRUCTURES

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Removal and Disposal of:
      a. Pavements.
      b. Sewers and appurtenances.
      c. Abandoned structures.
   2. Salvaging of Designated Materials:
      a. Fencing.
      b. Benchmarks and monuments.

B. Related Sections:
   1. Section 31 23 10 - Excavation and Embankment

C. Method of Measurement:
   1. General:
      a. Only materials and items designated for removal will be measured.
   2. Measurement by Area: Surface of uniform thickness will be measured by area in square units.
   3. Measurement by Length:
      a. Length measurements will be made along the longitudinal centerline.
      b. Pipe measurements will be made to the center of structures and to the end of aprons.
      c. Pavement sawing will be measured along the staked cut line.
   4. Measurement by Volume: Volumes will be determined from field measurements of materials actually removed.
   5. Measurement by Number (Complete Unit): Items will be measured separately by the number of units including appurtenances.

D. Basis of Payment:
   1. Removal of bituminous curbing and bituminous pavements less than 6 inches thick shall be considered incidental.
   2. Only items removed in acceptable condition will be measured as salvage.
   3. Items proposed for salvage which are damaged by Contractor's negligence shall be replaced at Contractor's expense.
   4. Backfilling of depressions resulting from removals shall be considered as embankment under Section 31 23 10.
   5. Payment for acceptable quantities of removal, salvage, or abandon items shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Protection:
   1. Protect all in-place structures and facilities not designated for removal.
   2. Protect and maintain all benchmarks and survey control points.
   3. Coordinate removals to minimize impact on vehicular and pedestrian traffic.

B. Sawing Pavement:
   1. Saw concrete pavement along removal lines to a depth 1/3 of the pavement thickness.
   2. Saw bituminous pavement along removal lines through entire pavement thickness.
   3. Produce a neat, square edge prior to restoration.
   4. Paint all ends of steel reinforcement in remaining concrete cross-section to prevent corrosion.

C. Existing Piping or Utilities:
   1. Determine requirements for disconnecting capping and protection.
   2. Before starting Site operations, disconnect or arrange for disconnection of utility services designated to be removed in accordance with requirements of utility company or agency.
   3. Repair damaged utilities or piping at no cost to Owner.
   4. Plug upgrade ends of drainage or sewer pipes leading from abandoned basements, manholes, or similar structures with concrete or masonry.
   5. Preserve in operating condition active utilities traversing site and designated to remain.

3.02 REMOVAL OPERATIONS

A. Remove only structures and facilities that have been marked by Engineer.

B. Complete all removal operations prior to adjacent new construction.

C. Remove materials designated for salvage in a manner that will not result in damage.

D. Completely remove structures which are designated for removal.

E. Whenever possible, remove concrete to an existing joint.

F. When removing guardrail and fences for salvage, neatly coil wire and cable, pull posts from the ground, and remove nails and staples from posts and boards.

3.03 DISPOSAL OF MATERIALS AND DEBRIS

A. Stockpile all materials designated for salvage at locations approved by Engineer.

B. Dispose of all materials not designated for salvage in accordance with all applicable laws and ordinances.

C. Submit written request to Engineer for disposal within right-of-way embankments.

D. Submit written request to Engineer for burning operations.

3.04 BACKFILLING DEPRESSIONS

A. Backfill all depressions resulting from removals in accordance with Section 31 23 10.

B. If the remains of partially removed structures prevent natural filtration of water, perforate structure bottoms prior to placing backfill to prevent entrapment of water.

3.05 INSTALLING SALVAGED MATERIALS

A. Install all salvaged materials as shown in Drawing Details and in locations as directed by Engineer.

3.06 SCHEDULES

A. Salvaged materials to be reused:
   1. Fencing fabric. Posts to remain in place or be reused.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes removal and disposal of trees, shrubs, brush, stumps, roots, windfalls, unsound branches, and other plant life.

B. Related Sections:
   1. Section 31 23 10 - Excavation and Embankment

C. Method of Measurement:
   1. Area Basis:
      a. Determine quantity by measuring staked areas to nearest 0.05 of an acre.
      b. All measurements will be made horizontally to a point 10 ft. outside the trunks of qualifying trees or stumps on the perimeter of the area being measured. The Engineer will measure separate areas less than 0.05 acre as 0.05 acres..

D. Basis of Payment:
   1. Pruning of branches on plantings being preserved shall be considered incidental.
   2. Payment for acceptable quantities of clearing and grubbing shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PROTECTION

A. Do not commence operations until erosion and sedimentation control measures are in place.

B. Confine operations to areas staked or trees marked for removal.

C. Protect all trees and plant materials which are not designated for removal.
   1. Do not store materials within Tree Protection Zone.
   2. Keep Tree Protection Zone free of debris and construction waste.
   3. Do not excavate in the Tree Protection Zone unless indicated on Drawings.

D. Conduct all operations in a manner that will not damage or injure surrounding plant life and property.

E. Salvage topsoil where feasible in accordance with Section 31 23 10.

3.02 CLEARING OPERATIONS

A. Cut and remove all designated trees, shrubs, bushes, windfalls, and other vegetation.

B. Prune and remove any low hanging or unsound branches.

3.03 GRUBBING OPERATIONS

A. Remove and dispose of designated stumps, roots and other remains.

B. Remove stumps completely.

C. Backfill depressions with native soils and compact.

3.04 DISPOSAL OPERATIONS

A. Submit written request to Engineer for disposal within right-of-way embankments.

B. Submit written request to Engineer for burning operations.

3.05 RESTORATION

A. Repair or replace trees damaged by construction activities but not selected for removal as directed by Engineer.

END OF SECTION

SECTION 31 13 15

SITE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Protection of improvements, plants, and utilities.
   2. Removal and replacement of improvements.
   3. Location of utilities and coordination with utility companies.
   4. Temporary erosion control.
   5. Clearing and grubbing trees and vegetation.
   6. Topsoil salvage.
   7. Miscellaneous demolition.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 PREPARATION

A. Verify that existing plant life and features designated to remain are tagged or identified.

3.02 PROTECTION

A. Protect improvements on site and on adjoining properties. Provide barricades, coverings or other types of protection as necessary to prevent damage and to safeguard against injury. Restore to original condition improvements damaged by the work or improvements that required temporary removal during construction.

B. Protect existing vegetation indicated to remain against unnecessary cutting, breaking, bruising, or smothering by stockpiling excavated materials or parking of vehicles within drip line. Provide temporary fences, tree wells, barricades or guards; repair or replace trees and vegetation damaged by construction operations.

C. Protect survey monuments, reference points, and bench marks from movement. Should removal be necessary, notify Engineer who will set reference stakes and give notice that monument may be removed. Owner will reset monument after construction at no cost to Contractor. Contractor shall pay cost for reestablishing monuments lost due to his negligence or failure to notify Engineer.

D. No extra payment or time will be allowed for protection work that could have been suspected or anticipated by site inspection and interpretation of bidding documents prior to execution of contract.

3.03 UTILITIES

A. Notify all affected utility companies of construction operations at least 3 working days before beginning work near their facilities. Locate existing utilities; provide adequate protection and support during construction operations. If uncharted or incorrectly charted piping or other utilities are encountered during earthwork, consult Engineer immediately for directions as to procedure. Cooperate with Owner, and public and private utility companies to keep their services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

3.04 TEMPORARY EROSION CONTROL

A. Furnish, install and maintain temporary erosion or sedimentation control devices. Devices include hay bales, silt fences, sediment traps, flotation silt curtains and diversion mounds.

B. Coordinate erosion control measures with earthwork and turf establishment operations. Complete work on a drainage area basis to prevent excessive soil erosion.

C. Construct items in conformance with typical sections and elevation controls as shown on plans.

D. Remove all items upon completion of contract work. Spread and shape accumulated sediment to permit natural drainage and provide for turf establishment.

3.05 SITE CLEARING AND GRUBBING

A. Remove trees, stumps, snags, shrubs, brush, heavy growths of grass, weeds and other vegetation, improvements, rubbish and debris, and obstructions that interfere with proposed construction; remove items only as necessary for completion of work.

B. Cut brush and vegetation flush with ground. Grub out stumps, roots having a diameter of 2 inches or larger, and root clusters to a depth of least 2 feet below subgrade elevation for pavements, structures, and embankments and 6 inches below ground surface in other areas.

C. Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction. Cut back roots to a minimum of 1 foot from concrete work, paving, and structures and to a depth of not less than 2 feet below structures, foundations, and embankments.

3.06 TOPSOIL

A. Topsoil shall include all friable, fertile, organic clay loam soil suitable for grass and plants, found at surface to a depth of approximately 6 to 12 inches, reasonably free of subsoil, clay lumps, stones, objects over 2 inches diameter, weeds, large roots, root clusters, and other objectionable material.

B. Strip topsoil from project area to whatever depths encountered; prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping topsoil.

C. Where trees are indicated to remain, terminate stripping a sufficient distance from such trees to prevent damage to root system.

D. Stockpile topsoil in storage piles in areas where designated. Construct storage piles to freely drain surface water. Cover or sprinkle water on storage piles to prevent windblown dust.

3.07 DEMOLITION

A. Remove structures, pavements and improvements within construction limits as shown and as required for construction. Saw cut bituminous and concrete pavement to provide a smooth straight joint. Remove below-grade items encountered, such as slabs and foundations that interfere with construction.

3.08 DEBRIS DISPOSAL

A. Remove debris and excess materials from site and legally dispose of it; do not burn debris or wood unless properly permitted.

END OF SECTION

SECTION 31 22 10

SITE GRADING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes regrading of a site to accommodate the construction of new piping and structures

B. The Work includes the following:
   1. Topsoil removal.
   2. Excavation.
   3. Embankment.
   4. Compaction.
   5. Fine grading.
   6. Topsoil placement.

C. Related Sections:
   1. Section 31 23 16 - Structure Excavations and Backfills
   2. Section 31 25 10 - Stormwater Management
   3. Section 32 92 12 - Establishing Turf and Controlling Erosion

1.02 DESCRIPTION

A. Grade Site as shown on Drawings.

B. Contours and spot elevations indicate finished surface grades.

C. Construct uniform slopes between contours and spot elevations.

D. Set Site control and grade stakes as required to ensure conformance with Drawings.

1.03 SEQUENCING AND SCHEDULING

A. Complete topsoil removal and general grading prior to structure erection.

B. Perform fine grading and topsoil placement after structure erection.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil Borrow Material: NEDOT Section 207.02.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that native materials are suitable for reuse on Site.

B. Notify Engineer of any materials that do not appear suitable for reuse.

3.02 PROTECTION

A. Conduct all operations within designated grading limits.

B. Protect all existing structures, plantings, turf, and other facilities or natural features which are not scheduled for removal.

3.03 CONSTRUCTION OPERATIONS

A. Topsoil Removal:
   1. Excavate all topsoil, root, and organic material within designated grading area and stockpile separately.
   2. Separate all debris, large roots, and rocks greater than 1 inch from the topsoil and remove from Site.

B. Excavation:
   1. Excavate designated areas to proposed subgrade elevations indicated on Drawings.
   2. Perform additional excavation as required to provide for foundation construction of proposed structure.
   3. Advise Engineer immediately if any unsuitable soils, wet conditions or previously undisclosed conditions are unearthed.
   4. Locate and protect inplace utilities within or adjacent to excavation area.

C. Embankment:
   1. Place embankment material in designated areas to proposed subgrade elevations indicated on Drawings.
   2. Place granular borrow material in locations and at dimensions shown on Drawings.
   3. Use suitable excavated material from Site prior to import of common borrow material.
   4. Scarify existing subgrade areas prior to placement of embankments thereon.
   5. Place embankment materials in maximum 12-inch layers and compact each layer.
   6. Maintain proper moisture content during placement and compaction of embankment materials.
   7. Remove excess materials not required for embankment from Site.
   8. Place excess materials in accordance with these requirements in locations on Site as directed by Engineer.

D. Compaction:
   1. Compact granular borrow placed in structure excavation to 98 percent of standard Proctor density.
   2. Compact remaining areas with approved compaction equipment until there is no further evidence of consolidation.

E. Fine Grading: Finish grade all earthwork areas to within 1/10 foot of proposed subgrade elevations.

F. Topsoil Placement:
   1. Place 6 inches of salvaged topsoil **or** topsoil borrow over all disturbed areas.
   2. Drag topsoiled areas to remove wheel tracks and provide a uniform texture and appearance.
   3. Finish topsoiled areas to within 1/10 foot of proposed finished elevations.

END OF SECTION

SECTION 31 23 19

DEWATERING

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. System description.
   2. Installation and maintenance.

B. Related Sections:
   1. Section 31 23 33 - Trench Excavation and Backfill
   2. Section 31 25 10 - Stormwater Management

C. Measurement and Payment:
   1. Dewatering shall be considered incidental to the excavation.

1.02 SYSTEM DESCRIPTION

A. Design Requirements: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.

B. Performance Requirements:
   1. Continuously monitor and maintain dewatering operations to ensure:
      a. Erosion does not occur.
      b. Stability of excavations and constructed slopes.
      c. The excavation does not flood.
      d. That damage to subgrades and permanent structures is prevented.
      e. That the excavation does not uplift, heave, or develop seepage boils.

1.03 SUBMITTALS

A. Dewatering Plan:
   1. Describe dewatering system and associated system features.
   2. Show arrangement, locations, and details of the dewatering system; locations of risers, headers, filters, pumps, power units, discharge lines or other system components; and means of discharge, control of sediment, and disposal of water.
   3. Provide a schedule that shows the proposed timing and sequencing of operations.

1.04 REGULATORY REQUIREMENTS

A. Comply with local and State installation requirements and sediment control regulations and obtain permits as necessary to install and operate dewatering facilities as needed..

1.05 SITE CONDITIONS

A. Conduct additional subsurface investigations as required to determine the specific dewatering needs for the proposed construction at this site.

PART 2 PRODUCTS

2.01 EQUIPMENT

A. New or used materials, adequate in capacity for required usage, must not create unsafe conditions and must not violate requirements of applicable codes and standards.

PART 3 EXECUTION

3.01 PROTECTION

A. Protect trees, shrubs, lawns, and construction area from damage due to installation and operation of dewatering devices.

B. Prevent sediment and turbid or silty water from entering surface waters.

C. Control sediment by one or more of the following methods and as required by permitting agencies and local, State, and Federal regulations:
   1. Construction of a detention basin.
   2. Use of a portable detention basin or upland sumps.
   3. Pump turbid water away from surface waters.

D. Do not allow water discharge to run over roads, parking areas, or work areas where water or ice could cause a hazardous condition.

E. Do not allow water to pond in the construction area.

F. Protect existing or completed work from water or sedimentation damage.

G. Protect workers and public from temporary structures or basins.

H. Do not allow water to run over work in progress.

3.02 INSTALLATION

A. Install dewatering devices adequate to keep the work dry and free of ground water to an elevation at least 3 feet below elevation work is being done.

B. Do not install French drains, sumps, ditches, or trenches within 5 feet of a structure foundation or slab.

C. Install, operate, and ensure dewatering system is functional prior to excavating below the groundwater level.

D. Do not use crushed rock or granular soils beneath structure foundations unless shown on the Drawings.

E. Install dikes, riprap, culverts, and piping as necessary to prevent erosion of site or siltation of surface waters.

F. Maintain dewatering operations until excavations are backfilled.

G. Remove unneeded equipment and pipe upon completion. Abandon wells as required by controlling agency.

END OF SECTION

SECTION 31 23 33

TRENCH EXCAVATION AND BACKFILL

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Trench excavation.
   2. Special pipe foundation.
   3. Trench backfill.
   4. Compaction.
   5. Pipe grade and alignment conflicts.

B. Related Sections:
   1. Section 33 11 00 - Water Distribution Systems
   2. Section 33 31 00 - Sanitary Sewer Systems
   3. Section 33 41 00 - Storm Sewer Systems

C. Method of Measurement:
   1. Trench Excavation and Backfill: Incidental to associated pipe installation.
   2. Special Pipe Foundation Materials:
      a. Measure by linear foot of pipe acceptably placed.
      b. Bid price includes removal and disposal of material replaced.
   3. Compaction: Incidental to associated pipe installation.
   4. Dewatering:
      a. Incidental to associated pipe installation.

D. Basis of Payment:
   1. Payment for quantities measured in this Section shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 SUBMITTALS

A. Provide for each granular material:
   1. Name and location of source.
   2. Sample gradation.

1.03 SITE CONDITIONS

A. Groundwater: Provide trench dewatering if groundwater surface is above or within 3 feet of pipe zone.

1.04 WARRANTY

A. Repair all trench settlements and resulting damage or displacement of surface facilities that occur within the Contract correction period.

PART 2 PRODUCTS

A. Granular Pipe Foundation: NEDOT 702.02.

B. Aggregate Pipe Foundation: NEDOT 702.02.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Trench Excavation:
   1. Alignment and Grade:
      a. Excavate trench to alignment and grade as staked.
      b. Excavate no more than 100 feet in advance of pipe laying operation.
   2. Trench Width at Pipe Zone:
      a. Center trench on pipe alignment.
      b. Minimum width: Pipe outside dimension plus 12 inches.
      c. Maximum width: Pipe outside dimension plus 24 inches (except rock excavation).
   3. Excavated Materials:
      a. Use stable material for backfill.
      b. Waste unstable material as directed.
      c. Do not place materials on sidewalk, driveways, or drainageways.
   4. Drainage:
      a. Provide dewatering trenches when required.
      b. Drain trench water into natural channels or storm sewer.
      c. Do not drain trench water into sanitary sewer.

B. Pipe Foundations:
   1. Engineer to determine condition of trench bottom.
   2. Stable Trench Bottom Condition:
      a. Shape trench bottom to conform to bottom half of pipe.
      b. Excavate bell holes to permit proper jointing.
   3. Unstable Trench Bottom Condition:
      a. Excavate below pipe grade to specified depth.
      b. Refill with specified foundation material in accordance with Drawings details and compact.

C. Trench Backfill:
   1. Pipe Zone:
      a. Use specified foundation material free of rocks and other unsuitable debris.
      b. Deposit material uniformly on both sides of pipe throughout entire trench width.
      c. Place material in 6 inch lifts and mechanically compact.
   2. Above Pipe Zone:
      a. Use native materials free of debris and rock, concrete or clay lumps with a volume greater than 1/3 cubic foot.
      b. Place in uniform lifts no more than 1 foot thick.
      c. Mechanically compact each lift of the upper 3 feet of trench to a standard Proctor density of 100 percent.
      d. Mechanically compact each lift under the upper 3 feet of trench to a standard Proctor density of 95 percent.
      e. Do not backfill unless approved compaction equipment is operating.
      f. Fine grade street subgrade to staked elevation and cross section.
   3. Replacement Backfill:
      a. Engineer to determine suitability of native material for backfill.
      b. Use replacement backfill in lieu of native materials as directed.
   4. Excess or Deficiency of Backfill Material:
      a. Dispose of excess backfill material as directed after all trenches are backfilled.
      b. Provide replacement backfill as required to establish required surface elevation.

3.02 FIELD QUALITY CONTROL

A. Density tests on backfill materials will be as directed by Engineer.

B. Recompact all areas represented by failed density tests.

3.03 PIPE CLEARANCES AND CONFLICTS

A. Provide clearance between sewers and water main as follows:
   1. Maintain 10 foot horizontal between pipes.
   2. Maintain 18 inch vertical separation between pipes.

B. When 18-inch vertical separation between sewer and water main cannot be maintained, provide special pipe crossing as follows:
   1. Advise Engineer of pipe conflict.
   2. Lower water main in accordance with Drawing or as directed.
   3. Provide 18 inch vertical separation between pipes.
   4. Construct sewer using pipe material and joints equal to water main at crossing point.
   5. Center pipe lengths at crossing point.
   6. Provide special foundation material for both pipes.
   7. Place insulation as directed.

END OF SECTION

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SECTION 31 25 10

STORMWATER MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Temporary measures to control soil erosion and sedimentation.
   2. Furnishing, installing and maintaining erosion or sediment control devices.
   3. Managing discharge from dewatering operations.

B. Related Sections:
   1. Section 31 22 10 - Site Grading
   2. Section 31 23 19 - Dewatering
   3. Section 31 23 33 - Trench Excavation and Backfill
   4. Section 32 92 12 - Establishing Turf and Controlling Erosion
   5. Section 32 92 30 - Turf Restoration

C. Method of Measurement:
   1. Bale Barriers: Measure by number of bales furnished and acceptably installed.
   2. Silt Fence: Measured along base of fence acceptably provided from outside to outside of end posts.
   3. Sandbag Barriers:
      a. Measure by surface area acceptably installed along length of barrier times the height.
      b. For variable bag thickness, measure surface area of each bag thickness acceptably installed separately.
   4. Flotation Silt Curtain: Measure by linear foot of curtain acceptably provided.
   5. Sediment Traps: Include original material and sediment removed.
   6. Temporary Slope Drains: Measure by linear foot of pipe furnished and acceptably installed.
   7. Sediment Removal:
      a. Maintaining, spreading, hauling, and disposal are incidental.
   8. Sediment Control Logs: Measure by linear foot of logs furnished and acceptably installed.
   9. Culvert End Controls: Measure by each by measuring the individual ends protected throughout the Contract regardless of type or number of devices used at each end.
   10. Storm Drain Inlet Protection: Measure by each by the number of individual inlets protected throughout the Contract regardless of the type or number of devices used at each inlet.
   11. Filter Berm: Measure by linear foot of berm acceptably provided.
   12. Construction Exit Controls: Measure by the number of acceptably installed and maintained.

D. Basis of Payment:
   1. Payment for acceptable quantities of Stormwater Management items shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.
   2. Street Sweeping (Wet Pickup):
      a. Incidental.

1.02 DEFINITIONS

A. BMPs: Best Management Practices

B. For the NPDES permit process, the operator is defined as the Contractor

C. SWPPP: Storm Water Pollution Prevention Plan

1.03 SUBMITTALS

A. Proposed schedule for accomplishment of Work within, adjacent to, or affecting surface water.

B. Erosion and sediment control schedule.

1.04 REGULATORY REQUIREMENTS

A. Exposed Soil Areas Adjacent to Surface Water:
   1. Provide year-round temporary erosion protection for all exposed soil areas with a continuous positive slope within 200 lineal feet of a surface water.
   2. The maximum time these areas can remain open when not actively being worked is as follows:
      a. 7 days on slopes steeper than 3:1.
      b. 3 days on slopes steeper than 3:1 that drain to construction related impaired waters or Special Waters.
      c. 7 days on slopes flatter than 3:1 that drain to construction related impaired waters or Special Waters.
      d. 14 days on slopes between 3:1 and 10:1.

1.05 QUALITY ASSURANCE

A. Refer to “Protecting Water Quality in Urban Areas - Best Management Practices for Minnesota.

B. Obtain all necessary permits from responsible regulatory agencies.

C. Ensure minimum interference with roads, streets, walks, and adjacent occupied or used facilities. Do not close or obstruct without permission from authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Inlet Protection NEDOT 819

B. Filter Berm NEDOT 812

C. Silt Fence NEDOT 816

D. Flotation Silt Curtain NEDOT 820

E. Temporary Slope Drain NEDOT 814

F. Sediment Control Log NEDOT 812

G. Rolled Erosion Control Products NEDOT 812

H. Stabilized Construction Exit: NEDOT 823

PART 3 EXECUTION

3.01 PREPARATION

A. Establish sediment control BMPs on all downgradient perimeters of the site and downgradient area of the site that drain to any surface water, including curb and gutter systems.

B. Place erosion control for wetland protection prior to Work on any phase of the Project.

C. Install safeguards to prevent water pollution from haul roads, work platforms, or other temporary construction facilities.

D. Minimize sediment from entering surface waters, curb and gutter systems, and storm sewer inlets.

E. Complete grading, finishing, erosion control and turf establishment on a drainage area basis to prevent excessive soil erosion.
   1. Shape exposed soil areas to permit runoff with minimal erosion.

F. Coordinate erosion control measures with earthwork and turf establishment operations.

G. Stabilize all exposed soil areas, including stockpiles, when construction activity has ceased or is completed on any portion of the site to limit soil erosion in accordance with section 1.05.B.

3.02 EMERGENCY EROSION CONTROL

A. Upon written order by Engineer, conduct temporary erosion control Work on an emergency basis.
   1. Mobilize with sufficient personnel, equipment, materials, and incidentals within 24 hours of receipt of order.
   2. Provide immediate corrective work followed by installation of erosion control measures.

3.03 REPAIR AND MAINTENANCE

A. Inspect, repair, and maintain all erosion control measures to provide proper function throughout project.

B. Failure to maintain erosion control measures: Owner may hire another firm to maintain erosion control measures. Costs associated with hiring another firm will be deducted from the Contract.

C. Silt Fence:
   1. Inspect immediately after each runoff event and minimum once daily during prolonged rainfall.
   2. Make required repairs immediately.
   3. When sediment deposits reach approximately one-half the height of the silt fence, remove sediment or install a second silt fence.
   4. Dispose of sediment as directed by Engineer.

D. Flotation Silt Curtain:
   1. Remove material not originally in isolation zone.
   2. Dispose of material as directed by Engineer.
   3. Remove following the completion of work.

E. Sediment Control Logs:
   1. Inspect immediately after each runoff event and minimum once daily during prolonged rainfall.
   2. Make required repairs immediately.
   3. Dispose of sediment as directed by Engineer.

F. Erosion Control Blanket: Immediately repair if washed away or displaced.

G. Street Sweeping:
   1. Contractor is responsible for ensuring adjacent paved streets are clean at the end of each work day.
   2. Remove tracked sediment on paved surfaces within 24 hours of discovery.

H. Stabilized Construction Exit:
   1. Maintain when effectiveness of sediment removal has been reduced.
   2. Maintenance shall consist of removing sediment and cleaning the materials or placing additional materials to restore effectiveness.

3.04 FIELD QUALITY CONTROL

A. Inspections and maintenance prior to final acceptance:
   1. Every 7 days.
   2. Within 24 hours of 1/2-inch storm or greater.
   3. Record and file with SWPPP.

3.05 CLEANUP AND RESTORATION

A. Remove temporary erosion control items when area is permanently stabilized and upon completion of Work.

B. Restore all plant, equipment, or other supplementary operation sites to prevent siltation and erosion.

C. Repair any off-site damage resulting from failure to install or maintain BMPs.

D. Restore and stabilize areas disturbed during removal of erosion controls.

END OF SECTION

SECTION 31 37 00

RIPRAP

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Stone riprap.
   2. Filter material.
   3. Grouting.

B. Method of Measurement:
   1. Riprap:
      a. Measure by weight in tons based on actual scale weight of the material acceptably placed.
      b. Measure each type and class separately.
   2. Filter Materials:
      a. Granular Filter:
         1) Incidental to pipe installation.
      b. Geotextile Filter:
         1) Incidental to pipe installation.

C. Basis of Payment:
   1. Bid Price Includes:
      a. Excavation.
      b. Foundation preparation.
      c. Grouting (when required)
   2. Payment for riprap shall be at the Contract unit price as listed on the Bid Form. All associated work items shall be considered incidental.

1.02 REFERENCES

A. NEDOT 905, 908, and 1002

PART 2 PRODUCTS

2.01 MATERIALS

A. All materials shall be in accordance with the respective NEDOT Specifications as follows:
   1. Riprap Materials: NEDOT 905, Type A, B, or C.
   2. Grout (NEDOT 908.02 - Class 47B-3000 (47B-20)

PART 3 EXECUTION

3.01 FOUNDATION PREPARATION

A. Excavate and shape foundation areas to the location and cross section staked by Engineer.

B. Compact all loose foundation material prior to filter material placement.

C. Provide smooth surface, free of stones, sticks, and other debris.

3.02 FILTER MATERIAL

A. Granular Filter:
   1. Spread to uniform thickness over the prepared foundation.
   2. For under water placement, deposit material directly by means of a bucket.

B. Geotextile Filter:
   1. Place multiple fabric widths with the longest dimension parallel to the direction of water flow.
   2. Splice multiple fabric widths by mechanical seaming or minimum 18-inch overlap. (36-inch under water)
   3. Overlap joints in shingle arrangement.
   4. Bury upgrade edges of fabric to prevent under mining.
   5. Anchor fabric to prevent movement during riprap placement.
   6. Do not operate equipment on fabric.

3.03 RIPRAP STONE

A. Placement:
   1. Begin placement at the lowest elevation and work upgrade.
   2. Do not drop stones from greater than 1 foot height.

B. Hand-placed or Grouted Riprap:
   1. Embed all stones in the foundation material.
   2. Minimize space between stones.
   3. Stagger joints up the slope.
   4. Define edges of riprap area using selected stones set to line and grade.
   5. Seat smaller stones between the larger stones to produce a uniform surface.

3.04 GROUTING

A. Thoroughly wet all stones immediately prior to grout placement.

B. Fill spaces throughout entire depth of riprap with grout.

C. Finish grouted riprap surface by sweeping with a stiff broom.

3.05 THICKNESS REQUIREMENTS

A. All areas - minimum 80 percent of specified thickness.

B. Average - minimum 95 percent of specified thickness.

END OF SECTION

SECTION 31 40 00

SHORING, UNDERPINNING, AND BRACING

PART 1 GENERAL

1.01 SUMMARY

A. Provide (Contractor's choice):
   1. Steel Sheeting: Steel plate suitable for Project requirements.
   2. Soldier Piles: Steel beams in serviceable condition.
   3. Timber Lagging: Any species, rough-cut, mixed hardwood.

B. Perform the following, as needed:
   1. Shoring and underpinning to protect existing building, streets, walkways, utilities, improvements, and excavations against loss of ground or caving of embankments.
   2. Design and install bracing to prevent damage to structure and building during construction activities.
   3. Maintain shoring and bracing.
   4. Remove shoring and bracing when no longer needed.

C. Measurement and Payment: Work described in this Section shall be considered incidental to protect adjacent existing or new structures or utilities.

1.02 QUALITY ASSURANCE

A. Supervision: Engage and assign supervision of Work to qualified consultant.

B. Regulations: Comply with local codes and ordinances of governing authorities having jurisdiction.

1.03 PROJECT CONDITIONS

A. Verification:
   1. Before starting Work, check and verify governing dimensions and elevations.
   2. Survey condition of existing building.
   3. Take photographs to record any prior settlement or cracking of structures, pavements, and other improvements.
   4. Prepare list of such damages, verified by dated photographs and signed by Contractor and others conducting investigation.

B. Changes in Elevation: During excavation, promptly notify Engineer if changes in elevations occur or if cracks, sags or other damage is evident.

PART 2 PRODUCTS

2.01 MATERIALS

A. Provide suitable shoring and bracing materials that will support loads imposed.

B. Materials need not be new, but should be in serviceable condition.

C. Types include, but not limited to, soldier piles and lagging.

D. Shoring Near Existing Structures: If wood is part of shoring system near existing structures, use pressure preservative treated materials or remove before placement of backfill.

PART 3 EXECUTION

3.01 EXAMINATION

A. Work of Other Trades: Prior to commencing Work, carefully inspect and verify that work is complete to point where this installation may properly commence.

B. Verification of Conditions: Verify that shoring, underpinning, or bracing may be installed in accordance with original design, pertinent codes and regulations, and pertinent portions of referenced standards.

C. Discrepancies:
   1. Immediately notify Engineer.
   2. Do not proceed with installation in areas of discrepancy until fully resolved.
   3. Commencement of installation signifies acceptance of surface conditions.

3.02 SHORING

A. Location: Wherever shoring is required, locate system to clear permanent construction and to permit forming and finishing of concrete surfaces.

B. Anchoring:
   1. Provide shoring system adequately anchored, braced to resist earth and hydrostatic pressures.
   2. Leave in place, at completion of Work, shoring systems retaining earth on which support or stability of existing structures is dependent.

3.03 BRACING

A. Location:
   1. Locate to clear columns, floor framing construction, and other permanent Work.
   2. If necessary to move a brace, install new bracing prior to removal of original brace.
   3. Do not place bracing where it will be cast into or included in permanent concrete work, except as otherwise acceptable to Engineer.

B. Internal Bracing: Install, if required, to prevent spreading or distortion to braced frames.

C. Duration of Bracing: Maintain until structural elements are rebraced by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic pressures.

3.04 RESTORATION

A. Removal: Remove sheeting, shoring and bracing in stages to avoid disturbance to underlying soils and damage to structures, pavements, facilities, and utilities.

B. Damages: Repair or replace, as acceptable to Engineer, adjacent Work damaged or displaced through installation or removal of shoring and bracing Work.

END OF SECTION

SECTION 32 11 11

SUBGRADE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes shaping and compacting of subgrade prior to placement of base course.

B. Related Sections:
   1. Section 31 23 33 - Trench Excavation and Backfill

C. Method of Measurement and basis of payment:
   1. Incidental to construction of concrete pavement and gravel surfacing.

1.02 SEQUENCING AND SCHEDULING

A. Prepare subgrade after unstable areas have been repaired and in place surface courses have been removed.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CONSTRUCTION

A. Re-excavate, compact and shape the top 6 inches of subgrade area to provide smooth, stable surface for the placement of base course thereon.

B. Compact subgrade material to 100 percent of Standard Proctor Density.

C. Produce and maintain the necessary moisture content in the subgrade material by scarification or application of water.

D. Continue operations until no rutting or displacement occurs under construction traffic.

E. Provide a finished surface within 0.05 foot of the prescribed elevation at all locations.

END OF SECTION

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SECTION 32 13 10

CONCRETE PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Provide portland cement concrete pavement without reinforcement.

B. Method of Measurement: Concrete pavement construction will be measured in terms of major items of Work as follows:
   1. Concrete Pavement will be measured by area in square yards based on specified dimensions. Irregular Width Pavement will be measured and paid for separately.
   2. Dowel Bar Assemblies will be considered incidental.

C. Basis of Payment:
   1. Payment for concrete construction shall be at the Contract Unit Price listed on Bid Form. All associated Work items shall be considered incidental.

1.02 SUBMITTALS

A. Refer to Section 01 33 00.

B. Concrete Mix Submittals:
   1. Include name and address of transit-mix concrete supplier with submissions for Section 01 29 10.
   2. Catalog information on admixtures or agents to be included in mix.
   3. List of concrete mix designs at least 15 days prior to start of Work. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test or other circumstances warrant adjustments.

C. Quality Assurance/Control Submittals:
   1. Test Reports: Report test results to Engineer.
   2. Material Certificates: Signed by manufacturers certifying materials comply with requirements of Construction Documents.

1.03 QUALITY ASSURANCE

A. Regulatory Agencies: Comply with local governing regulations if more stringent than specified.

B. Preinstallation Meeting: Meet with Engineer prior to the start of installation.

1.04 PROJECT CONDITIONS

A. Existing Conditions:
   1. Drawings do not purport to show actual dimensions, but are intended only to establish location and scope of Work.
   2. Field-verify dimensions and assume full responsibility for their accuracy.

B. Maintain access for vehicular and pedestrian traffic.

PART 2 PRODUCTS

2.01 MATERIALS

A. Materials and accessories shall comply with NEDOT specifications:
   1. Concrete: NEDOT 1002.02 – Class 47B.
   2. Preformed Joint Filler: NEDOT 1015.
   3. Curing Materials NEDOT 1010, 1011, 1012, and 1013
   4. Forms:
      a. Wood or metal with smooth contact face.
      b. Minimum form height: That of proposed concrete thickness.
      c. Use flexible or curved forms for curves with radius 100 feet or less.
      d. Form sections shall be not less than 10 feet long, except that wood forms can be 8 feet or greater.
      e. Top of form shall show no deviations greater than 1/8 inch from a straight edge equal to form section.
      f. Face of straight forms shall show no deviation greater than 1/2 inch from a 10-foot straight edge.
   5. Form Release Agent: Commercially formulated; will not bond with, stain, or adversely affect concrete surfaces.

PART 3 EXECUTION

3.01 PREPARATION

A. Subgrade Preparation:
   1. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
   2. Remove loose material from compacted subgrade.
   3. Proof-roll subbase surface with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Correct nonconforming conditions.
   4. Complete fine grading at least 3 hours in advance of concrete placement.
   5. Moisten subgrade in upper 3 inches to provide uniform dampened condition.
   6. Do not place concrete on frozen surface.

B. Adjust gate valves, manholes and other structures to required finish elevation and alignment prior to paving.

C. Forms:
   1. Set forms to required grade on alignment for a distance equal to minimum 3 hours paving time.
   2. Clean after each use and coat contact face with chemical release agent.
   3. Do not remove for 24 hours after concrete has been placed.

3.02 INSTALLATION

A. Concrete Pavement:
   1. Place in accordance with NEDOT 602.
   2. Use either fixed form or slip form construction.
   3. Prevent segregation of mix.
   4. Do not add water to concrete during delivery, at Site, or to fresh concrete after testing.
   5. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator.
   6. Prevent dislocation of reinforcing, dowels, and joint devices.
   7. Deposit and spread concrete in a continuous operation.
   8. Do not move concrete with vibrator.

B. Joints:
   1. Construct and space as shown on Drawings.
   2. Joining existing pavement: Place transverse joints to align with previously placed joints, unless otherwise indicated.
   3. Construction Joints: Set at side and end terminations of pavement and at locations where pavement operations are stopped for more than 1/2 hour, unless pavement terminates at isolation joints.
   4. Tie Bars: Provide at sides of pavement strips where indicated.
   5. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   6. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat 1/2 of dowel length to prevent concrete bonding to 1 side of joint.
   7. Isolation Joints: Preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
      a. Furnish in one-piece lengths. Where more than 1 length is required, lace or clip joint-filler sections together.
      b. Protect top edge of joint filler during concrete placement with temporary preformed cap. Remove cap after concrete placed on both sides of joint.
   8. Contraction Joints: Construct to match jointing of existing adjacent concrete pavement.
   9. Edging:
      a. Tool edges of pavement after initial floating with edging tool.
      b. Repeat after applying surface finishes.
      c. Eliminate tool marks on concrete surfaces.
   10. After removal of forms, clean ends of joints and point-up any minor honeycombed areas.
   11. Remove and replace areas or sections with major defects, as directed by Engineer.

C. Surface Finish:
   1. After concrete is consolidated, screeded and floated, final finish texture shall be obtained by drawing a carpet drag longitudinally.
   2. Carpet shall be:
      a. Artificial grass type.
      b. Total minimum weight of 70 ounces per square yard.
      c. Molded polyethylene pile face with blade length of 5/8 to 1 inch.
   3. Transverse Metal-tine Texture Not required on subsidiary paving areas such as cross-overs, parking lanes etc.

D. Curing and Protection:
   1. Cure minimum 72 hours after finishing.
   2. Protect from loss of moisture, rain damage, traffic, and extreme hot or cold temperatures.
   3. Blanket Curing Method:
      a. Envelop concrete with waterproof paper or plastic after finishing, and seal with waterproof tape or adhesive.
      b. Prevent water vapor loss.
      c. After curing, treat exposed surfaces with 2 coats treating oil.
   4. Curing Compound Method:
      a. Coat exposed surfaces with curing compound immediately after finishing.
      b. Apply uniformly at a rate of 1 gallon per 150 square feet of surface area with approved airless sprayer.
      c. Spray on second coat within 3 hours.

E. Joint Sealing:
   1. Engineer to inspect and approve concrete base before sealing.
   2. Apply epoxy polyester sealer to sound, clean, oil-free, dry concrete in 2-coat application, and in accordance with manufacturer’s recommendations.

3.03 FIELD TESTING

A. Testing and Analysis of Concrete: See Section 01 45 00.

3.04 REPAIRS AND PROTECTION

A. Remove and replace concrete that is broken, damaged, or defective, or does not comply with requirements.

B. Drill test cores where directed by Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes with portland cement concrete bonded to pavement with epoxy adhesive.

C. Protect concrete from damage. Exclude traffic from pavement for minimum 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep not more than 2 days before date scheduled for Substantial Completion inspections.

END OF SECTION

SECTION 32 15 00

AGGREGATE SURFACING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes construction of an aggregate wearing course on a prepared subgrade.

B. Method of Measurement:
   1. Measure by area of material acceptably placed in cubic yards.

C. Basis of Payment:
   1. Payment for acceptable quantities of aggregate surfacing shall be at the contract unit price as listed on the Bid Form. All associated work items shall be considered incidental.

1.02 SUBMITTALS

A. Provide for each aggregate material:
   1. Name and location of source.
   2. Sample Gradation.

1.03 HANDLING AND DELIVERY

A. Stockpile and drain aggregate removed from below water for a minimum 24 hours prior to delivery.

1.04 SITE CONDITIONS

A. Deposit aggregate only on dry compact subgrade so that no rutting or displacement will occur under construction traffic.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate Surfacing Materials: NEDOT 1033.06.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Mix aggregate as required prior to spreading to produce and maintain uniform gradation.

B. Deposit and spread aggregate on driveways to achieve the required depth and coverage.

C. Compact aggregate with a steel-wheeled or pneumatic-tired roller until there is no further evidence of consolidation.

END OF SECTION

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SECTION 32 91 00

TOPSOIL PLACEMENT

PART 1 GENERAL

1.01 SUMMARY

A. Provide the following:
   1. Subsoil preparation.
   2. Soil composition.
   3. Placement of topsoil.
   4. Soils Report:
      a. Existing topsoil.
      b. Amended topsoil.

B. Related Sections:
   1. Section 31 22 10 - Site Grading
   2. Section 31 22 20 - Earthwork for Building Sites
   3. Section 31 25 10 - Stormwater Management
   4. Section 32 92 12 - Controlling Erosion and Establishing Vegetation

C. Basis of Payment:
   1. Payment for acceptable quantities of select topsoil borrow shall be at the contract unit price as listed on the Bid Form.
   2. Associated work items shall be incidental to unit price.
   3. Importation of materials required for provision of topsoil is incidental to Work.

1.02 SUBMITTALS

A. Refer to Section 01 33 00.

B. Quality Assurance/Control Submittals:
   1. Test Reports:
      a. Provide following qualification tests and information for topsoil either imported or prepared from on-site material.
      b. Submittal to be prepared by independent testing lab, state university soils science department, or other recognized soil physics testing laboratory to indicate that proposed material complies with specified requirements.
         1) Mechanical gradation analysis, ASTM D422.
         2) Materials qualification test.
         3) Recommendation for type and application rate of amendments needed to adjust topsoil to required nutrient levels for each proposed landscape operation, including, seeding, sodding, planting.

C. Delay resulting from rejected submittals is Contractor’s responsibility and will not be considered as basis for subsequent delay claim.

PART 2 PRODUCTS

2.01 SOILS MATERIALS

A. Topsoil for Non-Irrigated Areas:
   1. Material consisting of fertile, friable, loam, uniform in composition.
   2. Capable of sustaining vigorous plant growth.

3. Free of subsoil, stones, lumps, clods of hard earth, plants, plant roots, sticks, noxious weeds, slag, cinders, demolition debris or other extraneous matter over 1 inch in largest dimension.
4. Conforming to following chemical and physical attributes:
   a. Allowable limits of topsoil mechanical analysis based on percent of dry weight of samples:

	Minimum Percent	Maximum Percent
No. 4 Sieve	100	---
No. 10 Sieve	80	90
No. 200 Sieve	40	60
Silt (particles 0.005-0.05 mm) (1)	10	40
Clay (particles < 0.005 mm) (1)	5	20

(1) Silt-Clay ratio: 2:1 or less

   b. Allowable maximum limits of mechanical analysis of sand and gravel fraction based on dry weight of total fraction sample:

	Minimum Percent	Maximum Percent
Very Fine Sand (< 0.15 mm)	0	5
Fine Sand (0.15-0.25 mm)	0	20
Coarse Sand (0.25-1.00 mm)	60	100
Very Coarse Sand (1.00-2.00 mm)	0	10
Gravel (> 2.00 mm)	0	5

(1) Silt-Clay ratio: 2:1 or less

B. Final Topsoil Nutrient Values After Amendment (if required):
   1. Organic Matter: 4.0 percent minimum, 10.0 percent maximum.
   2. Extractable Phosphorus: 25 parts per million by weight minimum.
   3. Exchangeable Potassium: 125 parts per million by weight minimum.
   4. pH: 5.5 minimum, 7.0 maximum, 6-6.5 preferred.
   5. Soluble Salts: 3 mmhos/cm maximum.
   6. Lead Content: Less than 400 parts per million.

C. On-site Base Mixture: To extent available, and if modified to meet requirements, select on-site material may be used as base mixture for preparation of topsoil.

D. Import supplemental materials as necessary to satisfy specified topsoil requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which topsoil preparation and placement are to be performed.
   1. Verify final subgrade has been established.
   2. Verify topsoil meets requirements of this Section and soils testing lab report identifying required amendments is completed.
   3. Verify compaction requirements in Section 31 22 20 have not been exceeded.

B. Discrepancies:
   1. Immediately notify Engineer.
   2. Do not proceed in areas of discrepancy until fully resolved.
   3. Commencement of topsoil placement signifies acceptance of surface conditions. Do not proceed until unsatisfactory conditions have been corrected.

3.02 STORAGE/STOCKPILE

A. Stockpile location: As directed by E/A.

B. Stockpile topsoil/planter soil component materials in such a manner that natural drainage is not obstructed and that no off-site sediment transmission will result.

C. Place stockpiles with maximum 2:1 sideslopes.

D. Construct a temporary perimeter dike with gravel outlet, or fabric sediment barrier around topsoil component stockpiles.

E. Provide temporary seeding of stockpiles within 2 days of formation of stockpile.

F. Place mulch and erosion control blanket per Section 32 92 00.

3.03 PREPARATION AND PLACEMENT

A. Topsoil Placement Preparation:
   1. Provide erosion and sediment control items such as diversions, berms, dikes, waterways, sediment basins, as specified or as needed.
   2. Remove debris from areas to be topsoiled, including excess concrete and concrete spoils adjacent to back of curb locations, and excavation spoils.
   3. Eliminate uneven areas and low spots; maintain indicated grades and make changes in grade gradual by blending slopes into more level areas.
   4. After the areas to be topsoiled have been brought to inferred subgrade elevations, and immediately prior to dumping and spreading approved topsoil, loosen and condition the subgrade by power rototilling to a minimum depth of 8 inches to ensure removal of gross subgrade debris and bonding of the topsoil and subsoil; no substitute operations acceptable.
   5. After rototilling and prior to placement of the topsoil, scalp or otherwise remove all visible stones, clods of hard earth, roots, plant parts, stumps, sticks, weeds, demolition or construction debris, or any other extraneous non-earth material in excess of 1 inch in size.

B. Topsoil Placement:
   1. Do not place topsoil more than 2 weeks prior to planned commencement of Project planting operations.
   2. Do not place wet or muddy topsoil, when subgrade is excessively wet, or in condition that may otherwise be detrimental to subsequent Work.
   3. Uniformly place approved topsoil material where indicated to minimum compacted depth of 6 inches on 3:1 on steeper slopes, minimum of 8 inches on flatter slopes, and at greater depths as indicated on Drawings.
   4. Topsoil in excess of 8 inches is acceptable and desirable if excess is available.
   5. Correct irregularities in surface resulting from placement or other operations to prevent formation of depressions or water pockets.
   6. Avoid excessive compaction of topsoil; refer to limits in Section 31 22 20.
   7. Protect topsoiled areas from weather based erosion until planting operations commence.

END OF SECTION

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SECTION 32 92 00

LAWNS AND GRASSES

PART 1 GENERAL

1.01 SUMMARY

A. Provide the following:
   1. Seeding.

B. Perform the following:
   1. Finish grading. (see Section 31 22 20)
   2. Preparation of topsoil.
   3. Initial maintenance.

C. Related Sections:
   1. Section 31 22 10 - Site Grading
   2. Section 31 22 20 - Earthwork for Building Sites
   3. Section 31 25 10 - Stormwater Management

1.02 REFERENCES

A. ASTM:
   1. C602 - Standard for Agricultural Liming Materials
   2. D5268 - Standard for Topsoil Used for Landscaping Purposes

B. TPI - Guideline Specifications to Turfgrass Sodding

1.03 SUBMITTALS

A. Refer to Section 01 33 00.

B. Product Data:
   1. For each type of product indicated.

C. Certification of Grass Seed: From seed vendor for each grass seed, including:
   1. Botanical and common name and percentage by weight of each species and variety.
   2. Percentage of purity, germination, and weed seed.
   3. Year of production and date of packaging.
   4. Local source of seed mixture, including name and telephone number of supplier,

D. Qualification Data: For landscape installer.

E. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns and meadows during a calendar year. Submit before expiration of required maintenance periods.

1.04 QUALITY ASSURANCE

A. Qualifications:
   1. Installer: A qualified landscape installer whose work has resulted in successful lawn establishment.
   2. Field Supervisor: Installer to maintain an experienced full-time supervisor on Site when planting is in progress.
   3. Soil Testing Laboratory: An independent laboratory recognized by the State DOA.

B. Topsoil Analysis:
   1. Furnish soil analysis by qualified soil-testing laboratory stating percentages of organic matter, gradation of sand, silt and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
   2. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

C. Substitutions: Do not make substitutions. If specified landscape material is not obtainable, submit proof of non-availability to Engineer, together with proposal for use of equivalent material.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver in original sealed, labeled, and undamaged containers.

1.06 PROJECT CONDITIONS

A. Existing Conditions:
   1. Inspect the Project prior to installation;
   2. If conditions do not meet approval, notify Engineer.
   3. Proceeding without notification implies acceptance of conditions.

B. Excavation: When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions, or obstructions, notify Engineer before planting.

1.07 SEQUENCING AND SCHEDULING

A. Planting Time: Proceed with, and complete landscape work as rapidly as portions of site become available, working within seasonal limitations for each kind of landscape work required:
   1. Plant or install materials during normal planting seasons for each type of plant material required.
   2. Correlate planting with specified maintenance periods to provide maintenance from date of Substantial Completion.

1.08 WARRANTY

A. Warranty for a period of 2 year after date of substantial completion against defects, including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond landscape installer’s control.

B. Replacement: Remove and replace lawns and grasses found to be dead or in unhealthy condition during warranty period.

1.09 LAWN MAINTENANCE

A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
   1. Seeded Lawns:
      a. 60 days from date of Substantial Completion.
      b. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations.
   1. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
   2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch.
   3. Anchor as required to prevent displacement.

C. Watering:
   1. Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.
   2. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch.
   3. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   4. Water lawn at a minimum rate of 1 inch per week.
   5. Provide soil moisture gage and monitor to determine soil water retention.
   6. Water appropriately. Do not overwater.

D. Mowing:
   1. Begin as soon as top growth is tall enough to cut.
   2. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height.
   3. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings.
   4. Do not delay mowing until grass blades bend over and become matted.
   5. Do not mow when grass is wet.
   6. Schedule initial and subsequent mowings to maintain the following grass height:
      a. Bentgrass: 1/2 inch high or less.
      b. Burmudagrass: 1/2 to 1 inch high.
      c. Carpetgrass, centipedegrass, perennial ryegrass, and zoysiagrass: 1 to 2 inches high.
      d. Kentucky bluegrass, buffalograss, annual ryegrass, and chewings red fescue: 2-1/2 to 4 inches high.
      e. Bahiagrass, turf-type tall fescue, and St. Augustine grass: 2 to 3 inches high.

E. Lawn Postfertilization:
   1. Apply fertilizer after initial mowing and when grass is dry.
   2. Use fertilizer that will provide actual nitrogen of at least 1 pound per 1000 square feet to lawn area.

PART 2 PRODUCTS

2.01 SOIL PREPARATION MATERIALS

A. Topsoil:
   1. Existing topsoil may be reused only with acceptance of E/A.
   2. ASTM D5268, pH range of 5.5 to 7.
   3. Fertile, friable natural sandy loam, without admixture of subsoil material, obtained not more than 2 or 3 feet from top of deposit, from well-drained arable site.
   4. Free from heavy alkaline soil, coarse sand, stones larger than 2 inches in diameter, lumps, sticks, other foreign matter.
   5. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient.
      a. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep.
      b. Do not obtain from agricultural land, bogs or marshes.

2.02 INORGANIC SOIL AMENDMENTS

A. Lime:
   1. ASTM C602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
      a. Class: Class T, with a minimum 99 percent passing through No. 8 sieve and a minimum 75 percent passing through No. 60 sieve.
      b. Class: Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.
   2. Provide lime in form of dolomitic limestone.

B. Sulfur:
   1. Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 sieve and a maximum 10 percent passing through No. 40 sieve.
   2. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
   3. Aluminum Sulfate: Commercial grade, unadulterated.

C. Perlite: Horticultural perlite, soil amendment grade.

D. Agricultural or Recycled Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate. Free of contaminants.

E. Sand: Clean, washed, natural or manufactured, free of toxic materials.

F. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

G. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.03 ORGANIC SOIL AMENDMENTS

A. Compost:
   1. Well-composted, stable, and weed-free organic matter.
   2. pH range of 5.5 to 8.
   3. Moisture content 35 to 55 percent by weight.
   4. 100 percent passing through 1/2-inch sieve.
   5. Soluble salt content of 5 to 10 decisiemens/m.
   6. Not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
      a. Organic Matter Content: 50 to 60 percent of dry weight.
      b. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
      c. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

B. Manure:
   1. Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials.
   2. Free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.04 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

B. Fertilizers:
   1. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.
   2. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
   3. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
      a. Composition: 1 pound/1000 square feet of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

4. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
    a. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.05 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets:
1. Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh.
2. Acceptable manufacturer and product:
    a. SI Geosolutions, *LandLok Series*, applicable format.
    b. RoLanka *Erosion Control Mats*.
    c. Comparable products of other manufacturer.
3. Include manufacturer's recommended steel wire staples, 6 inches long.

B. Erosion-Control Fiber Mesh:
1. Biodegradable twisted jute or spun-coir mesh.
2. A minimum of 0.92 pound/square yard, with 50 to 65 percent open area.
3. Acceptable Manufacturer and Product:
    a. SI Geosolutions, *LandLok Series*, applicable format.
    b. RoLanka *Erosion Control Mats*.
    c. Comparable products of other manufacturer.
4. Include manufacturer's recommended steel wire staples, 6 inches long.

2.06 LAWNS AND GRASSES

A. Seed:
1. Products: First line product of *Scott*, *Northrup King*, or accepted equal.
2. Seed: Fresh clean "new crop" seed, 85 to 95 percent germination, free of noxious weed seeds, recleaned, treated with appropriate fungicide at time of mixing.
3. Lawn Mixture: Types and proportions of seeds recommended for climate and conditions, containing minimum 60 percent *Kentucky Bluegrass*, 30 percent *Creeping Red Fescue*, maximum 1 percent weed seed, 3.1 percent inert matter.

PART 3 EXECUTION

3.01 PREPARATION

A. Planting Soil:
1. Subsoil:
    a. After subgrade is established and accepted, loosen to depth of minimum 4 inches.
    b. Remove sticks, stones, roots and rubbish.
    c. Smooth over to remove ridges and depressions so surface is parallel to finished grade.
2. Topsoil:
    a. Before mixing, clean topsoil of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful or toxic to plant growth.
    b. Do not turn existing vegetation over into soil being prepared for lawns.
3. Soil Amendments:
    a. Mix Lime with dry soil prior to mixing of fertilizer; prevent lime from contacting roots of acid-loving plants.
    b. Apply phosphoric acid fertilizer (other than that constituting a portion of complete fertilizers) directly to subgrade before applying planting soil and tilling.
    c. Mix specified soil amendments and fertilizers with topsoil at rates specified.
    d. Delay mixing of fertilizer if planting will not follow placing of planting soil within a few days.

B. Lawns and Grasses:
   1. Prepare subsoil and lawn areas just prior to actual seeding.
   2. Place approximately 1/2 of total amount of topsoil required.
   3. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil.
   4. Add specified soil amendments and mix thoroughly into upper 4 inches of topsoil.
   5. Unchanged Grades: Where lawns are to be planted in areas that have not been altered or disturbed by excavating, grading, or stripping operations, prepare soil for lawn planting as follows:
      a. Till to a depth of not less than 6 inches.
      b. Apply soil amendments and initial fertilizers as specified.
      c. Remove high areas and fill in depressions.
      d. Till soil to a homogenous mixture of fine texture, free of lumps, clods, stones, roots and other extraneous matter.
      e. If undisturbed areas contain grass or turf, prior to preparation of unchanged areas remove existing grass, vegetation and turf.
   6. Allow for sod thickness in areas to be sodded.
   7. Apply specified commercial fertilizer at rates specified and thoroughly mix into upper 2 inches of topsoil. Delay application of fertilizer if lawn planting will not follow within a few days.
   8. Fine grade lawn areas to smooth, even surface with loose, uniformly fine texture.
   9. Roll, rake, and drag lawn areas, remove ridges and fill depressions, as required to meet finish grades.
   10. Limit fine grading to areas which can be planted immediately after grading.
   11. Moisten prepared lawn areas before planting if soil is dry.
      a. Water thoroughly and allow surface moisture to dry before planting lawns.
      b. Do not create a muddy soil condition.
   12. Restore lawn areas to specified condition, if eroded or otherwise disturbed, after fine grading and prior to planting.

3.02 LAWNS AND GRASSES

A. Seeding New Lawns:
   1. Seed at time favorable to growth of grass, only at time acceptable to Engineer.
   2. Do not seed after rain unless ground surface thoroughly loosened.
   3. Do not seed when wind velocity exceeds 5 miles per hour.
   4. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
   5. Sow seed using a spreader or seeding machine.
   6. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.
   7. Sow not less than one pound of seed per 150 square feet.
   8. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with a fine spray.
   9. Protect seeded slopes against erosion.

B. Hydroseeding New Lawns:
   1. Mix specified seed, fertilizer, and pulverized mulch in water, using equipment specifically designed for hydroseed application.
   2. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.
   3. Mix slurry with tackifier.
   4. Apply slurry uniformly to all areas to be seeded.
   5. Rate of application as required to obtain specified seed sowing rate.

3.03 MISCELLANEOUS LANDSCAPE WORK

A. Placing Wood Fiber Blanket:
   1. Place within 24 hours after seeding.
   2. Overlap strip ends 10 inches minimum with upgrade strip on top.
   3. Bury upgrade end of each strip minimum 6 inches into soil.
   4. Secure with wire staples placed at maximum 3-foot spacing.

3.04 CLEANUP, MAINTENANCE, AND PROTECTION

A. During landscape work, keep pavements clean and work area in an orderly condition.

B. Promptly remove soil and debris created by lawn work from paved areas.

C. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

D. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

E. Remove erosion-control measures after grass establishment period.

F. Disposal:
   1. Remove waste and foreign materials, including weeds, stones, soil cores, grass, vegetation, and sod and legally dispose of them off Owner's property.
   2. Divert from landfill disposal whenever possible.
   3. Topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, shall be disposed of legally.

3.05 INSPECTION AND ACCEPTANCE

A. Inspection: When landscape work is completed, including maintenance, Engineer will, upon request, make an inspection to determine acceptability.

B. Rejected Work: When inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until reinspected by Engineer and found to be acceptable.

END OF SECTION

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SECTION 32 92 12

ESTABLISHING TURF AND CONTROLLING EROSION

PART 1 GENERAL

1.01 SUMMARY

A. Establishment of herbaceous ground cover on designated areas.

B. Related Sections:
1. Section 31 22 10 - Site Grading
2. Section 31 23 10 - Excavation and Embankment
3. Section 31 25 10 - Stormwater Management
4. Section 32 91 13 - Soil Preparation
5. Section 33 05 50 - Surface Facility Restoration

C. Method of Measurement:
1. Seeding: Measure by the area seeded in acres or square yards regardless of the seed mixture used. Seed, seeding, maintenance, and fertilizer are considered incidental to seeding.
2. Rolled Erosion Control Products: Measure by area covered in square yards.

D. Basis of Payment:
1. Payment for acceptable quantities of Establishing Turf and Controlling Erosion shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 SCHEDULE OF WORK

A. Coordinate turf establishment to minimize lag time after topsoil placement.

B. Plant seed between March 1 to June 15 and August 1 to December 1.

1.03 SUBMITTALS

A. Submit certified test report for each seed mixture.

B. Submit certification from the grower stating the grass varieties contained in the sod.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect seed from moisture prior to use.

PART 2 PRODUCTS

2.01 MATERIALS

A. Seed: NEDOT 801 Type A seed mix.

B. Temporary Seed Mix: NEDOT 803.01

C. Rolled Erosion Control Products: NEDOT 810 – Class 1, Type E

PART 3 EXECUTION

3.01 PREPARATION

A. Remove all undesirable weeds as directed.

B. Operate equipment at right angles to direction of drainage.

C. Fill all washouts prior to cultivation.

D. Finish all areas to provide a smooth, moist, even textured foundation of uniform density.

3.02 APPLICATION

A. Establish turf and control erosion in compliance with NEDOT 810.

B. Placing Seed:
   1. Apply seed mixture over designated areas at a rate of 120 pounds per acre.

C. Placing Rolled Erosion Control Products:
   1. Erosion Control Blankets:
      a. Place blankets within 24 hours after seeding.
      b. Place blankets in accordance with NEDOT 810.

3.03 FIELD QUALITY CONTROL

A. Turf establishment will be accepted on a total project after the maintenance period expires.

B. All erosion control items must also be in place and properly maintained prior to acceptance.

C. Once accepted, Contractor is relieved of any further maintenance or repair except for the repair of damages due to causes entirely within the Contractor's control.

3.04 MAINTENANCE

A. Clean, protect, and maintain in accordance with NEDOT 802.

B. Maintain seeded areas for a period of 60 days after planting.

C. Provide mowing, watering, and weeding throughout maintenance period to ensure healthy, growing turf.

D. Weed seeded areas by hand pulling or spot spraying with a contact herbicide only.

E. Replace areas that are found to be dead, unhealthy, or not achieving normal growth.

F. If maintenance period extends beyond fall growing season, continue maintenance into spring growth season.

G. Watering:
   1. Apply water as needed in combination with rainfall to achieve the following:
      a. Minimum rate: 1 inch per week.
      b. Maximum interval between waterings: 72 hours.
      c. Minimum application per watering: 0.25 inch.

H. During extreme heat or drought periods, increase watering to maintain moist soil to a depth of 4 inches.

END OF SECTION

SECTION 33 11 00

WATER DISTRIBUTION SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Water main pipe and fittings.

B. Related Sections:
   1. Section 31 23 33 - Trench Excavation and Backfill

C. Method of Measurement:
   1. Water Main:
      a. Measure by distance in linear feet.
      b. Measure along pipe axis with no deduction for fittings or valves.
      c. Measure in the horizontal plane unless pipe grade exceeds 15 percent.
   2. Fittings:
      a. Measure by weight in pounds.
      b. Basis of Weight:
         1) Meet AWWA C153.
         2) Exclude weights of glands, gaskets, rods, bolts, and other accessories.

D. Basis of Payment:
   1. Payment for acceptable quantities of water main and appurtenances shall be at the Contract Unit Price as listed on the Bid Form. All associated Work items shall be considered incidental.

1.02 REFERENCES

A. ASTM:
   1. A126 - Gray Iron Castings for Valves, Flanges, and Pipe Fittings
   2. A536 - Ductile Iron Castings

B. AWWA:
   1. C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch for Water Distribution

1.03 SUBMITTALS

A. Submit Certificate of Compliance for products listed under Article 1.04.

1.04 QUALITY ASSURANCE

A. Provide Certificates of Compliance from the manufacturer certifying that the following products meet the respective requirements listed in Article 1.02:
   1. PVC Piping
   2. Ductile Iron Fittings

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inspection:
   1. Inspect all pipe and products during the unloading process.
   2. Notify Engineer of any cracked, flawed or otherwise defective products.
   3. Remove all products found to be defective by the Engineer from the Site.

B. Handling and Storage: Handling and storage of products shall be in accordance with Section 2.2 of AWWA C600.

PART 2 PRODUCTS

2.01 WATER MAIN PIPE

A. Polyvinyl Chloride Pipe: AWWA C900

B. Dimension Ratio (DR): 18

C. Joints:

1. Open Trench: Bell, integral wall section with factory-installed, solid cross-section elastomeric ring.

2. Bored: CERTA LOK Restrained Joint Coupled (RJ), ASTMF477, D2241

D. Outside dimensions: PVC or Cast Iron.

E. Tracer wire: Match existing. Use waterproof connectors.

2.02 FITTINGS

A. Ductile Iron: AWWA C153.

B. Cement-Mortar Lining: AWWA C104.

C. Joints: Mechanical with ASTM F593 and F594 type 304 Stainless Steel bolts and nuts.

PART 3 EXECUTION

3.01 CONSTRUCTION REQUIREMENTS

A. Connection to Existing System:
   1. Pressure Tap:
      a. Install tap in location shown on the Drawings.
      b. Use approved tapping machine designed specifically for tapping under pressure.
      c. Install tapping sleeve and gate valve as part of assembly.
      d. Install blocking as required.
   2. Cut-In Connection:
      a. Isolate segment of pipe to be cut and drain water from the line.
      b. Connect tee and sleeve assembly to pipe ends.
      c. Install blocking as required.
   3. Connect to Inplace Fitting:
      a. Isolate segment of inplace pipe and remove blocking as required.
      b. Remove plug and drain water from the line.
      c. Install blocking as required.

B. Pipe Installation:
   1. Install pipe at the alignment and grade shown on the Drawings.
   2. Install appurtenances in the locations shown on the Drawings.
   3. Remove all dirt and foreign material from the pipe interior prior to installation.
   4. See Section 31 23 33 for pipe foundation and backfill procedures.
   5. See Section 31 23 33 in case of conflicts with existing pipes.

C. Valve and Box Installation:
   1. Verify that subgrade material is adequate to support valve assembly.
   2. Install valves with stems vertical and plumb.
   3. Install boxes plumb and centered over the valve nut.
   4. Verify that box remains plumb and centered during backfill.
   5. Adjust box cover to required grade.

D. Thrust Restraint:
   1. Install thrust restraints at all bends, tees and plugs.
   2. Concrete Blocking:
      a. Place between the fitting and undisturbed trench wall.
      b. Minimum thickness: 12 inches.
      c. Minimum area in square feet shall be in accordance with the following:

Pipe	Tee or Plug	1/4 Bend	1/32 and 1/8 Bend	1/16 Bend
6 inch	2.9	3.1	1.6	0.8
8 inch	3.7	5.3	2.9	1.4
10 inch	5.7	8.1	4.4	2.2
12 inch	8.1	13.4	6.6	3.2
16 inch	15.1	21.4	11.6	5.9
20 inch	23.2	30.2	18.1	9.3
24 inch	33.6	48.5	26.1	13.3

      d. Size blocking based on the larger main.
      e. Verify that bolts are accessible after concrete is poured.
   3. Restrained Joints:
      a. Submit method and type to Engineer for approval.
      b. Install in accordance with “Thrust Restraint Design for Ductile Iron Pipe”.

3.02 FIELD QUALITY CONTROL

A. Perform the following tests upon completion of the system and prior to being placed into service:
   1. Pressure and Leakage Test:
      a. Perform pressure and leakage test in accordance with AWWA C600.
      b. Test Pressure: 150 psi.
      c. Test Duration: 2 hours.
      d. Gage Requirements:
         1) Size: 4-1/2 inch dial.
         2) Range: 0 to 200 psi.
         3) Gradation: 2 psi.
         4) Accuracy: 1/2 percent.
      e. Do not allow pressure to vary more than 5 psi during the test.
      f. Do not allow pressure to vary more than 2 psi during the last hour of the test.
      g. Allowable Leakage: One-half of the volume allowed by AWWA C600 in accordance with the following:

$$L = \frac{SD\sqrt{P}}{296{,}000}$$

L = Allowable Leakage in Gallons Per Hour
S = Length of Pipe Tested in Feet
D = Nominal Diameter of Pipe in Inches
P = Average Test Pressure During Test in Pounds/Square Inch (Gage)

   2. Testing Services:
      a. Perform separate pressure and leakage test on the services with the corporation stops open.
      b. Test Pressure: 100 psi.

c. Allowable Leakage: None.
d. At Contractor's option, service testing may be done concurrent with main testing.

3.03 DISINFECTION

A. Disinfect all newly installed water mains, appurtenances and services in accordance with AWWA C651.
   1. Tablet or Continuous Feed Method:
      a. Hold chlorine solution in pipe for a minimum period of 24 hours.
         1) Initial dosage: 50 ppm minimum.
         2) Residual dosage after hold period: 10 ppm minimum.

B. Flush system within 24 hours after disinfection is completed.

C. Sampling and Testing:
   1. After final flushing, obtain 2 sets of samples taken a minimum of 24 hours apart.
   2. Each sample set shall include:
      a. One sample for every 1,200 feet of main.
      b. One sample at each dead-end.
      c. Ensure that 1 sample is obtained from each branch of main.
      d. Minimum sample required: 2
   3. Perform coliform tests on each sample.
   4. Rechlorinate if any sample tests positive for coliform.

END OF SECTION

SECTION 33 31 00

SANITARY SEWER SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Gravity effluent sewer pipe.
   2. Sanitary manholes and appurtenances.

B. Related Sections:
   1. Section 31 23 33 - Trench Excavation and Backfill

C. Method of Measurement:
   1. Sewer Pipe:
      a. Measure by distance in linear feet.
      b. Measure along longitudinal axis from manhole centers with no deduction for fittings.
      c. Measure each pipe size, class, and depth zone separately.
   2. Manholes:
      a. Measure each size by vertical foot..
      b. Unit includes granular foundation, base, precast barrel and cone sections, steps, rings, frame, and cover.
      c. Measure depth from lowest invert to top of frame.
   3. Valves:
      a. Measure each size and type individually as a unit.
   4. Manhole Connections:
      a. Measure connections to an existing manhole as a unit.
      b. Unit includes cutting and patching of manhole wall and base, and construction of a new invert.

D. Basis of Payment:
   1. Payment for acceptable quantities of sanitary sewer items shall be at the Contract Unit Price as listed on the Bid Form.
   2. All associated Work items shall be considered incidental.

1.02 REFERENCES

A. ANSI:
   1. A21.4 - Standard for Cement - Mortar Lining for Ductile Iron Pipe and Fittings
   2. A21.11 - Standard for Rubber - Gasket Joints for Ductile Iron Pressure Pipe and Fittings
   3. A21.51 - Standard for Ductile Iron Pipe Centrifugally Cast
   4. A21.53 - Standard for Ductile Iron Compact Fittings, 3-inch through 16-inch

B. ASTM:
   1. A48 - Specification for Gray Iron Castings
   2. A74 - Specification for Cast Iron Soil Pipe and Fittings
   3. C76 - Specification for Reinforced Concrete Pipe
   4. C361 - Specification for Reinforced Concrete Low Head Pressure Pipe
   5. C425 - Specification for Compression Joints for VCP and Fittings
   6. C478 - Specification for Precast Reinforced Concrete Manhole
   7. C564 - Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings
   8. D2321 - Recommended Practice for Installation of Flexible Thermo-plastic Sewer Pipe
   9. D3034 - Specification for PVC Sewer Pipe and Fittings
   10. F477 - Elastomeric Seals for Joining Plastic Pipe
   11. F714 - Specification for PE Sewer Pipe and Fittings

1.03 SUBMITTALS

A. Submit Shop Drawings for each manhole.

B. Quality Assurance/Control Submittals:
   1. Submit Certificates of Compliance from manufacturers certifying that materials meet reference specifications listed in Article 1.02.
   2. Submit record of service connections weekly to Engineer.

1.04 HANDLING AND DELIVERY OF MATERIALS

A. Inspect pipe and materials during unloading process and notify Engineer of cracked, flawed or otherwise defective material.

1.05 STAKING

A. Contractor shall provide necessary staking for all Work under this Section.

1.06 MAINTAINING SEWER SYSTEM

A. Maintain flow in sanitary sewers on continuous basis while construction is underway.

B. Plug sewers with inflatable plug. Provide pumps, portable generators, hoses, and related items appurtenant to the Work.

PART 2 PRODUCTS

2.01 PIPE AND FITTINGS

A. Provide the following:

Material	Class	Joint
~~Cement Lined Ductile Iron with Class B Pipe Bedding~~	~~Class 52~~	~~Push-On (Pipe) Mechanical (Fittings)~~
BASE BID (8”): PVC with Class B Pipe Bedding	SDR 26	Elastomeric Gasket Water Stop Gasket
BASE BID (24”): VITRIFIED CLAY PIPE (VCP) WITH CLASS C PIPE BEDDING (HALF PIPE)	ASTM C301	Push On
ALTERNATE I (24”): Centrifugally Cast Fiberglass Reinforced Polymer Pipe (CCFRPM) with Class B Pipe Bedding	ASTM D3262 ASTM D4161 ASTM D2412 ASTM D3681 ASTM D638	Elastomeric membrane with FWC Coupling for direct bury pipe.

B. Provide pipe and fittings of each material type from same manufacturer.

2.02 MANHOLES

A. Precast Sections:
   1. ASTM C478.
   2. Cone: Eccentric.
   3. Pipe Joints: Gasketed, water-tight.

B. Covers and Frames:
   1. ASTM A48:Neenah Casting or approved equal

C. Steps:
   1. Cast aluminum by Modern Metals Foundry (A-12).
   2. Polypropylene coated steel by MA Industries.

D. Seals: Infi-shield, Inc., or approved equal.

PART 3 EXECUTION

3.01 PREPARATION

A. Line and Grade: Provide means for accurately transferring line and grade from ground surface stakes to working point in trench.

B. Water Stops: Provide in manholes as required to prevent infiltration into system.

3.02 CONSTRUCTION REQUIREMENTS

A. Pipe Installation:
   1. Comply with ASTM D2321 for PVC installation.
   2. Inspect pipe for defects and cracks while suspended before lowering into trench.
   3. Place pipe bell at upstream end of pipe length.
   4. Install pipe from lower to higher invert elevation at a uniform slope between manholes.
   5. Place plug in end of incomplete piping at end of day and when Work stops.
   6. Provide watertight plugs at future connection plugs.
   7. When water is present in trench, seals are to remain in-place while trench is pumped completely dry.
   8. See Section 31 23 33 for pipe foundation and backfill.
   9. Maximum Allowable Deviation From Staked Grade:
      a. Alignment: 0.30 feet.
      b. Elevation: 0.02 percent.

B. Manhole Installation:
   1. Place precast manhole base on compacted granular subgrade.
   2. Locate steps within 1 inch of vertical alignment and within 1 inch of required vertical spacing.
   3. Provide monolithic base for drop manholes.
   4. Maximum Allowable Deviation From Staked Grade:
      a. Alignment: 0.30 feet.
      b. Elevation: 0.03 feet.

3.03 FIELD QUALITY CONTROL

A. Remove all dirt and foreign material from pipe interior prior to testing.

B. Gravity Sewer Pipe:
   1. Pipe Diameter Larger Than 27 Inches: Infiltration test.

C. Perform the following tests upon completion of sewer construction and prior to any external plumbing connections:
   1. Infiltration Test:
      a. Manholes shall be watertight, with no leakage permitted.
      b. Place 90-degree V-notch weirs in locations directed by Engineer to measure leakage in sewer lines.
      c. Allowable leakage rate shall be 100 gallons/day/inch diameter/mile of sewer between any adjacent manholes.
      d. Provide corrective measures for lines exceeding the allowable leakage rate.

2. Deflection Test:
   a. Perform on PVC pipe at least 30 days after trench backfill has been placed.
   b. Perform test by pulling a mandrel through each line between manholes without aid of mechanical pulling devices.
   c. Mandrel diameter: Minimum 95 percent of the base inside diameter of the pipe as follows:

Nominal Size (in.)	Base I.D.	5% Deflection Mandrel
4	3.874	3.68
6	5.742	5.46
8	7.665	7.28
10	9.563	9.08
12	11.360	10.79
15	13.897	13.20
18	16.975	16.13
21	20.004	19.01
24	22.481	21.36
27	25.326	24.06
30	28.639	27.21
33	32.224	30.61
36	35.808	34.02
42	40.401	38.38
48	46.094	43.79

   d. The line will be considered acceptable if mandrel can progress through line without binding.
   e. Provide corrective measures for lines not meeting these requirements.

END OF SECTION

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Building a Better World
for All of Us®

Engineers | Architects | Planners | Scientists

COST OPINION

East Seward Street Improvements
Seward, Nebraska
APRIL 5TH, 2022

	ITEM	UNIT	QTY.	Unit Price	Extension
GROUP A - PAVING					
1	Mobilization	LS	1	$ 100,000.00	$ 100,000.00
2	Excavation (Established Quantity)	CY	11,150	$ 9.00	$ 100,350.00
3	Embankment (Established Quantity)	CY	721	$ 3.00	$ 2,163.00
4	Grind Concrete Curb	LF	30	$ 10.00	$ 300.00
5	Remove Pavement	SY	3,495	$ 7.00	$ 24,465.00
6	Remove Driveway Pavement	SY	648	$ 6.00	$ 3,888.00
7	Remove Gravel/Rock Surfacing	SY	3,510	$ 5.00	$ 17,550.00
8	Remove Sidewalk	SF	200	$ 2.00	$ 400.00
9	Remove CMP Culvert	LF	89	$ 14.00	$ 1,246.00
10	Remove RCP Storm Pipe	LF	192	$ 15.00	$ 2,880.00
11	Remove & Reset Mailbox	EA	5	$ 450.00	$ 2,250.00
12	Remove & Reset Sign	EA	7	$ 200.00	$ 1,400.00
13	Remove Sign	EA	4	$ 160.00	$ 640.00
14	Remove Existing Fire Hydrant & Valve	EA	2	$ 460.00	$ 920.00
15	Remove Area Inlet	EA	1	$ 900.00	$ 900.00
16	Remove Junction Box	EA	1	$ 950.00	$ 950.00
17	Remove Concrete Flume	EA	1	$ 250.00	$ 250.00
18	Build Concrete Flume	EA	2	$ 1,500.00	$ 3,000.00
19	Rip-Rap (River Rock)	TON	40	$ 110.00	$ 4,400.00
20	Expansion Joint with Dowel Bars	LF	64	$ 20.00	$ 1,280.00
21	Build 8" PCC Pavement	SY	10,232	$ 49.00	$ 501,368.00
22	Build 1.0' Wide PCC Curb & Gutter (8")	LF	175	$ 22.00	$ 3,850.00
23	Build 2.5' Wide PCC Curb & Gutter (8")	LF	835	$ 25.00	$ 20,875.00
24	Build 6" PCC Trail	SF	24,554	$ 7.00	$ 171,878.00
25	Build 6" PCC Driveway	SY	460	$ 40.00	$ 18,400.00
26	Build 7" PCC Driveway	SY	63	$ 50.00	$ 3,150.00
27	Build 5" PCC Sidewalk	SF	1,896	$ 7.00	$ 13,272.00
28	8" Subgrade Preparation	SY	3,251	$ 2.50	$ 8,127.50
29	12" Stabilized Subgrade Preparation	SY	10,232	$ 8.00	$ 81,856.00
30	Install Detectable Warning Panel	SF	288	$ 15.00	$ 4,320.00
31	Install 4" Double Yellow Wet Reflective Polyurea Pavement Markings, Grooved	LF	2272	$ 8.00	$ 18,176.00
32	Install White Cross-Walk Bar Markings, Grooved	SF	160	$ 5.00	$ 800.00
33	Install Sign Post	EA	7	$ 260.00	$ 1,820.00
34	Install Sign	SF	51.75	$ 58.00	$ 3,001.50
35	Install Silt Fence	LF	1050	$ 2.75	$ 2,887.50
36	Irrigation Replacement	LS	1	$ 3,000.00	$ 3,000.00
37	Construction Entrance	EA	2	$ 500.00	$ 1,000.00
38	Straw Wattle	LF	180	$ 4.00	$ 720.00

COST OPINION

East Seward Street Improvements
Seward, Nebraska
APRIL 5TH, 2022

	ITEM	UNIT	QTY.	Unit Price	Extension
39	Concrete Washout	EA	1	$ 550.00	$ 550.00
40	Storm Drain Inlet Protection	EA	14	$ 350.00	$ 4,900.00
41	Seeding - Super Turf II w/ S75 Erosion Control Blanket	SY	6200	$ 6.00	$ 37,200.00
42	Seeding - Low Grow Grass Mix w/ Hay Mulch	SY	9950	$ 2.00	$ 19,900.00
43	SWPP Information Sign	EA	1	$ 500.00	$ 500.00
44	Install Street Tree	EA	12	$ 550.00	$ 6,600.00
45	Temporary Access Road	LS	1	$ 5,000.00	$ 5,000.00
46	Traffic Control	LS	1	$ 10,000.00	$ 10,000.00
					$ 1,212,383.50
GROUP B - STORM SEWER & UTILITIES					
47	Connect to Existing Sanitary Sewer Stub	EA	1	$ 2,000.00	$ 2,000.00
48	Connect to Existing Sanitary Sewer Trunk 24" VCP	EA	1	$ 2,000.00	$ 2,000.00
49	Build 8" PVC Sanitary Sewer Main SDR 26	LF	317	$ 45.00	$ 14,265.00
50	Build 24" VCP Sanitary Sewer Trunk Main	LF	1590	$ 135.00	$ 214,650.00
51	Build 60" Sanitary Sewer Manhole	VF	62.25	$ 500.00	$ 31,125.00
52	Install External Frame Seal	EA	4	$ 400.00	$ 1,600.00
53	Construct Manhole Ring Collar	EA	4	$ 800.00	$ 3,200.00
54	Build 8" PVC Sanitary Cap	EA	2	$ 500.00	$ 1,000.00
55	Adjust Manhole to Grade	EA	3	$ 2,000.00	$ 6,000.00
56	Connect to Existing Water Main	EA	3	$ 1,500.00	$ 4,500.00
57	Install 8" Gate Valve	EA	6	$ 650.00	$ 3,900.00
58	Install 8"x8" Tee	EA	4	$ 550.00	$ 2,200.00
59	Install 8" Plug	EA	5	$ 238.00	$ 1,190.00
60	Install 8" PVC C900 Water Main	LF	225	$ 34.00	$ 7,650.00
61	Install 8" PVC C900 Water Main (Bored - Certa Lok)	LF	93	$ 50.00	$ 4,650.00

COST OPINION

East Seward Street Improvements
Seward, Nebraska
APRIL 5TH, 2022

	ITEM	UNIT	QTY.	Unit Price	Extension
62	Type II Hydrant Assembly, L=5.5'	EA	4	$ 5,000.00	$ 20,000.00
63	Build Outlet Structure	EA	1	$ 7,000.00	$ 7,000.00
64	Build Storm Sewer Junction Box	EA	7	$ 4,500.00	$ 31,500.00
65	Build 8'x6' Storm Sewer Manhole	EA	1	$ 6,000.00	$ 6,000.00
66	Build Area Grate Inlet w/ Type C Grate	EA	1	$ 4,000.00	$ 4,000.00
67	Build NDOT Curb Inlet - (Y = 8')	EA	8	$ 4,350.00	$ 34,800.00
68	Build NDOT Curb Inlet - (Y = 10')	EA	3	$ 4,700.00	$ 14,100.00
69	15" RCP Storm Sewer Pipe	LF	625	$ 65.00	$ 40,625.00
70	18" RCP Storm Sewer Pipe	LF	1081	$ 70.00	$ 75,670.00
71	24" RCP Storm Sewer Pipe	LF	854	$ 75.00	$ 64,050.00
72	36" Round Equivalent RCP Storm Sewer Pipe	LF	172	$ 150.00	$ 25,800.00
73	24" RCP FES	EA	1	$ 1,200.00	$ 1,200.00
74	36" Round Equivalent RCP FES	EA	1	$ 2,000.00	$ 2,000.00
		TOTAL GROUP B			*$ 626,675.00*
GROUP C - LIGHTING					
75	NMC SCH. 80 1-1/2-INCH	LF	840	$ 10.00	$ 8,400.00
76	NMC SCH. 80 1-1/2-INCH - DIRECTIONAL BORE	LF	200	$ 40.00	$ 8,000.00
77	ELECTRICAL WIRE #12 AWG	LF	1530	$ 1.10	$ 1,683.00
78	DIRECT BURY ELECTRICAL WIRE #8 AWG	LF	22400	$ 1.80	$ 40,320.00
79	INSTALL LIGHTING UNIT	EACH	30	$ 800.00	$ 24,000.00
		TOTAL GROUP C			*$ 82,403.00*
	TOTAL BASE BID (GROUP A + B + C)			**$**	**1,921,461.50**

2. East Seward Street Plan Update - City Administrator Butcher

Total Responses

Short Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
1	Close E. Seward St. at Plum Creek Bridge	0	0	0	52
2	Covert E Seward to cul-de-sac	0	0	0	53
3	Close westbound E. Seward Rd at the roundabout	6	1	5	39
4	Reconstruct & widen E. Seward St between Columbia & Lindell	13	8	6	29
5	Convert E. Seward St. Lindell Av and Jackson St to one-way	13	14	3	13
6	Restrict trucks on E. Seward St between Columbia and Lindell	10	17	9	9
7	Eliminate parking on E. Seward St. between Columbia & Lindell	10	8	6	28
8	Add north-south roads father east	13	10	17	6

Long Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
5	Crooked Mile Hwy 34 to E. Seward	22	1	1	12
6	Midland Pacific RR Row	3	1	1	36
7	Krutz, RR Row to Bluff Rd	0	3	1	38
8	Gee west property line, RR Row to Bluff Rd	0	0	1	32
9	E. Seward St, Prairie Flower Rd to 252 St	3	4	7	5
10	Prairie Flower Rd, E. Seward to Bluff Rd	15	11	3	19
12	Lieb/Hofer property line, Prairie Flower to 252nd	1	0	0	15
13	Bluff Road, Plum Creek Bridge to 252nd	5	6	12	2
14	252nd St, Hwy 34 to Bluff Rd	2	19	10	1
15	252nd St, Bluff Rd to Waverly Rd	1	0	8	3
16	Woodsage St, Hwy 34 to E. Seward St	2	4	5	22
17	Prairie Flower Rd, Bluff Rd to Waverly Rd	1	3	3	12
18	Karol Kay Blvd, E Seward roundabout to Hillcrest	9	13	6	13

East Seward Neighborhood Responses

Short Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
1	Close E. Seward St. at Plum Creek Bridge				No No No No No No No No No No No No No No No No No No No No No
2	Covert E Seward to cul-de-sac				No No No No No No No No No No No No No No No No No No No
3	Close westbound E. Seward Rd at the roundabout	1 1 1 1 1	2	3 3 3 3 3	No No No No No
4	Reconstruct & widen E. Seward St between Columbia & Lindell	1 1	2 2 2		No No No No No No No No No No No No No No No
5	Convert E. Seward St. Lindell Av and Jackson St to one-way	1 1 1	2 2 2		No No No No No
6	Restrict trucks on E. Seward St between Columbia and Lindell	1 1 1 1 1 1	2 2 2 2 2	3 3 3	No
7	Eliminate parking on E. Seward St. between Columbia & Lindell	1 1	2 2		No No No No No No No No No No No No No No No
8	Add north-south roads father east	1 1 1 1	2 2 2 2 2	3 3 3 3 3 3 3 3	

Long Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
5	Crooked Mile Hwy 34 to E. Seward	1 1 1 1 1 1 1 1 1 1 1	2		No No
6	Midland Pacific RR Row				No No No No No No No No No No No No No No No No No No No
7	Krutz, RR Row to Bluff Rd				No No No No No No No No No No No No No No No
8	Gee west property line, RR Row to Bluff Rd				No No No No No No No No No
9	E. Seward St, Prairie Flower Rd to 252 St			3 3	No
10	Prairie Flower Rd, E. Seward to Bluff Rd	1 1	2 2 2 2 2 2	3 3	No No
12	Lieb/Hofer property line, Prairie Flower to 252nd	1			
13	Bluff Road, Plum Creek Bridge to 252nd		2	3 3 3 3	
14	252nd St, Hwy 34 to Bluff Rd	1	2 2 2	3 3	
15	252nd St, Bluff Rd to Waverly Rd			3	
16	Woodsage St, Hwy 34 to E. Seward St			3 3	No No No No No No No No No No No No No No No
17	Prairie Flower Rd, Bluff Rd to Waverly Rd	1		3	
18	Karol Kay Blvd, E Seward roundabout to Hillcrest	1 1 1	2 2 2 2 2 2 2 2 2	3 3	No

Valley View Neighborhood Responses

Short Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
1	Close E. Seward St. at Plum Creek Bridge				No No No No No No
2	Covert E Seward to cul-de-sac				No No No No No No
3	Close westbound E. Seward Rd at the roundabout				No No No No No No No No
4	Reconstruct & widen E. Seward St between Columbia & Lindell		2 2	3	No No No
5	Convert E. Seward St. Lindell Av and Jackson St to one-way	1 1 1	2 2		No No
6	Restrict trucks on E. Seward St between Columbia and Lindell		2 2 2	3 3	No
7	Eliminate parking on E. Seward St. between Columbia & Lindell	1 1	2	3	No No No
8	Add north-south roads father east	1 1 1 1 1	2	3 3	

Long Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
5	Crooked Mile Hwy 34 to E. Seward	1 1 1		3	
6	Midland Pacific RR Row				No No
7	Krutz, RR Row to Bluff Rd				No No No
8	Gee west property line, RR Row to Bluff Rd				No No No
9	E. Seward St, Prairie Flower Rd to 252 St		2 2	3	No No
10	Prairie Flower Rd, E. Seward to Bluff Rd	1 1 1 1 1 1	2 2 2		
12	Lieb/Hofer property line, Prairie Flower to 252nd				No No
13	Bluff Road, Plum Creek Bridge to 252nd		2 2 2	3	No
14	252nd St, Hwy 34 to Bluff Rd		2	3 3	No
15	252nd St, Bluff Rd to Waverly Rd				No
16	Woodsage St, Hwy 34 to E. Seward St	1	2	3	
17	Prairie Flower Rd, Bluff Rd to Waverly Rd			3 3	No
18	Karol Kay Blvd, E Seward roundabout to Hillcrest			3 3	No No No

Ridge Run Neighbordhood Responses

Short Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
1	Close E. Seward St. at Plum Creek Bridge				No No No No No No No No No No No No No No No No No No No No No No No No No No No
2	Covert E Seward to cul-de-sac				No No No No No No No No No No No No No No No No No No No No No No No No No No No
3	Close westbound E. Seward Rd at the roundabout				No No No No No No No No No No No No No No No No No No No No No No No No No No No
4	Reconstruct & widen E. Seward St between Columbia & Lindell	1 1 1 1 1 1 1 1 1 1	2 2 2	3 3 3 3 3	No No No No
5	Convert E. Seward St. Lindell Av and Jackson St to one-way	1 1 1	2 2 2 2 2 2 2 2	3 3	No No No No No No
6	Restrict trucks on E. Seward St between Columbia and Lindell	1 1 1	2 2 2 2	3 3 3	No No No No No No No
7	Eliminate parking on E. Seward St. between Columbia & Lindell	1 1 1 1 1 1	2 2 2 2 2	3 3 3 3	No No No No No No No
8	Add north-south roads father east	1 1 1	2 2 2	3 3 3	No No No No No No

Long Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
5	Crooked Mile Hwy 34 to E. Seward	1 1 1 1			No No No No No No No No No No No
6	Midland Pacific RR Row	1 1 1	2	3	No No No No No No No No No No No No No
7	Krutz, RR Row to Bluff Rd		2 2 2	3	No No No No No No No No No No No No No
8	Gee west property line, RR Row to Bluff Rd			3	No No No No No No No No No No No No No
9	E. Seward St, Prairie Flower Rd to 252 St	1 1 1	2	3 3 3 3	No
10	Prairie Flower Rd, E. Seward to Bluff Rd	1 1 1 1 1 1 1	2		No No No No No No No No No No No
12	Lieb/Hofer property line, Prairie Flower to 252nd				No No No No No No No No No No
13	Bluff Road, Plum Creek Bridge to 252nd	1 1	2	3 3 3 3 3 3	No
14	252nd St, Hwy 34 to Bluff Rd		2 2 2 2 2 2 2 2 2 2 2	3 3 3 3	
15	252nd St, Bluff Rd to Waverly Rd	1		3 3 3 3 3 3	No
16	Woodsage St, Hwy 34 to E. Seward St	1	2 2	3	No No No no No No
17	Prairie Flower Rd, Bluff Rd to Waverly Rd		2 2 2		No No No No No No
18	Karol Kay Blvd, E Seward roundabout to Hillcrest	1 1 1 1 1	2 2		No No No No No No No No No

Other Neighborhood Responses

Short Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
1	Close E. Seward St. at Plum Creek Bridge				No No No No No No No
2	Covert E Seward to cul-de-sac				No No No No No No No
3	Close westbound E. Seward Rd at the roundabout	1			No No No No
4	Reconstruct & widen E. Seward St between Columbia & Lindell	1			No No No No No No
5	Convert E. Seward St. Lindell Av and Jackson St to one-way	1 1 1 1	2	3	
6	Restrict trucks on E. Seward St between Columbia and Lindell	1	2 2 2 2 2	3	
7	Eliminate parking on E. Seward St. between Columbia & Lindell			3	No No No No
8	Add north-south roads father east	1	2	3 3 3 3	

Long Term	Project Description	Number of Votes			
		Priority 1	Priority 2	Priority 3	No
5	Crooked Mile Hwy 34 to E. Seward	1 1 1 1			
6	Midland Pacific RR Row				No No No No No No
7	Krutz, RR Row to Bluff Rd				No No No No No No No
8	Gee west property line, RR Row to Bluff Rd				No No No No No No
9	E. Seward St, Prairie Flower Rd to 252 St		2		No
10	Prairie Flower Rd, E. Seward to Bluff Rd		2	3	No No No No No
12	Lieb/Hofer property line, Prairie Flower to 252nd				No No No
13	Bluff Road, Plum Creek Bridge to 252nd	1 1 1	2	3	
14	252nd St, Hwy 34 to Bluff Rd	1	2 2 2	3 3	
15	252nd St, Bluff Rd to Waverly Rd			3	No
16	Woodsage St, Hwy 34 to E. Seward St		2	3	No No No
17	Prairie Flower Rd, Bluff Rd to Waverly Rd				No No No No No
18	Karol Kay Blvd, E Seward roundabout to Hillcrest	1	2 2	3 3	No

	These comments were selected because they are other ideas than what was presented to alleviate or slow traffic on East Seward Street and Columbia Avenue.
1	You could continue East Moffitt/Locust Street to #18 taking pressure off of Columbia to the South and North of Concordia.
2	252nd plans should be pushed east to 238th.
3	Install speed bumps on East Seward Street.
4	A bridge ok for trucks/emergencies to cross Plum Creek at Lincoln or Bradford to tie in local roads to collector or arterial roads
5	Relocate the dog park to reduce traffic on East Seward Street.
6	Leave the improved East Seward and round-a-bout as is.
7	Make Seward Street and Jackson Street one ways to Highway 15.
8	Round-a-bout at Seward Street and Lindell.
9	Improve Highway 34 and Columbia intersection

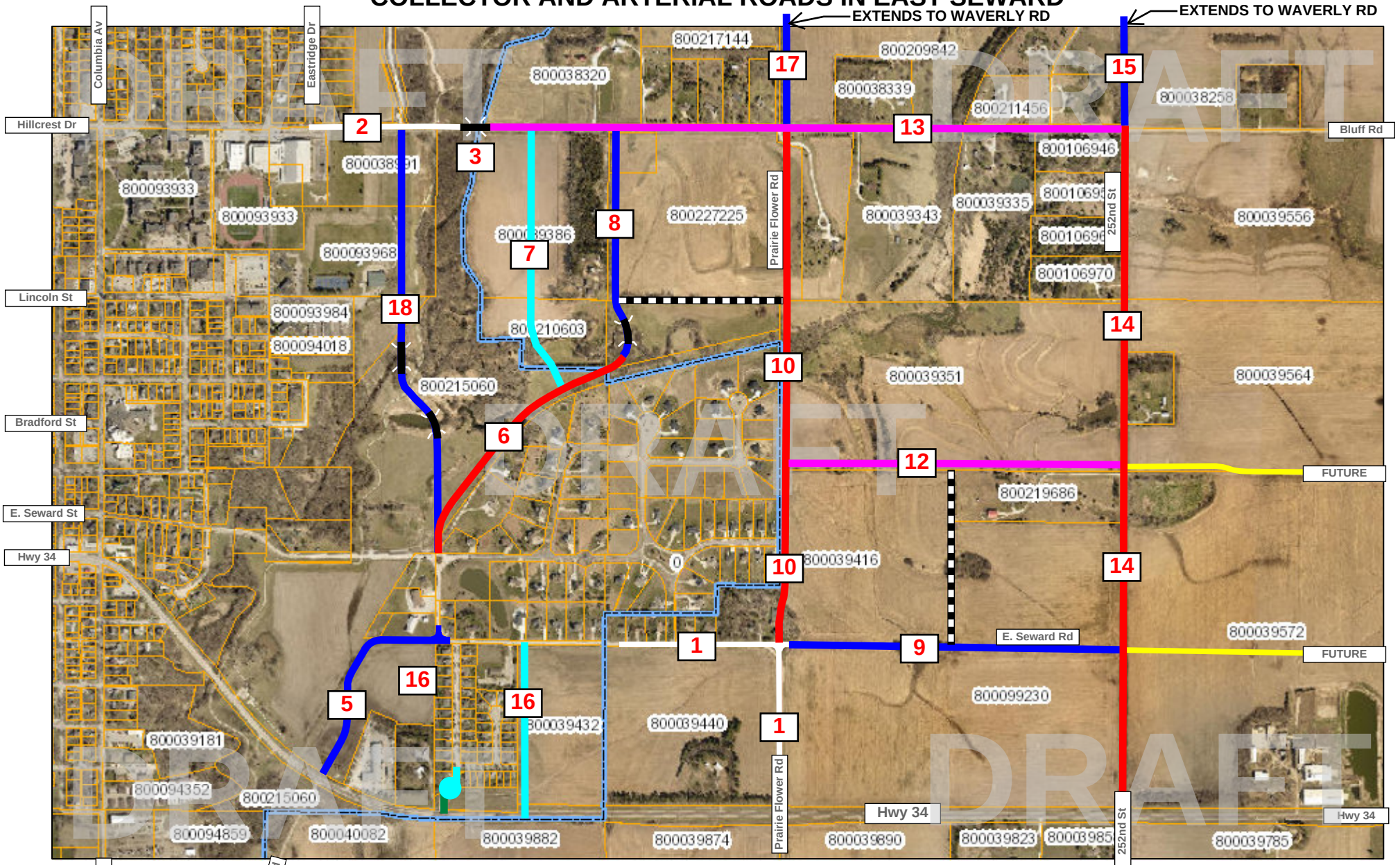
TABLE 1. ESTIMATED PROJECT COSTS FOR EAST SEWARD COLLECTOR AND ARTERIAL ROAD PROJECTS – CURRENT, PROPOSED AND CONCEPTUAL[1]

No.	Description	Centerline Length [ft]	Pavement Width [ft]	Design[2,3]	Total Project Cost [USD]	Comment
1.	E. Seward/Prairie Flower Road	2,500	32	Urban Collector	1,647,000	In design
2.	E. Hillcrest, Eastridge to Plum Creek	1,200	38	Urban Arterial	1,158,000	In design
3.	Plum Creek Bridge	200	28	Urban Collector	1,600,000	In design
4.	Deleted – Alt 4 added to No. 5.					
5.	Crooked Mile, Hwy 34 to E. Seward	1,500	28	Urban Collector	1,415,000	Acquire ROW: $11,000
6.	Midland Pacific RR ROW	1,600	28	Urban Collector	1,498,000	
7.	Krutz property, RR ROW to Bluff Rd	2,000	28	Urban Collector	2,635,000	1 - Box Culvert, $530,000 Acquire ROW: $74,000
8.	Gee west property line, RR ROW to Bluff Rd	1,800	32	Urban Collector	2,707,000	1 - Box Culvert, $600,000 Acquire ROW: $73,000
9.	E. Seward St, Prairie Flower Rd to 252nd St	2,600	32	Urban Collector	2,783,000	Acquire ROW: $106,000
10.	Prairie Flower Rd, E. Seward to Bluff Rd	4,000	32	Urban Collector	5,062,000	1 - Box Culvert, $600,000 Acquire ROW: $163,000
11.	Combined with No. 10.					
12.	Lieb/Hofer property line, Prairie Flower to 252nd St	2,600	32	Urban Collector	2,783,000	Acquire ROW: $106,000
13.	Bluff Road, Plum Creek Bridge to 252nd	5,000	24	Rural Arterial	2,925,000	1 - Box Culvert, $600,000 Urban adder: $1,495,000
14.	252nd St, Hwy 34 to Bluff Rd.	5,300	24	Rural Arterial	2,274,000	Urban adder: $1,585,000
15.	252nd St, Bluff Rd to Waverly Rd	5,300	24	Rural Arterial	3,054,000	1 - Box Culvert, $600,000 Urban adder: $1,585,000
16.	Woodsage St, Hwy 34 to E. Seward St.	1,300	32	Urban Collector	1,392,000	Acquire ROW: $53,000
17.	Prairie Flower Rd, Bluff Rd to Waverly Rd	5,300	32	Urban Collector	5,672,000	Acquire ROW: $215,000
18.	Karol Kaye Blvd, E. Seward roundabout to Hillcrest	3,300	28	Urban Collector	6,482,000	1 - Box Culvert, $530,000 1 - Bridge, $1,600,000

Notes:

1. Projects graphically presented in Figure 1.
2. Urban Design includes: curb & gutter, curb inlets, storm sewer system, sidewalk, street lights.
3. Rural Design includes: gravel shoulder, grassed ditches, driveway culverts, no sidewalk, no lighting.

FIGURE 1. LOCATION MAP OF PROPOSED CONCEPTUAL COLLECTOR AND ARTERIAL ROADS IN EAST SEWARD



DRAFT DRAFT DRAFT

March 4, 2022

DISCL M
and s uld

s basis,

1:16,338

0 0.125 0.25 0.5 mi

0 0.2 0.4 0.8 km

LEGEND

- Bridge or Box Culvert
- X — Project reference number[1]
- City Limits
- Proposed closure
- Proposed collector or arterial road[2]
- Alternate or secondary route
- Future collector

Note 1: Numbers 4 - 18 do not imply any planned order of implementation. Numbers 1, 2 and 3 represent active projects in design.
Note 2: Colors are strictly to visually segregate into constructible projects and do not reference type of road (i.e., hierarchy)

Seward County gWorks.

3. Preliminary Plat of Prairie View Addition - Building/Zoning & Code Enf Director Dworak

City of Seward

Major Subdivision Application

Applications shall be submitted a minimum of 30 days prior to City Planning Commission Meeting. Planning Commission meets the 2nd Monday of each month

Date Submitted: 11-12-2021

PAID Prelim 11-15-2021 CK

Preliminary Plat Application Fees:
$400.00 + $40.00 Per Lot ($ 6,840), + $100 Notification fee = $7,340.00

Name of Subdivision: Prairie View

Owner/Developer: Bob Benes

Legal Description: SE + SW Quarter of the SW Quarter of S22 T11 R3E

Project Engineer: Mark Palmer Number of Lots: 171

Present Zoning: R-3 Requested Zoning: R-3

Within City Limits	Yes X	No	NA
Adjacent to City Limits	Yes X	No	NA
Within 2 mile area	Yes X	No	NA
Annexation Requested	Yes X	No	NA
Subdivision Agreement submitted	Yes X	No	NA
Performance Bond Required	Yes	No X	NA

Signed by Developer _____

Preliminary Plat Review

Staff Review		Agency Review	
Electric Dept		Cable TV	
Street Dept		Gas Co	
Water/Waste		Telephone Co	
Police Dept		School Board	
Park/Rec Dept		County P.C.	

Final Plat Application fees:
$100.00 + $10.00 Per Lot ($_____) + filing fee (_____) = _____

Aid to Construction for Electric Dept (City of Seward Resolution 8-07):
Developer fees $400 Per Lot = $ _____ + $4.00 per foot of electrical line installation for lots _____ = _____

Neighborhood Park Dedication/Fees In Lieu Of (City of Seward Unified Land Development Ord. 410-41.5) See ULDO Article 41, Public Improvements & Infrastructure, 410-41.5 Section B, Parks and Reservations, to determine land or cash donation: _____

Date and action taken: _____ **Total Fees Due:** _____

Planning Commission: _____ City Council: _____

Revised: 2/14/2020

City of Seward Planning Commission

142 N 7th St, Seward, NE 68434

Staff Report

Tim Dworak, Building/Zoning & Code Enforcement Director

402-643-2928 opt 3 opt 1

APPLICATION TYPE

Major Subdivision Application
Preliminary Plat

FINAL ACTION?

DEVELOPER/OWNER

1640 LLC, Bob Benes

PC HEARING DATE

February 28, 2022

RELATED APPLICATIONS

PROPERTY ADDRESS, ZONING DISTRICT/USE

R-3 / Residential

ADJACENT ZONING DISTRICTS/USE:

North, R-3, Urban Residential Mixed-Density – Dale & Connie Rood, Bruce & Kendra Scheiber, Doug & Gail Brand, Samuel & Rachel Sommerer, Kenton & Christina Schegg, Nicholas & Jennifer Hiser, James & Ellen Varney, Brett & Noel Baker, April Hoffbauer, Thomas & Vickie Jorgensen, Kenneth & Nancy Lieb, Ridge Run Addition

East, AG, Agriculture – Jones Farms Inc

South, R-4, Urban Residential Multifamily – Jones Farm Inc

West, R-3, Urban Residential Mixed-Density – Church of Jesus Christ of Latter Day Saints, Christopher & Lori Read, Matthew & Michelle Folken, Kenneth & Patricia Hackel, Richard & Valorie Snow, Larry & Stephany Canning, Richard & Catherine Skoda, Valley View Estates 3rd Addition

BRIEF SUMMARY OF REQUEST:

A Major Subdivision preliminary plat review of Prairie View Addition.



APPLICATION CONTACT

Bob Benes, Office: 402-423-6811
1640 Normandy Ct A, Lincoln, NE 68512

COMPATIBILTY WITH THE COMPREHENSIVE PLAN

Use type matches the comprehensive plan.

ANALYSIS

This is a Major Subdivision Preliminary Plat application to develop a tract of land east of Valley View Estates Addition, South of Ridge Run Addition, and North of Highway 34.

The applicant is 1640, LLC, Bob Benes, and the professional design firm is Olsson, Inc. This will be the second subdivision that Mr. Benes will construct in Seward. Mr. Benes, has constructed multiple subdivisions in Lincoln and other Municipalities.

This subdivision involves 170 single family residential lots, with five additional outlots. The subject property is currently located partly inside and partly outside of the City limits, they are aware and receptive to annexation. The property is zoned R-3 Urban Residential District (Mixed Density) with all lot sizes conforming to the R-3 minimum lot width and square footage requirements. The construction is set to be done in seven phases with the grading for the first three phases to begin immediately upon approvals. Time frames for the stages is subject to demand and economic conditions.

The subdivision will involve extending City utilities and new public streets connecting to Willow Ave. in the Valley View Estates Addition, East Seward Street to the north, and Prairie Flower Road to the east. Bob, Olsson, Inc., and City staff have met to review the Preliminary Subdivision Plat to assure city requirements meet the respective utility's needs.

Olsson, Inc's. staff and City staff have met multiple times to research the drainage of storm water from the Prairie View subdivision and to work on designing the storm water management system for this area. Bob met with the Valley View Estates HOA to discuss the option of incorporating the detention cell to the south of the Valley View subdivision with the drainage for Prairie View subdivision and to clean up and maintain the existing cell.

The City's Unified Land Development Ordinance, §410-41.5 Parks and public facilities reads in part; "….*a subdivision shall dedicate for a neighborhood park 0.006 acres per single-family detached dwelling unit….".* The amount of land required is; *170 lots x .006 acres = 1.02 acres.* Prairie View has allotted; *1.23 acres (Outlots D and E).*

A public hearing notice was published, mailed to neighboring property owners, and the property was posted.

APPROXIMATE LAND AREA:

59.42 acres or 2,588,457.27 square feet +/-

LEGAL DESCRIPTION:

A TRACT OF LAND COMPOSED OF A PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER AND A PORTION THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 11 NORTH, RANGE 3 EAST OF THE 6TH P.M., SEWARD COUNTY, NEBRASKA, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE S00°26'06"W, ON THE EAST LINE OF SAID SOUTHWEST QUARTER, A DISTANCE OF 1,256.08' TO A POINT ON THE NORTH RIGHT OF WAY LINE OF STATE HIGHWAY 34; THENCE N89°53'36"W, ON THE NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 1,324.47' TO A POINT ON THE WEST LINE SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N88°59'50"W, ON A NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 337.49' TO A POINT ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N89°49'00"W, ON A NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 386.78' TO A POINT ON THE WEST LINE OF SAID DESCRIBED TRACT LOCATED IN A PORTION OF SOUTHWEST QUARTER OF SOUTHWEST QUARTER , SAID POINT BEING ON THE EAST LINE OF OUTLOT “A” SEWARD VALLEY VIEW ESTATES 3RD ADDITION, SAID POINT BEING ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N00°08'31"W, ON THE WEST LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, SAID LINE BEING THE EAST LINE OF SAID SEWARD VALLEY VIEW ESTATES 3RD ADDITION AND AN EAST LINE OF LOT 1, BLOCK 1 , SEWARD VALLEY ESTATES 2ND ADDITION AND ITS EXTENSION, A DISTANCE OF 1,260.26' TO A POINT ON THE NORTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER; THENCE S89°36'55"E, ON THE NORTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 730.37' TO THE NORTHEAST CORNER OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE S89°36'57"E, ON THE NORTH LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1,331.02', TO THE POINT OF BEGINNING, SAID TRACT CONTAINS A CALCULATED AREA OF 2,588,457.27 SQUARE FEET OR 59.42 ACRES, MORE OR LESS.(PID’s 800039432, 800039440)

Prepared by

Tim Dworak

City of Seward Building - Zoning - Code Enforcement Director

PRAIRIE VIEW DRAINAGE MEMO

Prepared for:

City of Seward

Seward, Nebraska

February, 2022

Olsson Project No. 021-04805

olsson

Prairie View Preliminary Plat - Drainage Memo

Prairie View: Background Information

This drainage memo has been prepared to analyze the impacts to stormwater flows in conjunction with the proposed Prairie View Preliminary Plat. The Prairie View development includes a land parcel of approximately 59-acres that is located in Seward, NE. The proposed Preliminary Plat site is being developed from an existing farmstead and row crop field to single family dwellings. The proposed development area is located within the limits of the Blue River Basin Watershed Management Plan.

The intent of this report is to summarize the findings of the design calculations for: site detention and runoff. No Floodplain occurs anywhere on the site.

Hydrologic and Hydraulic Analysis

A Hydrologic Analysis was performed on the site for the existing and proposed conditions. The site was divided into basins and sub-basins for each area using HydroCAD. The parameters were gathered from the topography, existing land use, proposed land use, and USDA-NRCs soil maps. The Hydraulic Analysis was also performed in HydroCAD based on similar parameters and existing structures on site.

The proposed development will be designed to ensure the change in land use does not adversely affect runoff to the adjacent properties and state right-of-way. The HydroCAD model results for proposed conditions demonstrate this for the 2-, 5-, 10-, 50- and 100-year storm events. The results of the HydroCAD modeling are provided in the Hydrologic Analysis section, below. The existing and proposed conditions are shown in the attached plan set.

There are two main drainage basins on this site. Basin A discharges to the South and West onto the adjacent property. Basin B discharges to the North into an existing culvert that crosses under E Seward Street. Existing and proposed Hydrologic and hydraulic conditions can be found below for each basin.

Existing Hydrologic and Hydraulic

Existing Hydrologic Parameters			
Condition	**Area (ac)**	**CN**	**Tc (min)**
Existing Basin A	50.99	84	40.2
Existing Basin B	8.04	85	27.6

Proposed Hydrologic and Hydraulic

Proposed Basin A has been split up into four sub-basins and Proposed Basin B remains as one sub-basin.

Proposed Hydrologic Parameters			
Condition	**Area (ac)**	**CN**	**Tc (min)**
Proposed Sub-Basin A1	25.32	87	21.7
Proposed Sub-Basin A2	10.65	87	18.3
Proposed Sub-Basin A3	17.76	87	19.3
Proposed Sub-Basin A4	2.41	87	9.0
Proposed Sub-Basin B1	6.82	87	18.9

Stormwater Detention Summary

Prairie View proposes to change the use type conditions, therefore, requires additional detention. This detention will be handled by two ponds that both retain and provide 1' of freeboard above the 100-year event. The outlet structure for Pond 1 will be a single 30" pipe with a 3' x 3' reinforced concrete box that is 4' tall with a trash rack and has a 0.5' open slot in the front of the box. More details on the outlet structure can be found on the Preliminary Plat. Adjacent lots will have a minimum opening set at least 1' above the 100-year elevation. Modeling for the pond can be found in the following report and the results are shown below.

Proposed Hydrograph Routing – Detention Pond 1					
Event	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**	**Peak Water Surface Elevation (ft)**	**Volume (ac-ft)**	**Overtop Elevation**
2 – Year	45.9	21.7	1470.33	1.0	1474.10
5 – Year	66.6	43.9	1470.80	1.3	
10 – Year	84.0	47.7	1471.31	1.6	
50 – Year	114.5	53.4	1472.36	2.4	
100 – Year	130.5	56.2	1472.90	2.8	

The second cell, Pond 2, will have a similar outlet structure to Pond 1. It is a single 36" pipe with a 4' x 4' reinforced concrete box that is 4.5' tall with a trash rack and has a 1.5' open slot in the front of the box. More details on the outlet structure can be found on the Preliminary Plat. Adjacent lots will have a minimum opening set at least 1' above the 100-year elevation. Modeling for the pond can be found in the following report and the results are shown below.

Proposed Hydrograph Routing – Detention Pond 2					
Event	**Peak Inflow (cfs)**	**Peak Outflow (cfs)**	**Peak Water Surface Elevation (ft)**	**Volume (ac-ft)**	**Overtop Elevation**
2 – Year	68.9	46.5	1457.02	0.9	1462.50
5 – Year	104.2	70.3	1458.27	1.6	
10 – Year	144.3	78.1	1459.27	2.3	
50 – Year	193.3	88.6	1460.78	3.6	
100 – Year	215.6	93.3	1461.51	4.3	

Hydrologic and Hydraulic Results

Existing and post-development peak flows from Basin A are shown in the table below. Every storm event shows a decrease in flow post-development.

Peak Flows from Basin A (cfs)			
	Existing	**Development**	**Change**
2 – Year	55.1	46.5	-8.6
5 – Year	84.4	70.3	-14.1
10 – Year	109.1	78.1	-31.0
50 – Year	152.2	88.6	-63.6
100 – Year	174.8	93.3	-81.5

Existing and post-development peak flows from Basin B are shown in the table below. The post-development flows slightly increase due to the area along Sunflower Avenue (Sub-Basin B1.1) being added to Basin B that originally went to Basin A.

Peak Flows from Basin B (cfs)			
	Existing	**Development**	**Change**
2 – Year	11.6	13.6	+2.0
5 – Year	17.5	19.6	+2.1
10 – Year	22.4	24.7	+2.3
50 – Year	31.0	33.5	+2.5
100 – Year	35.5	38.2	+2.7

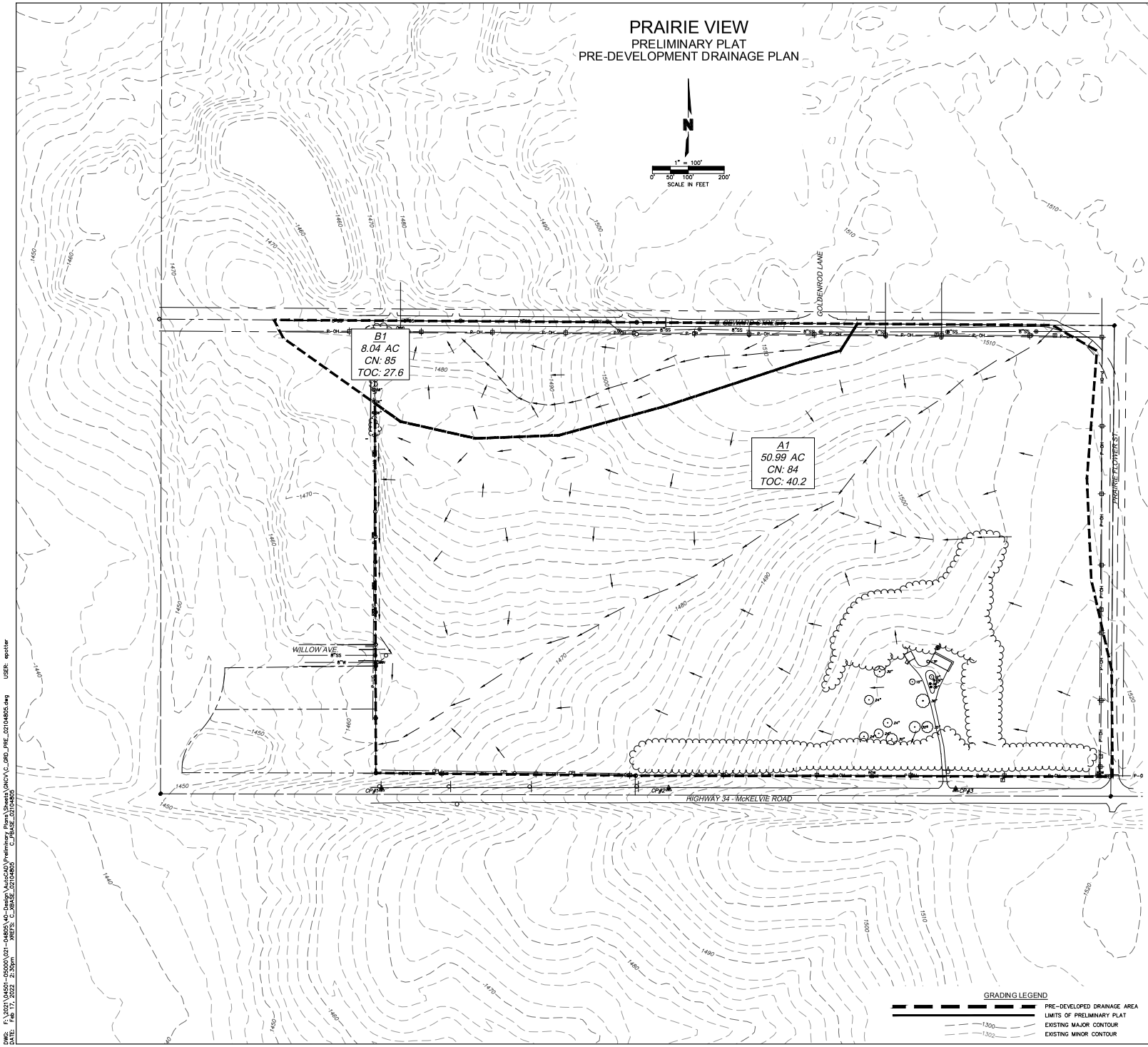
Summary

Prairie View has been designed in conformance with the City of Seward Storm Sewer Design Standards. Stormwater detention shall be provided by two cells located within the site. The proposed development will not adversely impact adjacent properties, upstream or downstream of the project. Design calculations supporting information above are included as attachments to this document.

F:\2021\04501-05000\021-04805\40-DESIGN\EXHIBITS\DRAINAGE REPORT\PRAIRIE VIEW DRAINAGE MEMO.DOCX

EXHIBITS

PRAIRIE VIEW
PRELIMINARY PLAT
PRE-DEVELOPMENT DRAINAGE PLAN



EXISTING CONDITIONS		
	SUB-BASIN A	SUB-BASIN B
RETURN PERIOD	PEAK FLOW	PEAK FLOW
(YEAR)	(CFS)	(CFS)
2	55.1	11.6
5	84.4	17.5
10	109.1	22.4
50	152.2	31.0
100	174.8	35.5

LEGEND

- CONTROL POINT
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIRE HYDRANT
- FIBER OPTIC BOX
- FOUND REBAR
- GUY WIRE
- LIGHT POLE
- POWER POLE
- RIGHT-OF-WAY MARKER
- SECTION CORNER
- SET REBAR
- SIGN
- SANITARY SEWER MANHOLE
- TELEPHONE RISER
- TRANSFORMER
- WATER WELL
- WATER VALVE
- CONTOUR LINE
- CENTER LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- WATER LINE
- UNDERGROUND GAS MAIN
- OVERHEAD POWER
- UNDERGROUND POWER
- CROP LINE
- TREE MASS\BUSHES

GRADING LEGEND

- PRE-DEVELOPED DRAINAGE AREA
- LIMITS OF PRELIMINARY PLAT
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR

olsson
601 P Street, Suite 200
P.O. Box 84608
Lincoln, NE 68508
TEL 402.474.6311
www.olsson.com

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

PRE-DEVELOPMENT DRAINAGE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

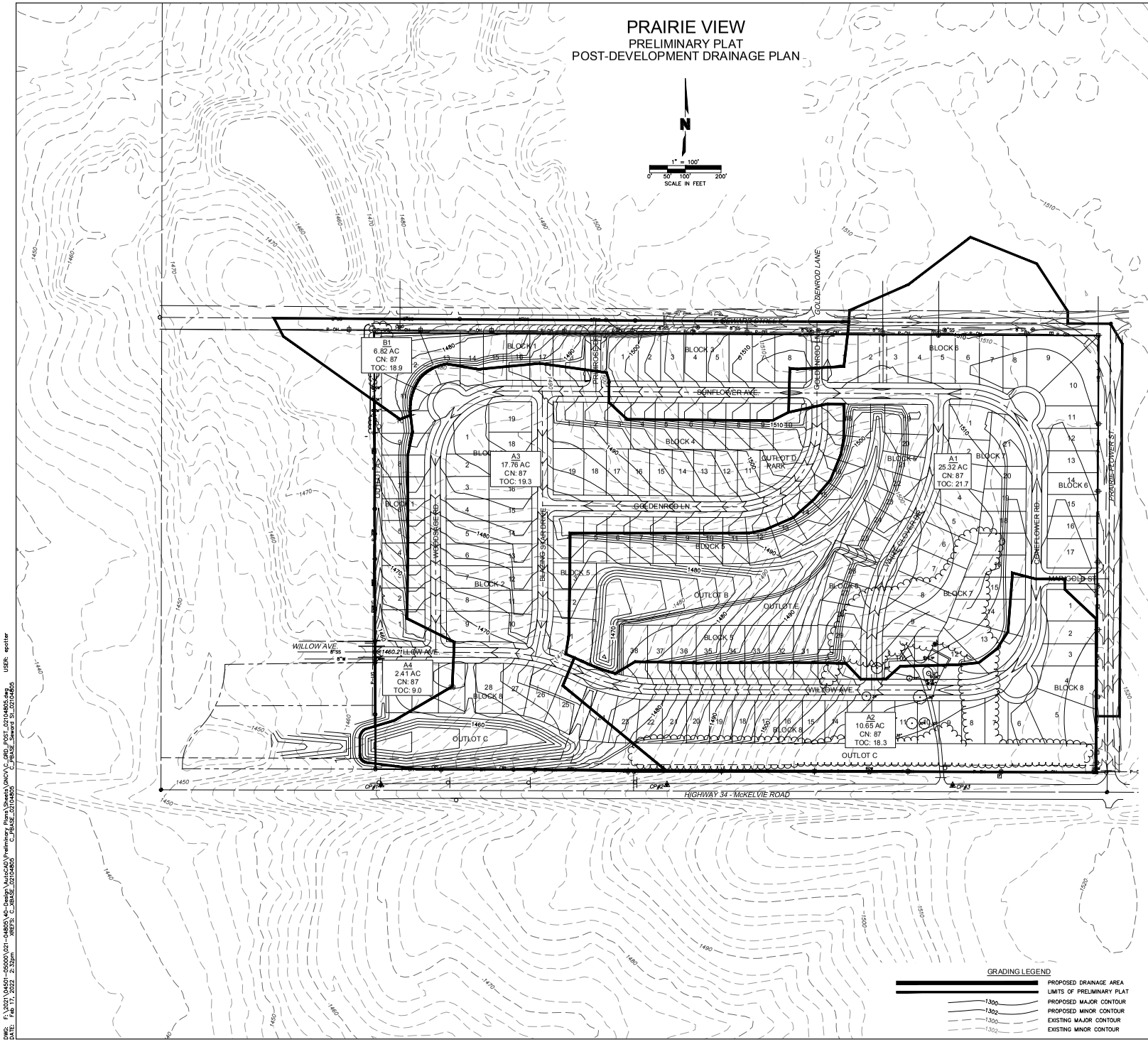
2022

drawn by:	KRT
checked by:	DATE
approved by:	BTB
QA/QC by	XXX
project no.:	0121-0485
drawing no.:	
date:	2/17/2022

SHEET
5 of 13

DWG: C:\2021\0485-0500\021-0485_VD_Design_Vol1\04\01\Preliminary Plans\Sheets\GNCV\C-GRD_PRE_021048O5.dwg USER: epotter
DATE: Feb 17, 2022 - 2:30pm XREFS: C-BASE_021048O5.dwg C-PLAT_021048O5.dwg

PRAIRIE VIEW
PRELIMINARY PLAT
POST-DEVELOPMENT DRAINAGE PLAN



PROPOSED CONDITIONS		
	SUB-BASIN A	SUB-BASIN B
RETURN PERIOD	PEAK FLOW	PEAK FLOW
(YEAR)	(CFS)	(CFS)
2	46.5	13.6
5	70.3	19.6
10	78.1	24.7
50	88.6	33.5
100	93.3	38.2

LEGEND

- CONTROL POINT
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIRE HYDRANT
- FIBER OPTIC BOX
- FOUND REBAR
- GUY WIRE
- LIGHT POLE
- POWER POLE
- RIGHT-OF-WAY MARKER
- SECTION CORNER
- SET REBAR
- SIGN
- SANITARY SEWER MANHOLE
- TELEPHONE RISER
- TRANSFORMER
- WATER WELL
- WATER VALVE
- 1500 CONTOUR LINE
- CENTER LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- 10"SS SANITARY SEWER LINE
- 10"SD STORM SEWER LINE
- 10"W WATER LINE
- G UNDERGROUND GAS MAIN
- P-OH OVERHEAD POWER
- P-UG UNDERGROUND POWER
- OPL CROP LINE
- TREE MASS\BUSHES

GRADING LEGEND

- PROPOSED DRAINAGE AREA
- LIMITS OF PRELIMINARY PLAT
- 1300 PROPOSED MAJOR CONTOUR
- 1302 PROPOSED MINOR CONTOUR
- 1300 EXISTING MAJOR CONTOUR
- 1302 EXISTING MINOR CONTOUR

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www.olsson.com

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

POST-DEVELOPMENT DRAINAGE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

2022

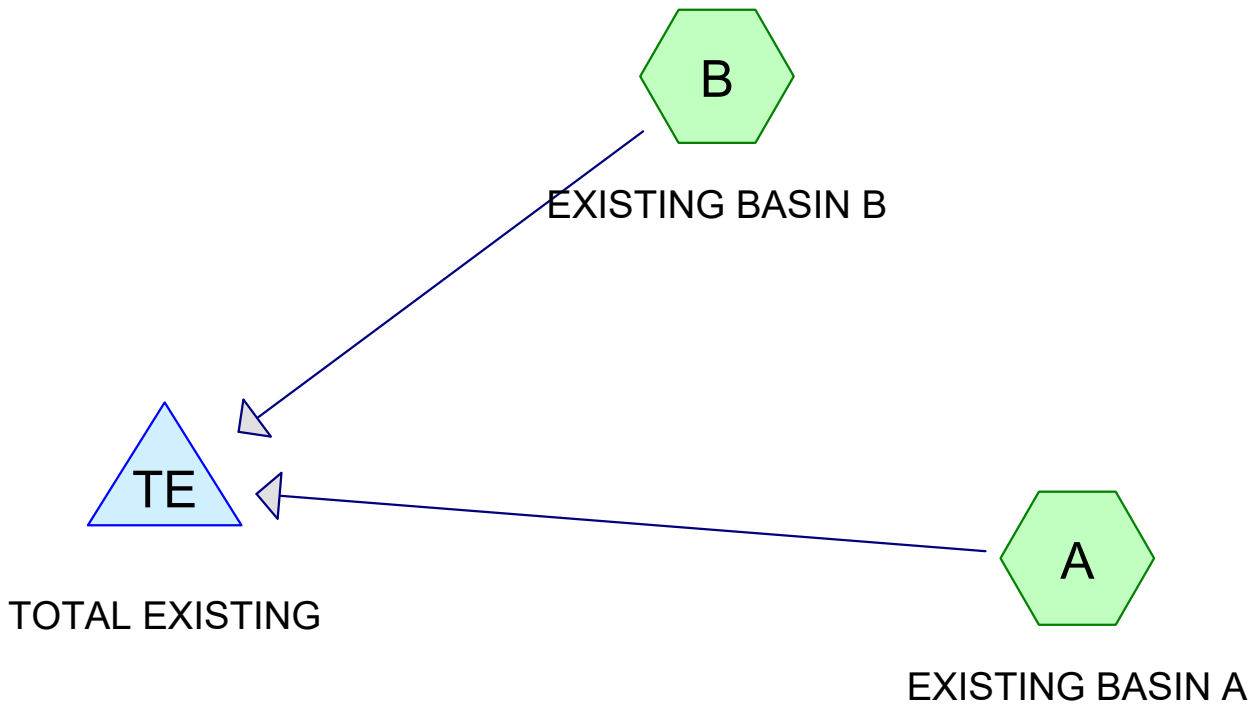
drawn by:	KRT
checked by:	EAR
approved by:	BFB
QA/QC by	XXX
project no.:	0121-0469
drawing no.:	
date:	2/17/2022

SHEET
6 of 13

DWG: C:\2021\0469\-2302\021-0469\-2302\Design\Active\03\Preliminary Plans\Sheets\XNCV\C_280_PDP_20210805.dwg
DATE: Feb 17, 2022 - 2:02pm
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HYDROCAD

PRE-DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for 22-02-17_GNCV_Drainage Report_02104805
Prepared by Olsson, Printed 2/17/2022
HydroCAD® 10.10-6a s/n 06508 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 - Year	Type II 24-hr		Default	24.00	1	3.00	2
2	5 - Year	Type II 24-hr		Default	24.00	1	3.93	2
3	10 - Year	Type II 24-hr		Default	24.00	1	4.69	2
4	50yr	Type II 24-hr		Default	24.00	1	6.00	2
5	100 - Year	Type II 24-hr		Default	24.00	1	6.68	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.290	77	2 acre lots, 12% imp, HSG C (A)
0.365	74	>75% Grass cover, Good, HSG C (B)
0.505	98	Paved parking, HSG C (B)
53.870	85	Row crops, straight row, Good, HSG C (A, B)
59.030	**84**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
59.030	HSG C	A, B
0.000	HSG D	
0.000	Other	
59.030		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	4.290	0.000	0.000	4.290	2 acre lots, 12% imp	A
0.000	0.000	0.365	0.000	0.000	0.365	>75% Grass cover, Good	B
0.000	0.000	0.505	0.000	0.000	0.505	Paved parking	B
0.000	0.000	53.870	0.000	0.000	53.870	Row crops, straight row, Good	A, B
0.000	**0.000**	**59.030**	**0.000**	**0.000**	**59.030**	**TOTAL AREA**	

2-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: EXISTING BASIN A Runoff Area=50.990 ac 1.01% Impervious Runoff Depth=1.53"
Flow Length=2,220' Tc=40.2 min CN=84/98 Runoff=55.11 cfs 6.497 af

Subcatchment B: EXISTING BASIN B Runoff Area=8.040 ac 6.28% Impervious Runoff Depth=1.59"
Flow Length=1,320' Tc=27.6 min CN=84/98 Runoff=11.56 cfs 1.069 af

Pond TE: TOTAL EXISTING Inflow=64.28 cfs 7.565 af
Primary=64.28 cfs 7.565 af

Total Runoff Area = 59.030 ac Runoff Volume = 7.565 af Average Runoff Depth = 1.54"
98.27% Pervious = 58.010 ac 1.73% Impervious = 1.020 ac

Summary for Subcatchment A: EXISTING BASIN A

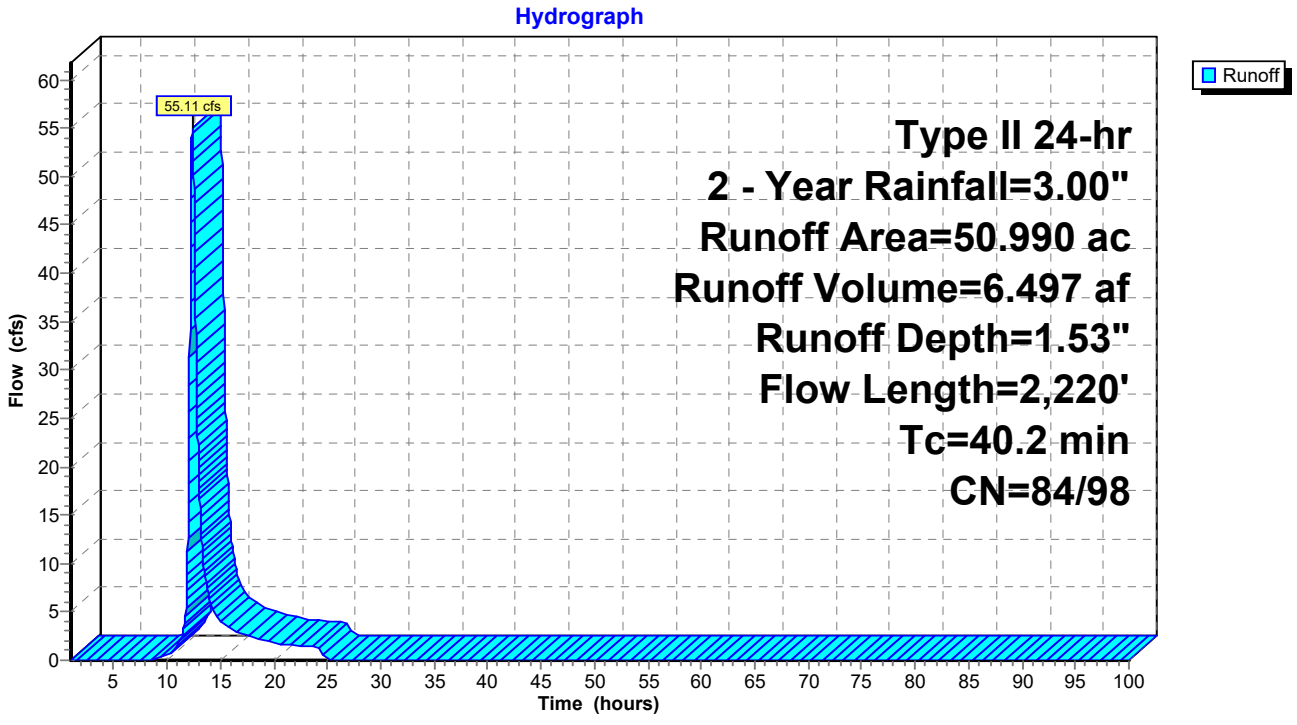
Runoff = 55.11 cfs @ 12.37 hrs, Volume= 6.497 af, Depth= 1.53"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
4.290	77	2 acre lots, 12% imp, HSG C
46.700	85	Row crops, straight row, Good, HSG C
50.990	84	Weighted Average
50.475	84	98.99% Pervious Area
0.515	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
23.7	2,020	0.0250	1.42		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
40.2	2,220	Total			

Subcatchment A: EXISTING BASIN A



Summary for Subcatchment B: EXISTING BASIN B

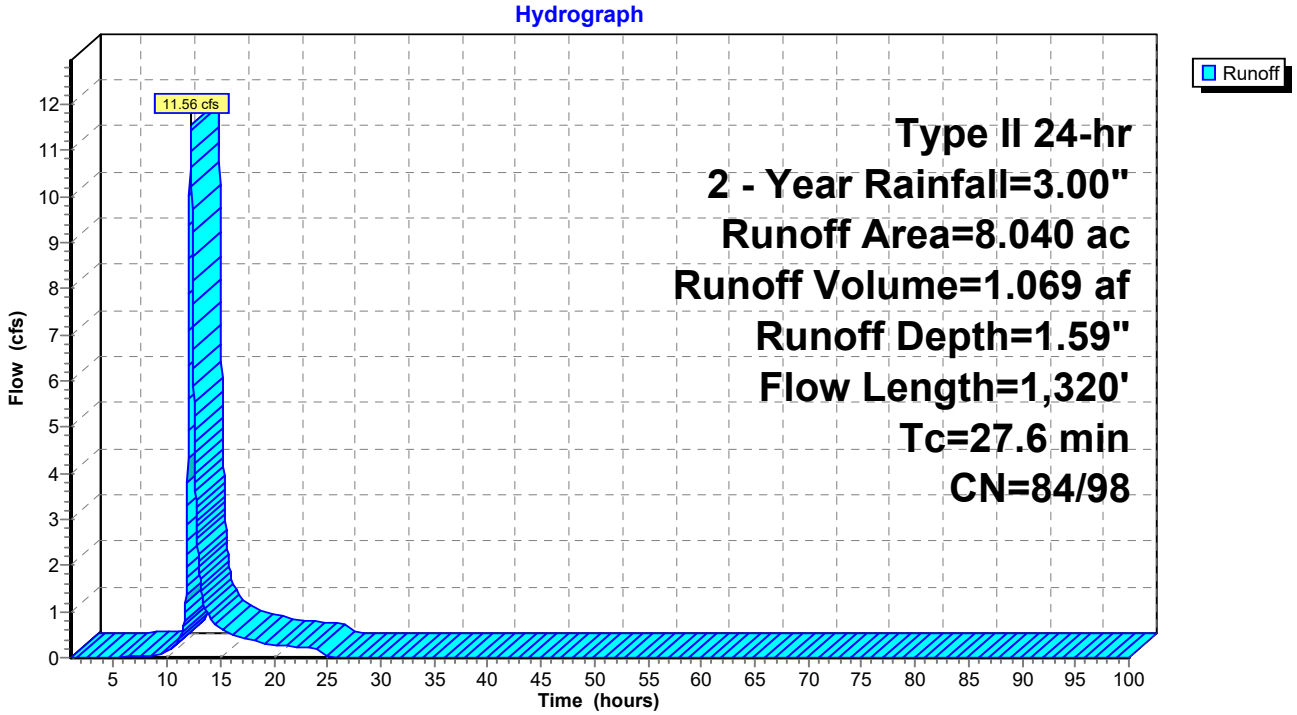
Runoff = 11.56 cfs @ 12.22 hrs, Volume= 1.069 af, Depth= 1.59"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
7.170	85	Row crops, straight row, Good, HSG C
8.040	85	Weighted Average
7.535	84	93.72% Pervious Area
0.505	98	6.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
11.1	1,120	0.0350	1.68		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
27.6	1,320	Total			

Subcatchment B: EXISTING BASIN B



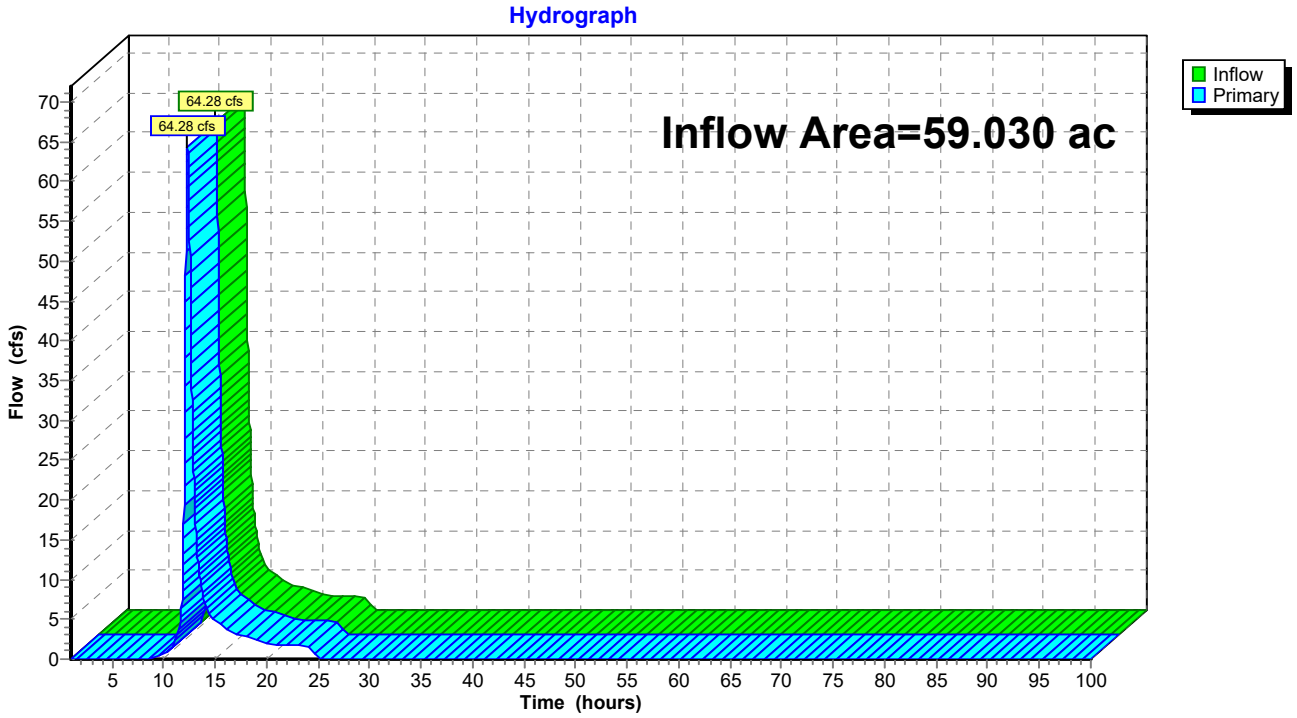
Summary for Pond TE: TOTAL EXISTING

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59.030 ac, 1.73% Impervious, Inflow Depth = 1.54" for 2 - Year event
Inflow = 64.28 cfs @ 12.35 hrs, Volume= 7.565 af
Primary = 64.28 cfs @ 12.35 hrs, Volume= 7.565 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TE: TOTAL EXISTING



5-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: EXISTING BASIN A Runoff Area=50.990 ac 1.01% Impervious Runoff Depth=2.32"
Flow Length=2,220' Tc=40.2 min CN=84/98 Runoff=84.42 cfs 9.873 af

Subcatchment B: EXISTING BASIN B Runoff Area=8.040 ac 6.28% Impervious Runoff Depth=2.40"
Flow Length=1,320' Tc=27.6 min CN=84/98 Runoff=17.45 cfs 1.606 af

Pond TE: TOTAL EXISTING Inflow=98.32 cfs 11.479 af
Primary=98.32 cfs 11.479 af

Total Runoff Area = 59.030 ac Runoff Volume = 11.479 af Average Runoff Depth = 2.33"
98.27% Pervious = 58.010 ac 1.73% Impervious = 1.020 ac

Summary for Subcatchment A: EXISTING BASIN A

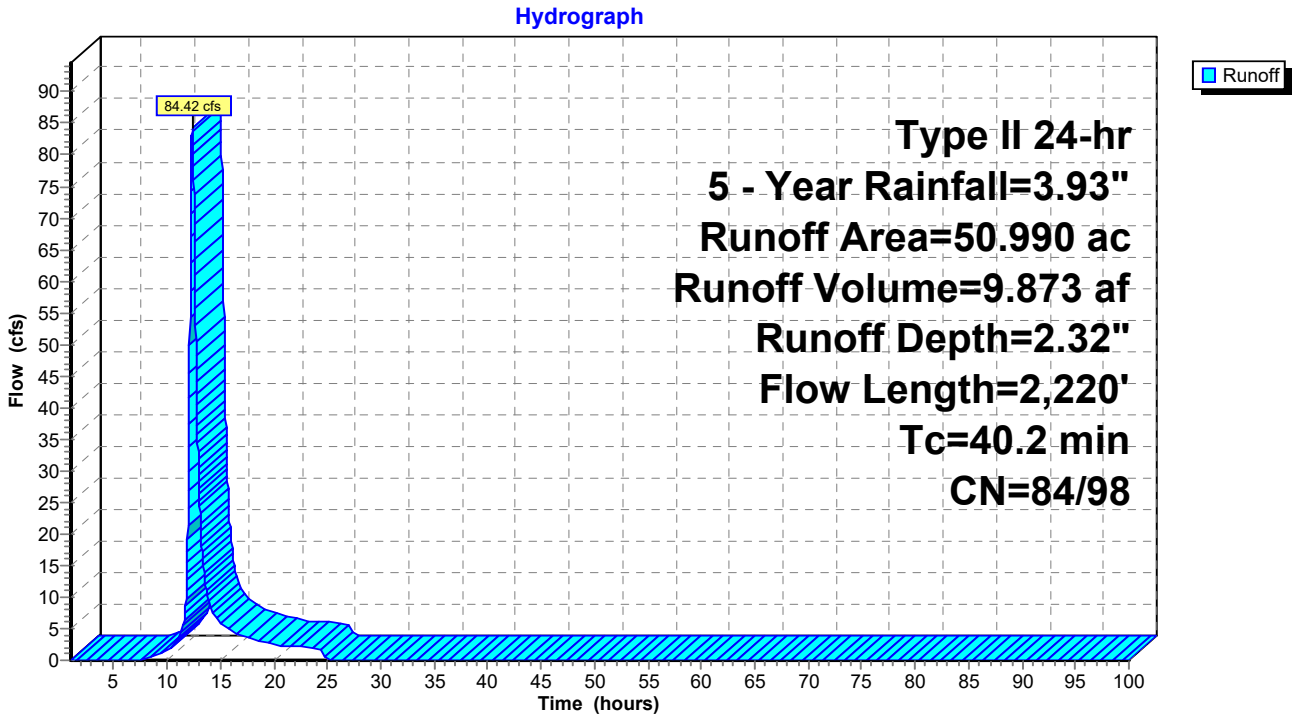
Runoff = 84.42 cfs @ 12.37 hrs, Volume= 9.873 af, Depth= 2.32"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
4.290	77	2 acre lots, 12% imp, HSG C
46.700	85	Row crops, straight row, Good, HSG C
50.990	84	Weighted Average
50.475	84	98.99% Pervious Area
0.515	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
23.7	2,020	0.0250	1.42		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
40.2	2,220	Total			

Subcatchment A: EXISTING BASIN A



Summary for Subcatchment B: EXISTING BASIN B

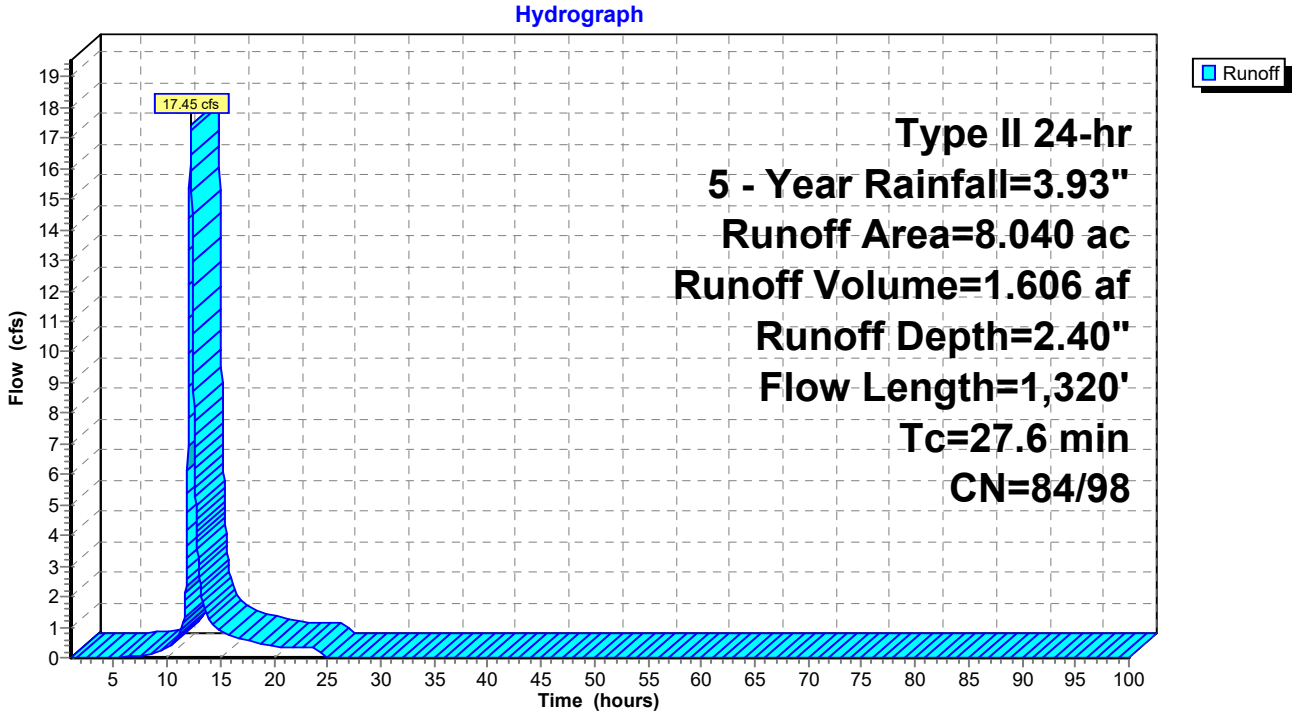
Runoff = 17.45 cfs @ 12.21 hrs, Volume= 1.606 af, Depth= 2.40"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
7.170	85	Row crops, straight row, Good, HSG C
8.040	85	Weighted Average
7.535	84	93.72% Pervious Area
0.505	98	6.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
11.1	1,120	0.0350	1.68		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
27.6	1,320	Total			

Subcatchment B: EXISTING BASIN B



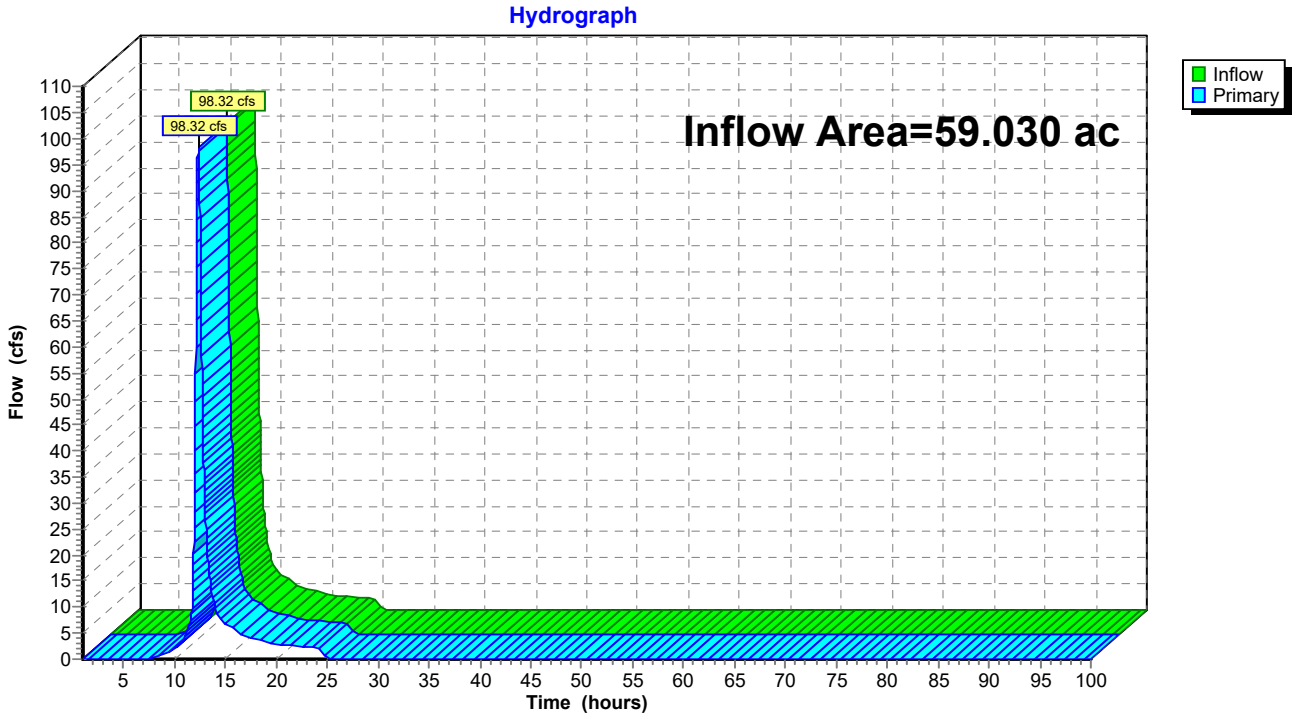
Summary for Pond TE: TOTAL EXISTING

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59.030 ac, 1.73% Impervious, Inflow Depth = 2.33" for 5 - Year event
Inflow = 98.32 cfs @ 12.34 hrs, Volume= 11.479 af
Primary = 98.32 cfs @ 12.34 hrs, Volume= 11.479 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TE: TOTAL EXISTING



10-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: EXISTING BASIN A Runoff Area=50.990 ac 1.01% Impervious Runoff Depth=3.00"
Flow Length=2,220' Tc=40.2 min CN=84/98 Runoff=109.05 cfs 12.760 af

Subcatchment B: EXISTING BASIN B Runoff Area=8.040 ac 6.28% Impervious Runoff Depth=3.08"
Flow Length=1,320' Tc=27.6 min CN=84/98 Runoff=22.40 cfs 2.064 af

Pond TE: TOTAL EXISTING Inflow=127.01 cfs 14.824 af
Primary=127.01 cfs 14.824 af

Total Runoff Area = 59.030 ac Runoff Volume = 14.824 af Average Runoff Depth = 3.01"
98.27% Pervious = 58.010 ac 1.73% Impervious = 1.020 ac

Summary for Subcatchment A: EXISTING BASIN A

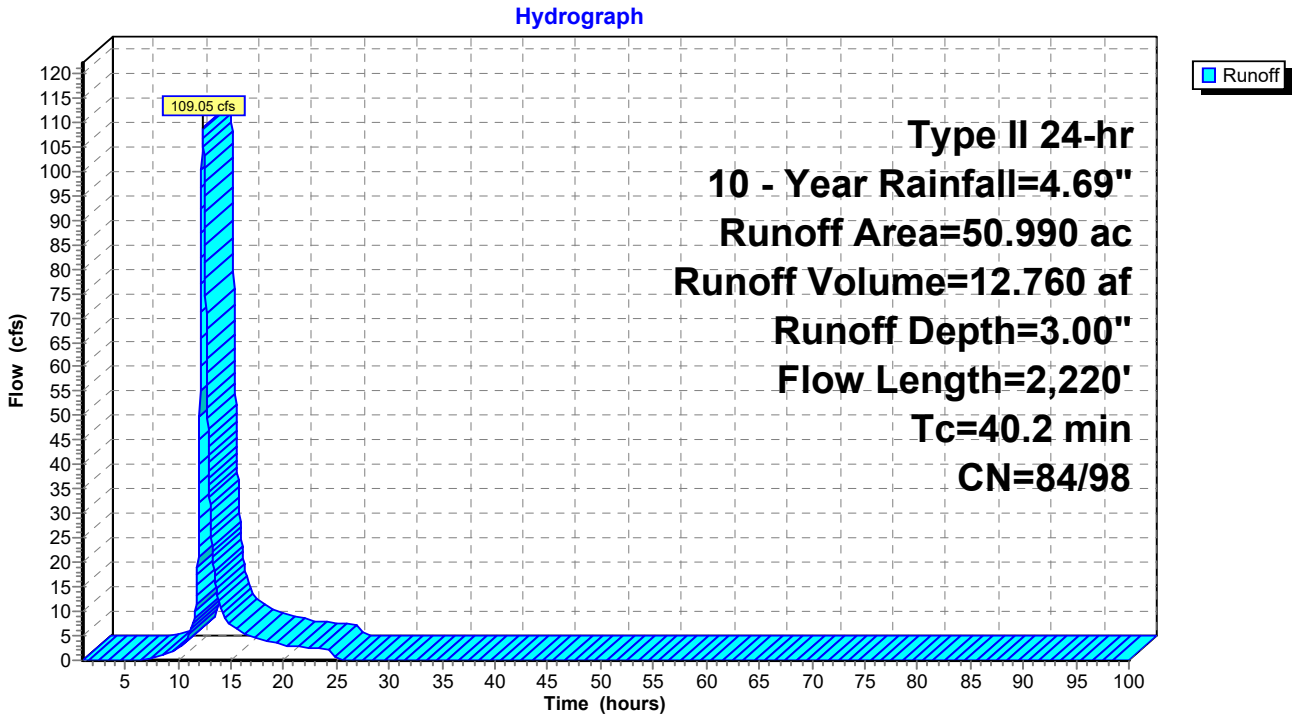
Runoff = 109.05 cfs @ 12.37 hrs, Volume= 12.760 af, Depth= 3.00"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
4.290	77	2 acre lots, 12% imp, HSG C
46.700	85	Row crops, straight row, Good, HSG C
50.990	84	Weighted Average
50.475	84	98.99% Pervious Area
0.515	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
23.7	2,020	0.0250	1.42		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
40.2	2,220	Total			

Subcatchment A: EXISTING BASIN A



Summary for Subcatchment B: EXISTING BASIN B

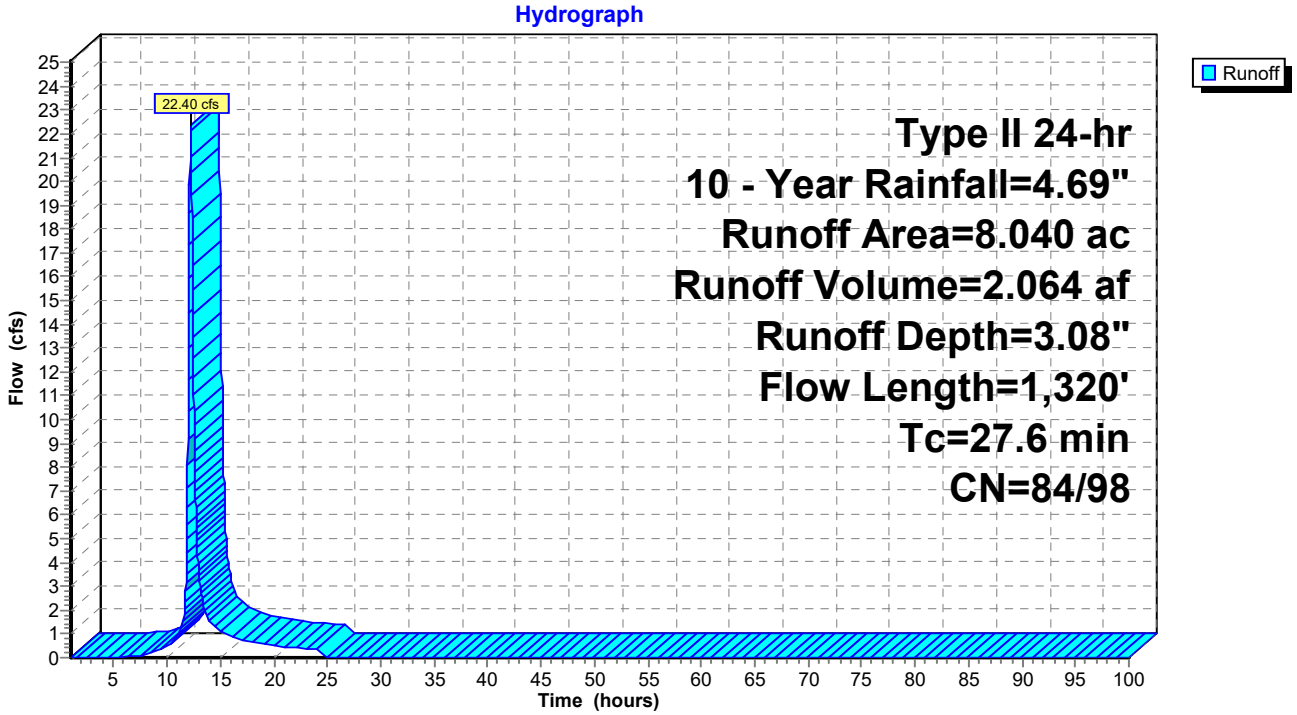
Runoff = 22.40 cfs @ 12.21 hrs, Volume= 2.064 af, Depth= 3.08"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
7.170	85	Row crops, straight row, Good, HSG C
8.040	85	Weighted Average
7.535	84	93.72% Pervious Area
0.505	98	6.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
11.1	1,120	0.0350	1.68		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
27.6	1,320	Total			

Subcatchment B: EXISTING BASIN B



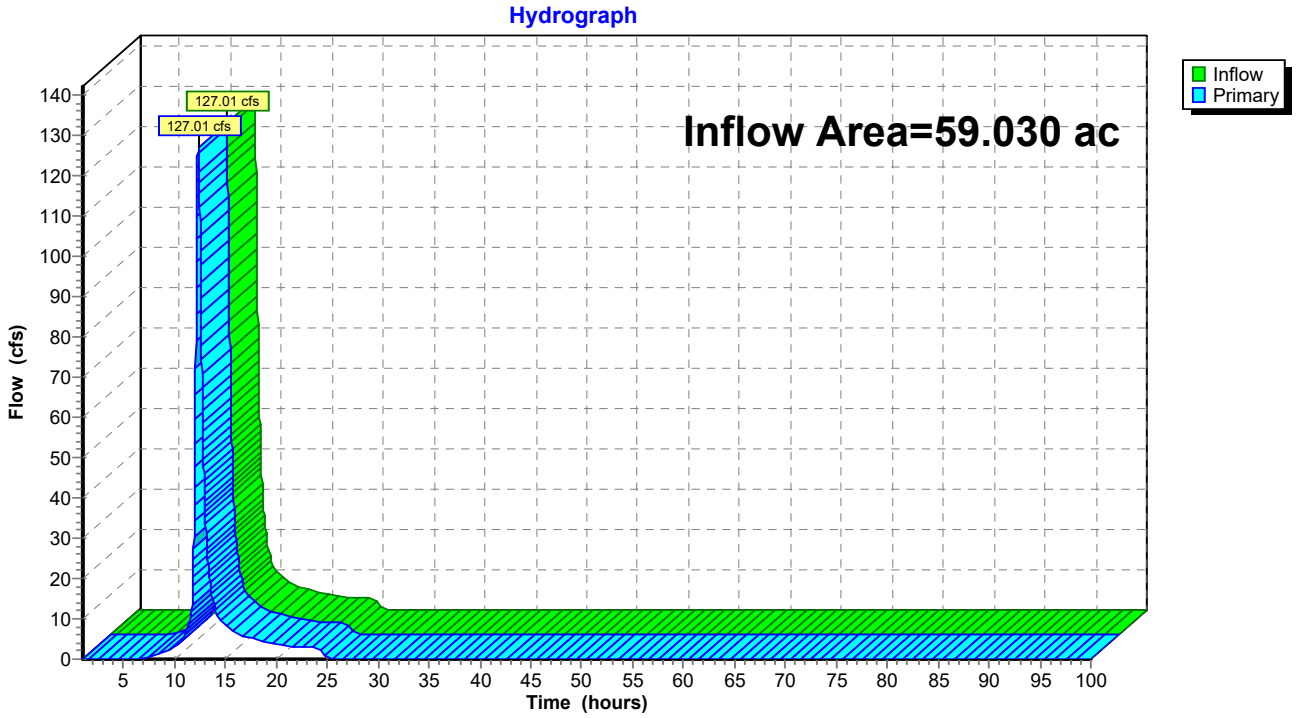
Summary for Pond TE: TOTAL EXISTING

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59.030 ac, 1.73% Impervious, Inflow Depth = 3.01" for 10 - Year event
Inflow = 127.01 cfs @ 12.33 hrs, Volume= 14.824 af
Primary = 127.01 cfs @ 12.33 hrs, Volume= 14.824 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TE: TOTAL EXISTING



50-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA: EXISTING BASIN A Runoff Area=50.990 ac 1.01% Impervious Runoff Depth=4.21"
Flow Length=2,220' Tc=40.2 min CN=84/98 Runoff=152.22 cfs 17.899 af

SubcatchmentB: EXISTING BASIN B Runoff Area=8.040 ac 6.28% Impervious Runoff Depth=4.29"
Flow Length=1,320' Tc=27.6 min CN=84/98 Runoff=31.03 cfs 2.878 af

Pond TE: TOTAL EXISTING Inflow=177.27 cfs 20.776 af
Primary=177.27 cfs 20.776 af

Total Runoff Area = 59.030 ac Runoff Volume = 20.776 af Average Runoff Depth = 4.22"
98.27% Pervious = 58.010 ac 1.73% Impervious = 1.020 ac

Summary for Subcatchment A: EXISTING BASIN A

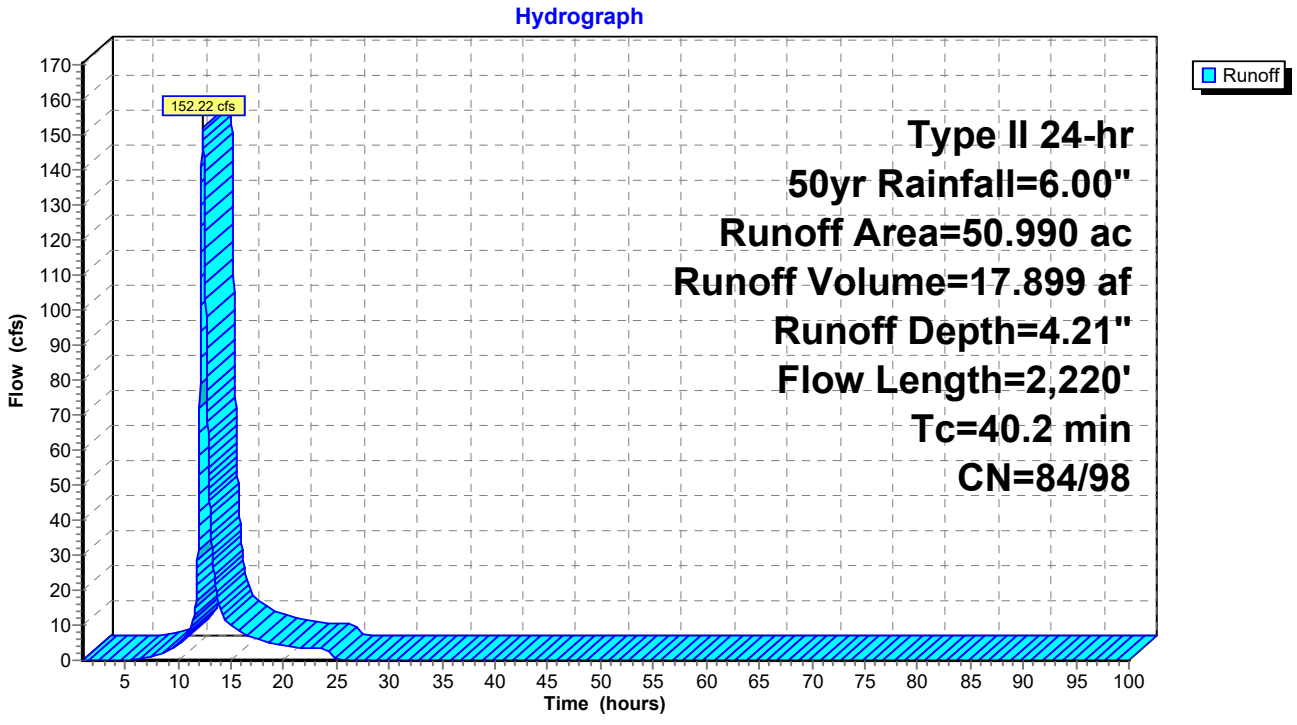
Runoff = 152.22 cfs @ 12.36 hrs, Volume= 17.899 af, Depth= 4.21"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
4.290	77	2 acre lots, 12% imp, HSG C
46.700	85	Row crops, straight row, Good, HSG C
50.990	84	Weighted Average
50.475	84	98.99% Pervious Area
0.515	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
23.7	2,020	0.0250	1.42		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
40.2	2,220	Total			

Subcatchment A: EXISTING BASIN A



Summary for Subcatchment B: EXISTING BASIN B

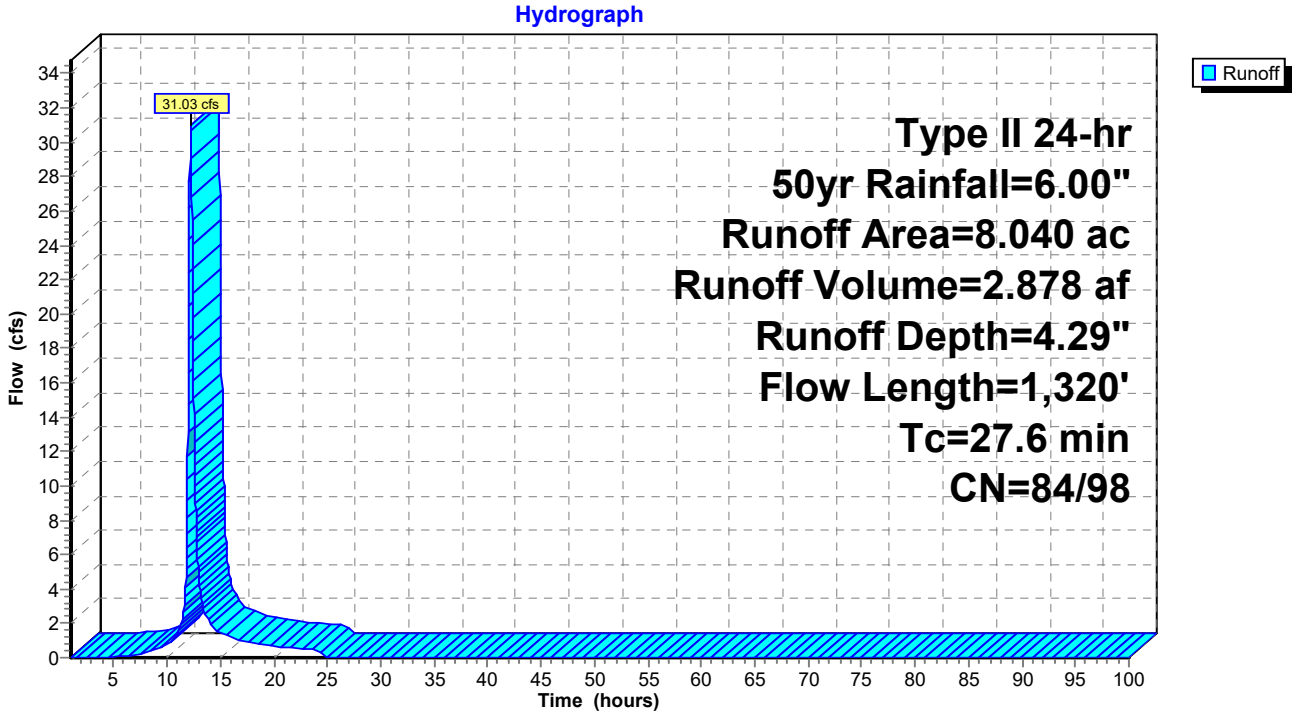
Runoff = 31.03 cfs @ 12.21 hrs, Volume= 2.878 af, Depth= 4.29"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
7.170	85	Row crops, straight row, Good, HSG C
8.040	85	Weighted Average
7.535	84	93.72% Pervious Area
0.505	98	6.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
11.1	1,120	0.0350	1.68		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
27.6	1,320	Total			

Subcatchment B: EXISTING BASIN B



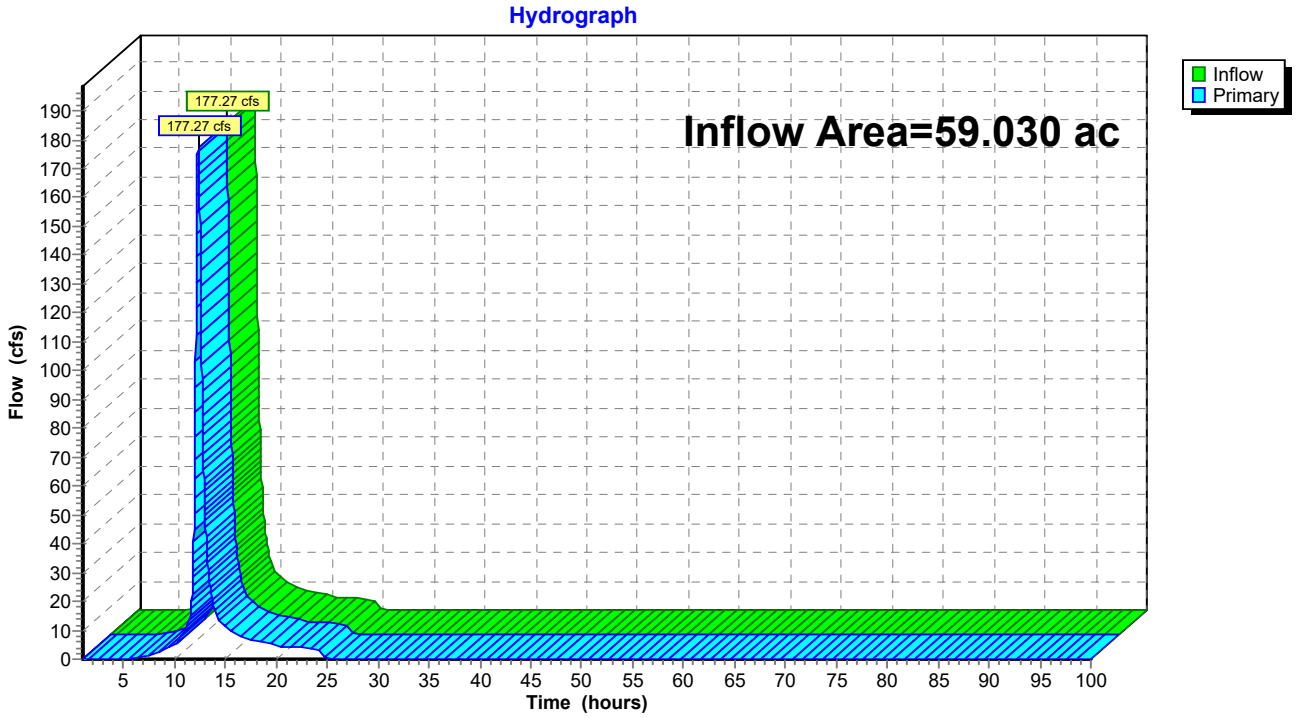
Summary for Pond TE: TOTAL EXISTING

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 59.030 ac, 1.73% Impervious, Inflow Depth = 4.22" for 50yr event
Inflow = 177.27 cfs @ 12.33 hrs, Volume= 20.776 af
Primary = 177.27 cfs @ 12.33 hrs, Volume= 20.776 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TE: TOTAL EXISTING



100-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment A: EXISTING BASIN A Runoff Area=50.990 ac 1.01% Impervious Runoff Depth=4.85"
Flow Length=2,220' Tc=40.2 min CN=84/98 Runoff=174.75 cfs 20.620 af

Subcatchment B: EXISTING BASIN B Runoff Area=8.040 ac 6.28% Impervious Runoff Depth=4.94"
Flow Length=1,320' Tc=27.6 min CN=84/98 Runoff=35.54 cfs 3.308 af

Pond TE: TOTAL EXISTING Inflow=203.50 cfs 23.928 af
Primary=203.50 cfs 23.928 af

Total Runoff Area = 59.030 ac Runoff Volume = 23.928 af Average Runoff Depth = 4.86"
98.27% Pervious = 58.010 ac 1.73% Impervious = 1.020 ac

Summary for Subcatchment A: EXISTING BASIN A

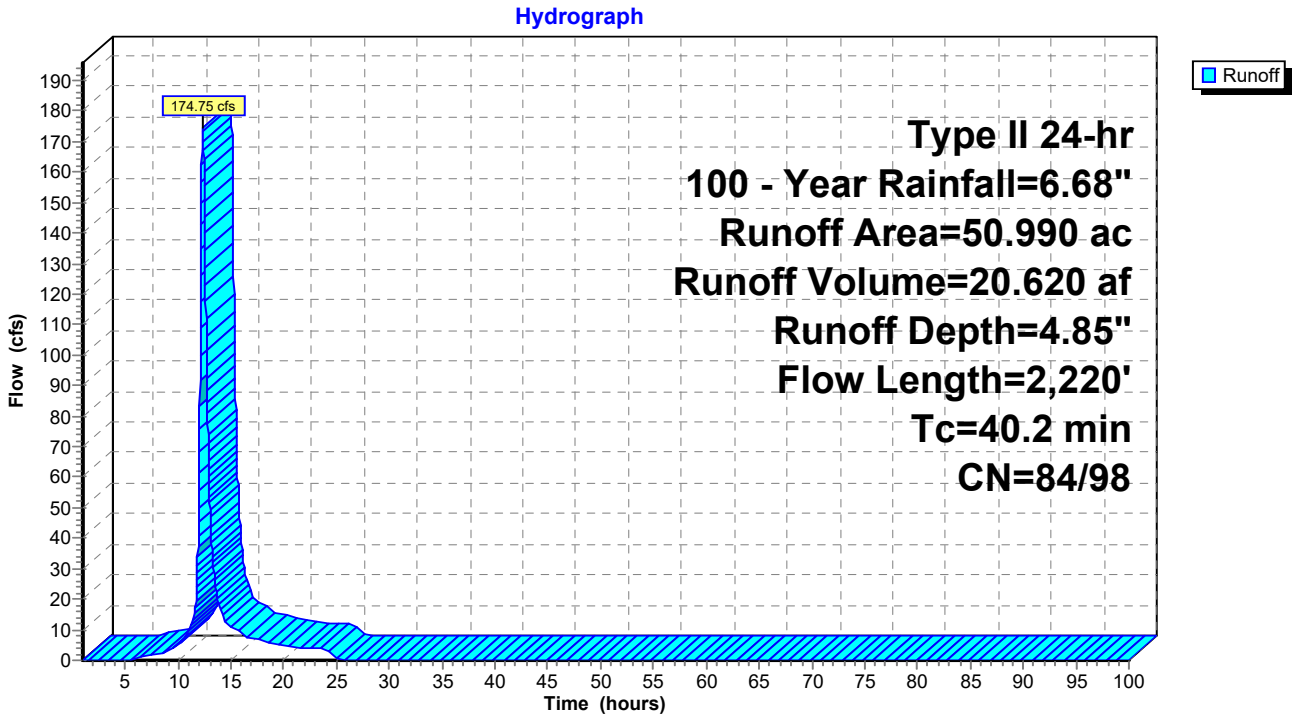
Runoff = 174.75 cfs @ 12.36 hrs, Volume= 20.620 af, Depth= 4.85"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
4.290	77	2 acre lots, 12% imp, HSG C
46.700	85	Row crops, straight row, Good, HSG C
50.990	84	Weighted Average
50.475	84	98.99% Pervious Area
0.515	98	1.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
23.7	2,020	0.0250	1.42		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
40.2	2,220	Total			

Subcatchment A: EXISTING BASIN A



Summary for Subcatchment B: EXISTING BASIN B

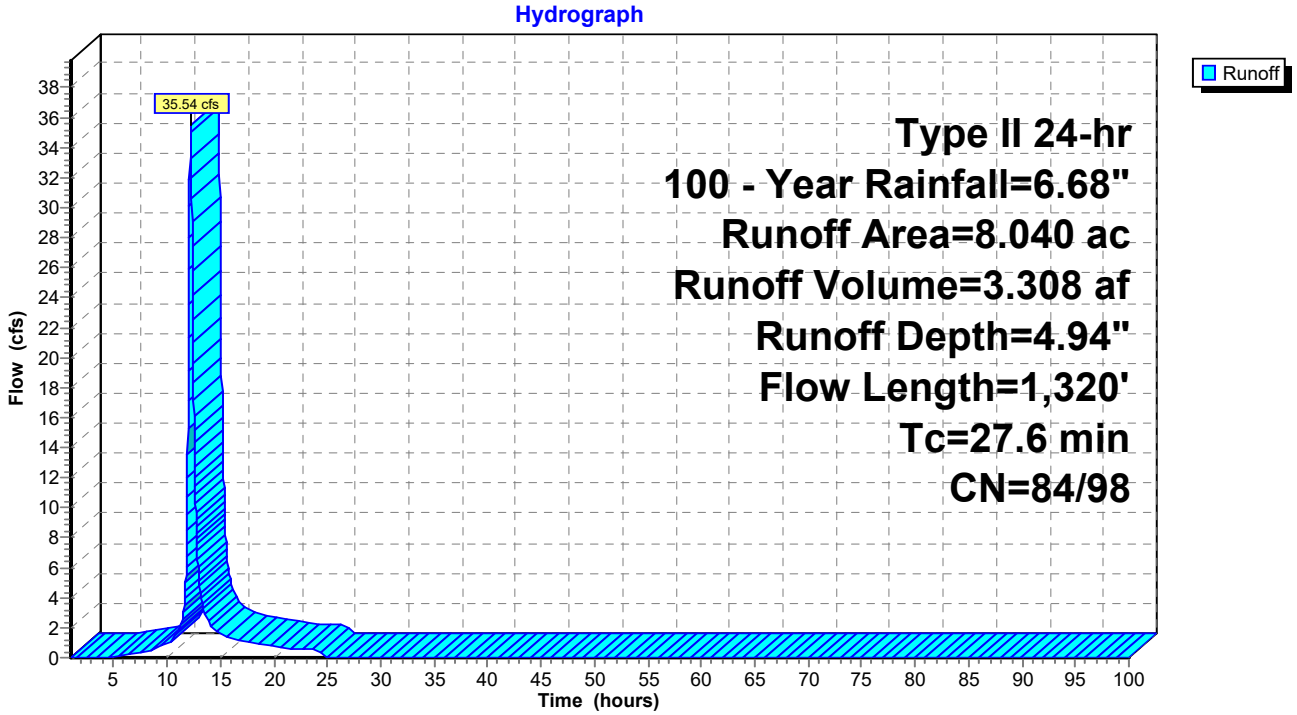
Runoff = 35.54 cfs @ 12.20 hrs, Volume= 3.308 af, Depth= 4.94"
Routed to Pond TE : TOTAL EXISTING

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
7.170	85	Row crops, straight row, Good, HSG C
8.040	85	Weighted Average
7.535	84	93.72% Pervious Area
0.505	98	6.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.5	200	0.0150	0.20		**Sheet Flow, SHEET** n= 0.120 P2= 3.00"
11.1	1,120	0.0350	1.68		**Shallow Concentrated Flow, SHALLOW** Cultivated Straight Rows Kv= 9.0 fps
27.6	1,320	Total			

Subcatchment B: EXISTING BASIN B



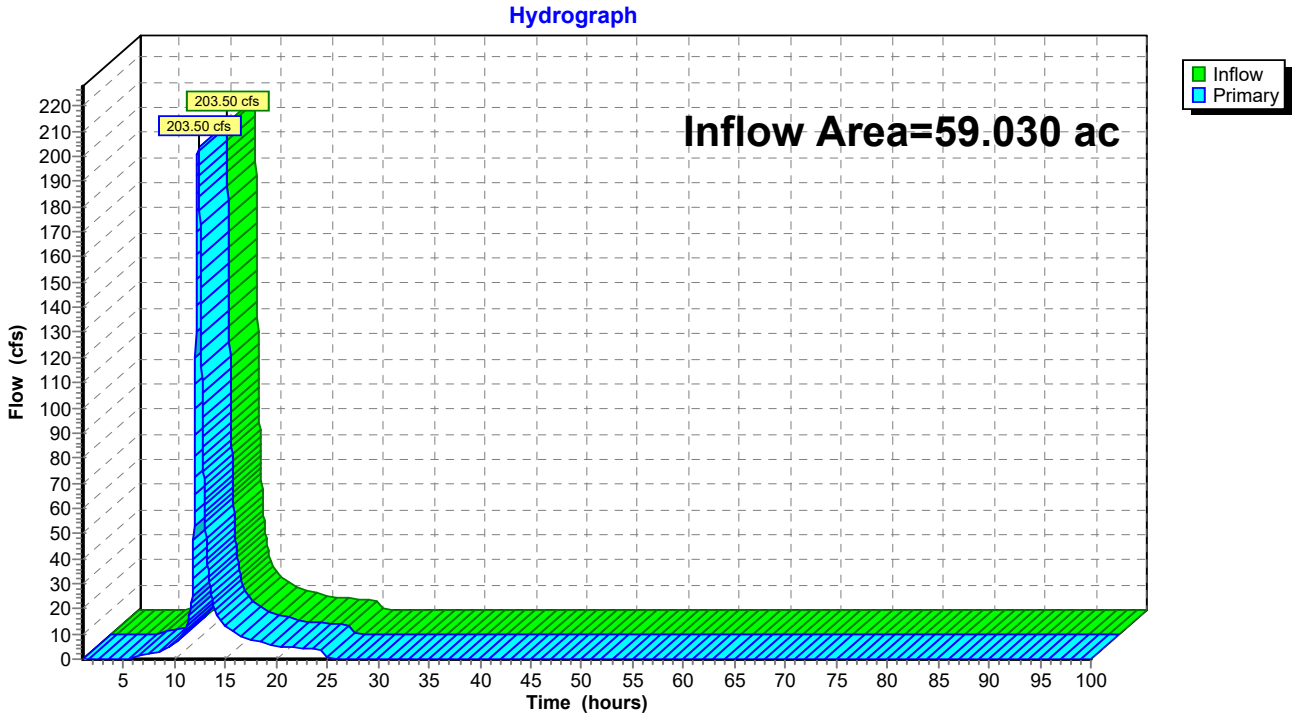
Summary for Pond TE: TOTAL EXISTING

[40] Hint: Not Described (Outflow=Inflow)

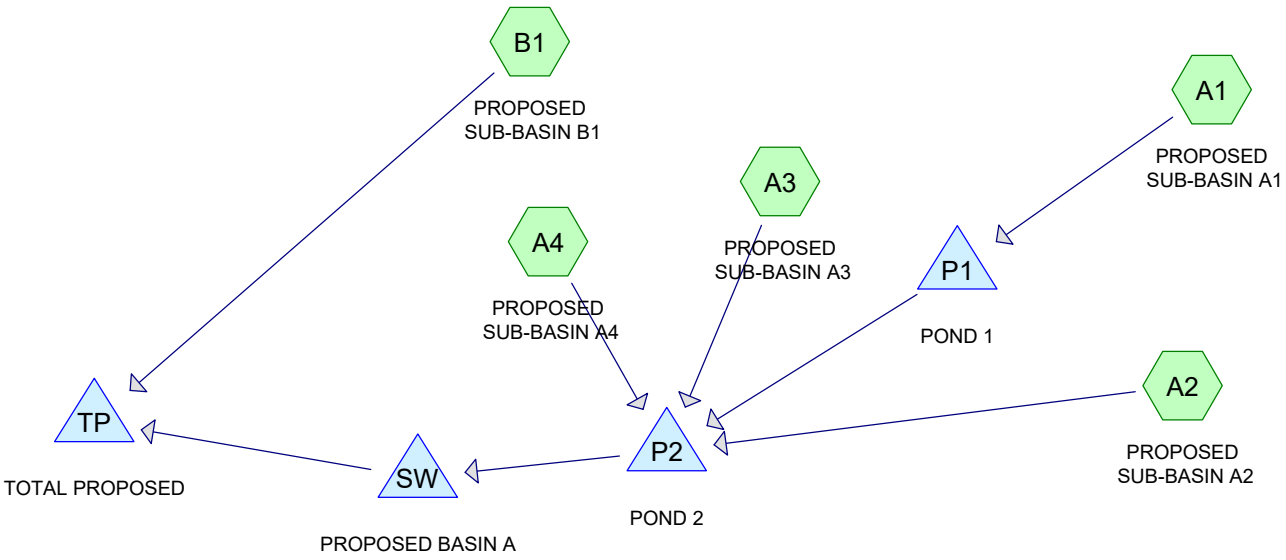
Inflow Area = 59.030 ac, 1.73% Impervious, Inflow Depth = 4.86" for 100 - Year event
Inflow = 203.50 cfs @ 12.33 hrs, Volume= 23.928 af
Primary = 203.50 cfs @ 12.33 hrs, Volume= 23.928 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TE: TOTAL EXISTING



POST-DEVELOPMENT



Subcat Reach Pond Link

Routing Diagram for 22-02-17_GNCV_Drainage Report_02104805
Prepared by Olsson, Printed 2/17/2022
HydroCAD® 10.10-6a s/n 06508 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2 - Year	Type II 24-hr		Default	24.00	1	3.00	2
2	5 - Year	Type II 24-hr		Default	24.00	1	3.93	2
3	10 - Year	Type II 24-hr		Default	24.00	1	4.69	2
4	50yr	Type II 24-hr		Default	24.00	1	6.00	2
5	100 - Year	Type II 24-hr		Default	24.00	1	6.68	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
62.040	87	1/4 acre lots, 38% imp, HSG D (A1, A2, A3, A4, B1)
0.365	74	>75% Grass cover, Good, HSG C (B1)
0.505	98	Paved parking, HSG C (B1)
62.910	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.870	HSG C	B1
62.040	HSG D	A1, A2, A3, A4, B1
0.000	Other	
62.910		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	62.040	0.000	62.040	1/4 acre lots, 38% imp	A1, A2, A3, A4, B1
0.000	0.000	0.365	0.000	0.000	0.365	>75% Grass cover, Good	B1
0.000	0.000	0.505	0.000	0.000	0.505	Paved parking	B1
0.000	**0.000**	**0.870**	**62.040**	**0.000**	**62.910**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	A1	0.00	0.00	560.0	0.0130	0.012	0.0	24.0	0.0
2	A2	0.00	0.00	800.0	0.0450	0.012	0.0	15.0	0.0
3	A3	0.00	0.00	655.0	0.0200	0.012	0.0	24.0	0.0
4	A3	0.00	0.00	200.0	0.0050	0.012	0.0	36.0	0.0
5	B1	0.00	0.00	750.0	0.0050	0.012	0.0	15.0	0.0
6	P1	1,466.00	1,462.00	300.0	0.0133	0.012	0.0	30.0	0.0
7	P2	1,452.50	1,452.00	95.0	0.0053	0.012	0.0	36.0	0.0

2-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: PROPOSED Runoff Area=25.320 ac 38.00% Impervious Runoff Depth=1.83"
Flow Length=1,825' Tc=21.7 min CN=80/98 Runoff=45.93 cfs 3.855 af

SubcatchmentA2: PROPOSED Runoff Area=10.600 ac 38.00% Impervious Runoff Depth=1.83"
Flow Length=1,340' Tc=18.3 min CN=80/98 Runoff=21.17 cfs 1.614 af

SubcatchmentA3: PROPOSED Runoff Area=17.760 ac 38.00% Impervious Runoff Depth=1.83"
Flow Length=1,845' Tc=19.3 min CN=80/98 Runoff=34.45 cfs 2.704 af

SubcatchmentA4: PROPOSED SUB-BASIN Runoff Area=2.410 ac 38.00% Impervious Runoff Depth=1.83"
Tc=9.0 min CN=80/98 Runoff=6.48 cfs 0.367 af

SubcatchmentB1: PROPOSED SUB-BASIN Runoff Area=6.820 ac 40.56% Impervious Runoff Depth=1.87"
Flow Length=1,285' Tc=18.9 min CN=80/98 Runoff=13.63 cfs 1.060 af

Pond P1: POND 1 Peak Elev=1,470.33' Storage=44,672 cf Inflow=45.93 cfs 3.855 af
Outflow=21.74 cfs 3.855 af

Pond P2: POND 2 Peak Elev=1,457.02' Storage=38,954 cf Inflow=68.91 cfs 8.539 af
Outflow=46.53 cfs 8.539 af

Pond SW: PROPOSED BASIN A Inflow=46.53 cfs 8.539 af
Primary=46.53 cfs 8.539 af

Pond TP: TOTAL PROPOSED Inflow=55.01 cfs 9.600 af
Primary=55.01 cfs 9.600 af

Total Runoff Area = 62.910 ac Runoff Volume = 9.600 af Average Runoff Depth = 1.83"
61.72% Pervious = 38.830 ac 38.28% Impervious = 24.080 ac

Summary for Subcatchment A1: PROPOSED SUB-BASIN A1

[47] Hint: Peak is 164% of capacity of segment #2

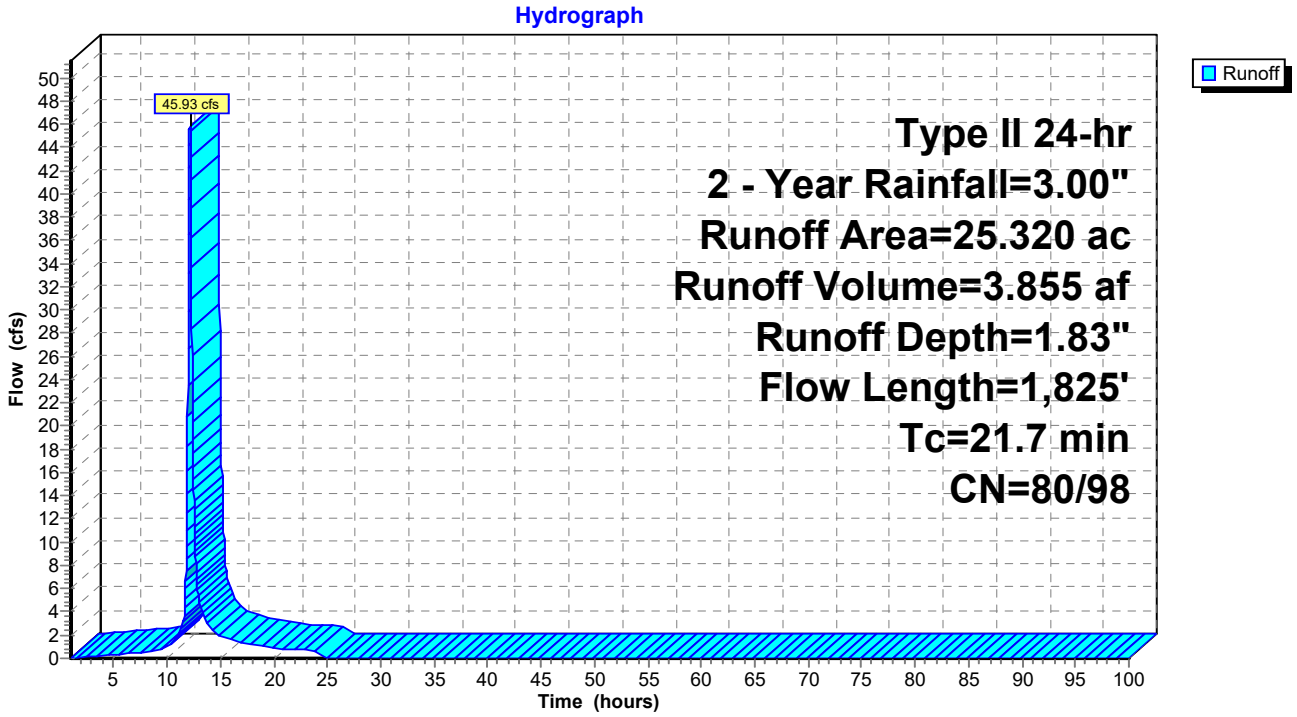
Runoff = 45.93 cfs @ 12.14 hrs, Volume= 3.855 af, Depth= 1.83"
Routed to Pond P1 : POND 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
25.320	87	1/4 acre lots, 38% imp, HSG D
15.698	80	62.00% Pervious Area
9.622	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	150	0.0100	0.14		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.0	560	0.0130	8.89	27.94	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.9	375	0.0200	6.67	160.11	**Trap/Vee/Rect Channel Flow, CHANNEL** Bot.W=4.00' D=2.00' Z= 4.0 '/' Top.W=20.00' n= 0.035 Earth, dense weeds
1.0	610	0.0400	10.26	821.11	**Trap/Vee/Rect Channel Flow,** Bot.W=20.00' D=2.00' Z= 10.0 '/' Top.W=60.00' n= 0.035 Earth, dense weeds
0.3	130	0.0100	6.51	429.85	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 4.0 '/' Top.W=34.00' n= 0.035 Earth, dense weeds
21.7	1,825	Total			

Subcatchment A1: PROPOSED SUB-BASIN A1



Summary for Subcatchment A2: PROPOSED SUB-BASIN A2

[47] Hint: Peak is 143% of capacity of segment #3

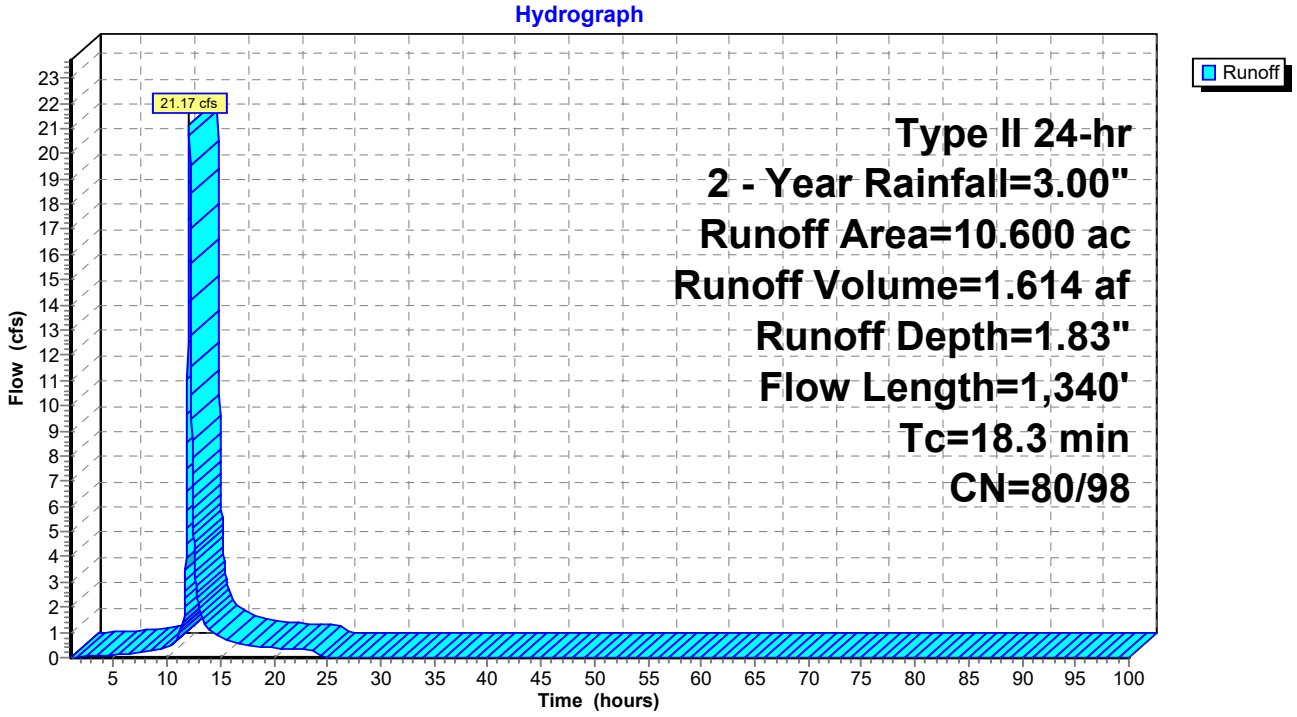
Runoff = 21.17 cfs @ 12.10 hrs, Volume= 1.614 af, Depth= 1.83"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
10.600	87	1/4 acre lots, 38% imp, HSG D
6.572	80	62.00% Pervious Area
4.028	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.2	390	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.1	800	0.0450	12.10	14.85	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.3	1,340	Total			

Subcatchment A2: PROPOSED SUB-BASIN A2



Summary for Subcatchment A3: PROPOSED SUB-BASIN A3

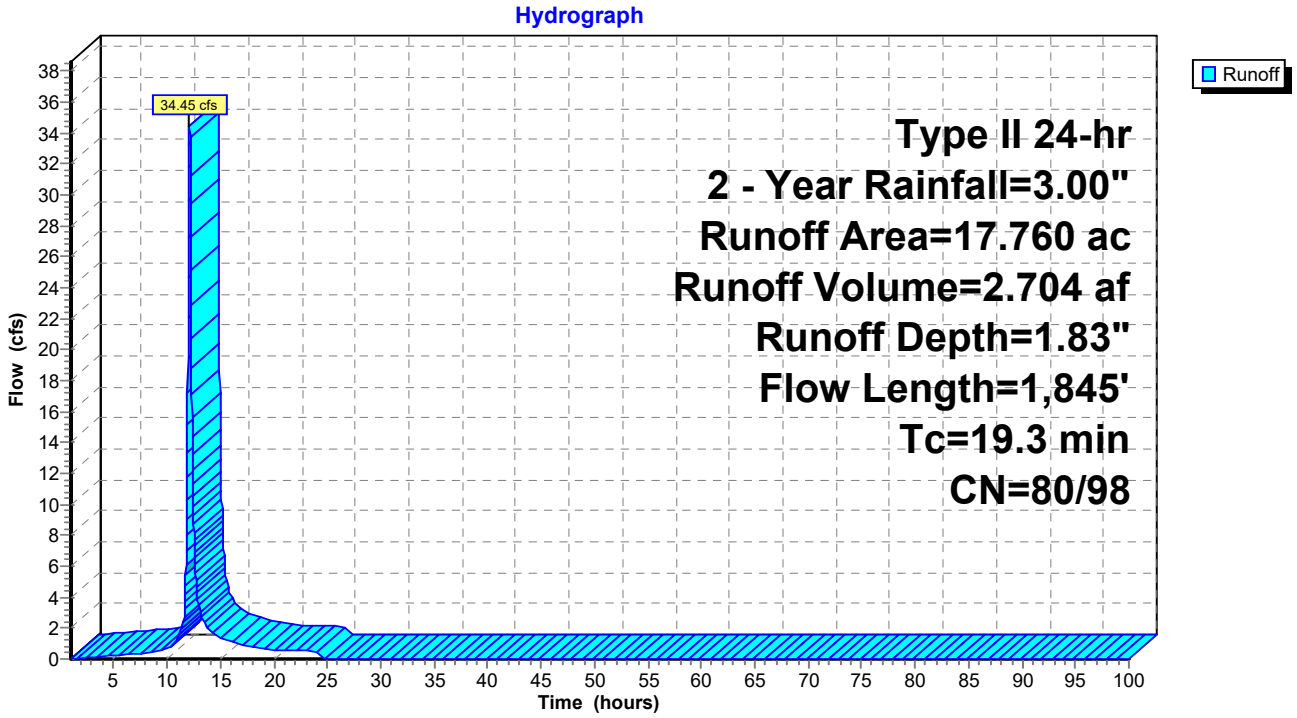
Runoff = 34.45 cfs @ 12.12 hrs, Volume= 2.704 af, Depth= 1.83"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
17.760	87	1/4 acre lots, 38% imp, HSG D
11.011	80	62.00% Pervious Area
6.749	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.8	840	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.0	655	0.0200	11.03	34.66	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.5	200	0.0050	7.23	51.09	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012 Concrete pipe, finished
19.3	1,845	Total			

Subcatchment A3: PROPOSED SUB-BASIN A3



Summary for Subcatchment A4: PROPOSED SUB-BASIN A4

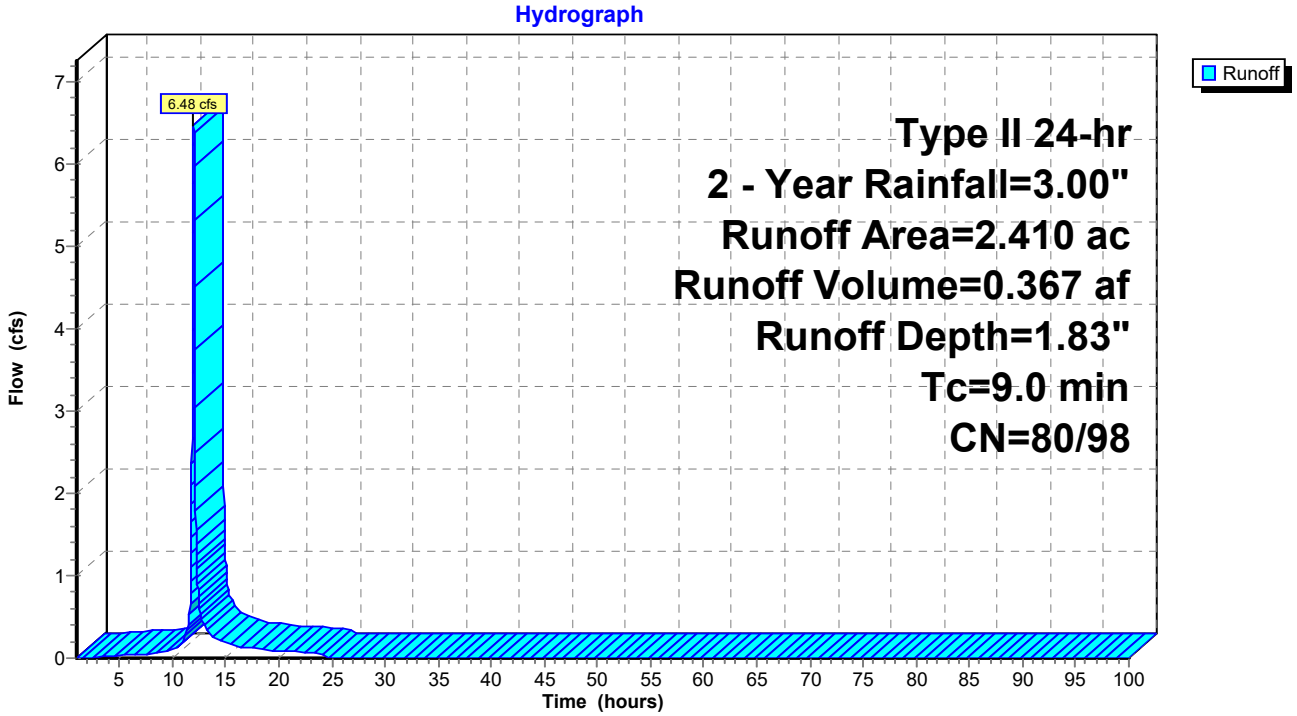
Runoff = 6.48 cfs @ 12.00 hrs, Volume= 0.367 af, Depth= 1.83"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
2.410	87	1/4 acre lots, 38% imp, HSG D
1.494	80	62.00% Pervious Area
0.916	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, direct**

Subcatchment A4: PROPOSED SUB-BASIN A4



Summary for Subcatchment B1: PROPOSED SUB-BASIN B1

[47] Hint: Peak is 275% of capacity of segment #3

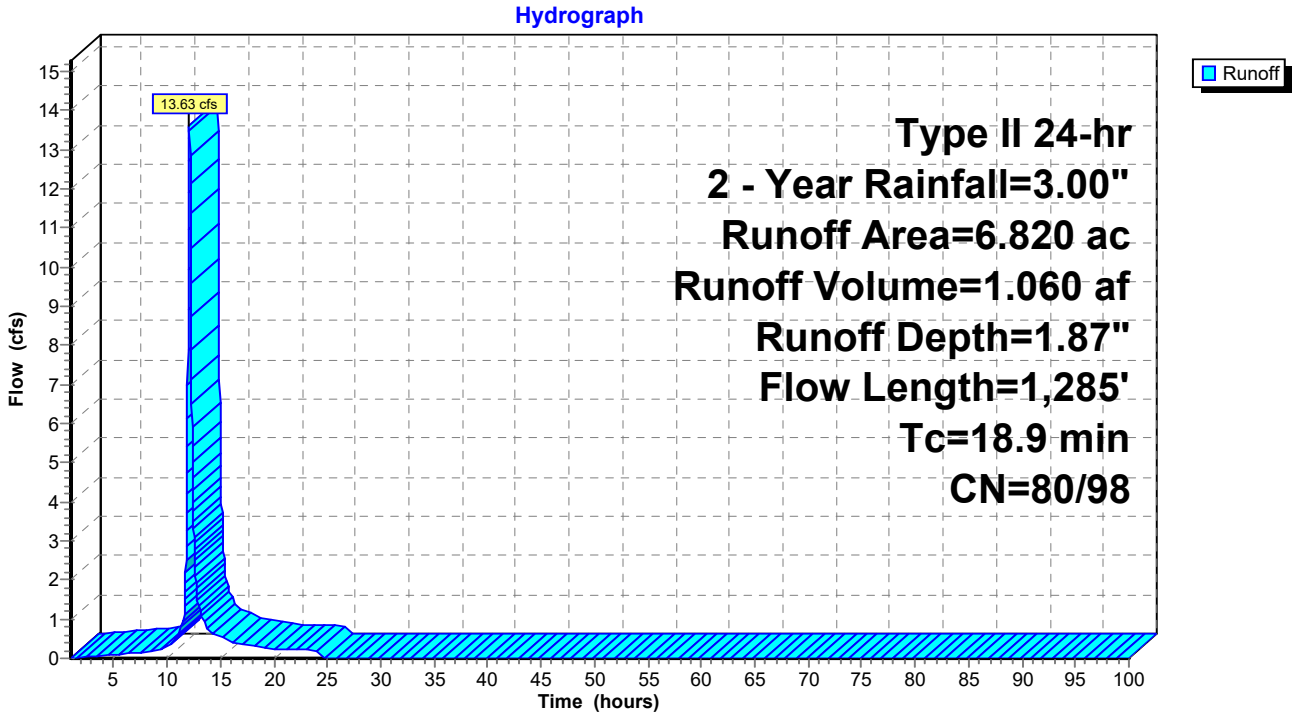
Runoff = 13.63 cfs @ 12.11 hrs, Volume= 1.060 af, Depth= 1.87"
Routed to Pond TP : TOTAL PROPOSED

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 2 - Year Rainfall=3.00"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
5.950	87	1/4 acre lots, 38% imp, HSG D
6.820	87	Weighted Average
4.054	80	59.44% Pervious Area
2.766	98	40.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.8	385	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
3.1	750	0.0050	4.03	4.95	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.9	1,285	Total			

Subcatchment B1: PROPOSED SUB-BASIN B1



Summary for Pond P1: POND 1

Inflow Area = 25.320 ac, 38.00% Impervious, Inflow Depth = 1.83" for 2 - Year event
Inflow = 45.93 cfs @ 12.14 hrs, Volume= 3.855 af
Outflow = 21.74 cfs @ 12.38 hrs, Volume= 3.855 af, Atten= 53%, Lag= 14.5 min
Primary = 21.74 cfs @ 12.38 hrs, Volume= 3.855 af
Routed to Pond P2 : POND 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,470.33' @ 12.38 hrs Surf.Area= 24,154 sf Storage= 44,672 cf

Plug-Flow detention time= 26.6 min calculated for 3.854 af (100% of inflow)
Center-of-Mass det. time= 26.6 min (832.8 - 806.2)

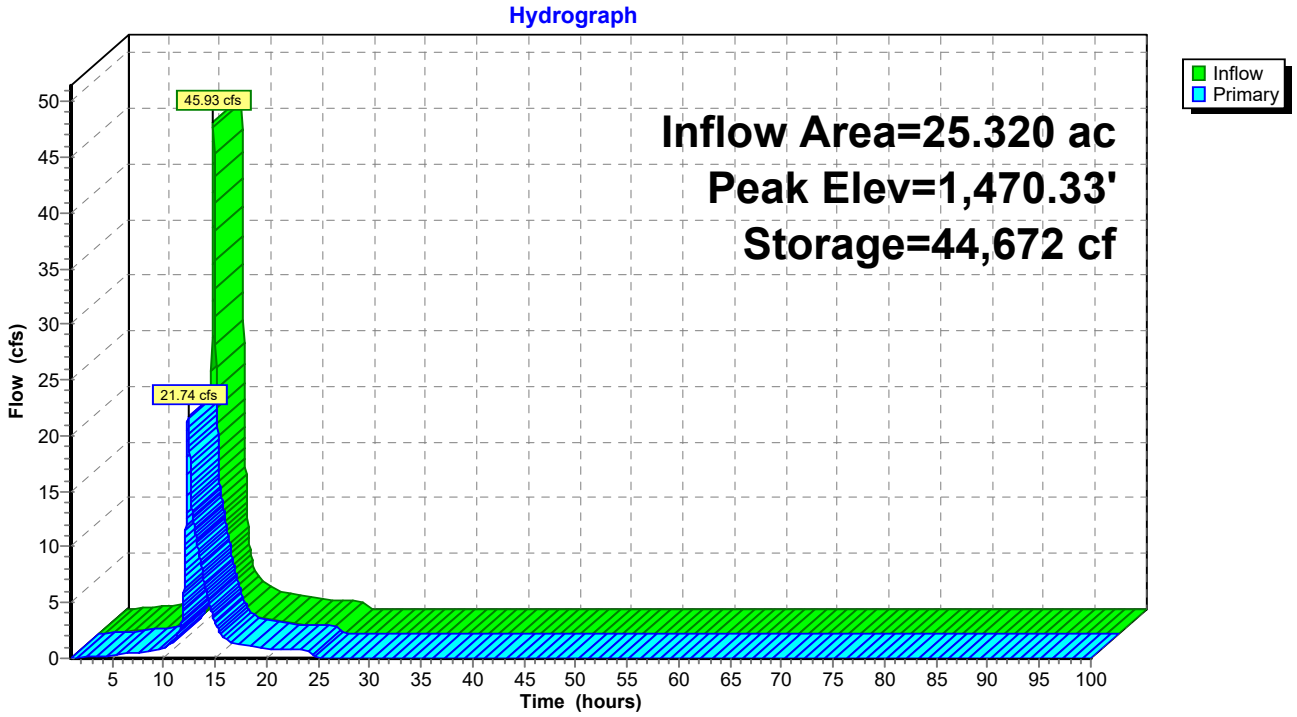
Volume	Invert	Avail.Storage	Storage Description
#1	1,466.00'	223,730 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,466.00	47	0	0
1,467.00	1,629	838	838
1,468.00	8,552	5,091	5,929
1,469.00	15,452	12,002	17,931
1,470.00	22,468	18,960	36,891
1,471.00	27,518	24,993	61,884
1,472.00	32,708	30,113	91,997
1,473.00	38,157	35,433	127,429
1,474.00	44,645	41,401	168,830
1,475.00	65,155	54,900	223,730

Device	Routing	Invert	Outlet Devices
#1	Primary	1,466.00'	**30.0" Round RCP_Round 30"** L= 300.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,466.00' / 1,462.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Primary	1,474.10'	**30.0' long + 4.0 '/' SideZ x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,470.00'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,466.00'	**6.0" W x 48.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=21.72 cfs @ 12.38 hrs HW=1,470.33' TW=1,457.01' (Dynamic Tailwater)
- **1=RCP_Round 30"** (Passes 21.72 cfs of 41.50 cfs potential flow)
  - **3=Orifice/Grate** (Weir Controls 7.55 cfs @ 1.89 fps)
  - **4=Orifice/Grate** (Orifice Controls 14.17 cfs @ 7.08 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1: POND 1



Summary for Pond P2: POND 2

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 1.83" for 2 - Year event
Inflow = 68.91 cfs @ 12.11 hrs, Volume= 8.539 af
Outflow = 46.53 cfs @ 12.34 hrs, Volume= 8.539 af, Atten= 32%, Lag= 13.7 min
Primary = 46.53 cfs @ 12.34 hrs, Volume= 8.539 af
Routed to Pond SW : PROPOSED BASIN A

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,457.02' @ 12.34 hrs Surf.Area= 20,614 sf Storage= 38,954 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 6.8 min (823.2 - 816.4)

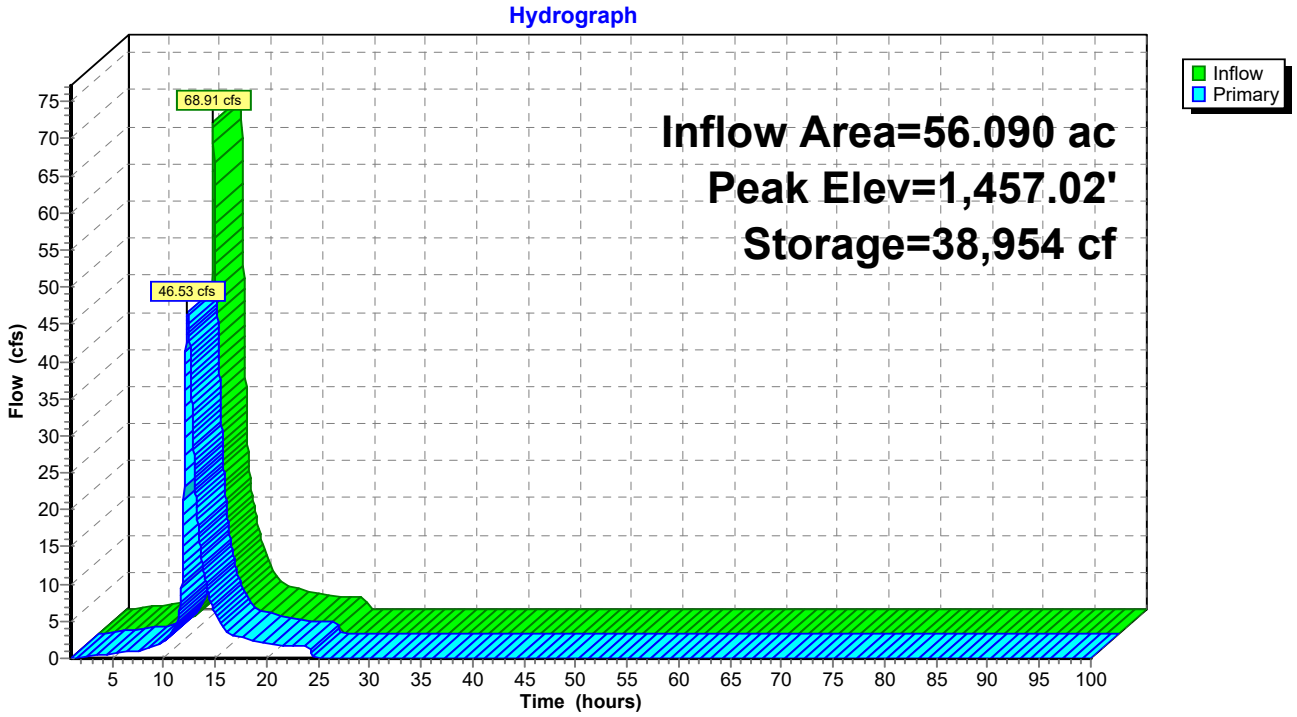
Volume	Invert	Avail.Storage	Storage Description
#1	1,453.00'	255,649 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,453.00	626	0	0
1,454.00	4,028	2,327	2,327
1,455.00	9,182	6,605	8,932
1,456.00	14,691	11,937	20,869
1,457.00	20,468	17,580	38,448
1,458.00	26,393	23,431	61,879
1,459.00	32,062	29,228	91,106
1,460.00	36,645	34,354	125,460
1,461.00	41,061	38,853	164,313
1,462.00	45,630	43,346	207,658
1,463.00	50,351	47,991	255,649

Device	Routing	Invert	Outlet Devices
#1	Primary	1,452.50'	**36.0" Round RCP_Round 36"** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,452.50' / 1,452.00' S= 0.0053 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Primary	1,462.50'	**35.0' long + 3.0 '/' SideZ x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,457.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,452.50'	**18.0" W x 54.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=46.52 cfs @ 12.34 hrs HW=1,457.02' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 36"** (Passes 46.52 cfs of 55.86 cfs potential flow)
  - **3=Orifice/Grate** (Weir Controls 0.20 cfs @ 0.51 fps)
  - **4=Orifice/Grate** (Orifice Controls 46.32 cfs @ 6.86 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: POND 2



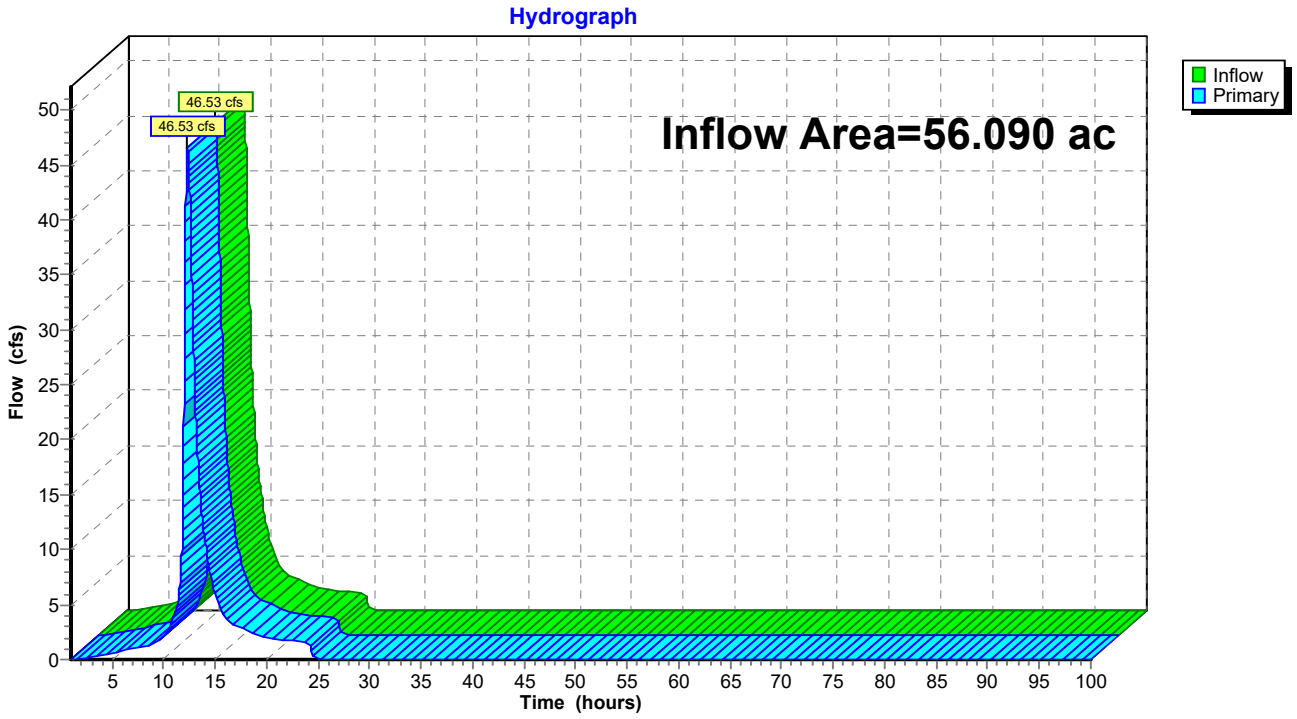
Summary for Pond SW: PROPOSED BASIN A

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 1.83" for 2 - Year event
Inflow = 46.53 cfs @ 12.34 hrs, Volume= 8.539 af
Primary = 46.53 cfs @ 12.34 hrs, Volume= 8.539 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TP : TOTAL PROPOSED

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond SW: PROPOSED BASIN A



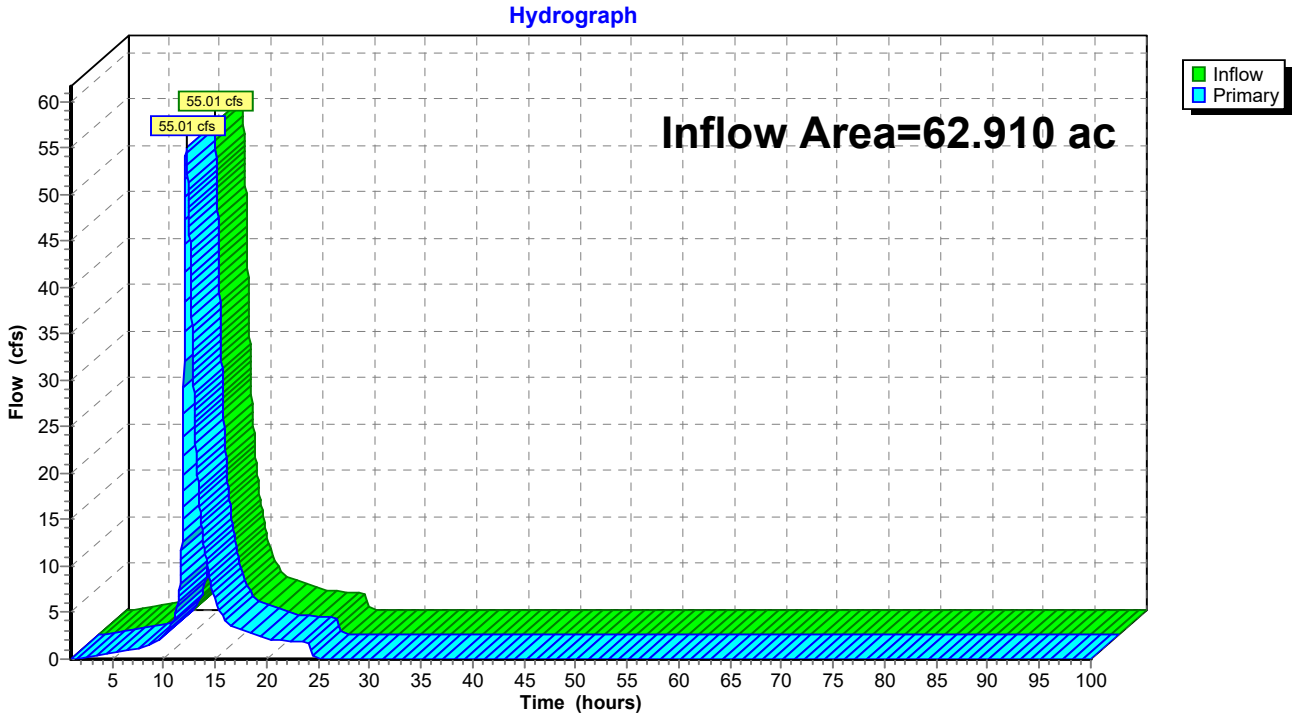
Summary for Pond TP: TOTAL PROPOSED

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 62.910 ac, 38.28% Impervious, Inflow Depth = 1.83" for 2 - Year event
Inflow = 55.01 cfs @ 12.21 hrs, Volume= 9.600 af
Primary = 55.01 cfs @ 12.21 hrs, Volume= 9.600 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TP: TOTAL PROPOSED



5-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: PROPOSED Runoff Area=25.320 ac 38.00% Impervious Runoff Depth=2.63"
Flow Length=1,825' Tc=21.7 min CN=80/98 Runoff=66.60 cfs 5.558 af

SubcatchmentA2: PROPOSED Runoff Area=10.600 ac 38.00% Impervious Runoff Depth=2.63"
Flow Length=1,340' Tc=18.3 min CN=80/98 Runoff=30.66 cfs 2.327 af

SubcatchmentA3: PROPOSED Runoff Area=17.760 ac 38.00% Impervious Runoff Depth=2.63"
Flow Length=1,845' Tc=19.3 min CN=80/98 Runoff=49.92 cfs 3.899 af

SubcatchmentA4: PROPOSED SUB-BASIN Runoff Area=2.410 ac 38.00% Impervious Runoff Depth=2.63"
Tc=9.0 min CN=80/98 Runoff=9.36 cfs 0.529 af

SubcatchmentB1: PROPOSED SUB-BASIN Runoff Area=6.820 ac 40.56% Impervious Runoff Depth=2.68"
Flow Length=1,285' Tc=18.9 min CN=80/98 Runoff=19.64 cfs 1.522 af

Pond P1: POND 1 Peak Elev=1,470.80' Storage=56,522 cf Inflow=66.60 cfs 5.558 af
Outflow=43.89 cfs 5.558 af

Pond P2: POND 2 Peak Elev=1,458.27' Storage=69,160 cf Inflow=104.19 cfs 12.313 af
Outflow=70.31 cfs 12.313 af

Pond SW: PROPOSED BASIN A Inflow=70.31 cfs 12.313 af
Primary=70.31 cfs 12.313 af

Pond TP: TOTAL PROPOSED Inflow=81.78 cfs 13.835 af
Primary=81.78 cfs 13.835 af

Total Runoff Area = 62.910 ac Runoff Volume = 13.835 af Average Runoff Depth = 2.64"
61.72% Pervious = 38.830 ac 38.28% Impervious = 24.080 ac

Summary for Subcatchment A1: PROPOSED SUB-BASIN A1

[47] Hint: Peak is 238% of capacity of segment #2

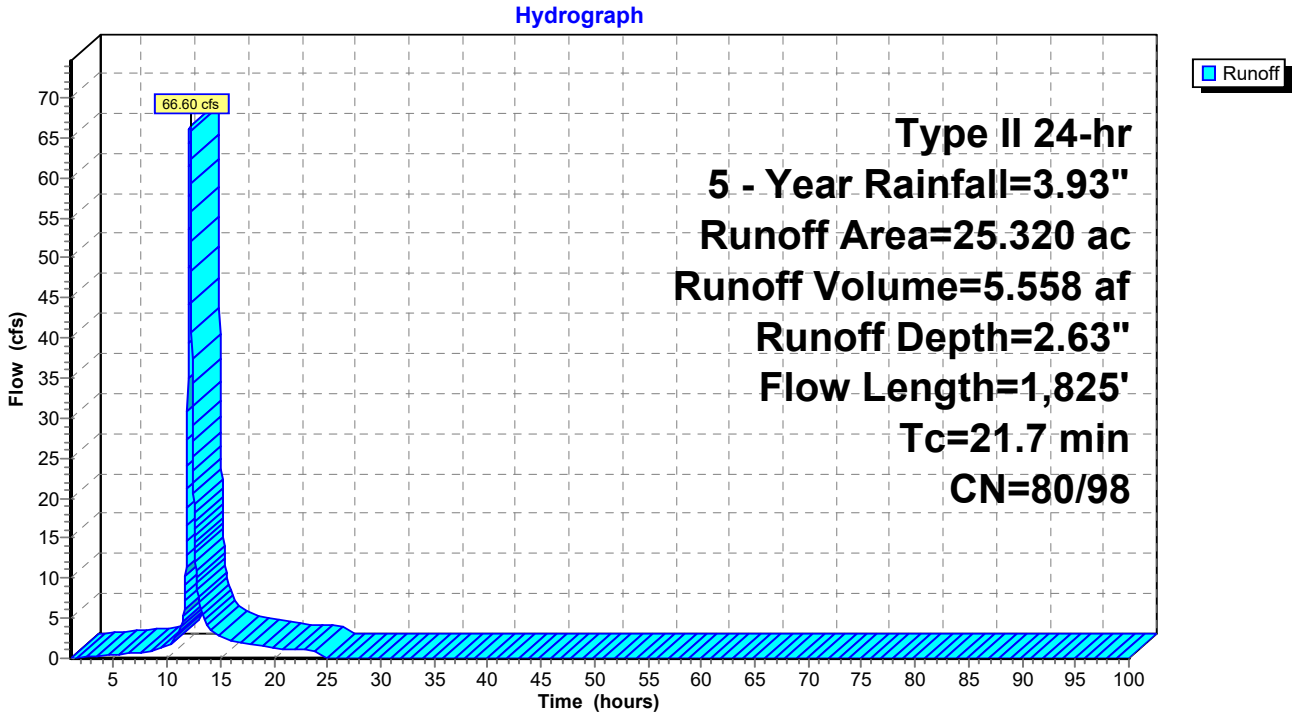
Runoff = 66.60 cfs @ 12.14 hrs, Volume= 5.558 af, Depth= 2.63"
Routed to Pond P1 : POND 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
25.320	87	1/4 acre lots, 38% imp, HSG D
15.698	80	62.00% Pervious Area
9.622	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	150	0.0100	0.14		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.0	560	0.0130	8.89	27.94	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.9	375	0.0200	6.67	160.11	**Trap/Vee/Rect Channel Flow, CHANNEL** Bot.W=4.00' D=2.00' Z= 4.0 '/' Top.W=20.00' n= 0.035 Earth, dense weeds
1.0	610	0.0400	10.26	821.11	**Trap/Vee/Rect Channel Flow,** Bot.W=20.00' D=2.00' Z= 10.0 '/' Top.W=60.00' n= 0.035 Earth, dense weeds
0.3	130	0.0100	6.51	429.85	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 4.0 '/' Top.W=34.00' n= 0.035 Earth, dense weeds
21.7	1,825	Total			

Subcatchment A1: PROPOSED SUB-BASIN A1



Summary for Subcatchment A2: PROPOSED SUB-BASIN A2

[47] Hint: Peak is 207% of capacity of segment #3

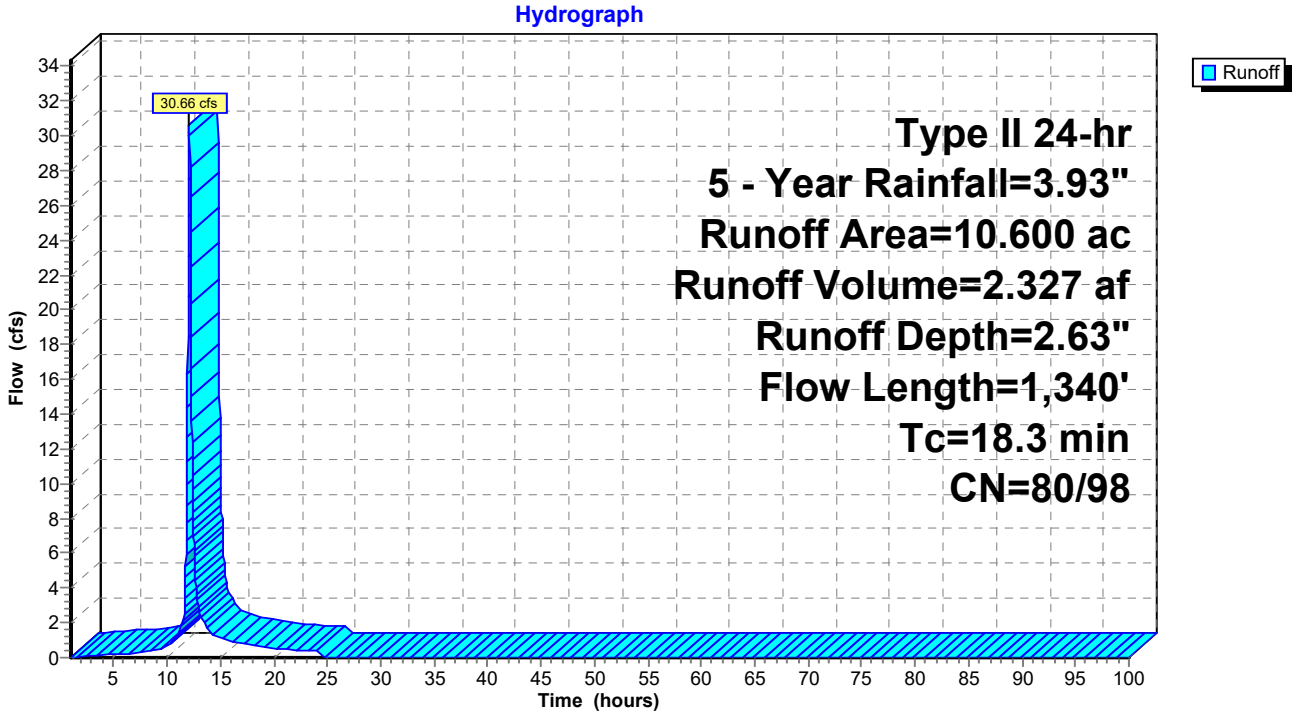
Runoff = 30.66 cfs @ 12.10 hrs, Volume= 2.327 af, Depth= 2.63"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
10.600	87	1/4 acre lots, 38% imp, HSG D
6.572	80	62.00% Pervious Area
4.028	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.2	390	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.1	800	0.0450	12.10	14.85	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.3	1,340	Total			

Subcatchment A2: PROPOSED SUB-BASIN A2



Summary for Subcatchment A3: PROPOSED SUB-BASIN A3

[47] Hint: Peak is 144% of capacity of segment #3

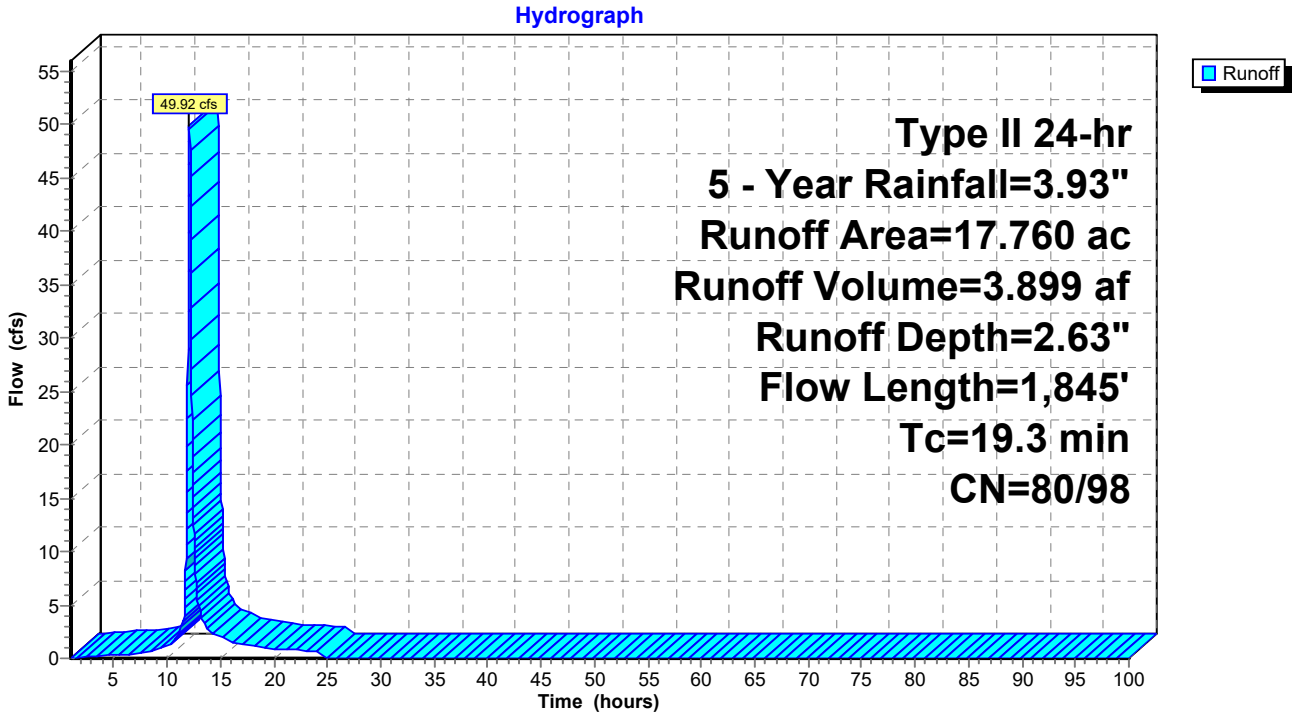
Runoff = 49.92 cfs @ 12.11 hrs, Volume= 3.899 af, Depth= 2.63"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
17.760	87	1/4 acre lots, 38% imp, HSG D
11.011	80	62.00% Pervious Area
6.749	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.8	840	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.0	655	0.0200	11.03	34.66	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.5	200	0.0050	7.23	51.09	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012 Concrete pipe, finished
19.3	1,845	Total			

Subcatchment A3: PROPOSED SUB-BASIN A3



Summary for Subcatchment A4: PROPOSED SUB-BASIN A4

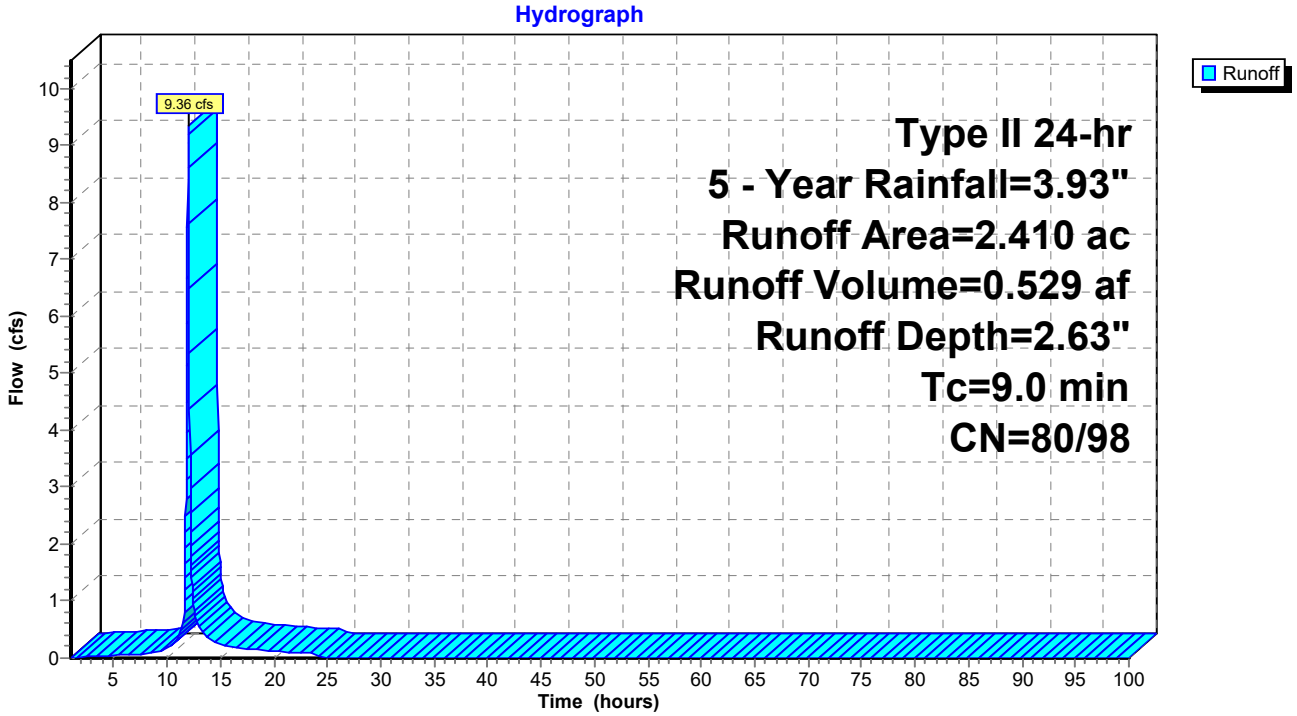
Runoff = 9.36 cfs @ 12.00 hrs, Volume= 0.529 af, Depth= 2.63"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
2.410	87	1/4 acre lots, 38% imp, HSG D
1.494	80	62.00% Pervious Area
0.916	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, direct**

Subcatchment A4: PROPOSED SUB-BASIN A4



Summary for Subcatchment B1: PROPOSED SUB-BASIN B1

[47] Hint: Peak is 397% of capacity of segment #3

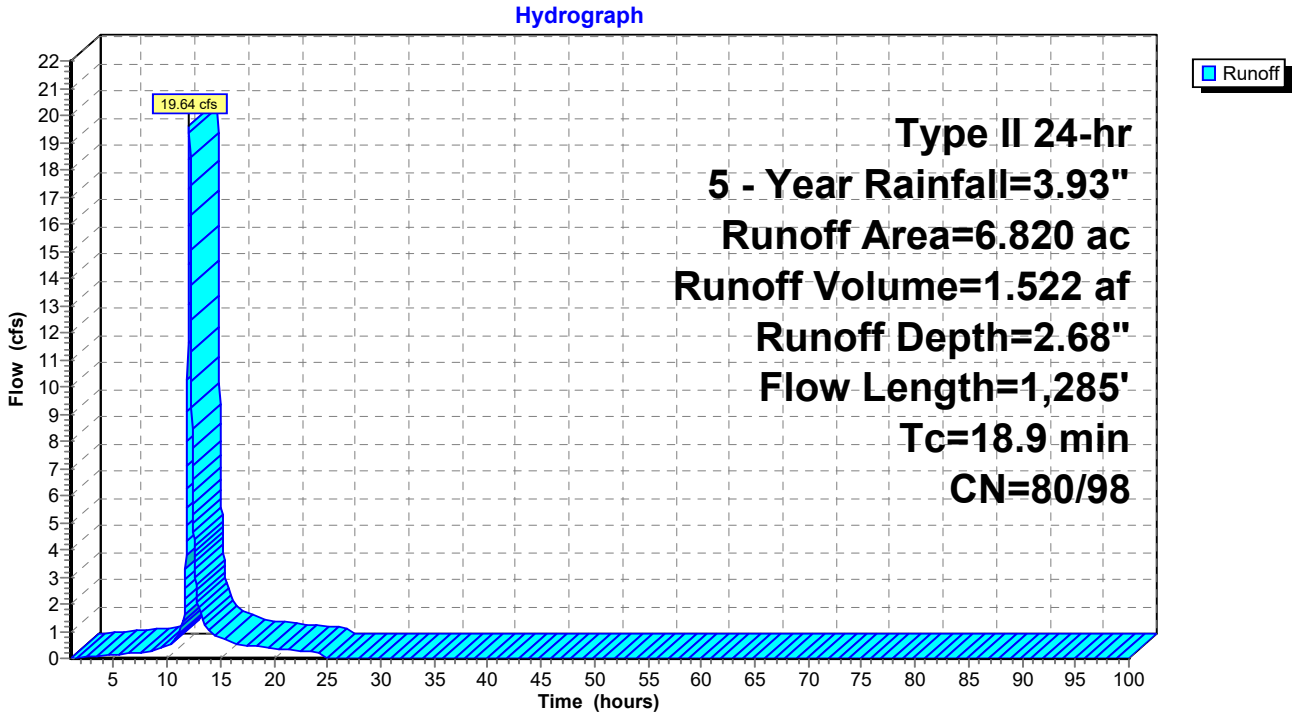
Runoff = 19.64 cfs @ 12.11 hrs, Volume= 1.522 af, Depth= 2.68"
Routed to Pond TP : TOTAL PROPOSED

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 5 - Year Rainfall=3.93"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
5.950	87	1/4 acre lots, 38% imp, HSG D
6.820	87	Weighted Average
4.054	80	59.44% Pervious Area
2.766	98	40.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.8	385	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
3.1	750	0.0050	4.03	4.95	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.9	1,285	Total			

Subcatchment B1: PROPOSED SUB-BASIN B1



Summary for Pond P1: POND 1

Inflow Area = 25.320 ac, 38.00% Impervious, Inflow Depth = 2.63" for 5 - Year event
Inflow = 66.60 cfs @ 12.14 hrs, Volume= 5.558 af
Outflow = 43.89 cfs @ 12.30 hrs, Volume= 5.558 af, Atten= 34%, Lag= 9.8 min
Primary = 43.89 cfs @ 12.30 hrs, Volume= 5.558 af
Routed to Pond P2 : POND 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,470.80' @ 12.30 hrs Surf.Area= 26,516 sf Storage= 56,522 cf

Plug-Flow detention time= 24.8 min calculated for 5.557 af (100% of inflow)
Center-of-Mass det. time= 24.8 min (825.5 - 800.8)

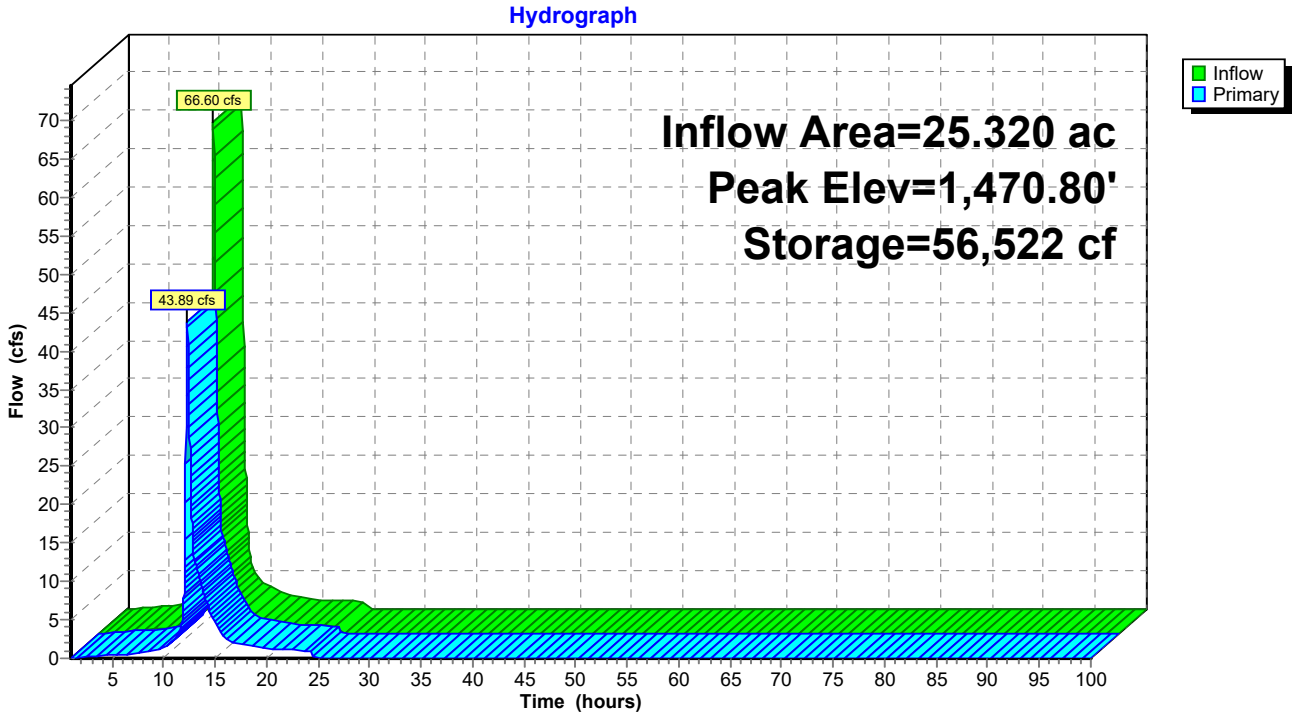
Volume	Invert	Avail.Storage	Storage Description
#1	1,466.00'	223,730 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,466.00	47	0	0
1,467.00	1,629	838	838
1,468.00	8,552	5,091	5,929
1,469.00	15,452	12,002	17,931
1,470.00	22,468	18,960	36,891
1,471.00	27,518	24,993	61,884
1,472.00	32,708	30,113	91,997
1,473.00	38,157	35,433	127,429
1,474.00	44,645	41,401	168,830
1,475.00	65,155	54,900	223,730

Device	Routing	Invert	Outlet Devices
#1	Primary	1,466.00'	**30.0" Round RCP_Round 30"** L= 300.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,466.00' / 1,462.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Primary	1,474.10'	**30.0' long + 4.0 '/' SideZ x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,470.00'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,466.00'	**6.0" W x 48.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=43.85 cfs @ 12.30 hrs HW=1,470.80' TW=1,458.18' (Dynamic Tailwater)
- **1=RCP_Round 30"** (Passes 43.85 cfs of 44.54 cfs potential flow)
  - **3=Orifice/Grate** (Weir Controls 28.11 cfs @ 2.93 fps)
  - **4=Orifice/Grate** (Orifice Controls 15.73 cfs @ 7.87 fps)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1: POND 1



Summary for Pond P2: POND 2

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 2.63" for 5 - Year event
Inflow = 104.19 cfs @ 12.18 hrs, Volume= 12.313 af
Outflow = 70.31 cfs @ 12.39 hrs, Volume= 12.313 af, Atten= 33%, Lag= 12.6 min
Primary = 70.31 cfs @ 12.39 hrs, Volume= 12.313 af
Routed to Pond SW : PROPOSED BASIN A

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,458.27' @ 12.39 hrs Surf.Area= 27,913 sf Storage= 69,160 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 8.3 min (818.4 - 810.1)

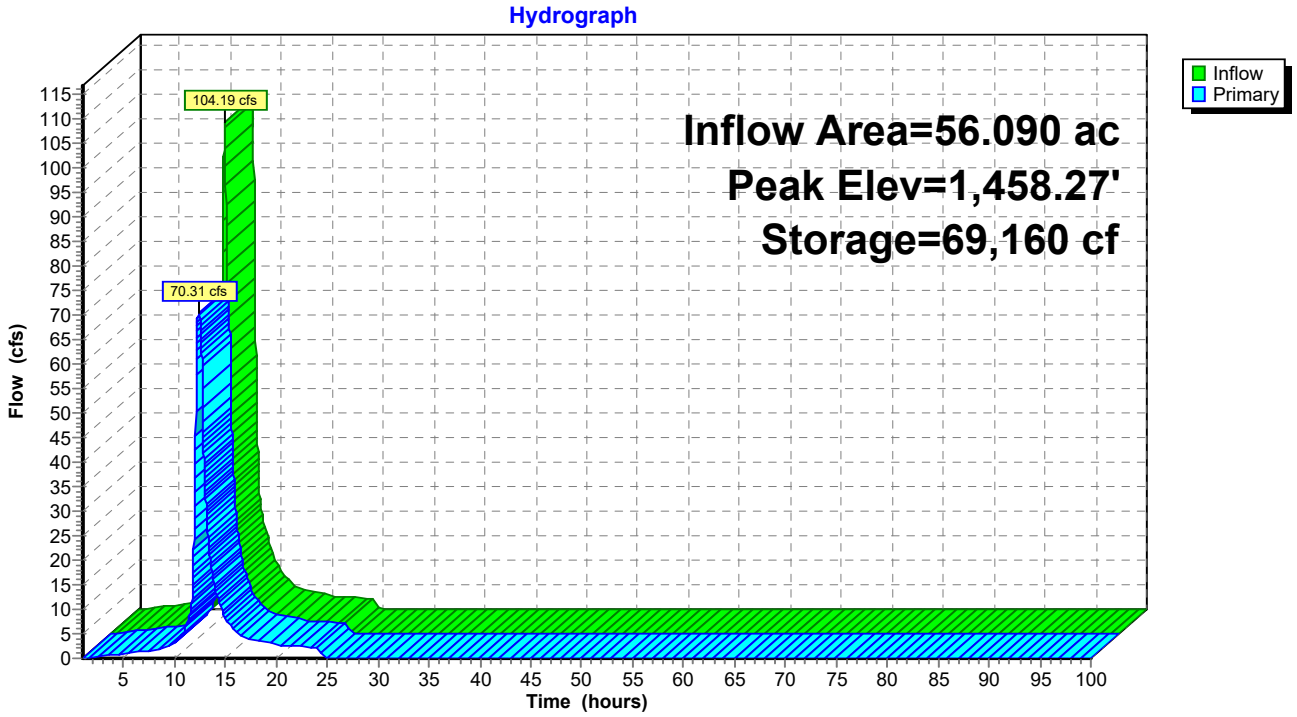
Volume	Invert	Avail.Storage	Storage Description
#1	1,453.00'	255,649 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,453.00	626	0	0
1,454.00	4,028	2,327	2,327
1,455.00	9,182	6,605	8,932
1,456.00	14,691	11,937	20,869
1,457.00	20,468	17,580	38,448
1,458.00	26,393	23,431	61,879
1,459.00	32,062	29,228	91,106
1,460.00	36,645	34,354	125,460
1,461.00	41,061	38,853	164,313
1,462.00	45,630	43,346	207,658
1,463.00	50,351	47,991	255,649

Device	Routing	Invert	Outlet Devices
#1	Primary	1,452.50'	**36.0" Round RCP_Round 36"** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,452.50' / 1,452.00' S= 0.0053 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Primary	1,462.50'	**35.0' long + 3.0 '/' SideZ x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,457.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,452.50'	**18.0" W x 54.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=70.31 cfs @ 12.39 hrs HW=1,458.27' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 36"** (Inlet Controls 70.31 cfs @ 9.95 fps)
  - **3=Orifice/Grate** (Passes < 74.63 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 59.82 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: POND 2



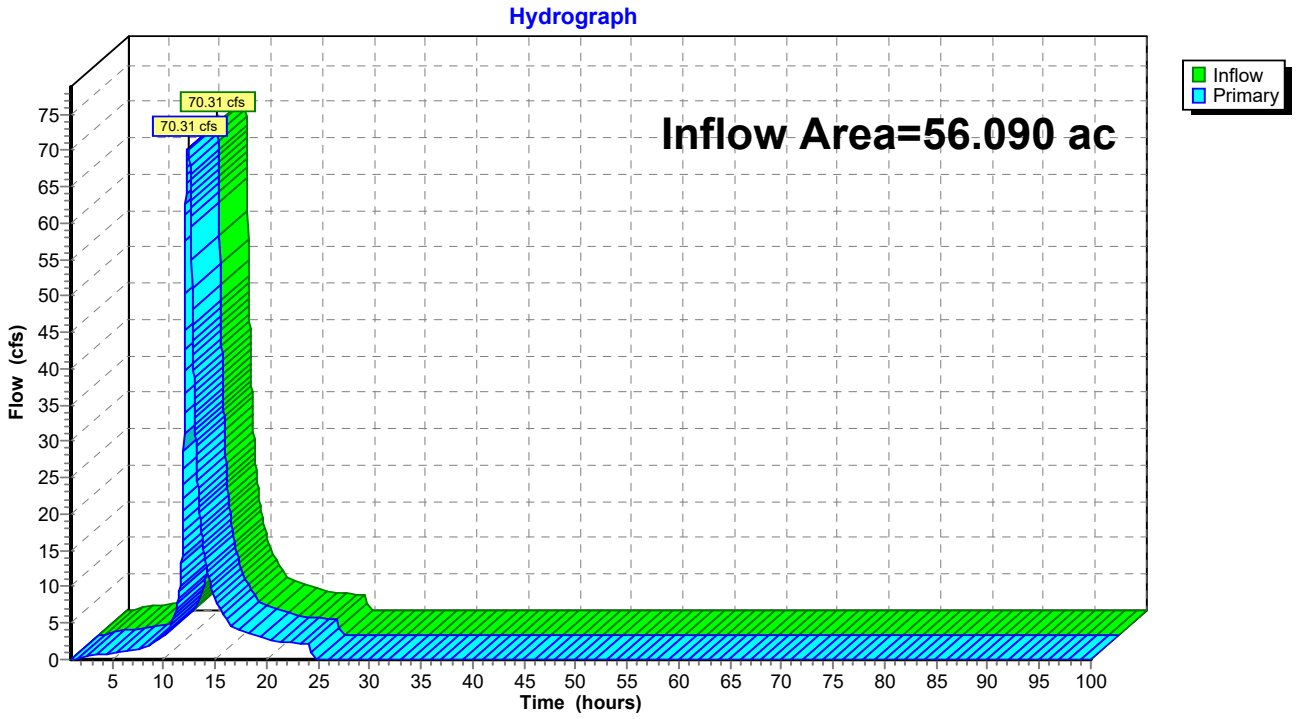
Summary for Pond SW: PROPOSED BASIN A

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 2.63" for 5 - Year event
Inflow = 70.31 cfs @ 12.39 hrs, Volume= 12.313 af
Primary = 70.31 cfs @ 12.39 hrs, Volume= 12.313 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TP : TOTAL PROPOSED

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond SW: PROPOSED BASIN A



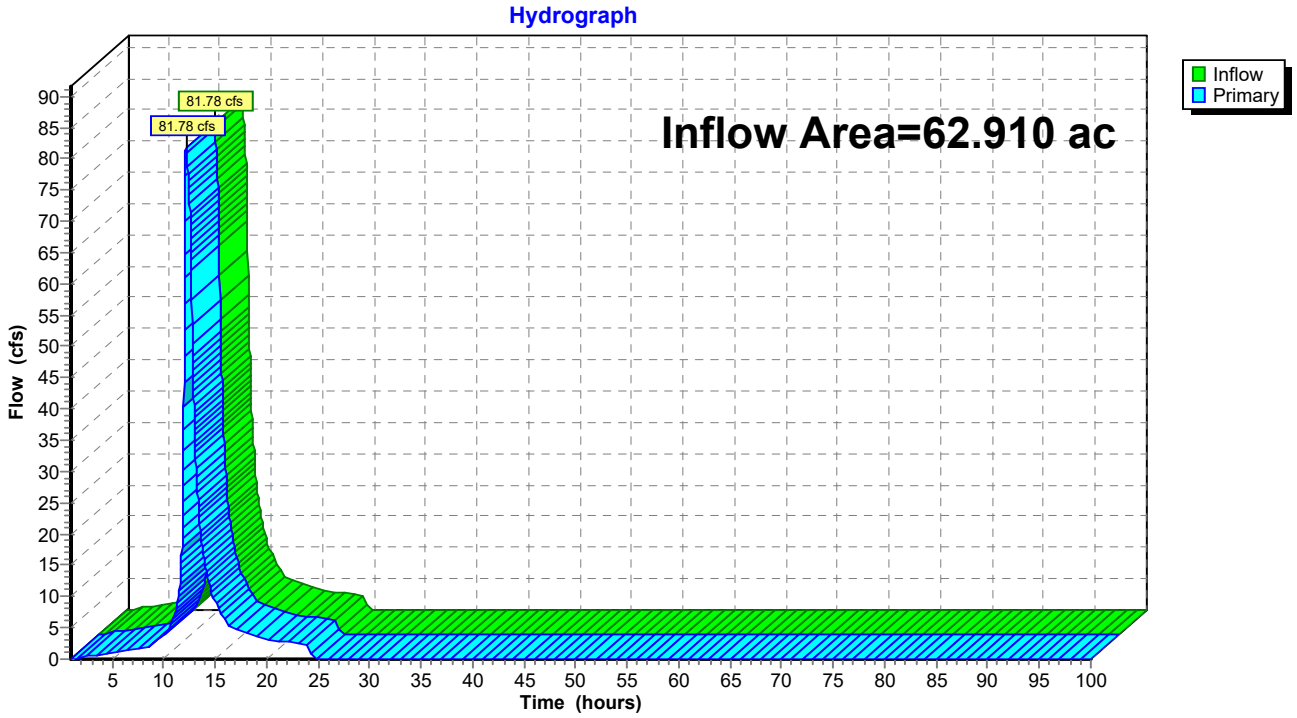
Summary for Pond TP: TOTAL PROPOSED

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 62.910 ac, 38.28% Impervious, Inflow Depth = 2.64" for 5 - Year event
Inflow = 81.78 cfs @ 12.20 hrs, Volume= 13.835 af
Primary = 81.78 cfs @ 12.20 hrs, Volume= 13.835 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TP: TOTAL PROPOSED



10-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: PROPOSED Runoff Area=25.320 ac 38.00% Impervious Runoff Depth=3.32"
Flow Length=1,825' Tc=21.7 min CN=80/98 Runoff=84.01 cfs 7.004 af

SubcatchmentA2: PROPOSED Runoff Area=10.600 ac 38.00% Impervious Runoff Depth=3.32"
Flow Length=1,340' Tc=18.3 min CN=80/98 Runoff=38.65 cfs 2.932 af

SubcatchmentA3: PROPOSED Runoff Area=17.760 ac 38.00% Impervious Runoff Depth=3.32"
Flow Length=1,845' Tc=19.3 min CN=80/98 Runoff=62.93 cfs 4.913 af

SubcatchmentA4: PROPOSED SUB-BASIN Runoff Area=2.410 ac 38.00% Impervious Runoff Depth>3.32"
Tc=9.0 min CN=80/98 Runoff=11.77 cfs 0.667 af

SubcatchmentB1: PROPOSED SUB-BASIN Runoff Area=6.820 ac 40.56% Impervious Runoff Depth=3.37"
Flow Length=1,285' Tc=18.9 min CN=80/98 Runoff=24.68 cfs 1.913 af

Pond P1: POND 1 Peak Elev=1,471.31' Storage=70,778 cf Inflow=84.01 cfs 7.004 af
Outflow=47.65 cfs 7.004 af

Pond P2: POND 2 Peak Elev=1,459.27' Storage=99,897 cf Inflow=144.29 cfs 15.516 af
Outflow=78.13 cfs 15.516 af

Pond SW: PROPOSED BASIN A Inflow=78.13 cfs 15.516 af
Primary=78.13 cfs 15.516 af

Pond TP: TOTAL PROPOSED Inflow=93.91 cfs 17.429 af
Primary=93.91 cfs 17.429 af

Total Runoff Area = 62.910 ac Runoff Volume = 17.429 af Average Runoff Depth = 3.32"
61.72% Pervious = 38.830 ac 38.28% Impervious = 24.080 ac

Summary for Subcatchment A1: PROPOSED SUB-BASIN A1

[47] Hint: Peak is 301% of capacity of segment #2

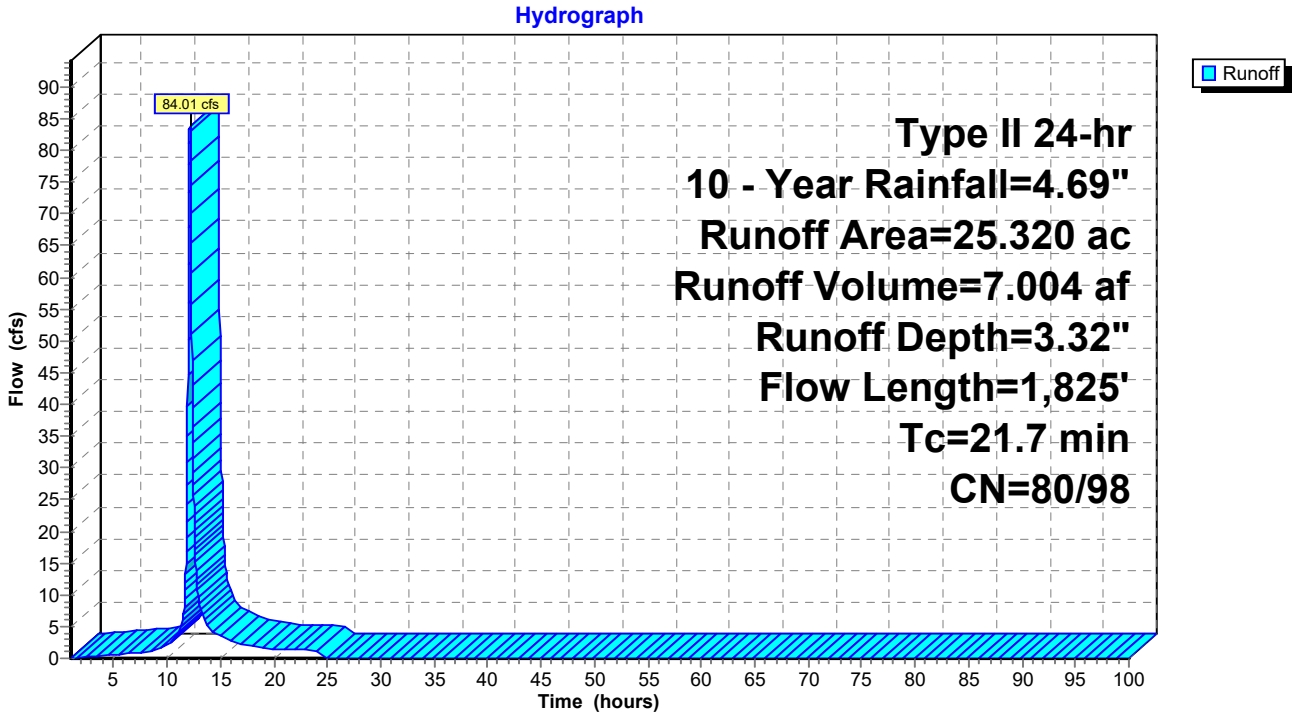
Runoff = 84.01 cfs @ 12.14 hrs, Volume= 7.004 af, Depth= 3.32"
Routed to Pond P1 : POND 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
25.320	87	1/4 acre lots, 38% imp, HSG D
15.698	80	62.00% Pervious Area
9.622	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	150	0.0100	0.14		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.0	560	0.0130	8.89	27.94	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.9	375	0.0200	6.67	160.11	**Trap/Vee/Rect Channel Flow, CHANNEL** Bot.W=4.00' D=2.00' Z= 4.0 '/' Top.W=20.00' n= 0.035 Earth, dense weeds
1.0	610	0.0400	10.26	821.11	**Trap/Vee/Rect Channel Flow,** Bot.W=20.00' D=2.00' Z= 10.0 '/' Top.W=60.00' n= 0.035 Earth, dense weeds
0.3	130	0.0100	6.51	429.85	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 4.0 '/' Top.W=34.00' n= 0.035 Earth, dense weeds
21.7	1,825	Total			

Subcatchment A1: PROPOSED SUB-BASIN A1



Summary for Subcatchment A2: PROPOSED SUB-BASIN A2

[47] Hint: Peak is 260% of capacity of segment #3

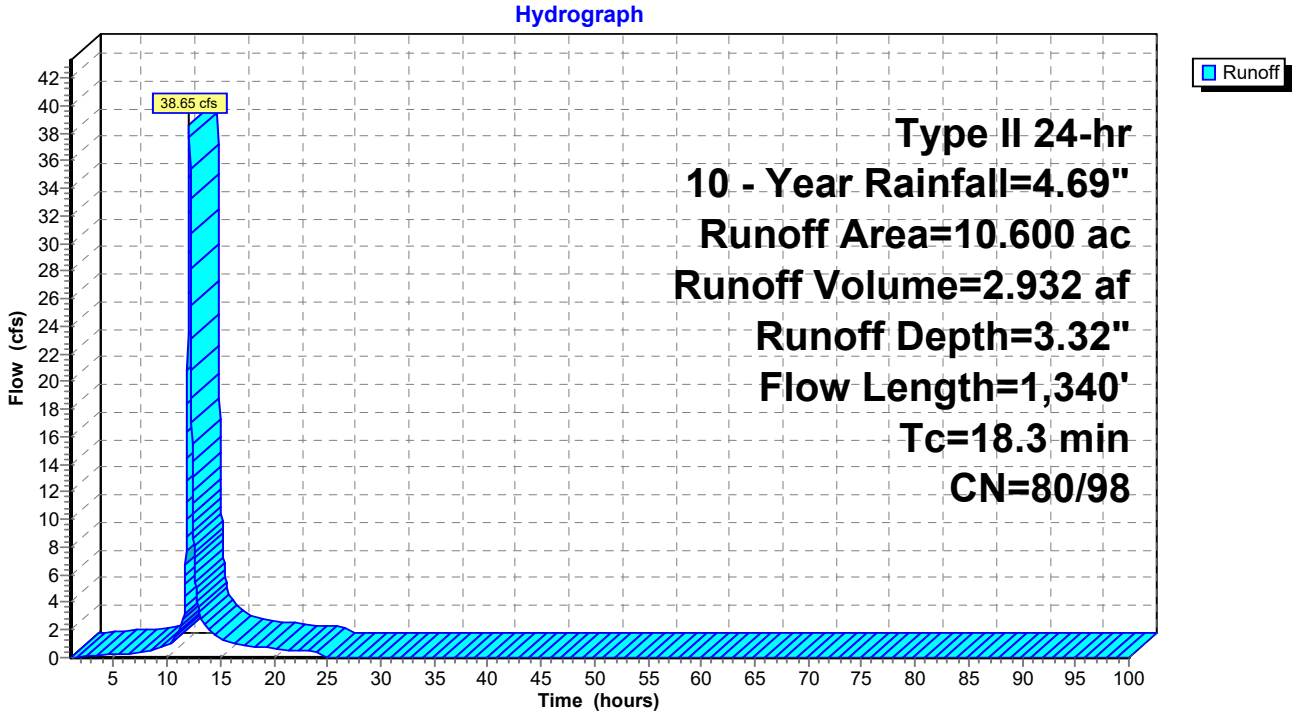
Runoff = 38.65 cfs @ 12.10 hrs, Volume= 2.932 af, Depth= 3.32"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
10.600	87	1/4 acre lots, 38% imp, HSG D
6.572	80	62.00% Pervious Area
4.028	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.2	390	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.1	800	0.0450	12.10	14.85	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.3	1,340	Total			

Subcatchment A2: PROPOSED SUB-BASIN A2



Summary for Subcatchment A3: PROPOSED SUB-BASIN A3

[47] Hint: Peak is 182% of capacity of segment #3
[47] Hint: Peak is 123% of capacity of segment #4

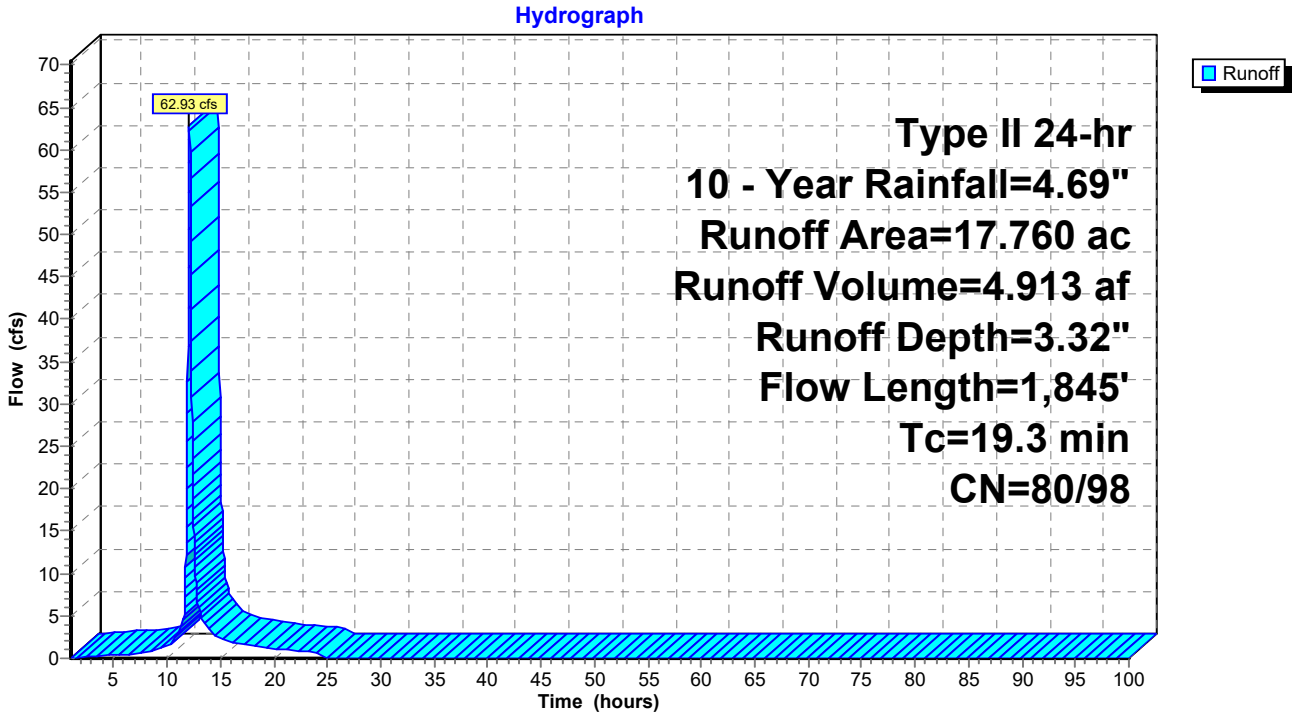
Runoff = 62.93 cfs @ 12.11 hrs, Volume= 4.913 af, Depth= 3.32"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
17.760	87	1/4 acre lots, 38% imp, HSG D
11.011	80	62.00% Pervious Area
6.749	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.8	840	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.0	655	0.0200	11.03	34.66	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.5	200	0.0050	7.23	51.09	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012 Concrete pipe, finished
19.3	1,845	Total			

Subcatchment A3: PROPOSED SUB-BASIN A3



Summary for Subcatchment A4: PROPOSED SUB-BASIN A4

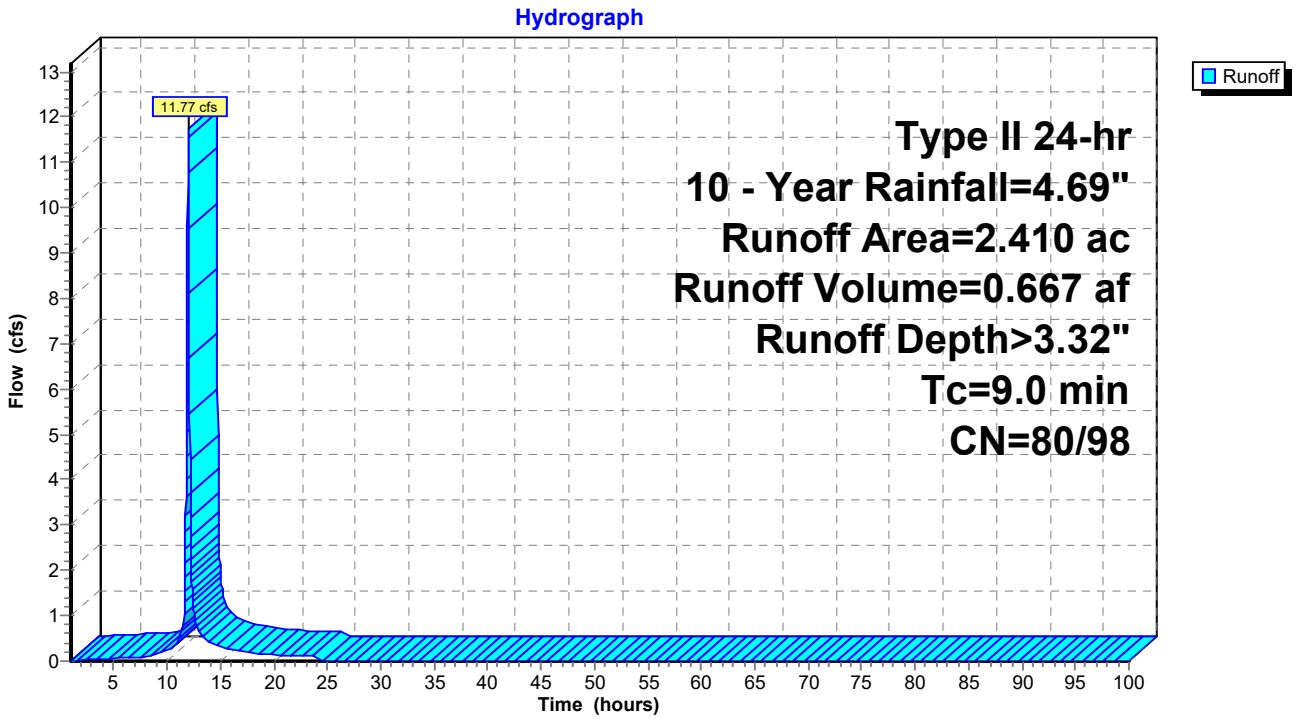
Runoff = 11.77 cfs @ 12.00 hrs, Volume= 0.667 af, Depth> 3.32"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
2.410	87	1/4 acre lots, 38% imp, HSG D
1.494	80	62.00% Pervious Area
0.916	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, direct**

Subcatchment A4: PROPOSED SUB-BASIN A4



Summary for Subcatchment B1: PROPOSED SUB-BASIN B1

[47] Hint: Peak is 499% of capacity of segment #3

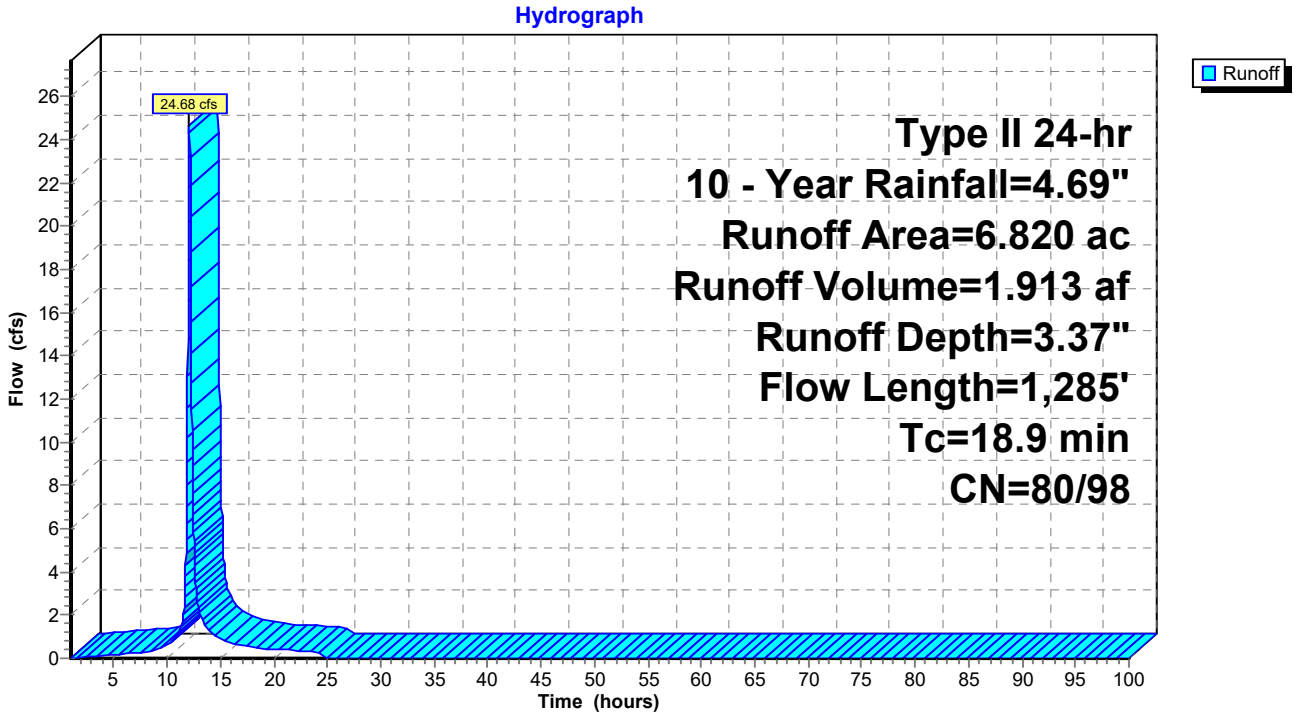
Runoff = 24.68 cfs @ 12.11 hrs, Volume= 1.913 af, Depth= 3.37"
Routed to Pond TP : TOTAL PROPOSED

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 10 - Year Rainfall=4.69"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
5.950	87	1/4 acre lots, 38% imp, HSG D
6.820	87	Weighted Average
4.054	80	59.44% Pervious Area
2.766	98	40.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.8	385	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
3.1	750	0.0050	4.03	4.95	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.9	1,285	Total			

Subcatchment B1: PROPOSED SUB-BASIN B1



Summary for Pond P1: POND 1

Inflow Area = 25.320 ac, 38.00% Impervious, Inflow Depth = 3.32" for 10 - Year event
Inflow = 84.01 cfs @ 12.14 hrs, Volume= 7.004 af
Outflow = 47.65 cfs @ 12.34 hrs, Volume= 7.004 af, Atten= 43%, Lag= 11.9 min
Primary = 47.65 cfs @ 12.34 hrs, Volume= 7.004 af
Routed to Pond P2 : POND 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,471.31' @ 12.34 hrs Surf.Area= 29,147 sf Storage= 70,778 cf

Plug-Flow detention time= 24.5 min calculated for 7.003 af (100% of inflow)
Center-of-Mass det. time= 24.5 min (821.5 - 797.1)

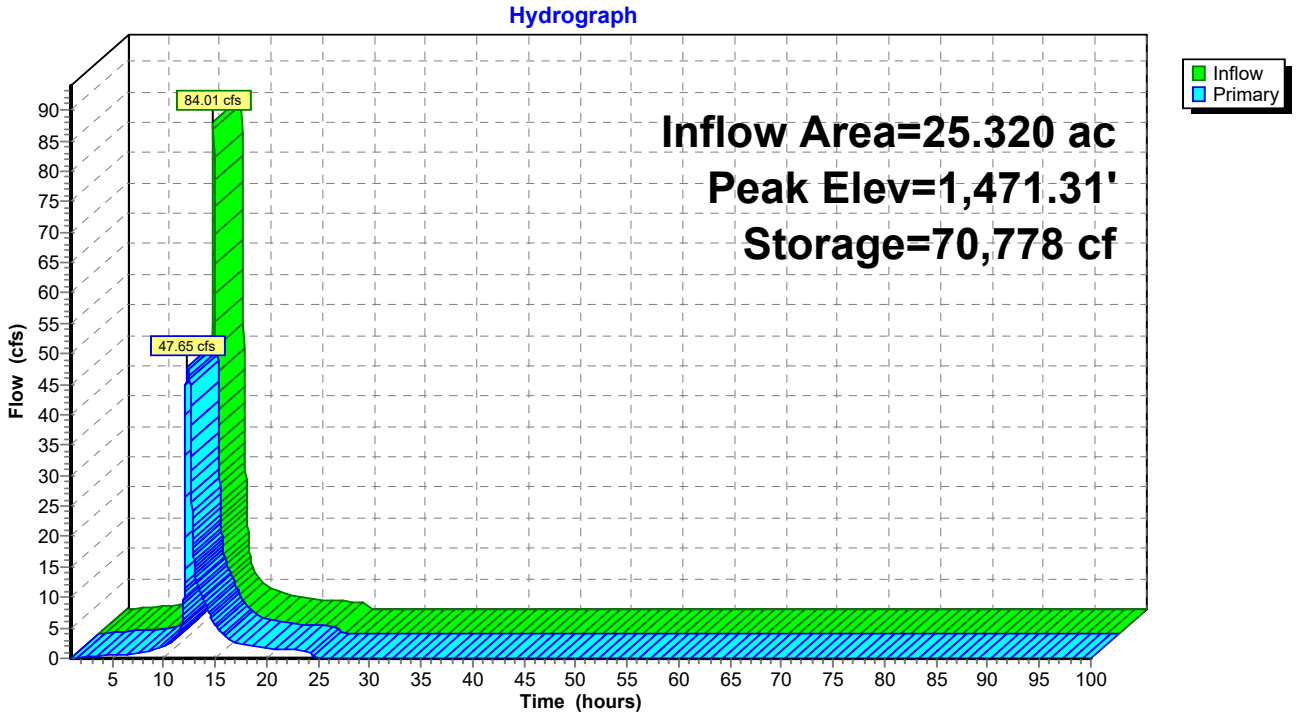
Volume	Invert	Avail.Storage	Storage Description
#1	1,466.00'	223,730 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,466.00	47	0	0
1,467.00	1,629	838	838
1,468.00	8,552	5,091	5,929
1,469.00	15,452	12,002	17,931
1,470.00	22,468	18,960	36,891
1,471.00	27,518	24,993	61,884
1,472.00	32,708	30,113	91,997
1,473.00	38,157	35,433	127,429
1,474.00	44,645	41,401	168,830
1,475.00	65,155	54,900	223,730

Device	Routing	Invert	Outlet Devices
#1	Primary	1,466.00'	**30.0" Round RCP_Round 30"** L= 300.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,466.00' / 1,462.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Primary	1,474.10'	**30.0' long + 4.0 '/' SideZ x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,470.00'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,466.00'	**6.0" W x 48.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=47.64 cfs @ 12.34 hrs HW=1,471.31' TW=1,459.19' (Dynamic Tailwater)
- **1=RCP_Round 30"** (Inlet Controls 47.64 cfs @ 9.71 fps)
  - **3=Orifice/Grate** (Passes < 49.66 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 17.24 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1: POND 1



Summary for Pond P2: POND 2

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 3.32" for 10 - Year event
Inflow = 144.29 cfs @ 12.15 hrs, Volume= 15.516 af
Outflow = 78.13 cfs @ 12.44 hrs, Volume= 15.516 af, Atten= 46%, Lag= 17.1 min
Primary = 78.13 cfs @ 12.44 hrs, Volume= 15.516 af
Routed to Pond SW : PROPOSED BASIN A

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,459.27' @ 12.44 hrs Surf.Area= 33,295 sf Storage= 99,897 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 10.3 min (816.6 - 806.3)

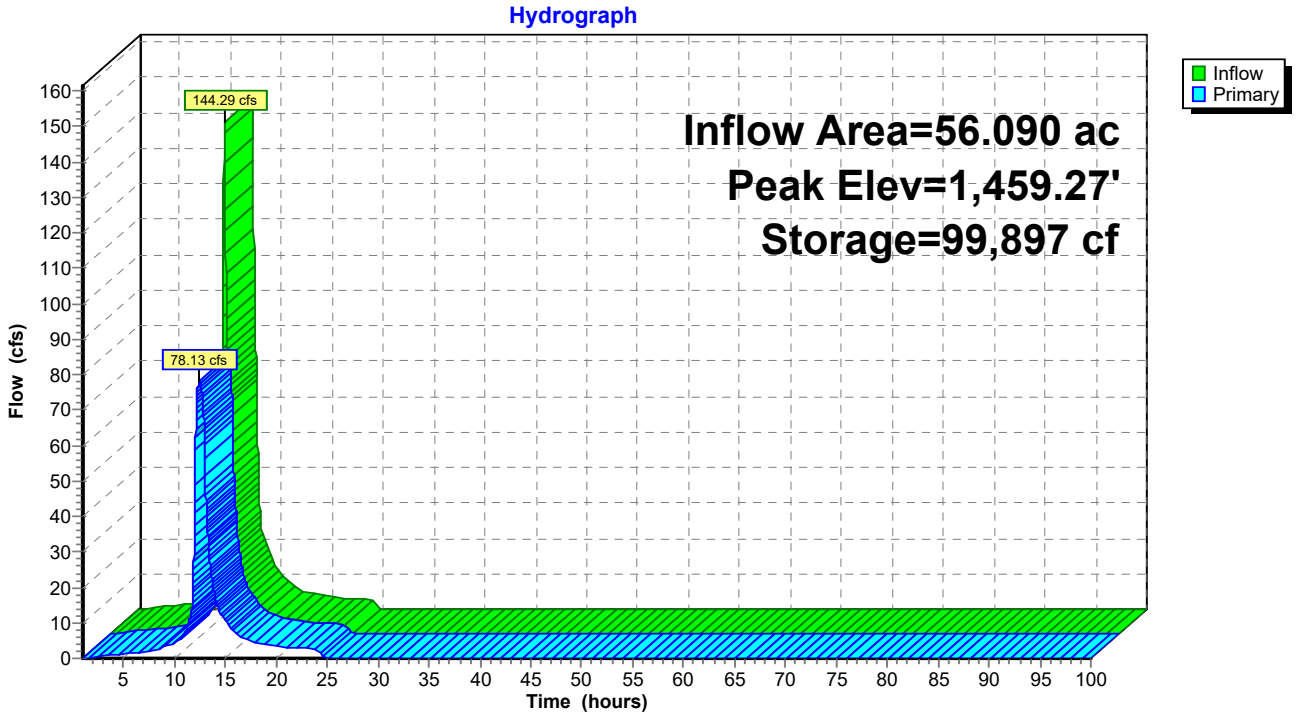
Volume	Invert	Avail.Storage	Storage Description
#1	1,453.00'	255,649 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,453.00	626	0	0
1,454.00	4,028	2,327	2,327
1,455.00	9,182	6,605	8,932
1,456.00	14,691	11,937	20,869
1,457.00	20,468	17,580	38,448
1,458.00	26,393	23,431	61,879
1,459.00	32,062	29,228	91,106
1,460.00	36,645	34,354	125,460
1,461.00	41,061	38,853	164,313
1,462.00	45,630	43,346	207,658
1,463.00	50,351	47,991	255,649

Device	Routing	Invert	Outlet Devices
#1	Primary	1,452.50'	**36.0" Round RCP_Round 36"** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,452.50' / 1,452.00' S= 0.0053 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Primary	1,462.50'	**35.0' long + 3.0 '/' SideZ x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,457.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,452.50'	**18.0" W x 54.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=78.12 cfs @ 12.44 hrs HW=1,459.27' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 36"** (Inlet Controls 78.12 cfs @ 11.05 fps)
  - **3=Orifice/Grate** (Passes < 116.04 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 68.34 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: POND 2



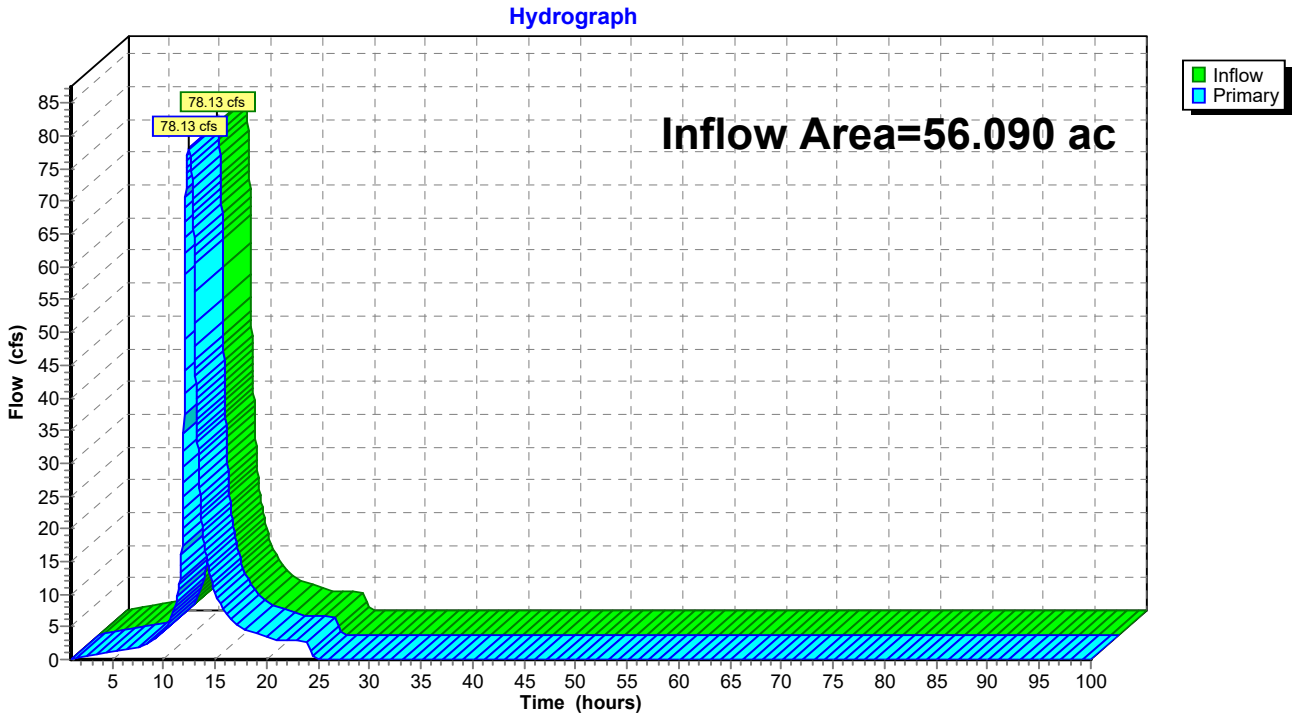
Summary for Pond SW: PROPOSED BASIN A

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth = 3.32" for 10 - Year event
Inflow = 78.13 cfs @ 12.44 hrs, Volume= 15.516 af
Primary = 78.13 cfs @ 12.44 hrs, Volume= 15.516 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TP : TOTAL PROPOSED

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond SW: PROPOSED BASIN A



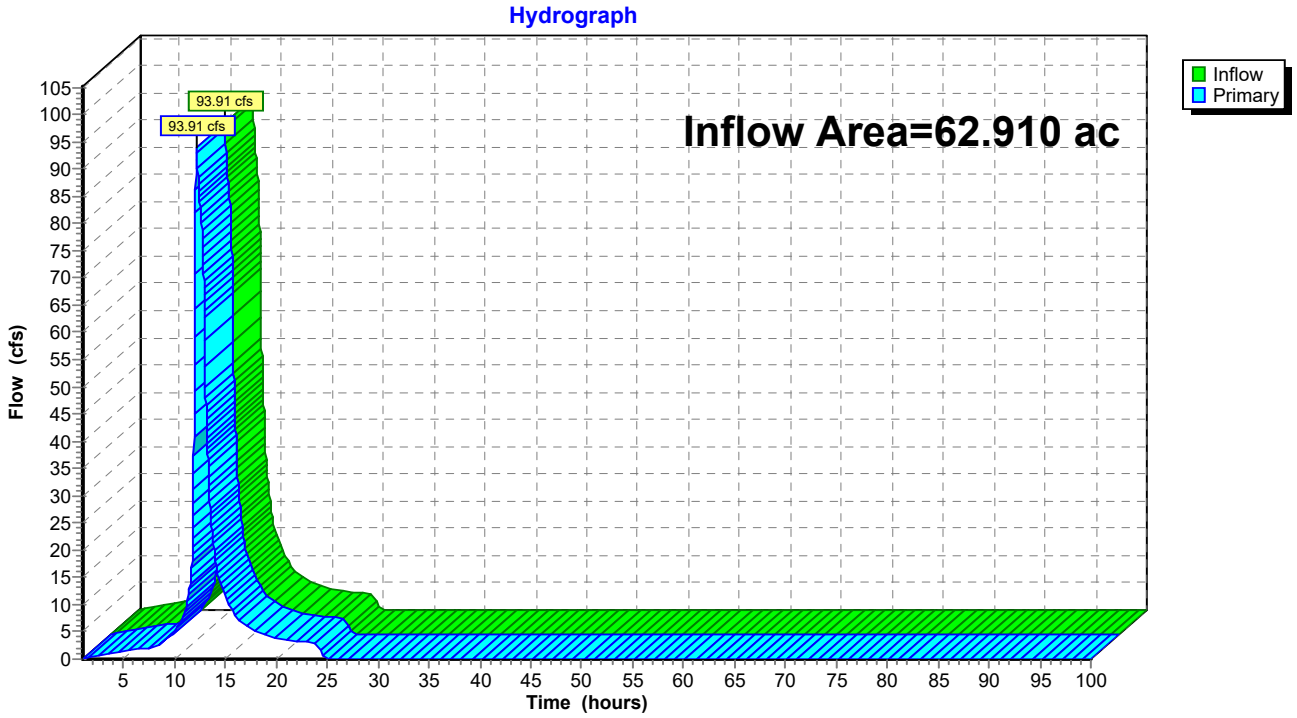
Summary for Pond TP: TOTAL PROPOSED

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 62.910 ac, 38.28% Impervious, Inflow Depth = 3.32" for 10 - Year event
Inflow = 93.91 cfs @ 12.18 hrs, Volume= 17.429 af
Primary = 93.91 cfs @ 12.18 hrs, Volume= 17.429 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TP: TOTAL PROPOSED



50-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: PROPOSED Runoff Area=25.320 ac 38.00% Impervious Runoff Depth>4.53"
Flow Length=1,825' Tc=21.7 min CN=80/98 Runoff=114.54 cfs 9.566 af

SubcatchmentA2: PROPOSED Runoff Area=10.600 ac 38.00% Impervious Runoff Depth>4.53"
Flow Length=1,340' Tc=18.3 min CN=80/98 Runoff=52.66 cfs 4.005 af

SubcatchmentA3: PROPOSED Runoff Area=17.760 ac 38.00% Impervious Runoff Depth>4.53"
Flow Length=1,845' Tc=19.3 min CN=80/98 Runoff=85.76 cfs 6.710 af

SubcatchmentA4: PROPOSED SUB-BASIN Runoff Area=2.410 ac 38.00% Impervious Runoff Depth>4.53"
Tc=9.0 min CN=80/98 Runoff=15.98 cfs 0.910 af

SubcatchmentB1: PROPOSED SUB-BASIN Runoff Area=6.820 ac 40.56% Impervious Runoff Depth>4.58"
Flow Length=1,285' Tc=18.9 min CN=80/98 Runoff=33.53 cfs 2.605 af

Pond P1: POND 1 Peak Elev=1,472.36' Storage=104,133 cf Inflow=114.54 cfs 9.566 af
Outflow=53.43 cfs 9.566 af

Pond P2: POND 2 Peak Elev=1,460.78' Storage=155,254 cf Inflow=193.29 cfs 21.192 af
Outflow=88.60 cfs 21.192 af

Pond SW: PROPOSED BASIN A Inflow=88.60 cfs 21.192 af
Primary=88.60 cfs 21.192 af

Pond TP: TOTAL PROPOSED Inflow=111.43 cfs 23.797 af
Primary=111.43 cfs 23.797 af

Total Runoff Area = 62.910 ac Runoff Volume = 23.797 af Average Runoff Depth = 4.54"
61.72% Pervious = 38.830 ac 38.28% Impervious = 24.080 ac

Summary for Subcatchment A1: PROPOSED SUB-BASIN A1

[47] Hint: Peak is 410% of capacity of segment #2

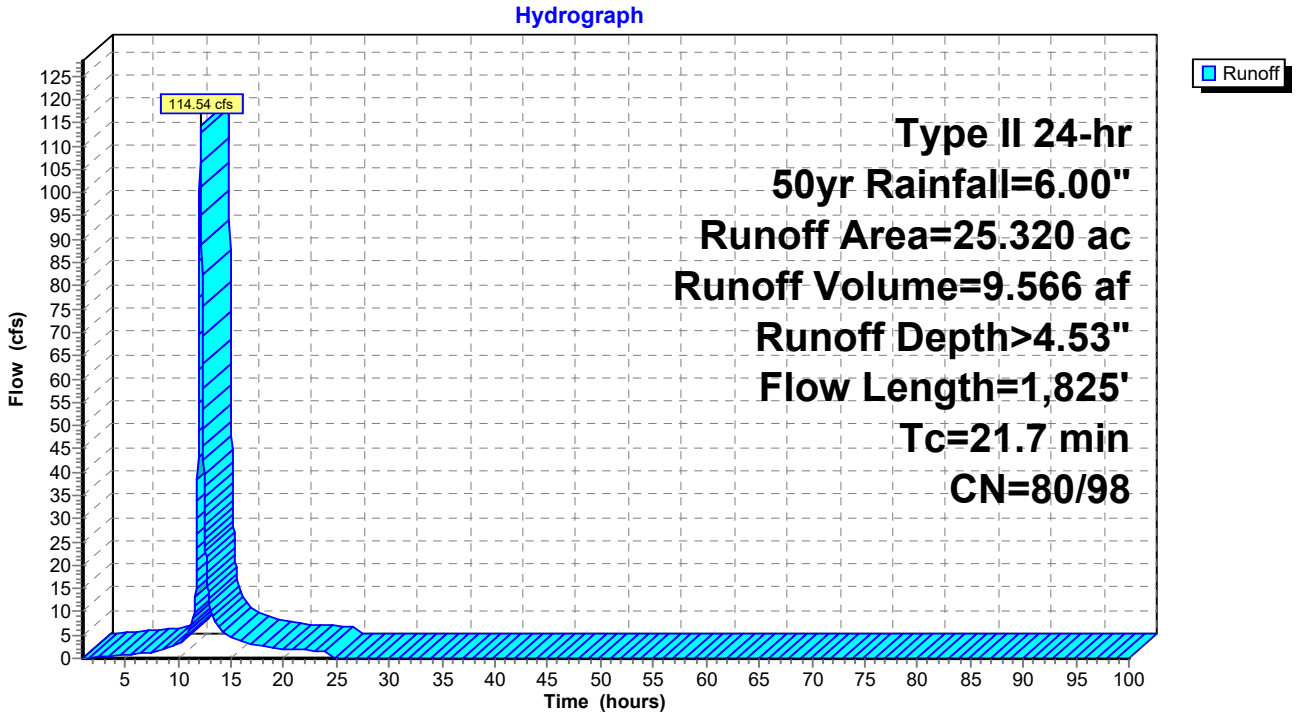
Runoff = 114.54 cfs @ 12.14 hrs, Volume= 9.566 af, Depth> 4.53"
Routed to Pond P1 : POND 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
25.320	87	1/4 acre lots, 38% imp, HSG D
15.698	80	62.00% Pervious Area
9.622	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	150	0.0100	0.14		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.0	560	0.0130	8.89	27.94	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.9	375	0.0200	6.67	160.11	**Trap/Vee/Rect Channel Flow, CHANNEL** Bot.W=4.00' D=2.00' Z= 4.0 '/' Top.W=20.00' n= 0.035 Earth, dense weeds
1.0	610	0.0400	10.26	821.11	**Trap/Vee/Rect Channel Flow,** Bot.W=20.00' D=2.00' Z= 10.0 '/' Top.W=60.00' n= 0.035 Earth, dense weeds
0.3	130	0.0100	6.51	429.85	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 4.0 '/' Top.W=34.00' n= 0.035 Earth, dense weeds
21.7	1,825	Total			

Subcatchment A1: PROPOSED SUB-BASIN A1



Summary for Subcatchment A2: PROPOSED SUB-BASIN A2

[47] Hint: Peak is 355% of capacity of segment #3

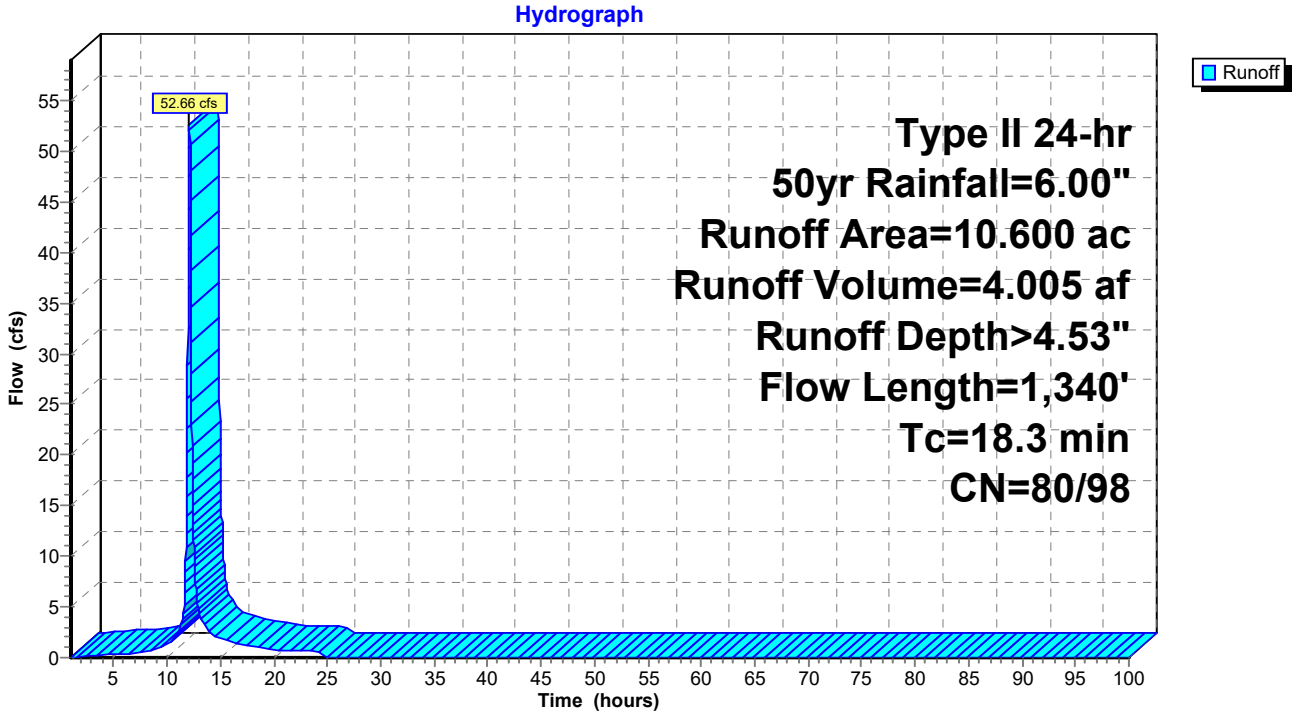
Runoff = 52.66 cfs @ 12.10 hrs, Volume= 4.005 af, Depth> 4.53"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
10.600	87	1/4 acre lots, 38% imp, HSG D
6.572	80	62.00% Pervious Area
4.028	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.2	390	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.1	800	0.0450	12.10	14.85	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.3	1,340	Total			

Subcatchment A2: PROPOSED SUB-BASIN A2



Summary for Subcatchment A3: PROPOSED SUB-BASIN A3

[47] Hint: Peak is 247% of capacity of segment #3
[47] Hint: Peak is 168% of capacity of segment #4

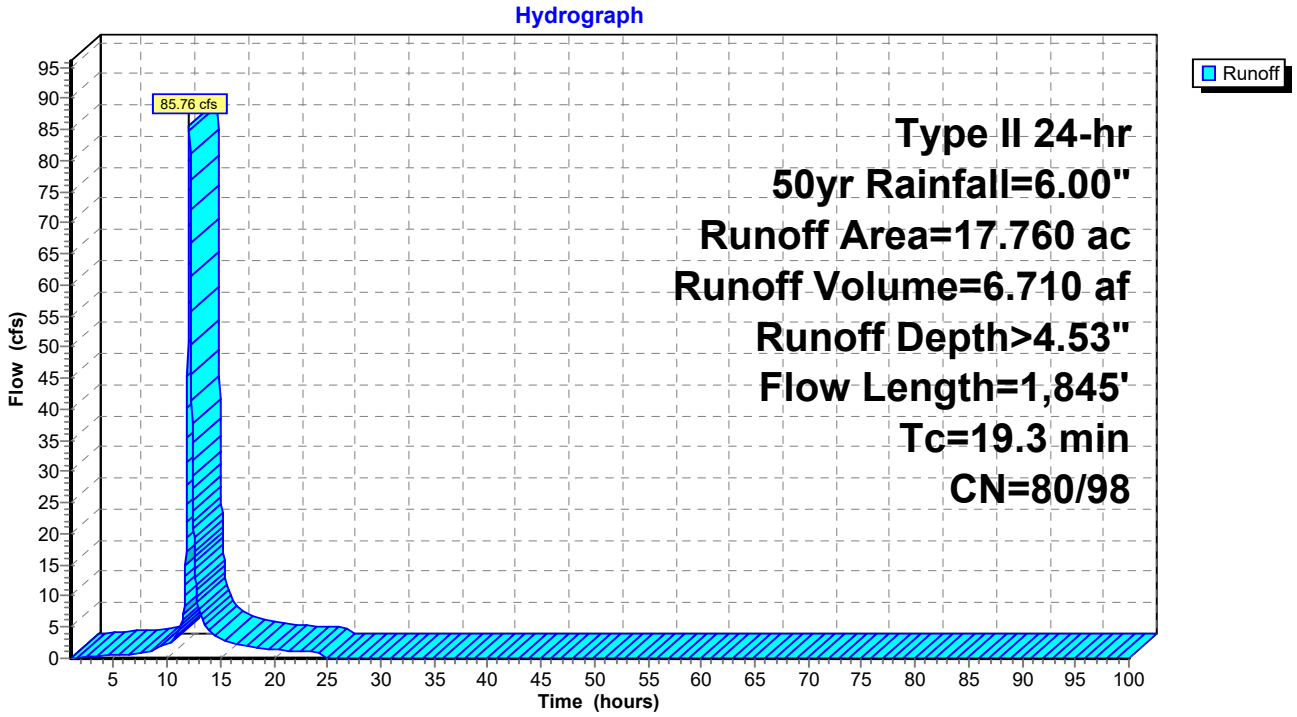
Runoff = 85.76 cfs @ 12.11 hrs, Volume= 6.710 af, Depth> 4.53"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
17.760	87	1/4 acre lots, 38% imp, HSG D
11.011	80	62.00% Pervious Area
6.749	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.8	840	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.0	655	0.0200	11.03	34.66	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.5	200	0.0050	7.23	51.09	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012 Concrete pipe, finished
19.3	1,845	Total			

Subcatchment A3: PROPOSED SUB-BASIN A3



Summary for Subcatchment A4: PROPOSED SUB-BASIN A4

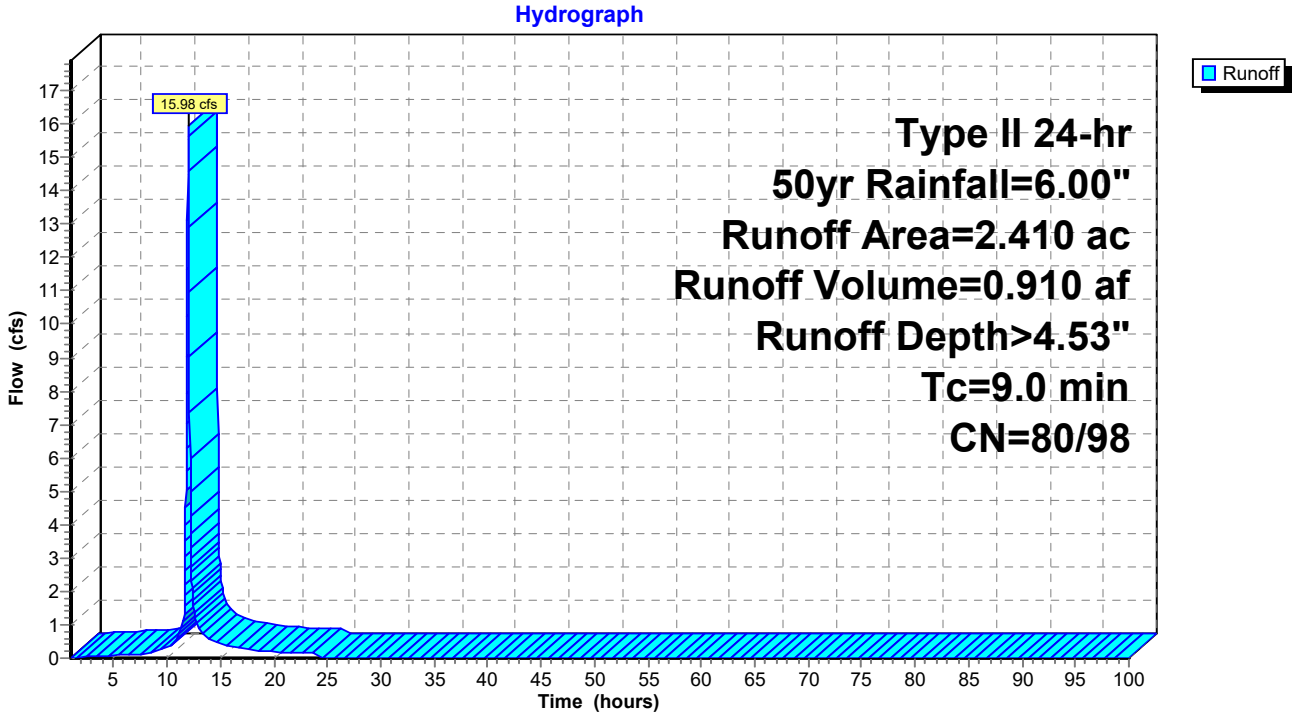
Runoff = 15.98 cfs @ 12.00 hrs, Volume= 0.910 af, Depth> 4.53"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
2.410	87	1/4 acre lots, 38% imp, HSG D
1.494	80	62.00% Pervious Area
0.916	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, direct**

Subcatchment A4: PROPOSED SUB-BASIN A4



Summary for Subcatchment B1: PROPOSED SUB-BASIN B1

[47] Hint: Peak is 678% of capacity of segment #3

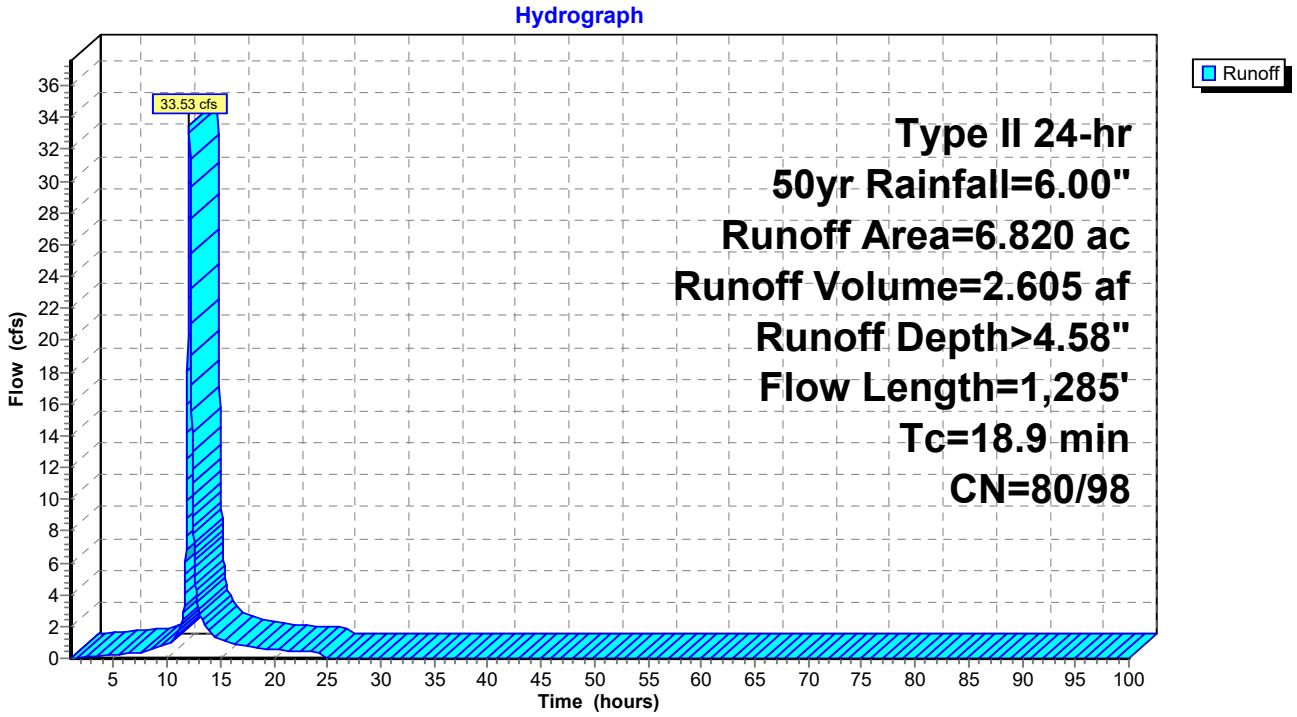
Runoff = 33.53 cfs @ 12.11 hrs, Volume= 2.605 af, Depth> 4.58"
Routed to Pond TP : TOTAL PROPOSED

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 50yr Rainfall=6.00"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
5.950	87	1/4 acre lots, 38% imp, HSG D
6.820	87	Weighted Average
4.054	80	59.44% Pervious Area
2.766	98	40.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.8	385	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
3.1	750	0.0050	4.03	4.95	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.9	1,285	Total			

Subcatchment B1: PROPOSED SUB-BASIN B1



Summary for Pond P1: POND 1

Inflow Area = 25.320 ac, 38.00% Impervious, Inflow Depth > 4.53" for 50yr event
Inflow = 114.54 cfs @ 12.14 hrs, Volume= 9.566 af
Outflow = 53.43 cfs @ 12.38 hrs, Volume= 9.566 af, Atten= 53%, Lag= 14.6 min
Primary = 53.43 cfs @ 12.38 hrs, Volume= 9.566 af
Routed to Pond P2 : POND 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,472.36' @ 12.38 hrs Surf.Area= 34,671 sf Storage= 104,133 cf

Plug-Flow detention time= 26.8 min calculated for 9.566 af (100% of inflow)
Center-of-Mass det. time= 26.3 min (818.1 - 791.8)

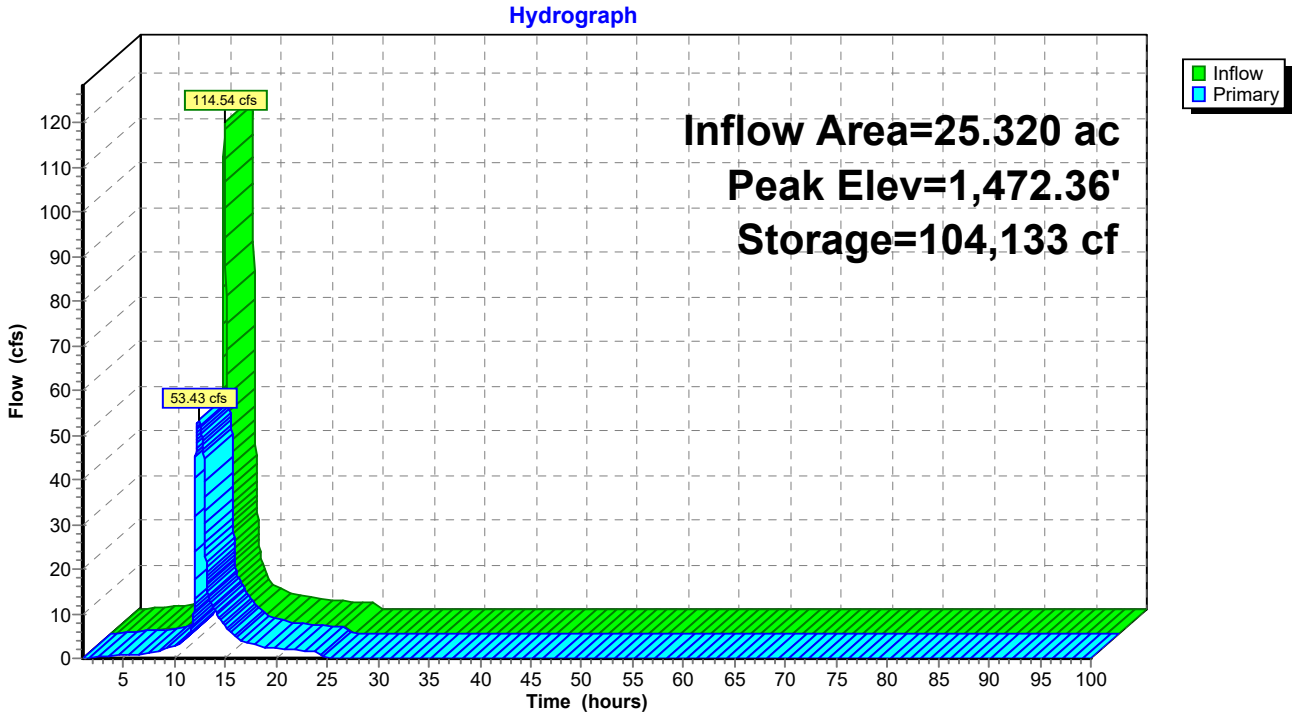
Volume	Invert	Avail.Storage	Storage Description
#1	1,466.00'	223,730 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,466.00	47	0	0
1,467.00	1,629	838	838
1,468.00	8,552	5,091	5,929
1,469.00	15,452	12,002	17,931
1,470.00	22,468	18,960	36,891
1,471.00	27,518	24,993	61,884
1,472.00	32,708	30,113	91,997
1,473.00	38,157	35,433	127,429
1,474.00	44,645	41,401	168,830
1,475.00	65,155	54,900	223,730

Device	Routing	Invert	Outlet Devices
#1	Primary	1,466.00'	**30.0" Round RCP_Round 30"** L= 300.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,466.00' / 1,462.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Primary	1,474.10'	**30.0' long + 4.0 '/' SideZ x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,470.00'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,466.00'	**6.0" W x 48.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=53.43 cfs @ 12.38 hrs HW=1,472.36' TW=1,460.71' (Dynamic Tailwater)
- **1=RCP_Round 30"** (Inlet Controls 53.43 cfs @ 10.88 fps)
  - **3=Orifice/Grate** (Passes < 66.57 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 19.92 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1: POND 1



Summary for Pond P2: POND 2

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth > 4.53" for 50yr event
Inflow = 193.29 cfs @ 12.10 hrs, Volume= 21.192 af
Outflow = 88.60 cfs @ 12.48 hrs, Volume= 21.192 af, Atten= 54%, Lag= 22.9 min
Primary = 88.60 cfs @ 12.48 hrs, Volume= 21.192 af
Routed to Pond SW : PROPOSED BASIN A

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,460.78' @ 12.48 hrs Surf.Area= 40,075 sf Storage= 155,254 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 14.1 min (816.0 - 801.9)

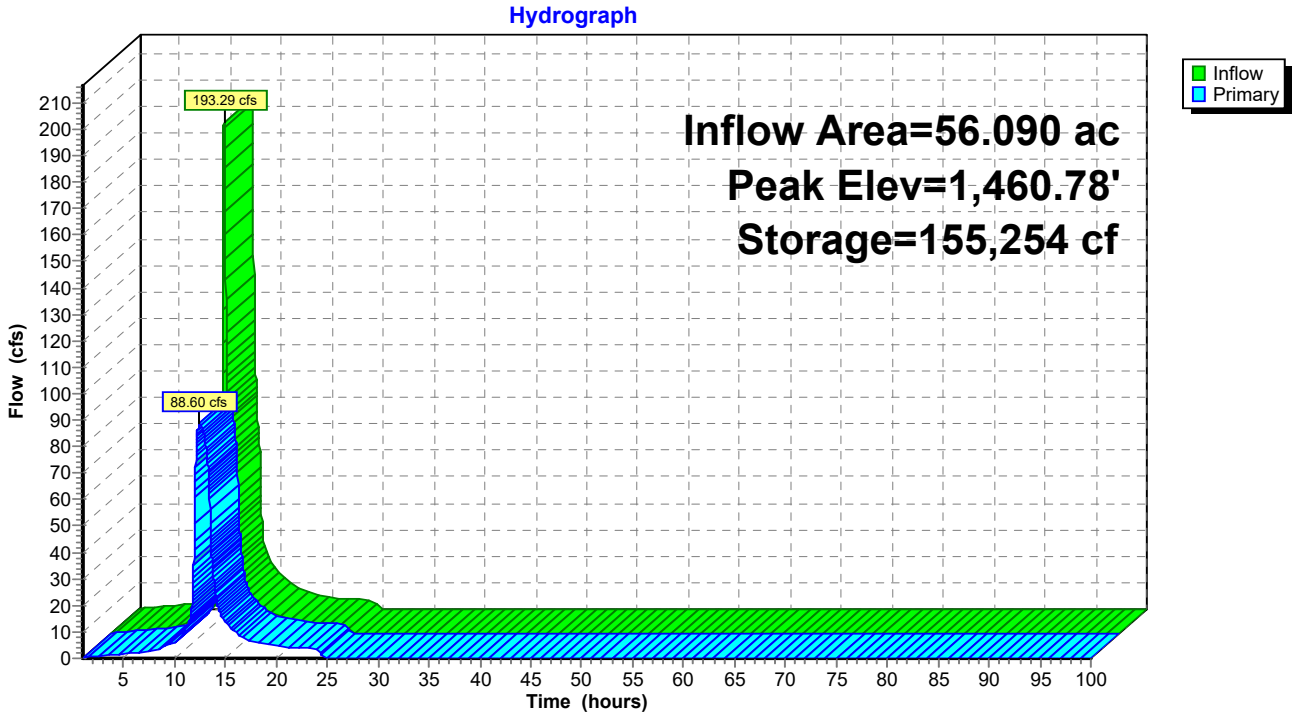
Volume	Invert	Avail.Storage	Storage Description
#1	1,453.00'	255,649 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,453.00	626	0	0
1,454.00	4,028	2,327	2,327
1,455.00	9,182	6,605	8,932
1,456.00	14,691	11,937	20,869
1,457.00	20,468	17,580	38,448
1,458.00	26,393	23,431	61,879
1,459.00	32,062	29,228	91,106
1,460.00	36,645	34,354	125,460
1,461.00	41,061	38,853	164,313
1,462.00	45,630	43,346	207,658
1,463.00	50,351	47,991	255,649

Device	Routing	Invert	Outlet Devices
#1	Primary	1,452.50'	**36.0" Round RCP_Round 36"** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,452.50' / 1,452.00' S= 0.0053 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Primary	1,462.50'	**35.0' long + 3.0 '/' SideZ x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,457.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,452.50'	**18.0" W x 54.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=88.60 cfs @ 12.48 hrs HW=1,460.78' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 36"** (Inlet Controls 88.60 cfs @ 12.53 fps)
  - **3=Orifice/Grate** (Passes < 149.71 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 79.31 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: POND 2



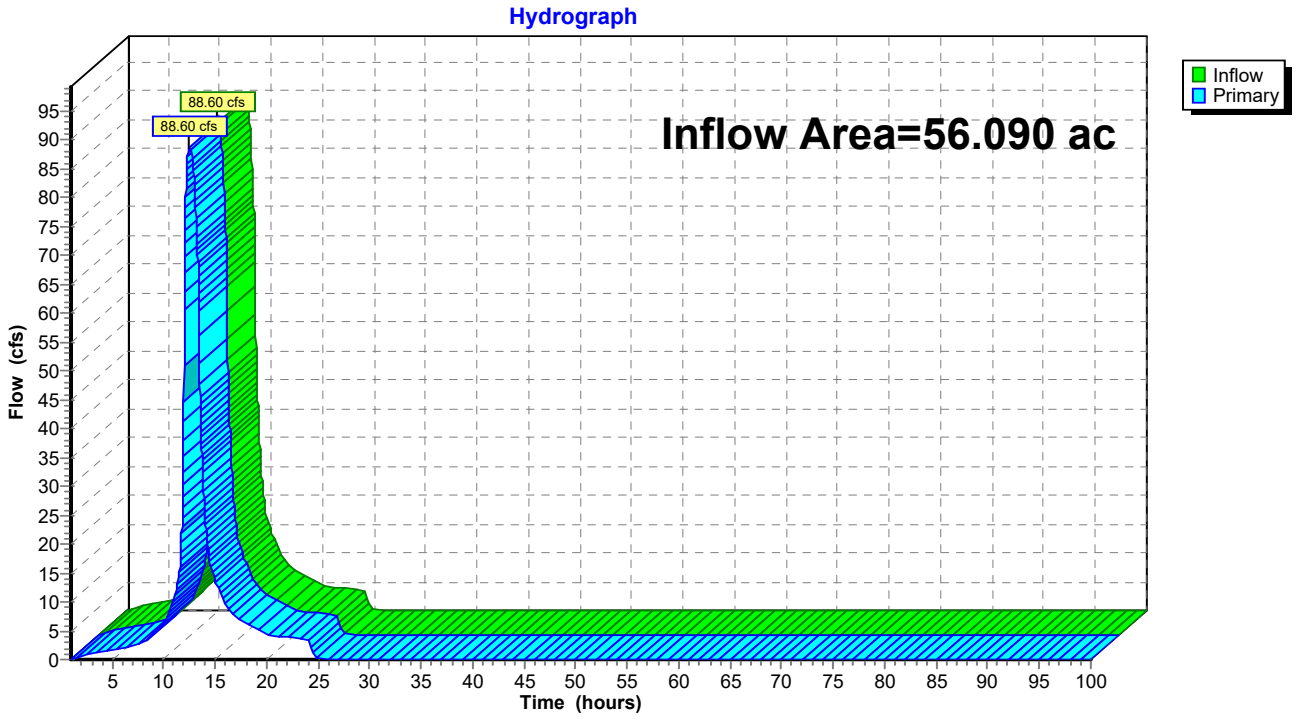
Summary for Pond SW: PROPOSED BASIN A

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth > 4.53" for 50yr event
Inflow = 88.60 cfs @ 12.48 hrs, Volume= 21.192 af
Primary = 88.60 cfs @ 12.48 hrs, Volume= 21.192 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TP : TOTAL PROPOSED

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond SW: PROPOSED BASIN A



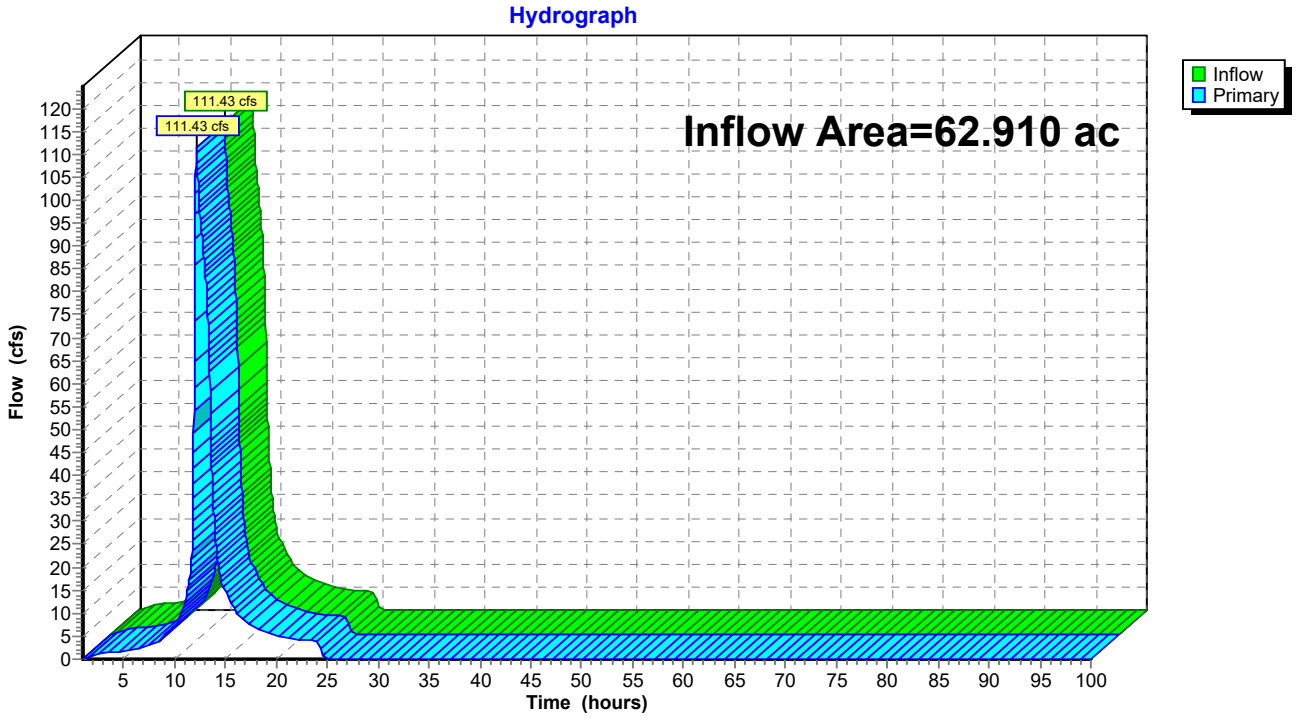
Summary for Pond TP: TOTAL PROPOSED

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 62.910 ac, 38.28% Impervious, Inflow Depth > 4.54" for 50yr event
Inflow = 111.43 cfs @ 12.16 hrs, Volume= 23.797 af
Primary = 111.43 cfs @ 12.16 hrs, Volume= 23.797 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TP: TOTAL PROPOSED



100-YEAR

Time span=1.00-100.00 hrs, dt=0.02 hrs, 4951 points
Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv.
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

SubcatchmentA1: PROPOSED Runoff Area=25.320 ac 38.00% Impervious Runoff Depth>5.18"
Flow Length=1,825' Tc=21.7 min CN=80/98 Runoff=130.53 cfs 10.920 af

SubcatchmentA2: PROPOSED Runoff Area=10.600 ac 38.00% Impervious Runoff Depth>5.18"
Flow Length=1,340' Tc=18.3 min CN=80/98 Runoff=59.99 cfs 4.572 af

SubcatchmentA3: PROPOSED Runoff Area=17.760 ac 38.00% Impervious Runoff Depth>5.18"
Flow Length=1,845' Tc=19.3 min CN=80/98 Runoff=97.70 cfs 7.660 af

SubcatchmentA4: PROPOSED SUB-BASIN Runoff Area=2.410 ac 38.00% Impervious Runoff Depth>5.18"
Tc=9.0 min CN=80/98 Runoff=18.18 cfs 1.039 af

SubcatchmentB1: PROPOSED SUB-BASIN Runoff Area=6.820 ac 40.56% Impervious Runoff Depth>5.23"
Flow Length=1,285' Tc=18.9 min CN=80/98 Runoff=38.16 cfs 2.971 af

Pond P1: POND 1 Peak Elev=1,472.90' Storage=123,555 cf Inflow=130.53 cfs 10.920 af
Outflow=56.17 cfs 10.920 af

Pond P2: POND 2 Peak Elev=1,461.51' Storage=185,769 cf Inflow=215.60 cfs 24.191 af
Outflow=93.26 cfs 24.191 af

Pond SW: PROPOSED BASIN A Inflow=93.26 cfs 24.191 af
Primary=93.26 cfs 24.191 af

Pond TP: TOTAL PROPOSED Inflow=119.83 cfs 27.162 af
Primary=119.83 cfs 27.162 af

Total Runoff Area = 62.910 ac Runoff Volume = 27.162 af Average Runoff Depth = 5.18"
61.72% Pervious = 38.830 ac 38.28% Impervious = 24.080 ac

Summary for Subcatchment A1: PROPOSED SUB-BASIN A1

[47] Hint: Peak is 467% of capacity of segment #2

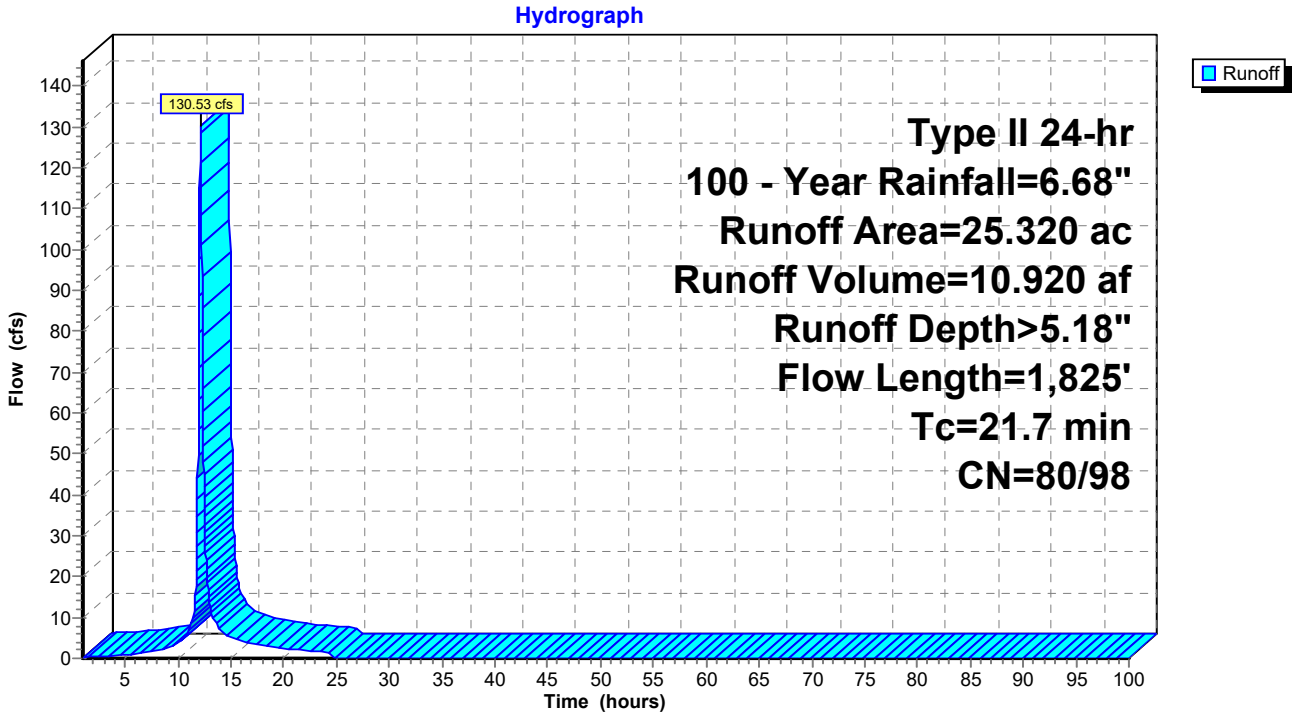
Runoff = 130.53 cfs @ 12.14 hrs, Volume= 10.920 af, Depth> 5.18"
Routed to Pond P1 : POND 1

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
25.320	87	1/4 acre lots, 38% imp, HSG D
15.698	80	62.00% Pervious Area
9.622	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.5	150	0.0100	0.14		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.0	560	0.0130	8.89	27.94	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.9	375	0.0200	6.67	160.11	**Trap/Vee/Rect Channel Flow, CHANNEL** Bot.W=4.00' D=2.00' Z= 4.0 '/' Top.W=20.00' n= 0.035 Earth, dense weeds
1.0	610	0.0400	10.26	821.11	**Trap/Vee/Rect Channel Flow,** Bot.W=20.00' D=2.00' Z= 10.0 '/' Top.W=60.00' n= 0.035 Earth, dense weeds
0.3	130	0.0100	6.51	429.85	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 4.0 '/' Top.W=34.00' n= 0.035 Earth, dense weeds
21.7	1,825	Total			

Subcatchment A1: PROPOSED SUB-BASIN A1



Summary for Subcatchment A2: PROPOSED SUB-BASIN A2

[47] Hint: Peak is 404% of capacity of segment #3

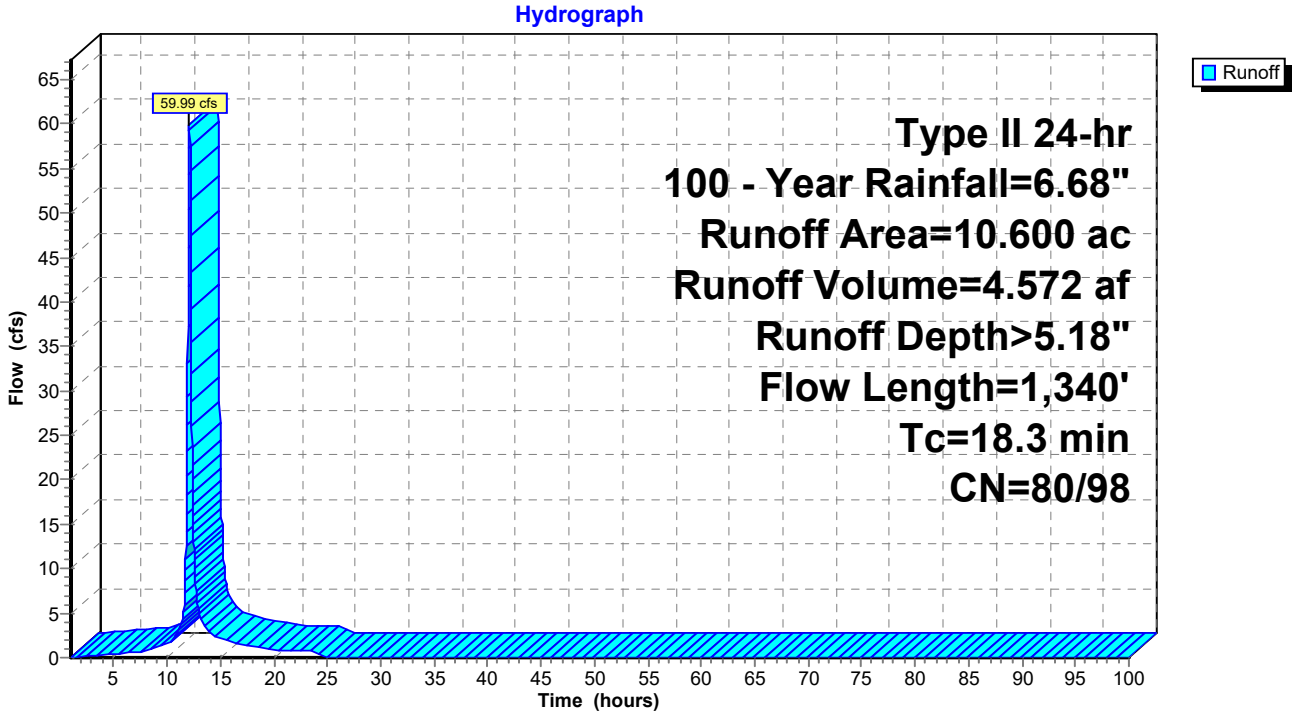
Runoff = 59.99 cfs @ 12.10 hrs, Volume= 4.572 af, Depth> 5.18"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
10.600	87	1/4 acre lots, 38% imp, HSG D
6.572	80	62.00% Pervious Area
4.028	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.2	390	0.0100	2.03		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.1	800	0.0450	12.10	14.85	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.3	1,340	Total			

Subcatchment A2: PROPOSED SUB-BASIN A2



Summary for Subcatchment A3: PROPOSED SUB-BASIN A3

[47] Hint: Peak is 282% of capacity of segment #3
[47] Hint: Peak is 191% of capacity of segment #4

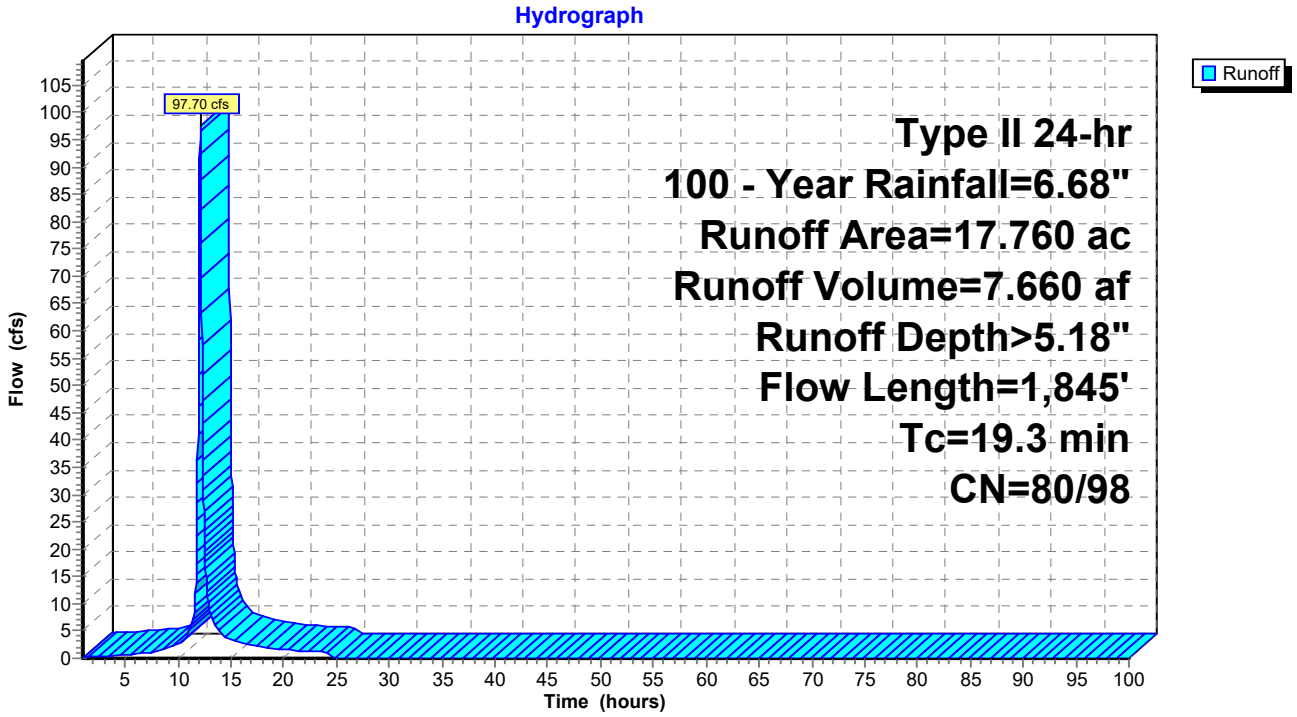
Runoff = 97.70 cfs @ 12.11 hrs, Volume= 7.660 af, Depth> 5.18"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
17.760	87	1/4 acre lots, 38% imp, HSG D
11.011	80	62.00% Pervious Area
6.749	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
3.8	840	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
1.0	655	0.0200	11.03	34.66	**Pipe Channel, RCP_Round 24"** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
0.5	200	0.0050	7.23	51.09	**Pipe Channel, RCP_Round 36"** 36.0" Round Area= 7.1 sf Perim= 9.4' r= 0.75' n= 0.012 Concrete pipe, finished
19.3	1,845	Total			

Subcatchment A3: PROPOSED SUB-BASIN A3



Summary for Subcatchment A4: PROPOSED SUB-BASIN A4

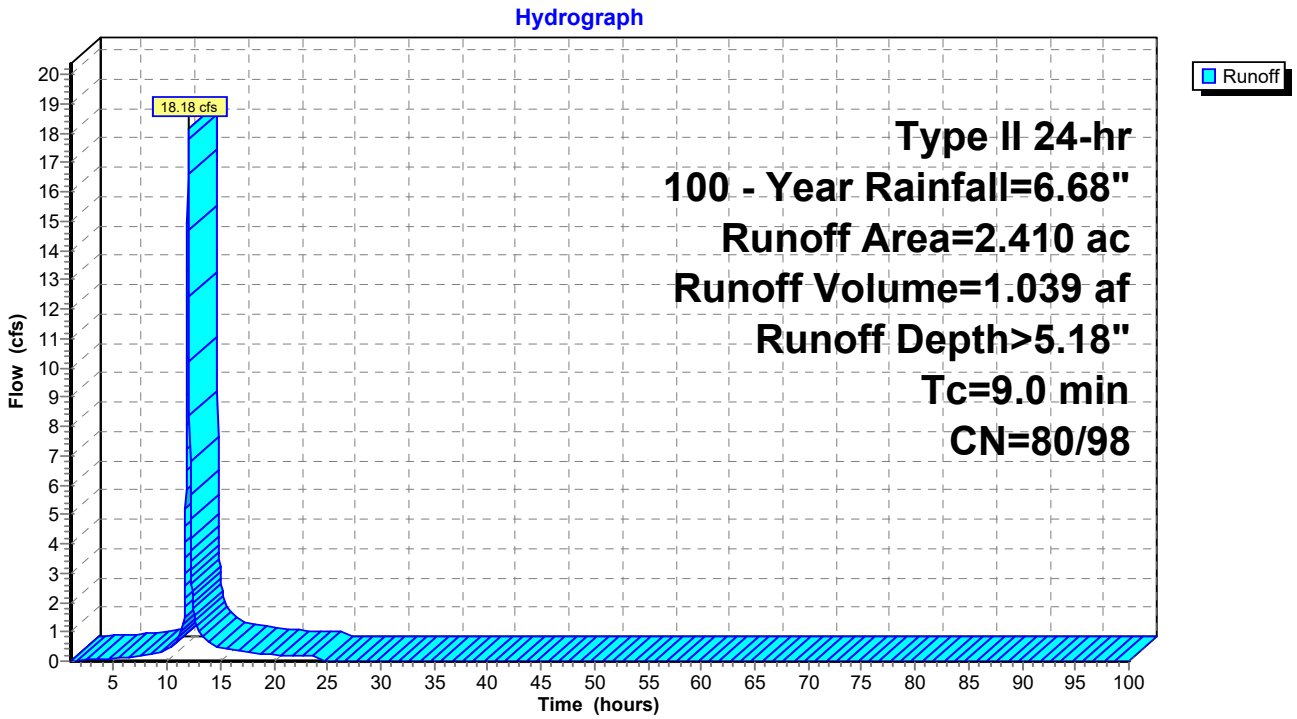
Runoff = 18.18 cfs @ 12.00 hrs, Volume= 1.039 af, Depth> 5.18"
Routed to Pond P2 : POND 2

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
2.410	87	1/4 acre lots, 38% imp, HSG D
1.494	80	62.00% Pervious Area
0.916	98	38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0					**Direct Entry, direct**

Subcatchment A4: PROPOSED SUB-BASIN A4



Summary for Subcatchment B1: PROPOSED SUB-BASIN B1

[47] Hint: Peak is 771% of capacity of segment #3

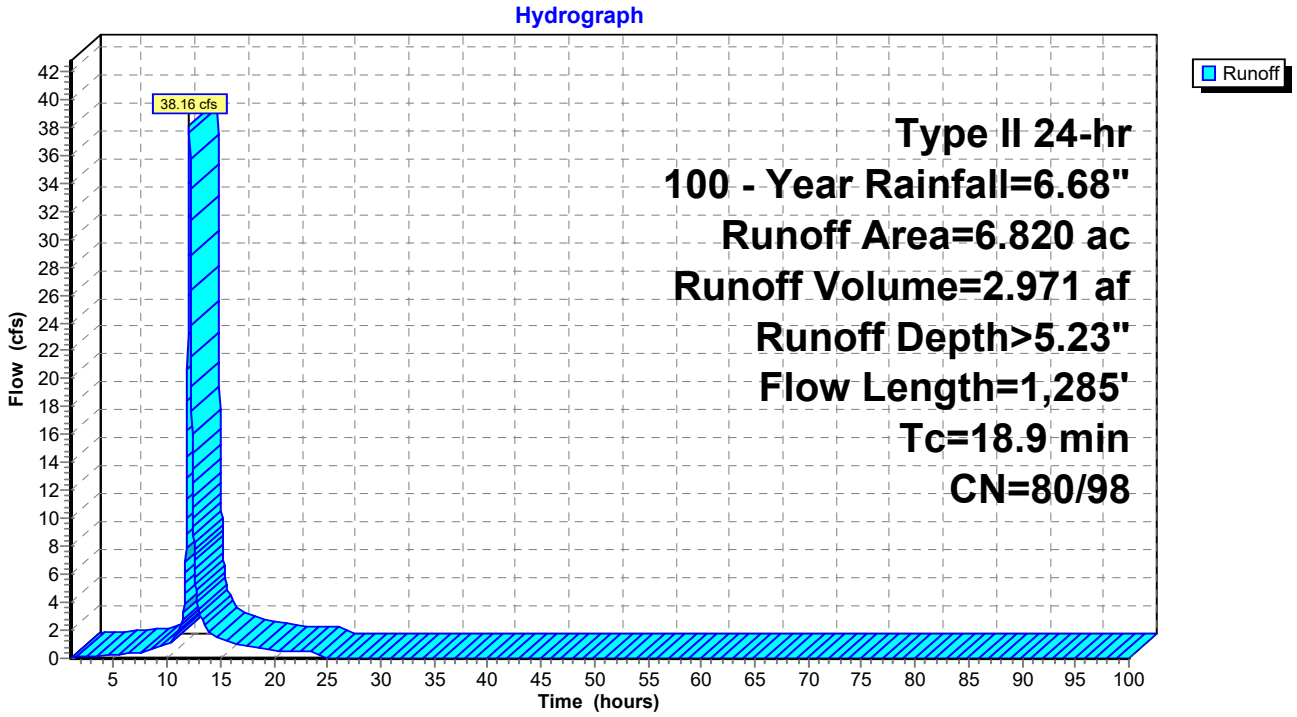
Runoff = 38.16 cfs @ 12.11 hrs, Volume= 2.971 af, Depth> 5.23"
Routed to Pond TP : TOTAL PROPOSED

Runoff by SCS TR-20 method, UH=SCS, Split Pervious/Imperv., Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Type II 24-hr 100 - Year Rainfall=6.68"

Area (ac)	CN	Description
0.505	98	Paved parking, HSG C
0.365	74	>75% Grass cover, Good, HSG C
5.950	87	1/4 acre lots, 38% imp, HSG D
6.820	87	Weighted Average
4.054	80	59.44% Pervious Area
2.766	98	40.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	150	0.0200	0.18		**Sheet Flow, SHEET** Grass: Short n= 0.150 P2= 3.00"
1.8	385	0.0325	3.66		**Shallow Concentrated Flow, SHALLOW** Paved Kv= 20.3 fps
3.1	750	0.0050	4.03	4.95	**Pipe Channel, RCP_Round 15"** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Concrete pipe, finished
18.9	1,285	Total			

Subcatchment B1: PROPOSED SUB-BASIN B1



Summary for Pond P1: POND 1

Inflow Area = 25.320 ac, 38.00% Impervious, Inflow Depth > 5.18" for 100 - Year event
Inflow = 130.53 cfs @ 12.14 hrs, Volume= 10.920 af
Outflow = 56.17 cfs @ 12.40 hrs, Volume= 10.920 af, Atten= 57%, Lag= 15.8 min
Primary = 56.17 cfs @ 12.40 hrs, Volume= 10.920 af
Routed to Pond P2 : POND 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,472.90' @ 12.40 hrs Surf.Area= 37,600 sf Storage= 123,555 cf

Plug-Flow detention time= 28.2 min calculated for 10.920 af (100% of inflow)
Center-of-Mass det. time= 27.7 min (817.2 - 789.5)

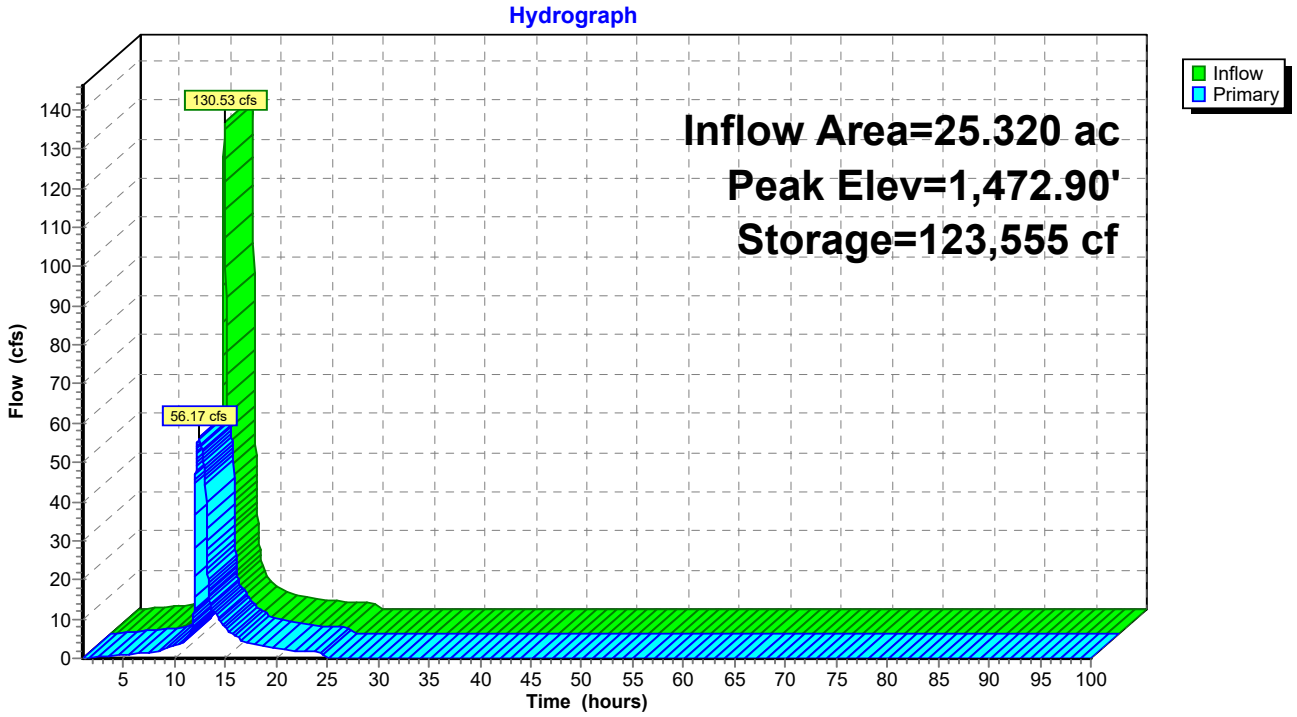
Volume	Invert	Avail.Storage	Storage Description
#1	1,466.00'	223,730 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,466.00	47	0	0
1,467.00	1,629	838	838
1,468.00	8,552	5,091	5,929
1,469.00	15,452	12,002	17,931
1,470.00	22,468	18,960	36,891
1,471.00	27,518	24,993	61,884
1,472.00	32,708	30,113	91,997
1,473.00	38,157	35,433	127,429
1,474.00	44,645	41,401	168,830
1,475.00	65,155	54,900	223,730

Device	Routing	Invert	Outlet Devices
#1	Primary	1,466.00'	**30.0" Round RCP_Round 30"** L= 300.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 1,466.00' / 1,462.00' S= 0.0133 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 4.91 sf
#2	Primary	1,474.10'	**30.0' long + 4.0 '/' SideZ x 60.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,470.00'	**36.0" x 36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,466.00'	**6.0" W x 48.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=56.17 cfs @ 12.40 hrs HW=1,472.90' TW=1,461.44' (Dynamic Tailwater)
- **1=RCP_Round 30"** (Inlet Controls 56.17 cfs @ 11.44 fps)
  - **3=Orifice/Grate** (Passes < 73.77 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 21.16 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P1: POND 1



Summary for Pond P2: POND 2

[44] Hint: Outlet device #4 is below defined storage

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth > 5.18" for 100 - Year event
Inflow = 215.60 cfs @ 12.10 hrs, Volume= 24.191 af
Outflow = 93.26 cfs @ 12.51 hrs, Volume= 24.191 af, Atten= 57%, Lag= 24.3 min
Primary = 93.26 cfs @ 12.51 hrs, Volume= 24.191 af
Routed to Pond SW : PROPOSED BASIN A

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs
Peak Elev= 1,461.51' @ 12.51 hrs Surf.Area= 43,383 sf Storage= 185,769 cf

Plug-Flow detention time= 16.2 min calculated for 24.186 af (100% of inflow)
Center-of-Mass det. time= 16.1 min (816.3 - 800.2)

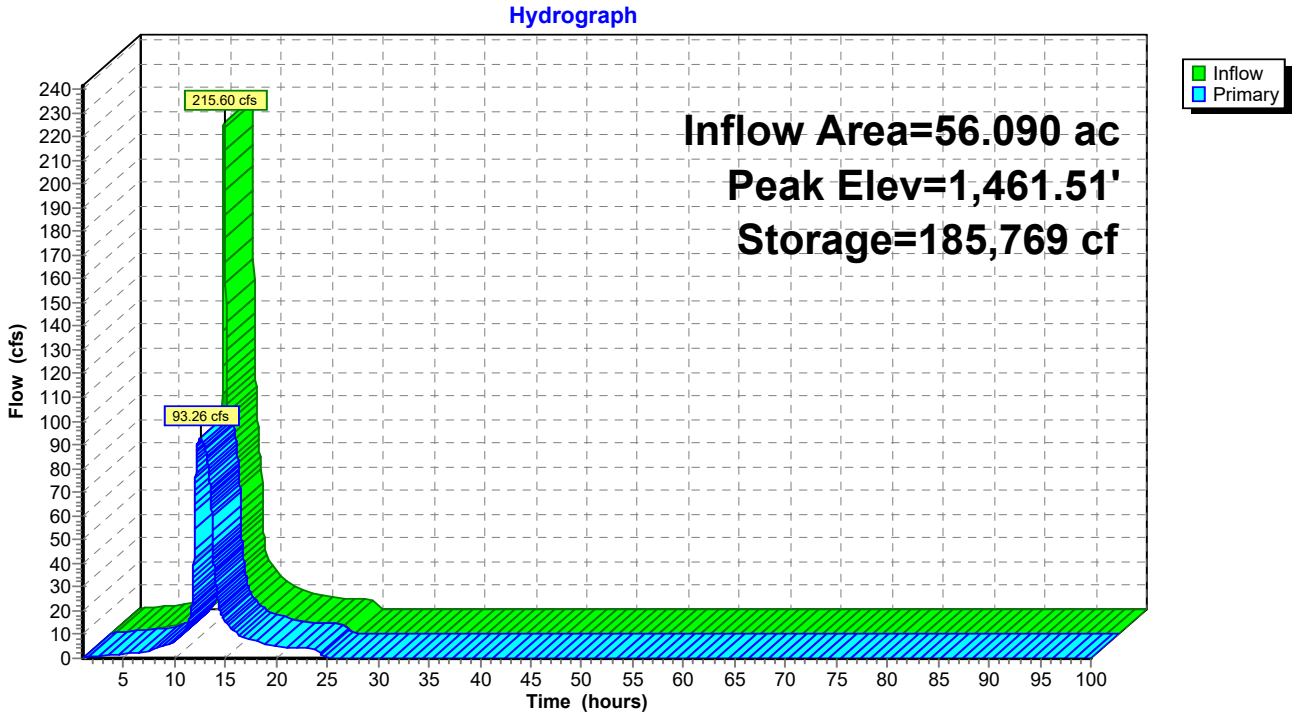
Volume	Invert	Avail.Storage	Storage Description
#1	1,453.00'	255,649 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,453.00	626	0	0
1,454.00	4,028	2,327	2,327
1,455.00	9,182	6,605	8,932
1,456.00	14,691	11,937	20,869
1,457.00	20,468	17,580	38,448
1,458.00	26,393	23,431	61,879
1,459.00	32,062	29,228	91,106
1,460.00	36,645	34,354	125,460
1,461.00	41,061	38,853	164,313
1,462.00	45,630	43,346	207,658
1,463.00	50,351	47,991	255,649

Device	Routing	Invert	Outlet Devices
#1	Primary	1,452.50'	**36.0" Round RCP_Round 36"** L= 95.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 1,452.50' / 1,452.00' S= 0.0053 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 7.07 sf
#2	Primary	1,462.50'	**35.0' long + 3.0 '/' SideZ x 20.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63
#3	Device 1	1,457.00'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Device 1	1,452.50'	**18.0" W x 54.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=93.26 cfs @ 12.51 hrs HW=1,461.51' TW=0.00' (Dynamic Tailwater)
- **1=RCP_Round 36"** (Inlet Controls 93.26 cfs @ 13.19 fps)
  - **3=Orifice/Grate** (Passes < 163.57 cfs potential flow)
  - **4=Orifice/Grate** (Passes < 84.09 cfs potential flow)
- **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond P2: POND 2



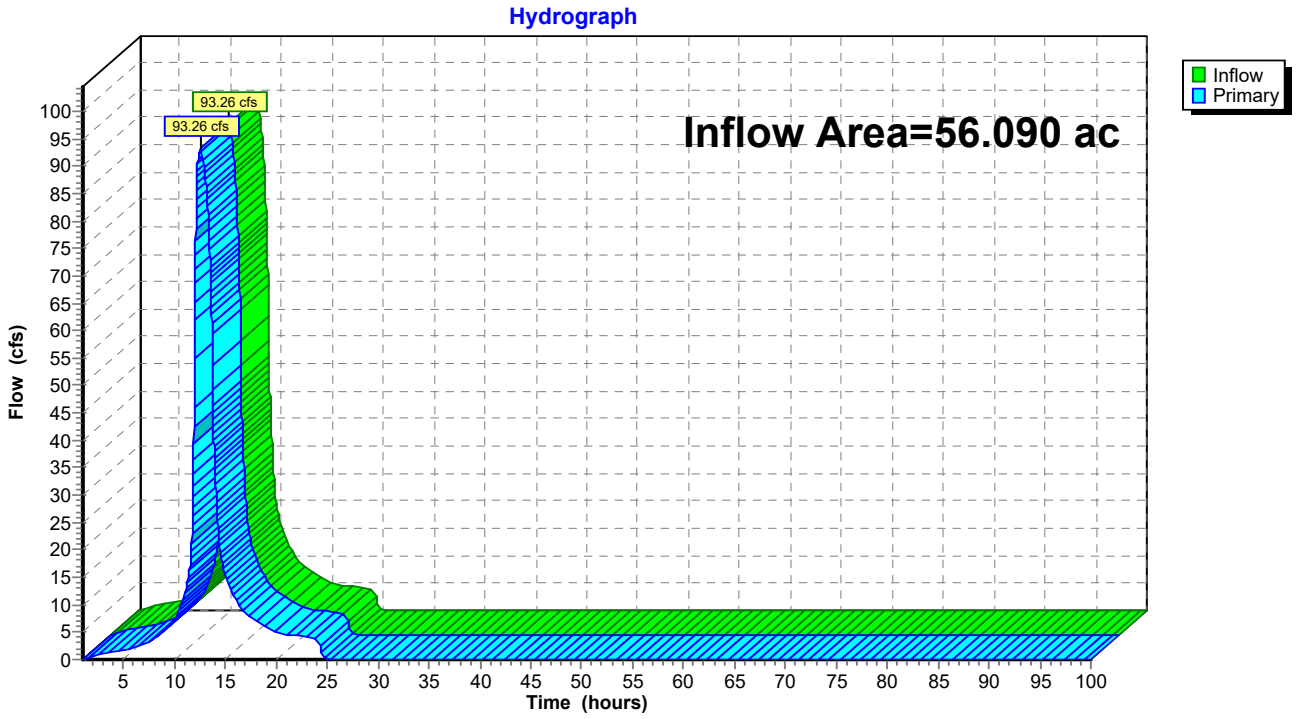
Summary for Pond SW: PROPOSED BASIN A

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 56.090 ac, 38.00% Impervious, Inflow Depth > 5.18" for 100 - Year event
Inflow = 93.26 cfs @ 12.51 hrs, Volume= 24.191 af
Primary = 93.26 cfs @ 12.51 hrs, Volume= 24.191 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TP : TOTAL PROPOSED

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond SW: PROPOSED BASIN A



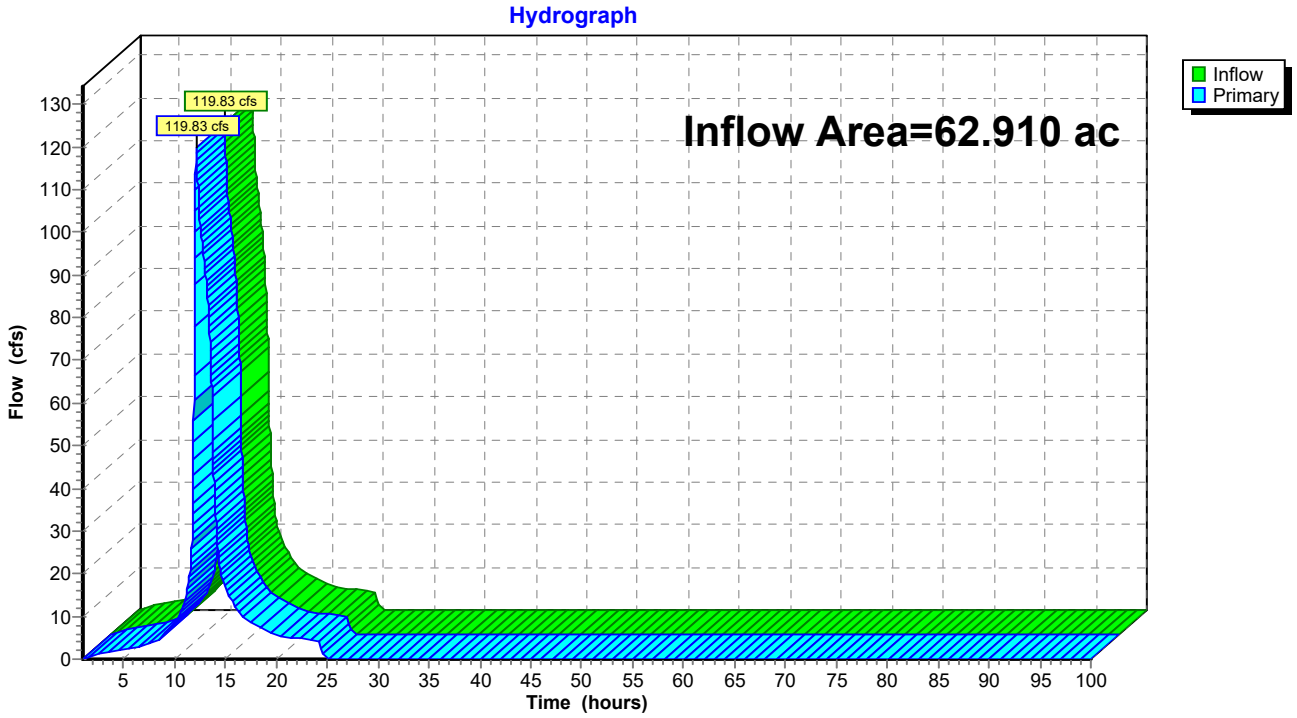
Summary for Pond TP: TOTAL PROPOSED

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 62.910 ac, 38.28% Impervious, Inflow Depth > 5.18" for 100 - Year event
Inflow = 119.83 cfs @ 12.16 hrs, Volume= 27.162 af
Primary = 119.83 cfs @ 12.16 hrs, Volume= 27.162 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-100.00 hrs, dt= 0.02 hrs

Pond TP: TOTAL PROPOSED



NRCS SOILS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Seward County, Nebraska



October 6, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Seward County, Nebraska
Survey Area Data: Version 21, Sep 14, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 16, 2011—Mar 2, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
3774	Muir silty clay loam, rarely flooded	0.7	0.5%
3775	Muir silt loam, rarely flooded	3.7	2.4%
3776	Muir silt loam, 1 to 3 percent slopes	9.4	6.3%
3840	Geary silty clay loam, 7 to 11 percent slopes, eroded	3.0	2.0%
3864	Hastings silt loam, 0 to 1 percent slopes	0.1	0.1%
3866	Hastings silt loam, 1 to 3 percent slopes	30.9	20.6%
3870	Hastings silty clay loam, 3 to 7 percent slopes, eroded	31.0	20.7%
3876	Hastings silty clay loam, 1 to 3 percent slopes, eroded	13.1	8.7%
3962	Hastings silty clay loam, 7 to 11 percent slopes, eroded	47.7	31.8%
3963	Hastings silty clay loam, 7 to 11 percent slopes, severely eroded	7.1	4.7%
7259	Deroin silty clay loam, 6 to 11 percent slopes, severely eroded	3.4	2.3%
Totals for Area of Interest		**150.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion

of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Seward County, Nebraska

3774—Muir silty clay loam, rarely flooded

Map Unit Setting

National map unit symbol: 2tpy0
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Muir, rarely flooded, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Muir, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 7 inches: silty clay loam
A - 7 to 18 inches: silty clay loam
Bw1 - 18 to 36 inches: silty clay loam
Bw2 - 36 to 48 inches: silt loam
C - 48 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.6 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: R075XY050NE - Loamy Terrace
Hydric soil rating: No

Minor Components

Hobbs, occasionally flooded

Percent of map unit: 5 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R074XY113KS - Loamy Floodplain
Hydric soil rating: No

3775—Muir silt loam, rarely flooded

Map Unit Setting

National map unit symbol: 2tpxt
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 27 to 34 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 149 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Muir, rarely flooded, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Muir, Rarely Flooded

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
A - 7 to 18 inches: silt loam
Bw1 - 18 to 36 inches: silty clay loam
Bw2 - 36 to 48 inches: silt loam
C - 48 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare

Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.7 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: R075XY050NE - Loamy Terrace
Hydric soil rating: No

Minor Components

Detroit, rarely flooded

Percent of map unit: 5 percent
Landform: Stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY050NE - Loamy Terrace
Hydric soil rating: No

Hobbs, occasionally flooded

Percent of map unit: 4 percent
Landform: Flood plains
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY068NE - Loamy Floodplain
Hydric soil rating: No

Aquolls, occasionally ponded

Percent of map unit: 1 percent
Landform: Depressions on flood plains
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R075XY045NE - Wet Subirrigated
Hydric soil rating: Yes

3776—Muir silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tpxw
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Muir, rarely flooded, and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Muir, Rarely Flooded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

Ap - 0 to 7 inches: silt loam
A - 7 to 18 inches: silt loam
Bw1 - 18 to 36 inches: silty clay loam
Bw2 - 36 to 48 inches: silt loam
C - 48 to 79 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: R075XY050NE - Loamy Terrace
Hydric soil rating: No

Minor Components

Crete

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Hydric soil rating: No

Hobbs, occasionally flooded

Percent of map unit: 4 percent
Landform: Flood plains
Down-slope shape: Concave

Across-slope shape: Linear
Ecological site: R074XY113KS - Loamy Floodplain
Hydric soil rating: No

Aquolls, occasionally ponded
Percent of map unit: 1 percent
Landform: Depressions on flood plains
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R075XY045NE - Wet Subirrigated
Hydric soil rating: Yes

3840—Geary silty clay loam, 7 to 11 percent slopes, eroded

Map Unit Setting
National map unit symbol: 2r9d8
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition
Geary, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Geary, Eroded

Setting
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile
Ap - 0 to 6 inches: silty clay loam
Bt1 - 6 to 22 inches: silty clay loam
Bt2 - 22 to 33 inches: silty clay loam
BC - 33 to 38 inches: silty clay loam
C - 38 to 79 inches: silt loam

Properties and qualities
Slope: 7 to 11 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 12.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Forage suitability group: Loam (G075XY100NE)
Other vegetative classification: Loam (G075XY100NE)
Hydric soil rating: No

Minor Components

Crete

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Hydric soil rating: No

Hastings

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY058NE - Loamy Plains
Hydric soil rating: No

Hobbs, occasionally flooded

Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY050NE - Loamy Terrace
Hydric soil rating: No

Meadin

Percent of map unit: 1 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Ecological site: R075XY062NE - Gravelly Hills
Hydric soil rating: No

Kezan, occasionally flooded

Percent of map unit: 1 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY045NE - Wet Subirrigated
Hydric soil rating: Yes

3864—Hastings silt loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2qsjy
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 149 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hastings and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
A - 6 to 13 inches: silty clay loam
BA - 13 to 17 inches: silty clay loam
Bt - 17 to 32 inches: silty clay loam
Bk - 32 to 39 inches: silty clay loam
C - 39 to 79 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 0.8 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Forage suitability group: Loam (G075XY100NE)
Other vegetative classification: Loam (G075XY100NE)
Hydric soil rating: No

Minor Components

Crete

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Hydric soil rating: No

Butler

Percent of map unit: 4 percent
Landform: Swales
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Other vegetative classification: Wet (G075XY900NE)
Hydric soil rating: No

Fillmore, frequently ponded

Percent of map unit: 4 percent
Landform: Playas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R075XY049NE - Closed Upland Depression
Other vegetative classification: Closed Upland Depression (G075XY910NE)
Hydric soil rating: Yes

Holder

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY058NE - Loamy Plains
Other vegetative classification: Loam (G075XY100NE)

Hydric soil rating: No

3866—Hastings silt loam, 1 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2qskb
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 149 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hastings and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings

Setting

Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 6 inches: silt loam
A - 6 to 11 inches: silty clay loam
BA - 11 to 14 inches: silty clay loam
Bt - 14 to 31 inches: silty clay loam
Bk - 31 to 38 inches: silty clay loam
C - 38 to 79 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 0.8 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Forage suitability group: Loam (G075XY100NE)
Other vegetative classification: Loam (G075XY100NE)
Hydric soil rating: No

Minor Components

Crete

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Hydric soil rating: No

Butler

Percent of map unit: 4 percent
Landform: Swales
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY057NE - Clayey Plains
Other vegetative classification: Wet (G075XY900NE)
Hydric soil rating: No

Holder

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Ecological site: R075XY058NE - Loamy Plains
Other vegetative classification: Loam (G075XY100NE)
Hydric soil rating: No

Fillmore, frequently ponded

Percent of map unit: 2 percent
Landform: Playas
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Ecological site: R075XY049NE - Closed Upland Depression
Other vegetative classification: Closed Upland Depression (G075XY910NE)
Hydric soil rating: Yes

3870—Hastings silty clay loam, 3 to 7 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2vzkr
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 175 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hastings, eroded, and similar soils: 89 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings, Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silty clay loam
BA - 8 to 14 inches: silty clay loam
Bt - 14 to 32 inches: silty clay loam
BC - 32 to 38 inches: silty clay loam
C - 38 to 79 inches: silt loam

Properties and qualities

Slope: 3 to 7 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Ecological site: R075XY058NE - Loamy Plains
Hydric soil rating: No

Minor Components

Geary, eroded
Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY058NE - Loamy Plains
Hydric soil rating: No

Hobbs, frequently flooded
Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY068NE - Loamy Floodplain
Hydric soil rating: No

Kezan, frequently flooded
Percent of map unit: 1 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY045NE - Wet Subirrigated
Hydric soil rating: Yes

3876—Hastings silty clay loam, 1 to 3 percent slopes, eroded

Map Unit Setting
National map unit symbol: 1trvg
Elevation: 1,200 to 1,800 feet
Mean annual precipitation: 28 to 30 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 160 to 180 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Hastings and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings

Setting
Landform: Interfluves
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Loess

Typical profile

H1 - 0 to 5 inches: silty clay loam
H2 - 5 to 41 inches: silty clay loam
H3 - 41 to 60 inches: silt loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Other vegetative classification: Silty - Veg. zone 4 (075XY075NE_2)
Hydric soil rating: No

3962—Hastings silty clay loam, 7 to 11 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2vzks
Elevation: 1,130 to 2,770 feet
Mean annual precipitation: 23 to 31 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 150 to 175 days
Farmland classification: Not prime farmland

Map Unit Composition

Hastings, eroded, and similar soils: 89 percent
Minor components: 11 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings, Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loess

Typical profile

Ap - 0 to 8 inches: silty clay loam
BA - 8 to 14 inches: silty clay loam
Bt - 14 to 32 inches: silty clay loam
BC - 32 to 38 inches: silty clay loam
C - 38 to 79 inches: silt loam

Properties and qualities

Slope: 7 to 11 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 11.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Hydric soil rating: No

Minor Components

Geary, eroded

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R075XY058NE - Loamy Plains
Hydric soil rating: No

Hobbs, frequently flooded

Percent of map unit: 3 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY068NE - Loamy Floodplain
Hydric soil rating: No

Kezan, frequently flooded

Percent of map unit: 1 percent
Landform: Drainageways
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: R075XY045NE - Wet Subirrigated
Hydric soil rating: Yes

3963—Hastings silty clay loam, 7 to 11 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 1trvl
Elevation: 1,200 to 1,800 feet
Mean annual precipitation: 28 to 30 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Hastings and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hastings

Setting

Landform: Hillslopes
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 4 inches: silty clay loam
H2 - 4 to 40 inches: silty clay loam
H3 - 40 to 60 inches: silt loam

Properties and qualities

Slope: 7 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R075XY058NE - Loamy Plains
Other vegetative classification: Silty - Veg. zone 4 (075XY075NE_2)
Hydric soil rating: No

7259—Deroin silty clay loam, 6 to 11 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: 1trv0
Elevation: 1,200 to 1,800 feet
Mean annual precipitation: 28 to 30 inches
Mean annual air temperature: 52 to 55 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Deroin, eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deroin, Eroded

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Nose slope, side slope
Down-slope shape: Concave, convex
Across-slope shape: Linear
Parent material: Loess

Typical profile

H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 34 inches: silty clay loam
H3 - 34 to 60 inches: silty clay loam

Properties and qualities

Slope: 7 to 12 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: R106XY075NE - Loamy Upland
Forage suitability group: Loam (G106XY100NE)
Other vegetative classification: Loam (G106XY100NE)
Hydric soil rating: No

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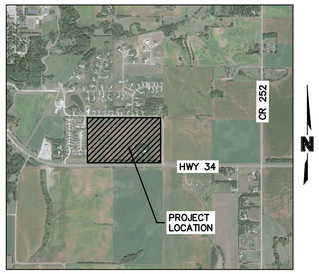
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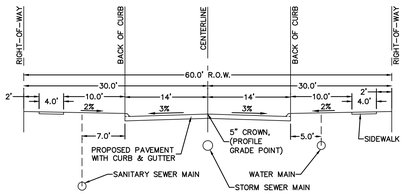
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PRAIRIE VIEW
PRELIMINARY PLAT COVER SHEET



VICINITY MAP
NOT TO SCALE



TYPICAL 28' RESIDENTIAL STREET CROSS SECTION
NOT TO SCALE

N

1" = 100'
0' 50' 100' 200'
SCALE IN FEET

LEGEND

PROPERTY LINE
BOUNDARY LINE
EASEMENT LINE
CENTERLINE

CITY COUNCIL MEMBERS

PRESIDENT – KARL MILLER
MEMBER – ELLEN BECK
MEMBER – JESSICA KOLTERMAN
MEMBER – MATT STRYSON
MEMBER – SID KAMPRATH
MEMBER – JOHN SINGLETON
MEMBER – ALYSSA HENDRIX
MEMBER – JONATHON WILKEN

LOCAL GOVERNMENT OFFICIALS

MAYOR – JOSH EICKMEIER
CITY ADMINISTRATOR – GREG BUTCHER
CITY CLERK – DEREK BARGMANN
CITY ATTORNEY – KELLY HOFFSCHNEIDER
BUILDING/ZONING & CODE ENFORCEMENT DIRECTOR – TIM DWORAK
ELECTRIC & POWER RESOURCE DIRECTOR – LARRY RUETHER
CITY ENGINEER – MIKE ONEBY
STREET/TRANSPORTATION & RECYCLING SUPERINTENDENT – BOB MIERS
PARKS/RECREATION/CEMETERY DIRECTOR – BOB CORE
CHIEF OF POLICE – BRIAN PETERS
FINANCE DIRECTOR/TREASURER – NICHOLAS WOLF
WATER/WASTEWATER SUPERINTENDENT – TIM RICHTIG
FIRE CHEIF – JAMES KIMSEY

ZONING TABLE	
ZONE	TYPE
R3	SINGLE FAMILY
MINIMUM LOT AREA	5000 SQ. FT
MINIMUM LOT WIDTH	55 FT.
BUILDING MAX. HEIGTH	35 FT.
SET BACK TABLE	
FRONT YARD	25 FT.
SIDE YARD	5 FT.
REAR YARD	20% OF LOT DEPTH
STREET SIDE YARD	25'

LEGAL DESCRIPTION

A TRACT OF LAND COMPOSED OF A PORTION OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER AND A PORTION THE SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 22, TOWNSHIP 11 NORTH, RANGE 3 EAST OF THE 6TH P.M., SEWARD COUNTY, NEBRASKA, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE S00°26'06"W, ON THE EAST LINE OF SAID SOUTHWEST QUARTER, A DISTANCE OF 1,256.08' TO A POINT ON THE NORTH RIGHT OF WAY LINE OF STATE HIGHWAY 34; THENCE N89°53'36"W, ON THE NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 1,324.47' TO A POINT ON THE WEST LINE SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N88°59'50"W, ON A NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 337.49' TO A POINT ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N89°49'00"W, ON A NORTH LINE OF SAID RIGHT OF WAY, A DISTANCE OF 386.78' TO A POINT ON THE WEST LINE OF SAID DESCRIBED TRACT LOCATED IN A PORTION OF SOUTHWEST QUARTER OF SOUTHWEST QUARTER , SAID POINT BEING ON THE EAST LINE OF OUTLOT "A" SEWARD VALLEY VIEW ESTATES 3RD ADDITION, SAID POINT BEING ON THE NORTH LINE OF SAID RIGHT OF WAY; THENCE N00°08'31"W, ON THE WEST LINE OF SAID DESCRIBED TRACT LOCATED IN A PORTION OF SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, SAID LINE BEING THE EAST LINE OF SAID SEWARD VALLEY VIEW ESTATES 3RD ADDITION AND AN EAST LINE OF LOT 1, BLOCK 1 , SEWARD VALLEY ESTATES 2ND ADDITION AND ITS EXTENSION, A DISTANCE OF 1,260.26' TO A POINT ON THE NORTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER; THENCE S89°36'55"E, ON THE NORTH LINE OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 730.37' TO THE NORTHEAST CORNER OF SAID SOUTHWEST QUARTER OF THE SOUTHWEST QUARTER, SAID POINT BEING THE NORTHWEST CORNER OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER; THENCE S89°36'57"E, ON THE NORTH LINE OF SAID SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER, A DISTANCE OF 1,331.02', TO THE POINT OF BEGINNING, SAID TRACT CONTAINS A CALCULATED AREA OF 2,588,457.27 SQUARE FEET OR 59.42 ACRES, MORE OR LESS.



PROJECT TEAM

ENGINEER
OLSSON
601 P STREET, SUITE 200
LINCOLN, NE 68508
CONTACT: MARK PALMER
(402) 474-6311

SURVEYOR
OLSSON
601 P STREET, SUITE 200
LINCOLN, NE 68508
CONTACT: TOM BRUGGEMAN
(402) 474-6311

DEVELOPER
1640 LLC
BOB BENES
1640 NORMANDY CT. ST. A
LINCOLN, NE 68512
(402) 423-6811

CONTROL POINTS

PNT.	NORTHING	EASTING	ELEV.	DESC.
1	146294.53	178713.23	1469.36	PK NAIL
2	146295.05	179513.35	1497.02	PK NAIL
3	146293.10	180313.19	1515.57	PK NAIL

BENCHMARKS

1. PK NAIL ON SW. CORNER OF PROPERTY, N. SIDE OF HIGHWAY #34/McKELVIE ROAD.
CONTROL POINT #1
ELEV.=1469.36 (N.A.V.D. 1988)

1. PK NAIL, APPROX. 800' E. OF CONTROL POINT #1, N. SIDE OF HIGHWAY #34/McKELVIE ROAD.
CONTROL POINT #2
ELEV.=1497.02 (N.A.V.D. 1988)

2. PK NAIL APPROX 800' E. OF CONTROL POINT #2, E. SIDE OF DRIVE INTO 3404 McKELVIE ROAD, N. SIDE OF HIGHWAY #34/McKELVIE ROAD.
CONTROL POINT #3
ELEV.=1515.57 (N.A.V.D. 1988)

PRELIMINARY PLAT NOTES

1. THIS PRELIMINARY PLAT CONTAINS 59.4 ACRES.
2. THE EXISTING ZONING IS R-3. NO CHANGE OF ZONE IS BEING REQUESTED.
3. EXACT LOCATION OF ALL EASEMENTS SHALL BE SHOWN AT THE TIME OF FINAL PLATS.
4. ALL OPEN SPACE DETENTION AREAS MAINTENANCE IS THE RESPONSIBILITY OF THE DEVELOPERS AND/OR FUTURE HOMEOWNER'S ASSOCIATION.
5. ALL LIGHT POLES LOCATIONS AND DESIGN SHALL BE PROVIDED BY THE CITY OF SEWARD ELECTRIC DEPARTMENT.
6. ALL UTILITY SIZES SHALL BE AS SHOWN ON PLAN.
7. TELEPHONE AND CABLE INSTALLATION SHALL BE COORDINATED AND INSTALLED WITH THE ELECTRICAL SERVICE.
8. LOCATIONS OF PUBLIC WATER MAIN, HYDRANTS, AND VALVES ARE SHOWN FOR REFERENCE ONLY. FINAL DESIGN OF WATER MAIN WILL BE APPROVED BY THE CITY OF SEWARD.
9. ALL SANITARY SEWERS, STORM SEWERS EXCEPT DETENTION OUTLETS, & WATER MAINS TO BE PUBLIC.
10. WATER TO BE PROVIDED BY THE CITY OF SEWARD.
11. GAS TO BE PROVIDED BY BLACKHILLS ENERGY.
12. POWER TO BE PROVIDED BY THE CITY OF SEWARD ELECTRIC DEPARTMENT.
13. UTILITY EASEMENT TO BE PROVIDED AS REQUESTED BY THE CITY OF SEWARD ELECTRIC DEPARTMENT.
14. HYDRANTS AND VALVES SHALL BE LOCATED AND SPACED PER THE CITY OF SEWARD MUNICIPAL DESIGN STANDARDS.
15. 4" SANITARY SEWER SERVICES SHALL BE TERMINATED AT THE MIDPOINT OF EACH LOT.
16. ANY UPSIZED WATER MAIN SHALL BE SUBSIDIZED BY THE CITY OF SEWARD.
17. LOT LINES MAY CHANGE UP TO 10' AT THE TIME OF FINAL PLAT.
18. SANITARY SEWER MANHOLE LOCATION AND ELEVATIONS MAY CHANGE AT THE TIME OF FINAL DESIGN FOR CONSTRUCTION.
19. ALL DIMENSIONS ALONG CURVES ARE CHORD DISTANCES.
20. ALL PAVING RADII TO BE 25' UNLESS OTHERWISE NOTED. RADII AT ALL INTERSECTIONS WITH E. SEWARD STREET SHALL BE 35' (BY OTHERS).
21. LOT, OUTLOT AND BLOCK DIMENSIONS SHOWN ARE APPROXIMATE AND MAY VARY.
22. ALL STREET DIMENSIONS ARE TO BACK OF CURB.
23. ALL ELEVATIONS ARE ON NAVD 1988.
24. THE YARD SETBACKS REGULATE STRUCTURAL WALLS ONLY AND DO NOT RESTRICT OVERHANGS, PATIOS, DOOR SWINGS, WINDOW SWINGS, ETC. FROM ENCROACHING INTO THE SETBACK.

APPROVAL OF THE CITY PLANNING COMMISSION:

THIS PRELIMINARY PLAT FOR PRAIRIE VIEW A PART OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA WAS APPROVED BY THE CITY PLANNING COMMISSION OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA THIS_____ DAY OF_____ , 2021.

BY: _____
CHAIRPERSON

APPROVAL OF THE ZONING ADMINISTRATOR:

THIS PRELIMINARY PLAT FOR PRAIRIE VIEW A PART OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA WAS APPROVED BY THE ZONING ADMINISTRATOR OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA THIS_____ DAY OF_____ , 2021.

BY: _____
ZONING ADMINISTRATOR

APPROVAL OF THE CITY MAYOR:

THIS PRELIMINARY PLAT FOR PRAIRIE VIEW A PART OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA WAS APPROVED BY THE MAYOR OF THE CITY OF SEWARD, SEWARD COUNTY, NEBRASKA THIS_____ DAY OF_____ , 2021.

BY: _____
CITY MAYOR

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P.O. Box 84608
Lincoln, NE 68508
TEL 402.474.6311
www.olsson.com

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

COVER SHEET

PRAIRIE VIEW
PRELIMINARY PLAT

2022

SEWARD, NEBRASKA

drawn by: KRT
checked by: EAP
approved by: BPB
QA/QC by: XXX
project no.: 021-04805
drawing no.: 1
date: 2/25/2022

SHEET
1 of 13

DWG: F:\2021\04501-05000\021-04805\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\C_COV_021004805.dwg USER: epotter
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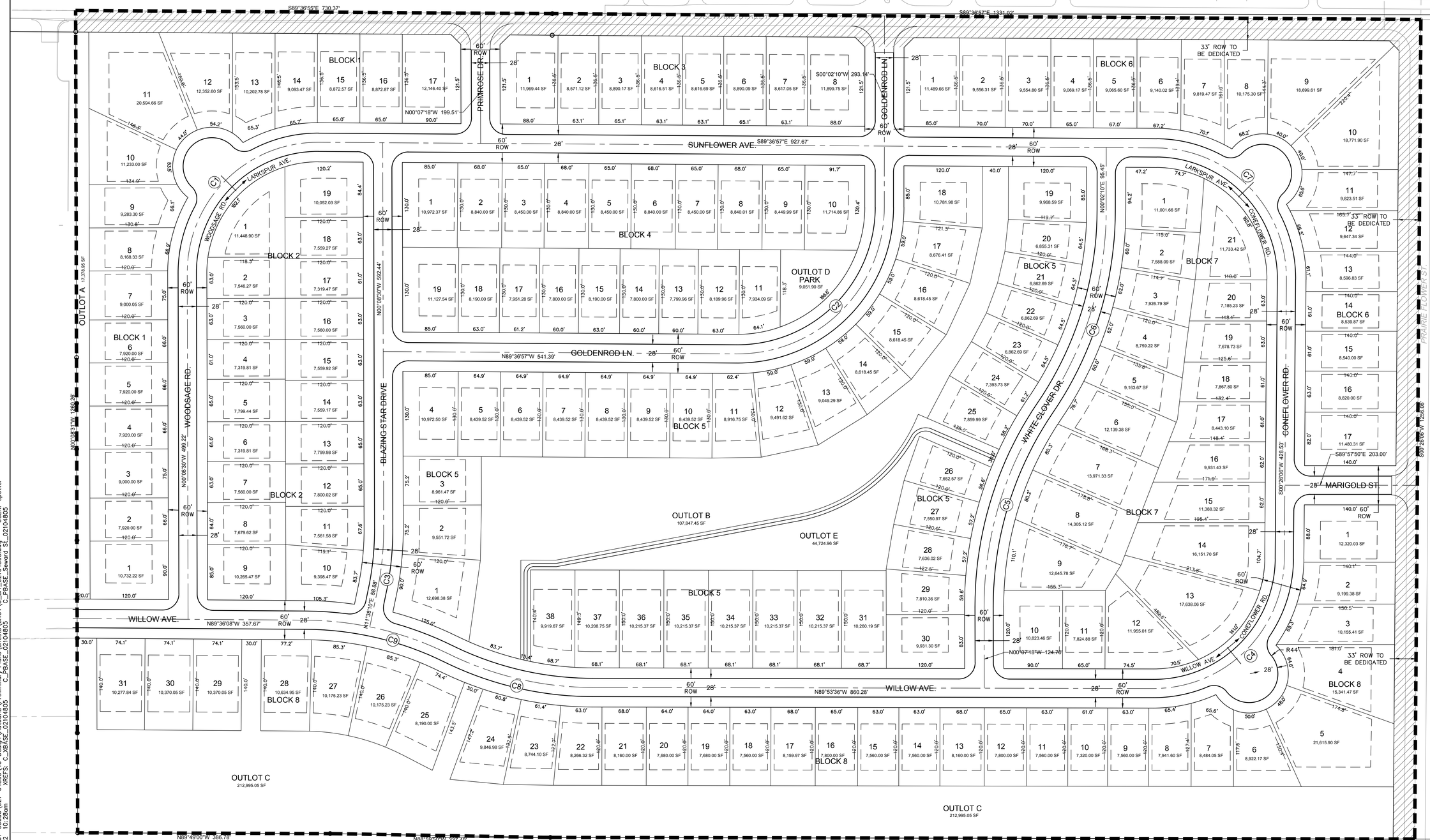
PRAIRIE VIEW
PRELIMINARY PLAT
SITE PLAN

CURVE TABLE					
CURVE ID	RADIUS	DELTA	LENGTH	CHORD LENGTH	TANGENT LENGTH
C1	200.00'	90°31'35"	316.00'	284.14'	201.85'
C2	225.00'	90°20'53"	354.80'	319.16'	226.37'
C3	450.00'	11°46'40"	92.50'	92.34'	46.41'
C4	200.00'	89°40'18"	313.01'	282.03'	198.86'
C5	540.00'	34°21'21"	323.80'	318.97'	166.93'
C6	540.00'	34°11'54"	322.31'	317.55'	166.12'
C7	200.00'	90°03'04"	314.34'	282.97'	200.18'
C8	500.00'	26°08'51"	228.18'	226.20'	116.11'
C9	500.00'	25°51'22"	225.64'	223.73'	114.77'

N

1" = 60'
0' 30' 60' 120'
SCALE IN FEET

LEGEND
- PROPERTY LINE
- BOUNDARY LINE
- CENTERLINE
- SETBACK



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SITE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

2022

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	1
date:	2/25/2022

SHEET
2 of 13

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PRAIRIE VIEW
PRELIMINARY PLAT
CONCEPTUAL PHASING PLAN

N

1" = 60'
0' 30' 60' 120'
SCALE IN FEET

E. SEWARD STREET
GOLDENROD LANE
PRAIRIE FLOWER ST.
HIGHWAY 34 - McKELVIE ROAD

PHASE 1
PHASE 2
PHASE 3
PHASE 4
PHASE 5
PHASE 6
PHASE 7

BLOCK 1
BLOCK 2
BLOCK 3
BLOCK 4
BLOCK 5
BLOCK 6
BLOCK 7
BLOCK 8

OUTLOT A
OUTLOT B
OUTLOT C
OUTLOT D PARK
OUTLOT E

PRIMROSE DR.
SUNFLOWER AVE.
GOLDENROD LN.
WILLOW AVE.
MARIGOLD ST.
OSAGE RD
G STAR DRIVE
WHITE CLOVER DR
CONEFLOWER RD

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CONCEPTUAL PHASING PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

2022

SEWARD, NEBRASKA

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	-
date:	2/25/2022

SHEET
3 of 13

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PRAIRIE VIEW
PRELIMINARY PLAT
UTILITY PLAN

N

1" = 60'
0' 30' 60' 120'
SCALE IN FEET

LEGEND
- PROPERTY LINE
- BOUNDARY LINE
- EASEMENT LINE
- CENTERLINE
- 6"W — PROPOSED 6" WATER MAIN
- 8"SS — PROPOSED 8" SANITARY SEWER
- 8"W — PROPOSED 8" WATER MAIN
- 24"SS — PROPOSED 24" SANITARY SEWER
- 10"W — PROPOSED 10" WATER MAIN
- 12"W — PROPOSED 12" WATER MAIN
- PROPOSED FIRE HYDRANT

SANITARY SEWER MANHOLE
RIM= 1489.53
E INV. IN= 1477.61 (8" PVC)
W INV. OUT= 1477.51 (8" PVC)
S INV. OUT= 1477.51 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1511.14
E INV. OUT= 1499.14 (8" PVC)
W INV. OUT= 1499.14 (8" PVC)
S INV. OUT= 1499.14 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1509.25
E INV. IN= 1497.35 (8" PVC)
W INV. IN= 1497.35 (8" PVC)
S INV. OUT= 1497.25 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1486.73
NE INV. IN= 1474.84 (8" PVC)
SW INV. OUT= 1474.74 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1512.49
SE INV. IN= 1500.59 (8" PVC)
NW INV. OUT= 1500.49 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1483.63
N INV. IN= 1471.73 (8" PVC)
E INV. IN= 1471.73 (8" PVC)
S INV. OUT= 1471.63 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1479.48
N INV. IN= 1469.24 (8" PVC)
S INV. OUT= 1469.14 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1495.63
E INV. IN= 1483.61 (8" PVC)
W INV. OUT= 1483.51 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1471.93
E INV. IN= 1454.13 (8" PVC)
NE INV. IN= 1454.13 (8" PVC)
W INV. OUT= 1454.03 (8" PVC)

SANITARY SEWER DROP MANHOLE
RIM= 1484.79
E INV. IN= 1472.33 (8" PVC)
W INV. OUT= 1469.73 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1467.04
E INV. IN= 1451.74 (8" PVC)
N INV. IN= 1451.74 (8" PVC)
W INV. OUT= 1451.64 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1503.50
NE INV. IN= 1491.60 (8" PVC)
SW INV. OUT= 1491.50 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1515.75
S INV. OUT= 1503.75 (8" PVC)
N INV. OUT= 1503.75 (8" PVC)

SANITARY SEWER DROP MANHOLE
RIM= 1508.60
E INV. IN= 1496.61 (8" PVC)
N INV. IN= 1489.77 (8" PVC)
W INV. OUT= 1489.67 (8" PVC)

SANITARY SEWER MANHOLE
RIM= 1514.37
NE INV. IN= 1501.62 (8" PVC)
W INV. OUT= 1501.52 (8" PVC)

24" SANITARY SEWER & 10" WATER MAIN DESIGNED AND CONSTRUCTED BY OTHERS. FY 2023.

30' SANITARY SEWER & WATER MAIN EASEMENT

20' SANITARY SEWER EASEMENT

30' WATER MAIN, STORM SEWER, AND UTILITY EASEMENT

HIGHWAY 34 - McKELVIE ROAD

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REVISIONS

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UTILITY PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

2022

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	
date:	2/25/2022

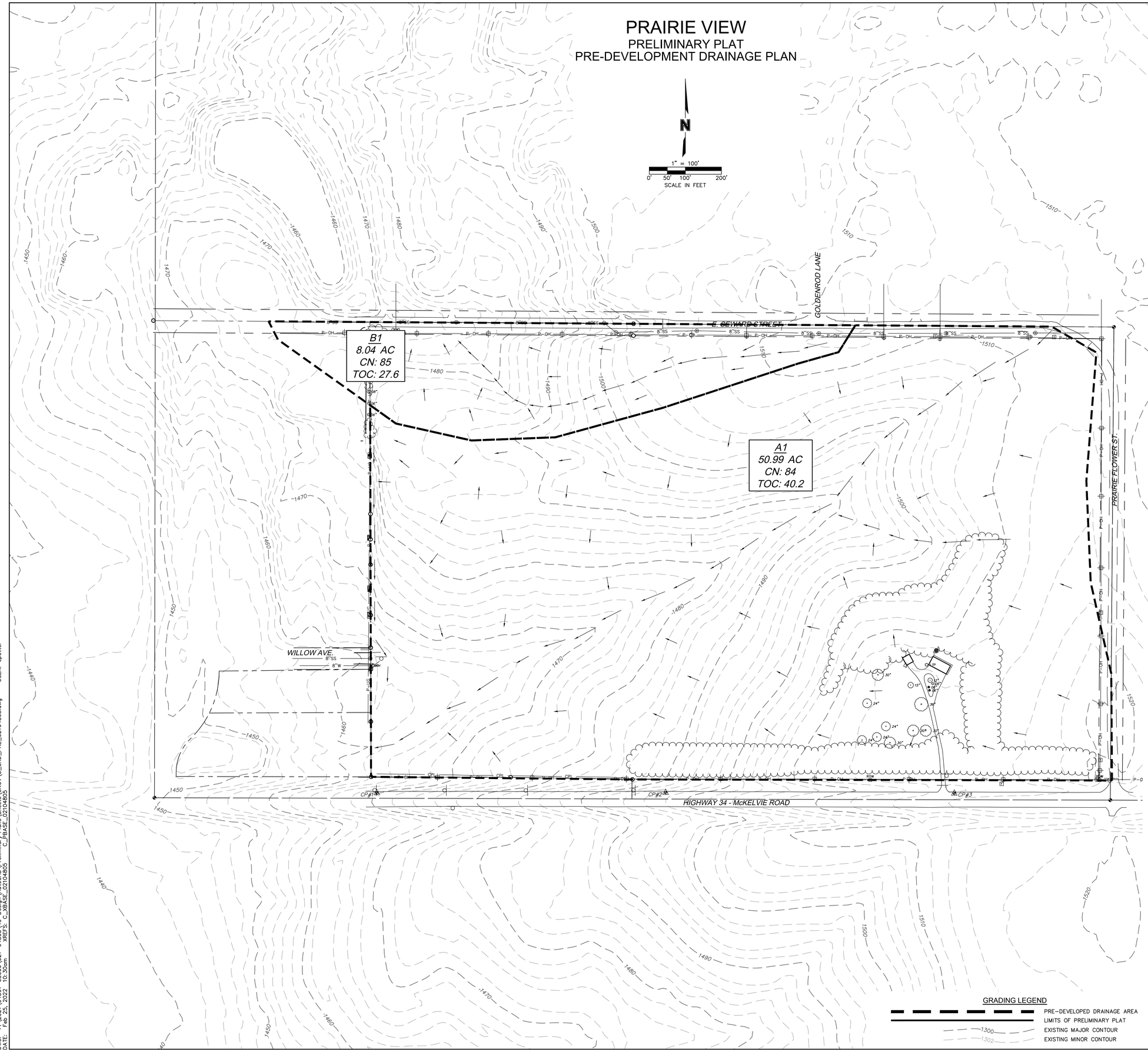
SHEET
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PRAIRIE VIEW
PRELIMINARY PLAT
PRE-DEVELOPMENT DRAINAGE PLAN

N

1" = 100'
0' 50' 100' 200'
SCALE IN FEET



EXISTING CONDITIONS		
	SUB-BASIN A	SUB-BASIN B
RETURN PERIOD	**PEAK FLOW**	**PEAK FLOW**
(YEAR)	(CFS)	(CFS)
2	55.1	11.6
5	84.4	17.5
10	109.1	22.4
50	152.2	31.0
100	174.8	35.5

LEGEND

- CONTROL POINT
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIRE HYDRANT
- FIBER OPTIC BOX
- FOUND REBAR
- GUY WIRE
- LIGHT POLE
- POWER POLE
- RIGHT–OF–WAY MARKER
- SECTION CORNER
- SET REBAR
- SIGN
- SANITARY SEWER MANHOLE
- TELEPHONE RISER
- TRANSFORMER
- WATER WELL
- WATER VALVE
- 1500 CONTOUR LINE
- CENTER LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- 10"SS SANITARY SEWER LINE
- 10"SD STORM SEWER LINE
- 10"W WATER LINE
- G UNDERGROUND GAS MAIN
- P–OH OVERHEAD POWER
- P–UG UNDERGROUND POWER
- CPL CROP LINE
- TREE MASS\BUSHES

GRADING LEGEND

- PRE–DEVELOPED DRAINAGE AREA
- LIMITS OF PRELIMINARY PLAT
- 1300 EXISTING MAJOR CONTOUR
- 1302 EXISTING MINOR CONTOUR

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PRE-DEVELOPMENT DRAINAGE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

2022

SEWARD, NEBRASKA

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	
date:	2/25/2022

SHEET
5 of 13

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PRAIRIE VIEW
PRELIMINARY PLAT
POST-DEVELOPMENT DRAINAGE PLAN

N

1" = 100'
0' 50' 100' 200'
SCALE IN FEET

B1
6.82 AC
CN: 87
TOC: 18.9

A3
17.76 AC
CN: 87
TOC: 19.3

A4
2.41 AC
CN: 87
TOC: 9.0

A1
25.32 AC
CN: 87
TOC: 21.7

A2
10.65 AC
CN: 87
TOC: 18.3

E. SEWARD STREET

HIGHWAY 34 - McKELVIE ROAD

GOLDENROD LANE

PRAIRIE FLOWER ST.

SUNFLOWER AVE.

GOLDENROD LN.

WILLOW AVE.

MARIGOLD ST.

PRIMROSE DR.

WOODSAGE RD.

BLAZING STAR DRIVE

WHITE CLOVER DR.

CONEFLOWER RD.

BLOCK 1 | BLOCK 2 | BLOCK 3 | BLOCK 4 | BLOCK 5 | BLOCK 6 | BLOCK 7 | BLOCK 8

OUTLOT A | OUTLOT B | OUTLOT C | OUTLOT D PARK | OUTLOT E

CP#1 | CP#2 | CP#3

PROPOSED CONDITIONS		
	SUB-BASIN A	SUB-BASIN B
RETURN PERIOD	**PEAK FLOW**	**PEAK FLOW**
(YEAR)	(CFS)	(CFS)
2	46.5	13.6
5	70.3	19.6
10	78.1	24.7
50	88.6	33.5
100	93.3	38.2

LEGEND

- CONTROL POINT
- CONIFEROUS TREE
- DECIDUOUS TREE
- FIRE HYDRANT
- FIBER OPTIC BOX
- FOUND REBAR
- GUY WIRE
- LIGHT POLE
- POWER POLE
- RIGHT-OF-WAY MARKER
- SECTION CORNER
- SET REBAR
- SIGN
- SANITARY SEWER MANHOLE
- TELEPHONE RISER
- TRANSFORMER
- WATER WELL
- WATER VALVE
- 1500 CONTOUR LINE
- CENTER LINE
- PROPERTY LINE
- SECTION LINE
- EASEMENT LINE
- 10"SS SANITARY SEWER LINE
- 10"SD STORM SEWER LINE
- 10"W WATER LINE
- G UNDERGROUND GAS MAIN
- P-OH OVERHEAD POWER
- P-UG UNDERGROUND POWER
- CPL CROP LINE
- TREE MASS\BUSHES

GRADING LEGEND

- PROPOSED DRAINAGE AREA
- LIMITS OF PRELIMINARY PLAT
- 1300 PROPOSED MAJOR CONTOUR
- 1302 PROPOSED MINOR CONTOUR
- 1300 EXISTING MAJOR CONTOUR
- 1302 EXISTING MINOR CONTOUR

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REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

POST-DEVELOPMENT DRAINAGE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

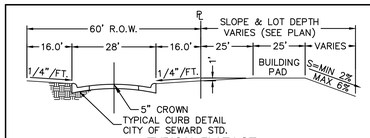
2022

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	-
date:	2/25/2022

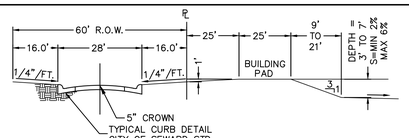
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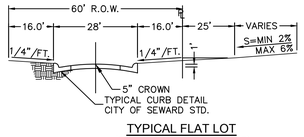
PRAIRIE VIEW
PRELIMINARY PLAT
GRADING & DRAINAGE PLAN



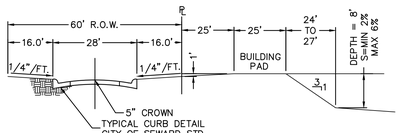
TYPICAL FLAT LOT
NOT TO SCALE



TYPICAL DAYLIGHT LOT
NOT TO SCALE



TYPICAL FLAT LOT
(DRAINAGE BACK TO FRONT)
NOT TO SCALE



TYPICAL WALK-OUT LOT
NOT TO SCALE

N

1" = 60'
0' 30' 60' 120'
SCALE IN FEET

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GRADING & DRAINAGE PLAN

PRAIRIE VIEW
PRELIMINARY PLAT

2022

SEWARD, NEBRASKA

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
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date:	2/25/2022

SHEET
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SEE SHEET 8 FOR SWALE CAPACITY ANALYSIS OF THE 100-YR FLOW

TREES TO REMAIN, IN PLACE

PRAIRIE VIEW
PRELIMINARY PLAT
DRAINAGE PIPE SIZE CALCULATIONS

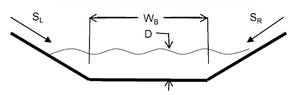
Project: Seward
OA Project No. 021-04805

PRELIMINARY PIPE SIZING CALCULATIONS

		Minor Storm System Conveyance Analysis							Minor Storm Average Return Frequency (yr) Crossings:					50		Major Storm System Conveyance analysis								
		Minor Storm Average Return Frequency (yr):					5		Minor Storm Average Return Frequency (yr) Sumps:					10		Major Storm Average Return Frequency (yr):				100				
Location	**Area A (square feet)**	**Area A (acres)**	**Coefficient C**	**A x C**	**Sum A x C**	**Time of Concentration Tc, (minutes)**	**Return Frequency (yrs)**	**Intensity I (in/hr)**	**Runoff Qr (cfs)**	**Pipe Slope Sp (ft/ft)**	**Pipe Length L (feet)**	**Pipe Diameter D (inches)**	**Pipe Capacity Qp (cfs)**	**Pipe Velocity Vp (fps)**	**Time in Section Tp (minutes)**	**Intensity I100 (in/hour)**	**Freq. Factor Cf**	**Flow Q100 (cfs)**	Overflow Route Slope Sov (ft/ft)	**Street Width Wst (feet)**	Street Capacity, Qst (cfs)	**Swale Width W (feet)**	Swale Capacity Qsw (cfs)	Overflow plus Pipe Capacity Qov (cfs)	**COMMENTS**
		1	2	3	4	5		6	7	8	9	10	11	12	13	14		15	16	17	18	19	20	21	22
SUB - BASIN 'A1'																									
A1.1	295337	6.78	0.40	2.71	2.71	8.00	10	5.76	15.6	0.0100	1495	24	22.6	7.2	3.46	9.00	1.25	30.52	0.0100	28	62	0	0	84.6	
A1.2	174240	4.00	0.40	1.60	4.31	11.46	10	5.13	22.1	0.0500	260	24	50.6	16.1	0.27	8.02	1.25	43.23	0.0500	0	0	0	0	50.6	SUMP
A2.1	264845	6.08	0.40	2.43	2.43	8.00	10	5.76	14.0	0.0400	170	18	21.0	11.9	0.24	9.00	1.25	27.37	0.0400	0	0	30	156	177.0	SUMP
A3.1	227383	5.22	0.40	2.09	2.09	8.00	5	5.03	10.5	0.0500	815	15	14.4	11.8	1.15	9.00	1.25	23.50	0.0500	28	139	0	0	153.1	
A3.2	367646	8.44	0.40	3.38	5.81	8.00	10	5.76	33.4	0.0133	55	30	47.3	9.6	0.10										DESIGNED IN HYDROCAD
A3.3	234353	5.38	0.40	2.15	10.05	9.15	10	5.53	55.5	0.0133	235	36	76.9	10.9	0.36	8.65	1.25	108.60	0.0200	0	0	30	110	187.2	SUMP
A4.1	45302	1.04	0.40	0.42	0.42	8.00	5	5.03	2.1	0.0100	60	18	10.5	5.9	0.17	9.00	1.25	4.68	0.0100	28	62	0	0	72.5	
A4.2	239580	5.50	0.40	2.20	2.62	8.17	5	5.00	13.1	0.0100	400	24	22.6	7.2	0.93	8.95	1.25	29.26	0.0100	28	62	0	0	84.6	
A4.3	60548	1.39	0.40	0.56	3.17	9.09	5	4.84	15.4	0.0200	200	24	32.0	10.2	0.33	8.66	1.25	34.35	0.0200	28	88	0	0	119.7	
A4.4	156816	3.60	0.40	1.44	1.44	8.00	5	5.03	7.2	0.0050	120	18	7.4	4.2	0.48	9.00	1.25	16.21	0.0050	28	44	0	0	51.3	
A4.5	123275	2.83	0.40	1.13	5.74	9.42	10	5.48	31.5	0.0050	210	36	47.2	6.7	0.52	8.57	1.25	61.52	0.0050	0	0	30	55	102.3	SUMP
A5.1	59242	1.36	0.40	0.54	0.54	8.00	10	5.76	3.1	0.0050	35	15	4.6	3.7	0.16	9.00	1.25	6.12	0.0050	28	44	0	0	48.4	
A5.2	25265	0.58	0.40	0.23	0.78	8.16	10	5.72	4.4	0.0050	220	15	4.6	3.7	0.99	8.95	1.25	8.68	0.0050	0	0	30	55	59.7	
SUB - BASIN 'B1'																									
B1.1	76230	1.75	0.40	0.70	0.70	8.00	5	5.03	3.5	0.0050	210	15	4.6	3.7	0.94	9.00	1.25	7.88	0.0050	28	44	0	0	48.4	

SWALE CAPACITY **SECTION A-A**

Bottom Width, WB (ft)	15.0
Channel Slope, So (ft/ft)	0.02
Right Bank Slope, SR (ft/ft)	0.20
Left Bank Slope, SL (ft/ft)	0.20
Roughness Coefficient, n	0.025
Beginning Depth (ft)	0.75
Depth Increment (ft)	0.01



DESIGN DISCHARGE:

Flow Rate: 93.3 cfs
Depth: 0.78 ft 9.4 in
Velocity: 6.3 fps

Q=1.49/n A R2/3 S1/2

Depth of Flow	Cross Sectional Area	Wetted Perimeter	Hydraulic Radius	Discharge
(ft)	(ft2)	(ft)	(ft)	(ft3/sec)
0.75	14.06	22.65	0.62	86.3
0.76	14.29	22.75	0.63	88.3
0.77	14.51	22.85	0.64	90.4
0.78	14.74	22.95	0.64	92.5
0.79	14.97	23.06	0.65	94.6
0.80	15.20	23.16	0.66	96.8
0.81	15.43	23.26	0.66	98.9
0.82	15.66	23.36	0.67	101.1
0.83	15.89	23.46	0.68	103.3
0.84	16.13	23.57	0.68	105.6
0.85	16.36	23.67	0.69	107.8
0.86	16.60	23.77	0.70	110.1
0.87	16.83	23.87	0.71	112.4
0.88	17.07	23.97	0.71	114.7
0.89	17.31	24.08	0.72	117.1
0.90	17.55	24.18	0.73	119.5

BLOCK	LOT	MINIMUM OPENING ELEVATION
5	1	1473.9
5	2	1473.9
5	3	1474.2
5	5	1477.2
5	6	1477.2
5	7	1478.6
5	8	1480.2
5	9	1482.1
5	10	1484.0
5	11	1486.0
5	12	1488.0
5	13	1490.0
5	14	1492.6
5	15	1494.3
5	16	1496.1
5	17	1497.8
5	18	1499.6
5	19	1500.0
5	20	1499.0
5	21	1498.0
5	22	1497.0
5	23	1496.0
5	24	1494.7
5	25	1493.3
5	26	1494.0
5	27	1495.0
5	28	1496.0
5	31	1492.1
5	32	1488.5
5	33	1484.9
5	34	1481.2
5	35	1478.3
5	36	1475.9
5	37	1475.2
5	38	1473.9
8	23	1476.9
8	24	1471.4
8	25	1468.8
8	26	1468.0
8	27	1467.0
8	28	1465.6
8	29	1464.6
8	30	1463.8
8	31	1462.5

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DRAINAGE PIPE SIZE CALCULATIONS

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

2022

drawn by: KRT
checked by: EAP
approved by: BPB
QA/QC by: XXX
project no.: 021-04805
drawing no.: _____
date: 2/25/2022

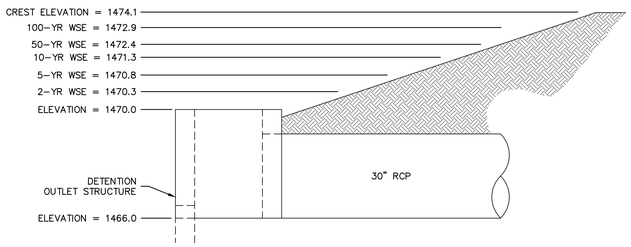
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PRAIRIE VIEW
PRELIMINARY PLAT
POND DETAILS

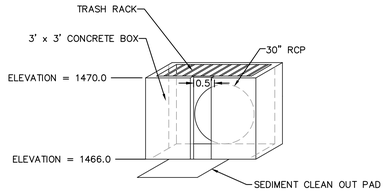
GRADING LEGEND

- PROPOSED STORM SEWER
- PROPOSED MAJOR CONTOUR (1300)
- PROPOSED MINOR CONTOUR (1302)
- EXISTING MAJOR CONTOUR (1300)
- EXISTING MINOR CONTOUR (1302)
- PROPOSED 100-YR WSE LIMITS

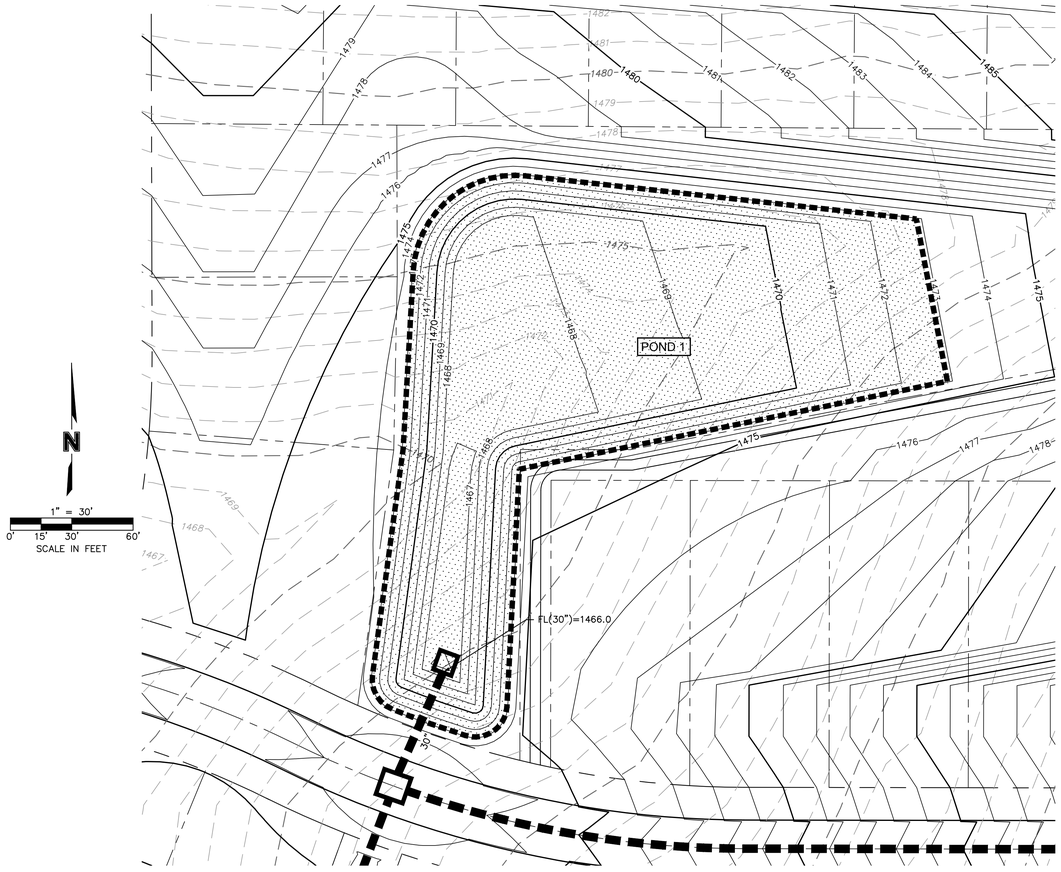


PROPOSED DETENTION POND 1					
RETURN PERIOD	PEAK FLOW IN	PEAK FLOW OUT	VOLUME	STAGE	POOL ELEVATION
(YEAR)	(CFS)	(CFS)	(AC-FT)	(FEET)	(FEET)
2	45.9	21.7	1.0	4.3	1470.33
5	66.6	43.9	1.3	4.8	1470.80
10	84.0	47.7	1.6	5.3	1471.31
50	114.5	53.4	2.4	6.4	1472.36
100	130.5	56.2	2.8	6.9	1472.90

POND 1 OUTLET DETAIL
PROFILE VIEW
NOT TO SCALE



POND 1 DETENTION OUTLET STRUCTURE DETAIL
ISOMETRIC VIEW
NOT TO SCALE

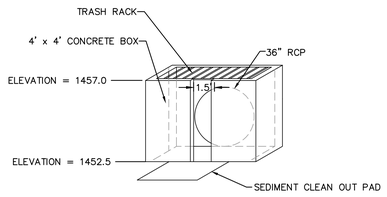


N
1" = 30'
0' 15' 30' 60'
SCALE IN FEET

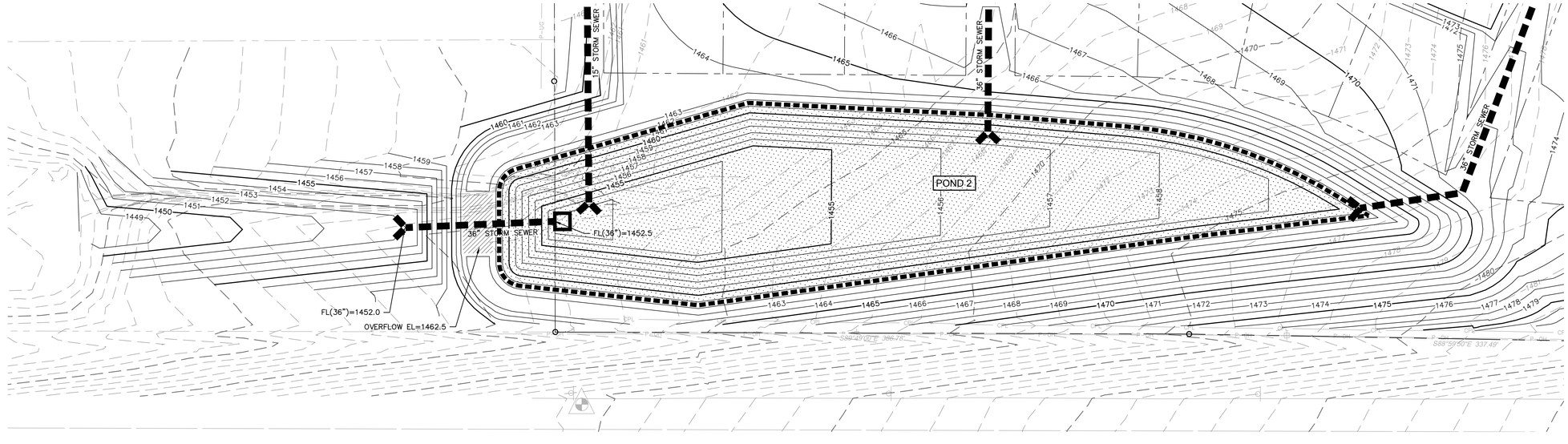


PROPOSED DETENTION POND 2					
RETURN PERIOD	PEAK FLOW IN	PEAK FLOW OUT	VOLUME	STAGE	POOL ELEVATION
(YEAR)	(CFS)	(CFS)	(AC-FT)	(FEET)	(FEET)
2	68.9	46.5	0.9	4.5	1457.02
5	104.2	70.3	1.6	5.8	1458.27
10	144.3	78.1	2.3	6.8	1459.27
50	193.3	88.6	3.6	8.3	1460.78
100	215.6	93.3	4.3	9.0	1461.51

POND 2 OUTLET DETAIL
PROFILE VIEW
NOT TO SCALE



POND 2 DETENTION OUTLET STRUCTURE DETAIL
ISOMETRIC VIEW
NOT TO SCALE



N
1" = 30'
0' 15' 30' 60'
SCALE IN FEET

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POND DETAILS

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

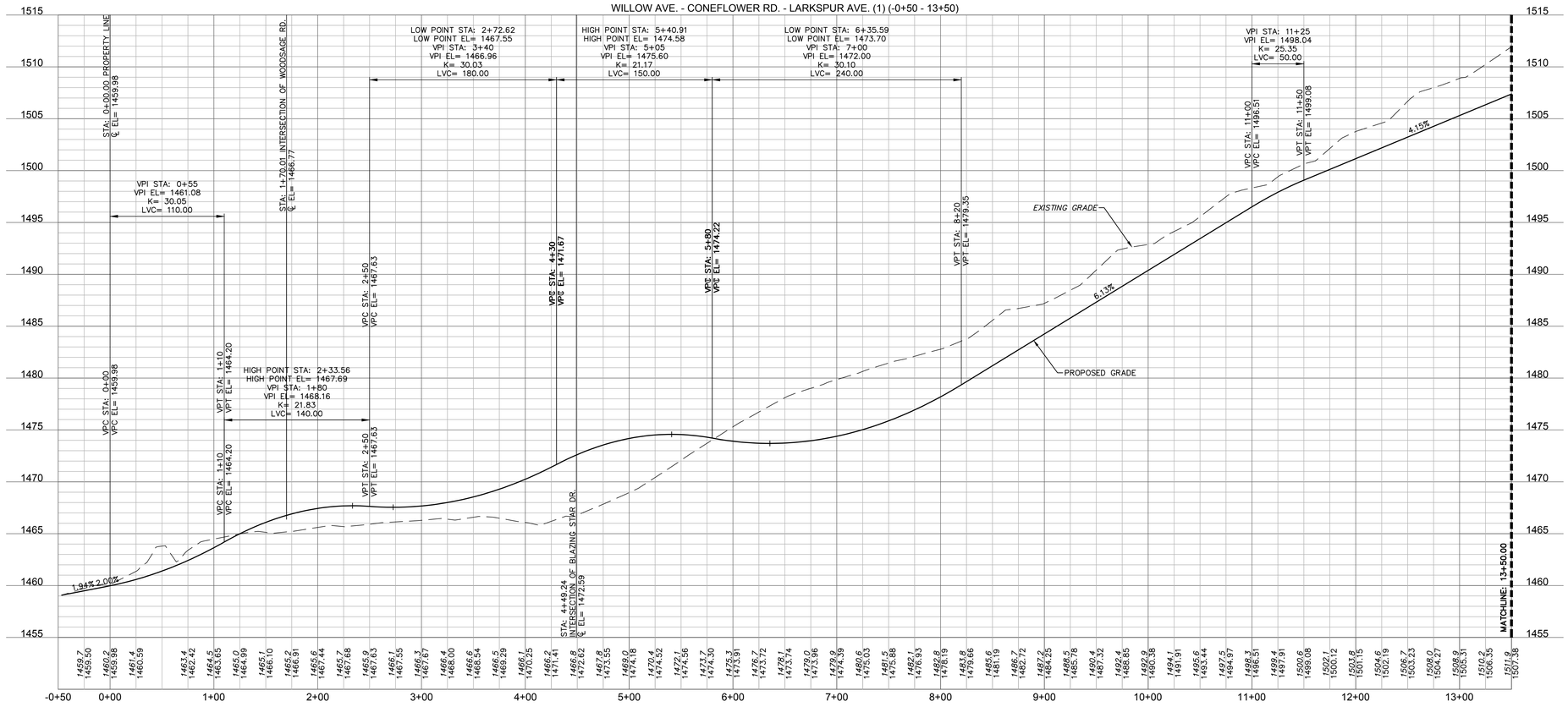
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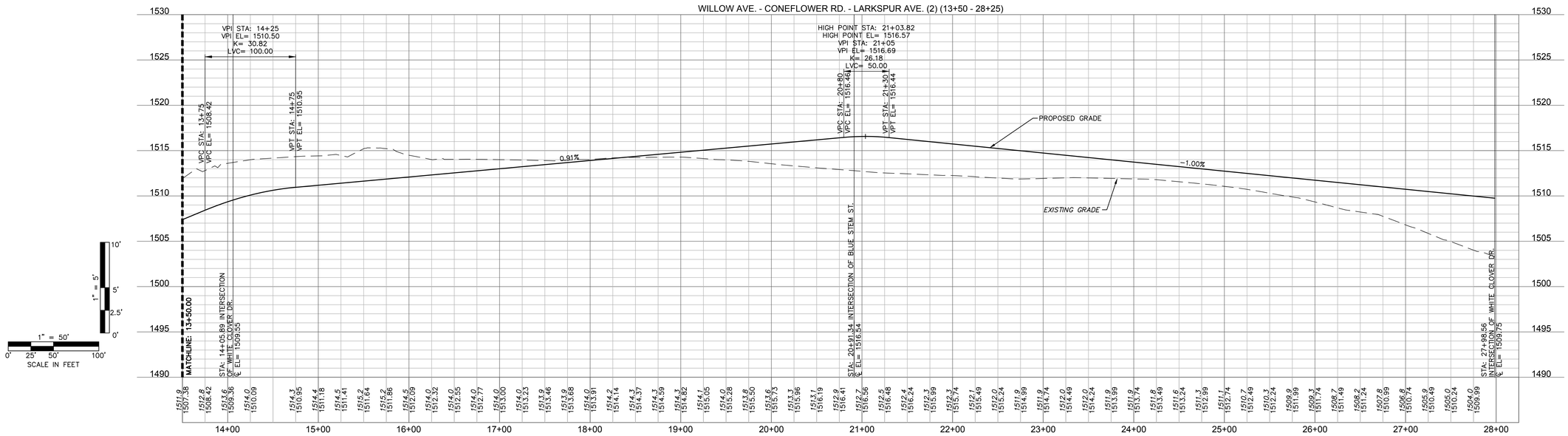
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PRAIRIE VIEW
PRELIMINARY PLAT
ROADWAY PROFILES





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PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

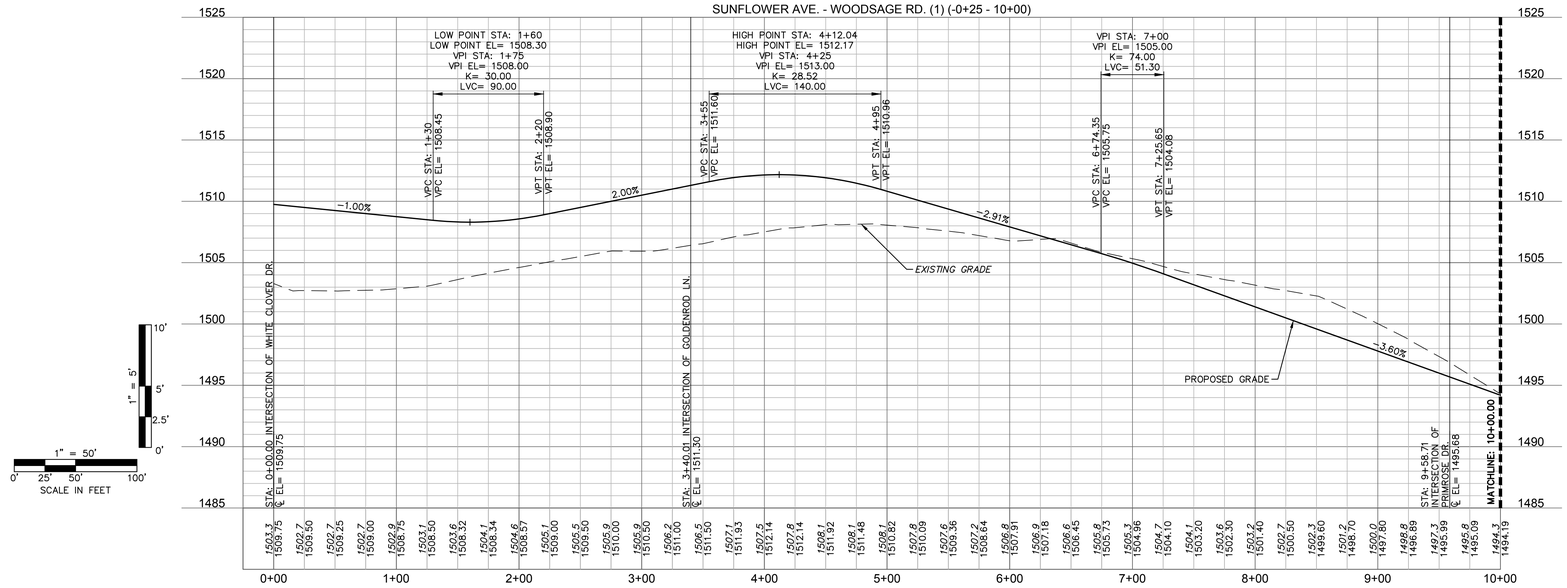
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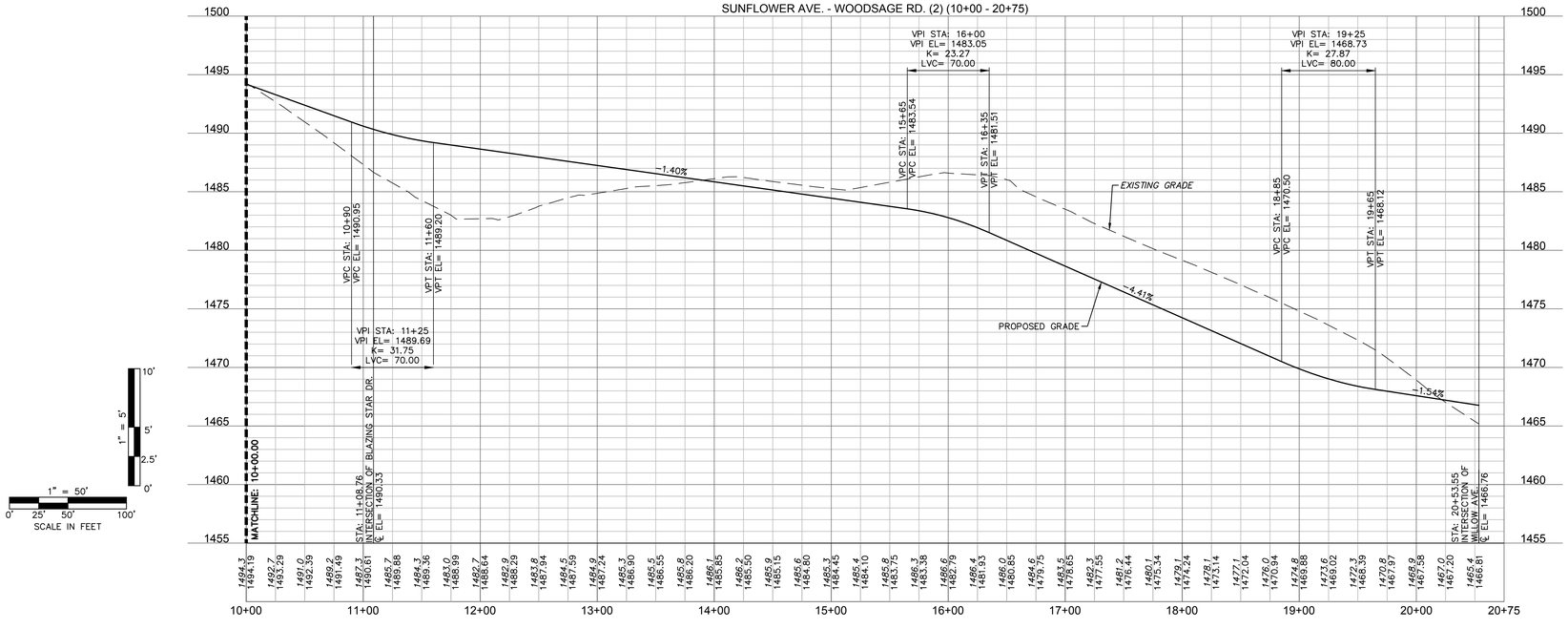
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SHEET
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PRAIRIE VIEW
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ROADWAY PROFILES





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ROADWAY PROFILES

PRAIRIE VIEW
PRELIMINARY PLAT

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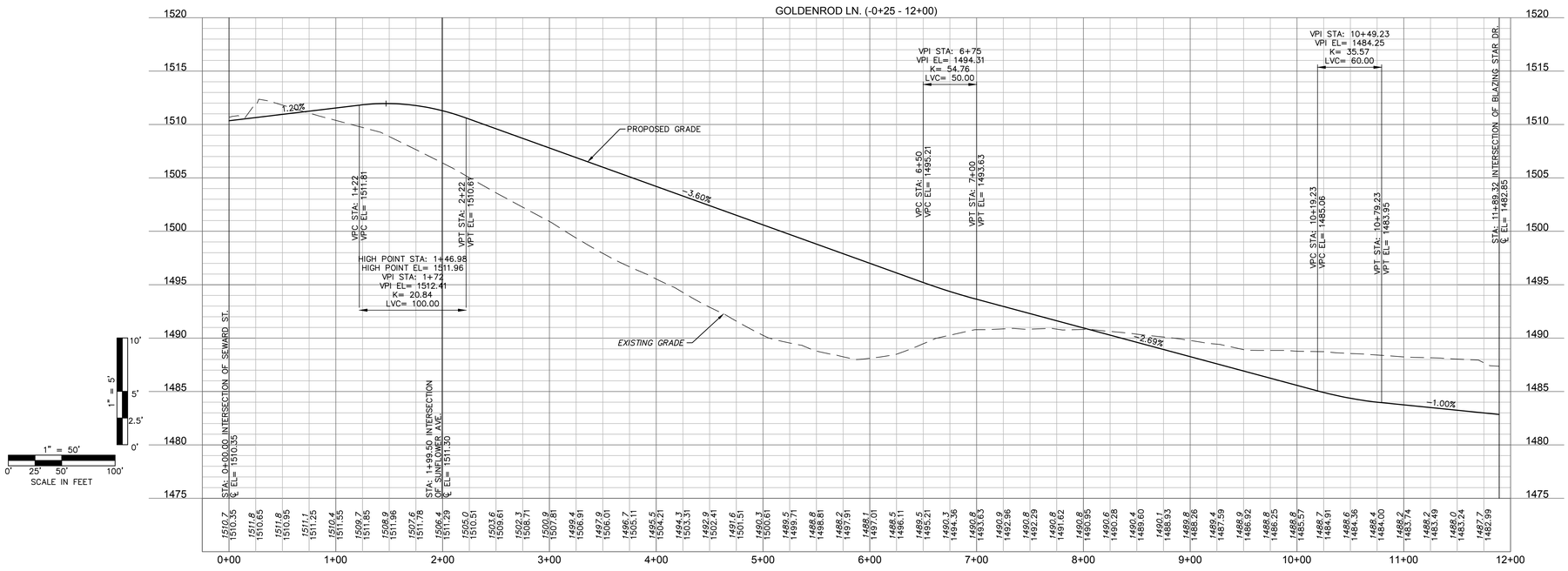
SEWARD, NEBRASKA

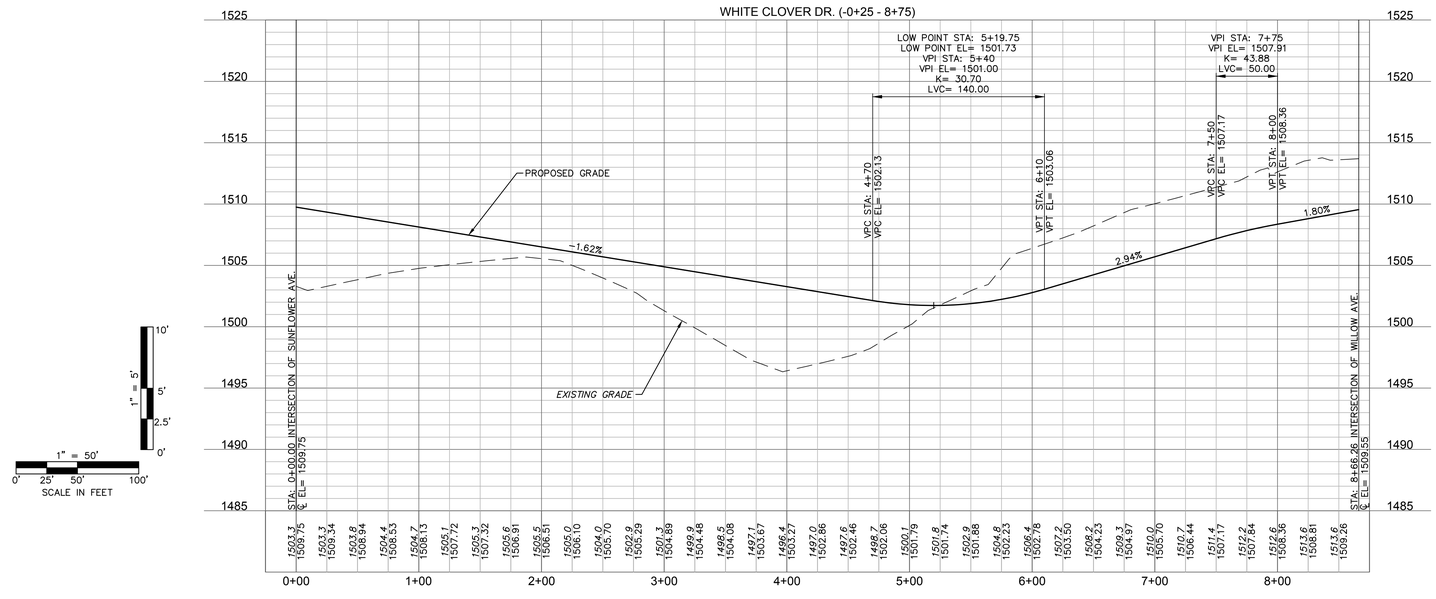
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SHEET
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PRAIRIE VIEW
PRELIMINARY PLAT
ROADWAY PROFILES





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ROADWAY PROFILES

PRAIRIE VIEW
PRELIMINARY PLAT

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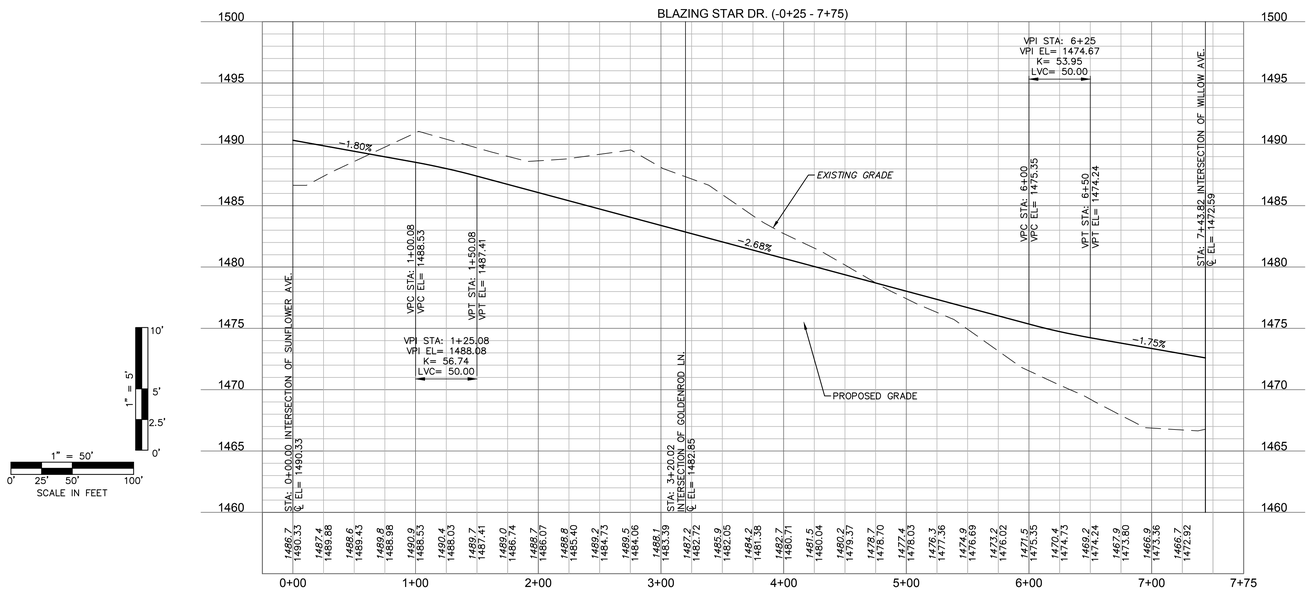
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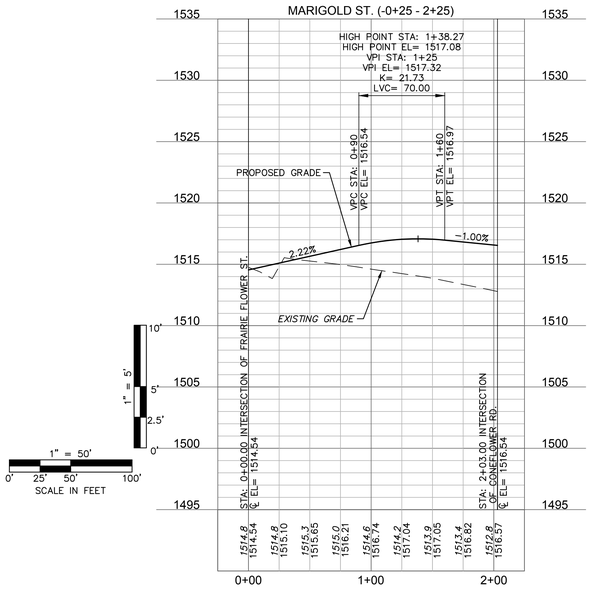
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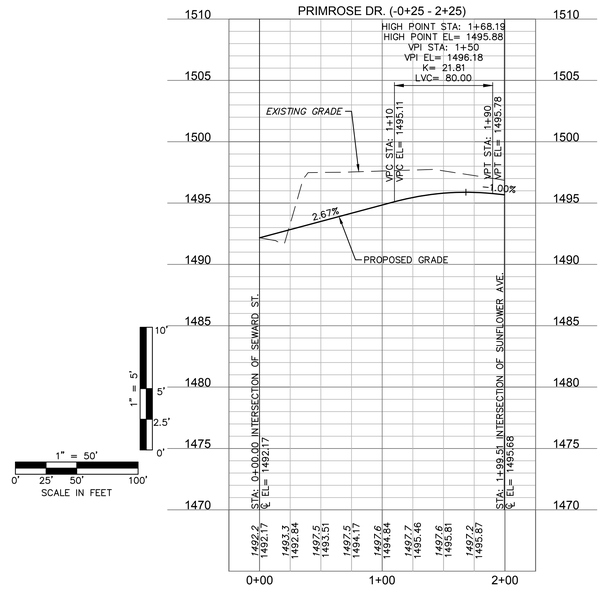
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www.olsson.com

REVISIONS

REV. NO.	DATE	REVISIONS DESCRIPTION

ROADWAY PROFILES

PRAIRIE VIEW
PRELIMINARY PLAT

SEWARD, NEBRASKA

2022

drawn by:	KRT
checked by:	EAP
approved by:	BPB
QA/QC by:	XXX
project no.:	021-04805
drawing no.:	-
date:	2/25/2022

SHEET
13 of 13

DWG: F:\2021\04501-05000\021-04805\40-Design\AutoCAD\Preliminary Plans\Sheets\GNCV\C_PROF_02104805.dwg USER: spotter
DATE: Feb 25, 2022 10:42am XREFS: C_PBASE_02104805 C_XBASE_02104805

After recording please return to:

SUBDIVISION AGREEMENT

THIS AGREEMENT is made and entered into by and between 1640 LLC, a Nebraska limited liability company (referred to hereafter as the "Subdivider"), and the City of Seward, Nebraska, a municipal corporation (the "City").

WHEREAS, Subdivider has made application to City for permission to subdivide and for approval of the final plat of Prairie View Addition, a copy of which is attached to this Agreement as Exhibit 'A' (the “Final Plat” or “Subdivision”); and

WHEREAS, the Final Plat contains certain provisions requiring an agreement between Subdivider and City relating to the Final Plat and the development thereof.

NOW, THEREFORE, IN CONSIDERATION of the City granting permission to plat and approval of the Final Plat of Prairie View Addition, it is agreed by and between Subdivider and City as follows:

1. **Sanitary Sewer.** The Subdivider agrees to design and install sanitary sewer lines within or adjacent to said Subdivision per City approved plans and specifications. All costs for said sanitary sewer facilities shall be paid by the Subdivider; provided, however, any additional costs for oversized lines that are not a direct benefit to said Subdivision or other property owned by said Subdivider, shall not be assessed against said Subdivision, but shall be paid by the City.

2. **Water**. The Subdivider agrees to design and install 8” matching water distribution lines, including Mueller fire hydrants (red), within or adjacent to said Subdivision per City approved plans and specifications. All costs for said water facilities shall be paid by the Subdivider; provided, however, any additional costs for oversized lines that are not a direct benefit to said Subdivision or other property owned by said Subdivider, shall not be assessed against said Subdivision, but shall be paid by the City.

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3. **Storm Water Management.** The Subdivider agrees to design and install storm sewer facilities within and adjacent to said Subdivision per City approved plans and specifications. All costs for said storm sewer facilities shall be paid by the Subdivider; provided, however, any additional costs for oversized lines that are not a direct benefit to said Subdivision or other property owned by said Subdivider, shall not be assessed against said Subdivision, but shall be paid by the City.

4. **Streets/Paving.** The Subdivider agrees to design and install public Streets/Paving within said Subdivision per City approved plans and specifications. The Subdivider agrees to construct future connections to adjacent properties at the time of development of adjoining lands at the Subdivider's cost. At a time whence the Subdivider and/or all succeeding property owners, upon dedication of said streets to the public, may petition the City to create all paving by a special assessment project. Such petition shall waive any required resolution of necessity, any applicable limitations of the amount which could be assessed against subdivision property owners including intersection costs.

5. **Sidewalks.** The Subdivider agrees that the construction of sidewalks within said Subdivision shall be provided on both sides of the street, by the Subdivider and/or all succeeding property owners, and shall be constructed per City approved plans and specifications, and installed on each lot concurrently with construction of improvements upon such lot.

6. **Electrical Infrastructure**. The City agrees to install all electrical infrastructure needed to serve the Subdivision, provided that the Subdivider pays the Developer and Aid to Construction fees outlined on the Major Subdivision application, and provides adequate utility easements on the Final Plat, as determined by the City Electric Power and Resource Director. In addition, electrical infrastructure will not be installed until final grade is established with no obstructions.

7. **Street Signs.** The City agrees to install all Street signs at all intersections as per City Standards and the Manual of Uniform Traffic Control Devices as it deems necessary and to assume all costs for same.

8. **Erosion Control.** The Subdivider shall provide at Subdivider's expense all erosion control which shall be performed by seeding the area covered by the Subdivision, controlling erosion of areas disturbed by grading operations, constructing temporary terraces on slopes, temporary silting basins, swills and spillways. In addition to the above, the perimeter of said Subdivision shall be enclosed by silt fencing and whatever further measures are necessary to prevent erosion, damage and sedimentation to adjacent properties and public rights-of-way.

9. **Park and Open Spaces.** Land for park and open space shall be provided by the Subdivider as public open space and/or park improvement for said Subdivision. Land shall be dedicated for public use in accordance with ULDO 410-41.5, Parks and Public Facilities,

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specifically in the amount of acres as required by sub-section B Park Reservations, (1) Neighborhood Park Dedication, of 0.006 acres per total single-family detached dwelling units and 0.004 acre per unit of other types of housing in the proposed Subdivision. Land shall either be adjacent to the public circulation system or connected to it by means of at least two pedestrian corridors. The park or open space shall be provided with a continuous concrete sidewalk five (5) feet in width that connects to the public sidewalk at a minimum of two locations. Alternatively, fees will be accepted in lieu of land and these fees will be equivalent to the cost of 0.006 acre per single-family detached dwelling unit and 0.004 acre per unit of rother types of housing. For phased development, parks and open space shall be fully developed within the phase that includes the dedicated land. Park and open space shall be maintained by the Subdivider or a property owner's association on a permanent and continuous basis.

10. **Perimeter Fencing.** All street-facing property boundaries shall be provided with a privacy fence parallel to and two feet inset from the public sidewalk. The fence shall be a manufacturer and model selected by the City for consistency in color, appearance and durability. If the prescribed fence model becomes discontinued, the City shall select a replacement for use by all subsequent property development. The fence shall be 6 feet in height, constructed of virgin PVC with titanium dioxide pigment for UV resistance, and shall be provided with a three (3) foot gate to allow access to the property owner for maintenance of the right-of-way. The fence shall be installed as soon after development as weather shall permit, but in any event within twelve (12) months of occupancy. The fence and gate shall be maintained and replaced, when necessary, by the property owner.

11. **Engineering.** It shall be the Subdivider's responsibility at Subdivider's cost, which is not reimbursable, to have all plans and specifications for the construction of Sanitary Sewer, Water, Paving & Storm Sewer Districts drawn to the City of Seward specifications together with all necessary documentation for bid letting. Said plans and specifications shall be approved by the City of Seward and any other appropriate State agencies prior to bid letting.

12. **Sale of Lots and Special Assessments.** Any levied and unpaid special assessments which are liens upon a lot within said Subdivision shall be paid in full on or before the closing of the sale of any lot within the Subdivision.

13. **Replatting and Special Assessments.** Any levied and unpaid special assessments which are liens upon a lot within said Subdivision shall be in paid in full prior to the approval by the City of any replatting of said Subdivision.

14. **Relocation of Utilities upon replatting.** The cost of any relocation of public utilities or apparatus necessitated by the replatting of any lots or the Subdivision shall be borne by the Subdivider.

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15. **Binding Agreement.** This Agreement shall run with the land and shall be binding upon and inure to the benefit of the parties hereto, their successor, assigns, devisees and legatees. Where the term "Subdivider" is used in this Agreement, the subsequent owners of any lots in the Subdivision shall be responsible to perform any of the conditions of this Agreement if the Subdivider has not performed such condition.

16. **Construction/Development Lots.** Development of structures on any lots within said Subdivision shall not occur until all improvements have been installed and accepted by the City of Seward or other appropriate authority.

17. **As-built Construction Plans.** A full set of construction drawings which incorporate all changes made during the construction process shall be submitted to the City upon completion of construction of the Subdivision. Said drawings shall be provided in both paper and digital spatial formats, specifically the following formats; three (3) sets, full size (Architect D size) paper copies, and in digital GIS format, meaning at least one of the following file types; shapefile (.shp or .shx or .dbf extensions), personal geodatabase (.mdb), or file geodatabase (.gdb).

18. **Markers.** The Subdivider agrees to complete the installation of permanent parcel markers prior to construction on or conveyance of any lot within the Final Plat.

19. The Subdivider agrees to comply with the provisions of ULDO, Article 39, Subdivision Design Criteria and General Standards Construction, including 410-39.2 Site Design and Constraints, grading and erosion control plans, NPDES permits, etc. Final grading plans must be submitted with the Final Plat.

20. This Agreement shall be recorded with the Seward County Register of Deeds upon the recording of the Final Plat for Prairie View Addition.

21. This Agreement and all obligations of the Subdivider shall apply to the Subdivision including all of the lots legally described in Exhibit 'B' to this Agreement.

22. Subdivider guarantees the completion of all improvements as required by City of Seward ULDO Article 42, Improvement Financing and Guarantees, including 410-42.3. The Subdivider agrees to comply with 410-42.4 Performance Guarantees, and will provide an Agreement for Escrow of Security Fund attached hereto as Exhibit ‘C'.

23. An Ownership Certificate for the property included within the Final Plat is attached hereto as Exhibit 'D' to this Agreement.

Dated this ___day of _____, 2022.

SUBDIVIDER:

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1640, LLC, a Nebraska limited liability company

By: Michelle S. Benes Revocable Trust dated May 21, 2003, Managing Member

By:_____
Michelle S. Benes, Trustee

By: Robert L. Benes Revocable Trust dated May 21, 2003, Managing Member

By: _____
Robert L. Benes, Trustee

STATE OF NEBRASKA)
) ss.
COUNTY OF LANCASTER)

The foregoing was acknowledged before me this ____ day of _____, 2022, by Michelle S. Benes, Trustee of the Michelle S. Benes Revocable Trust dated May 21, 2003, Managing Member of **1640 LLC**, a Nebraska limited liability company, on behalf of the limited liability company.

_____
Notary Public

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STATE OF NEBRASKA)
) ss.
COUNTY OF LANCASTER)

The foregoing was acknowledged before me this ____ day of _____, 2022, by Robert L. Benes, Trustee of the Robert L. Benes Revocable Trust dated May 21, 2003, Managing Member of **1640 LLC**, a Nebraska limited liability company, on behalf of the limited liability company.

_____
Notary Public

CITY:

Attest: **City of Seward, Nebraska**

_____ _____
By: Derek Bargmann ~~Bonnie Otte~~, City Clerk By: Josh Eickmeier, Mayor

STATE OF NEBRASKA)
) ss
COUNTY OF SEWARD)

The foregoing instrument was acknowledged before me this ____ day of _____, 2022 by _____, Mayor, and _____, City Clerk, of the City of Seward, on behalf of the City.

_____
Notary Public

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EXHIBIT 'A'

FINAL PLAT

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EXHIBIT 'B'

LEGAL DESCRIPTION OF LOTS IN SUBDIVISION

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EXHIBIT 'C'

PRAIRIE VIEW ADDITION

AGREEMENT FOR ESCROW OF SECURITY FUND

WHEREAS, before any final plat may be approved, the required improvements must have been installed or a performance bond, escrow or security agreement must be furnished to the City of Seward, Nebraska to guarantee the installation of the required improvements; and

WHEREAS, 1640 LLC, a Nebraska limited liability company, hereinafter called "Permittee", has made application to the City for permission to construct improvements consisting of:

Improvement	**Amount**
Sanitary Sewer	$_____
Water Distribution	$_____
Storm Water Management	$_____
Streets/Paving	$_____

within the final plat of Prairie View Addition, an addition to the City of Seward, Seward County, Nebraska and guarantee the same by placing funds in an escrow account as security for performance of said construction.

NOW, THEREFORE, IT IS AGREED by and between Permittee and the City of Seward, Nebraska, a municipal corporation, hereinafter called the "City", as follows:

1. That prior to approval of the aforesaid final plat, Permittee shall either deposit the sum of _____ Dollars ($_____) with _____ Bank ("Bank") as escrow agent for the City, or obtain a loan of immediately payable funds from Bank in said amount and irrevocably pledge and assign said funds to Bank as escrow agent for the City, the same to be held in escrow as security to guarantee the construction of the aforesaid improvements within said final plat.

2. The said escrow fund shall be allocated to the above-specified improvements in said final plat as follows:

Improvement	**Amount**
Sanitary Sewer	$_____
Water Distribution	$_____
Storm Water Management	$_____
Streets/Paving	$_____

3. The funds designated for any one improvement less the retainage, if any, may be released from escrow when that improvement is completed to the satisfaction of the City and the

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City has certified to Bank in writing that construction has been completed for that improvement; provided, that all other funds in the escrow account designated as security for remaining uncompleted improvements shall remain in escrow until the improvements for which said funds have been designated has been completed. In the event any or all of the aforesaid improvements are not completed to the satisfaction of the City by the completion dates listed in the conditions of approval for said final plat or replat to do said construction, whichever is earlier, then and in that event Bank upon written request from the City, shall pay to the City the total amount of funds designated for each of the aforesaid improvements which shall not have been completed on said date or the amount of funds necessary to complete construction thereof, whichever is the lesser.

4. The conditions of release of the escrow funds upon completion of the improvements set forth in paragraph 1, supra, shall include payment in full of any and all costs due to the City by Permittee in connection with the development and construction of such improvements including, but not limited to, engineering costs, inspection costs, and survey costs.

5. This Agreement shall be contingent upon its execution by the parties hereto, the pledge and assignment of the required security funds with Bank as escrow agent for the City of Seward, and the acceptance of this Agreement by said escrow agent.

6. Permittee agrees to pay any and all fees charged by Bank as escrow agent for the City of Seward under the terms of this Agreement.

7. Bank shall be liable as a depository only.

8. Upon deposit of the security fund as provided in this Agreement, the City agrees to waive the requirement that Permittee post performance bonds for completion of the aforesaid improvements.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed this _____ day of _____, 2022.

PERMITEE:

1640, LLC, a Nebraska limited liability company

By: Michelle S. Benes Revocable Trust dated May 21, 2003, Managing Member

By:_____
Michelle S. Benes, Trustee

By: Robert L. Benes Revocable Trust dated May 21, 2003, Managing Member

By: _____
Robert L. Benes, Trustee

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CITY:

Attest: **City of Seward, Nebraska**

_____ _____

By: Derek Bargmann ~~Bonnie Otte~~, City Clerk By: Josh Eickmeier, Mayor

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ACCEPTANCE OF ESCROW AGREEMENT

Frontier Bank ("Bank") hereby agrees to the terms and instruction listed above and acknowledges that it has accepted a deposit of _____ Dollars ($_____) or an irrevocable pledge and assignment of immediately payable funds in said amount from 1640 LLC ("Permittee") to be held in escrow (Note No. _____) by Bank as escrow agent for the City of Seward, Nebraska, a municipal corporation ("City"), to ensure construction of the improvements listed in the above and foregoing Agreement and further agrees not to release any of said monies or irrevocable pledges held by Bank to secure construction of said improvements until it has received written authorization from the City in accordance with the foregoing Agreement.

Dated this _____ day of _____, 2022.

Attest: _____ **BANK** (Bank)

_____ (Address)

By: _____ By: _____

Name: _____ Name: _____

Title: _____ Title: _____

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EXHIBIT 'D'

OWNERSHIP CERTIFICATE

4814-4553-9921, v. 1

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4. Creation of the Utilities Locator Position - City Administrator Butcher

P.O. Box 38, 537 Main Street, Seward, Nebraska 68434. Phone: 402-643-2928. Fax: 402-643-6491. www.CityofSewardNE.gov

Date: April 5, 2022

To: *Seward City Council*
From: *City Administration*
Re: **Utilities Locator position creation**

City Administration is bringing forth a request to create a 'Utilities Locator' position within the established employment positions. The impetus for this request is due to the ever-increasing 'locate' requests that the City is receiving for projects going on within the City. These requests are currently being fulfilled by employees within the Electric, Street and Water/Wastewater Departments, which pull them away from essential operation responsibilities of City utilities. Additionally, the ALLO installation will require even more work to 'locate' underground lines, thus straining our workforce further. City Administration has been considering options to handle this workload and as such, is requesting that a 'Utilities Locator' position be established to focus exclusively on locating underground utilities. The position would initially be considered 'temporary' but may become permanent and absorbed within either the Electric or Water/Wastewater Department depending on future workloads.

The attached job description has been drafted after analyzing and comparing similar jobs in municipal government as well as local companies. The Electric Superintendent and Water/Wastewater Director have also reviewed the attached job description and provided their suggestions based on the tasks they are currently handling. With creation of this job position, it is expected that the City will begin advertising and hiring of this position immediately. One note regarding accountability of the position, their supervisor will largely depend on their prior experience and understanding of underground utilities. For example, if the best candidate has more experience/knowledge of electrical utilities then he/she would be under the supervision of the Electric Superintendent primarily and vice versa if the candidate had more water/wastewater experience.

Regarding the suggested salary range of the proposed 'Utilities Locator' position, City Administration viewed similar job positions for Black Hills Energy, J-Spot Services, LES (Lincoln Electric System) and USIC (US Infrastructure Company) and found the following information:

- 'Utility Locator' position for USIC in Fairbury, Geneva and Lincoln is listed at $17.00/hr compensation and the same position in Omaha is listed at $19.00/hr
- 'Utility Protection Technician' for J-Spot Services, LLC in Hickman has listed range of $19.23 - $28.85/hr
- 'Utility Specialist' for Black Hills Energy in Papillion has listed range of $18.34 - $27.76/hr
- 'Locating Technician' for LES in Lincoln has listed range of $30.96 - $43.56

In looking at the established pay lines at the City, City Administration is requesting to establish the minimum hourly rate identical to Step 1 of the Utility Maintenance Worker I at $17.64/hr. For the maximum hourly rate, we are requesting this position be viewed as mid-grade level of the Electric Lineman position (between Step 5 and Step 6) with a rate of $30.00/hr. Our objective is to provide a broad salary range to attract and retain a quality candidate for the position.

Note on 'Water Safety Instructor Aide' change:
Upon review of the current job titles included on the most recent ordinance, it was noted that the 'Water Safety Instructor Aide' position was incorrectly titled as 'Swim Lesson Aide.' The change on the ordinance in job title is to ensure consistency in how it is titled at the City—no change in duties or pay range. Assistant Recreation Director Bode has been contacted and agrees with the ordinance change as suggested.

Job Title: Utilities Locator
Department: Electric
FLSA Status: Non-Exempt, Hourly, Full-Time
Revised Date: 4/5/22 (Council Creation)

Accountability
Under the direction of the Electric Superintendent or Water/Wastewater Director depending on prior work experience. Additionally, may be under the supervision of the Street Superintendent to complete certain assigned tasks.

Job Summary
Responsible for performing skilled and unskilled work in physically locating the underground utilities within the City of Seward, including electric lines, storm sewer lines, water distribution lines, service lines, sanitary sewer lines and any other underground elements.

Essential Job Functions
Responds to all underground utility locate requests from City personnel, as well as private contractors as approved by supervisor; performs precise locating, marking, and identifying to determine electric lines, storm sewer lines, water distribution lines, service lines, sanitary sewer lines and other underground elements; operates locating equipment and City-issued vehicle properly; maintains supply of paint, flags, and other supplies for locating; generates accurate reports of identified utilities and presents to City officials as requested; researches historical records to determine utilities placement; gathers field data for Geographic Information System (GIS) program and assists in confirming information with current utility records and maps; assists excavators in complying with State One-Call law; frequently interacts with contractors and general public to establish and maintain effective working relationships regarding ongoing and proposed excavation projects; attends project meetings with contractors and City personnel as requested.

Additional Duties and Responsibilities
Assists line personnel with utility maintenance duties as directed.

Knowledge, Abilities and Skills
Considerable knowledge of electric, stormwater, water, wastewater, and other underground elements; ability to effectively use tools/equipment to precisely locate underground lines; ability to keep good, neat and accurate records; good organizational skills; ability to read and understand technical language, technical drawings and maps; basic GIS knowledge/experience; knowledge of Nebraska One-Call guidelines; ability to follow oral and written instructions; ability to communicate effectively both orally and in writing; ability to perform duties in a positive manner with contractors, the general public and City personnel; ability to operate two-way radio; ability to work in extreme weather conditions, highly-traveled automobile areas and on uneven surfaces; ability to lift 75 lbs.; ability to climb stairs and ladders and get into confined spaces including manholes; ability to walk, sit, stand, lift, bend, twist, kneel, stoop, crawl, reach, push, pull, dig, shovel, and perform a variety of physical activities.

Education and Experience
High school diploma or equivalent. Must have at least six months of prior experience as a locator or an equivalent combination of education and experience sufficient to successfully perform the essential duties of the job.

Special Requirements
Possession of a valid driver's license.

***Note**: The statements herein are intended to describe the general nature and level of work being performed by employees assigned to this classification. They are not intended to be constructed as an exhaustive list of all responsibilities, duties, and skills required of personnel so classified. This job description may be changed or updated at any time without notice.*

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ORDINANCE NO. 2022-4

AN ORDINANCE TO PROVIDE FOR ANNUAL CLASSIFICATION OF OFFICERS AND EMPLOYEES OF THE CITY OF SEWARD, NEBRASKA; TO CREATE THE UTILITIES LOCATOR POSITION; TO PROVIDE FOR LONGEVITY PAY AND PAYMENT OF PART-TIME EMPLOYEES; TO PROVIDE FOR A DATE SUCH CLASSIFICATION AND PAY RANGES OF COMPENSATION SHALL BECOME EFFECTIVE; TO PROVIDE FOR PUBLICATION IN PAMPHLET FORM; TO PROVIDE FOR A TIME WHEN THIS ORDINANCE SHALL TAKE EFFECT.

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF SEWARD, NEBRASKA:

Section 1. CLASSIFICATION, RANGES OF COMPENSATION. The classification of officers and employees of the City of Seward, Nebraska, pay grades and ranges of compensation for such classification are as follows:

2021-2022 SALARY SCHEDULE
PAY RANGE RATES

POSITION	MINIMUM	MAXIMUM
(A) CLERICAL (HOURLY)		
Payroll Clerk	17.71	23.77
Utility Billing/Account Clerk	16.44	21.80
Administrative Assistant	15.91	21.42
Admin Assistant – Municipal Bldg	15.08	20.54
Library Assistant II/Social Media/IT	17.01	22.38
Library Assistant I/Community Outreach	13.00	15.18
Library Assistant I/Children’s Services	12.38	15.18
Library Clerk I	10.51	13.10
Aging Services Commission Assistant	15.86	22.80
Golf Shop Seasonal Employee	10.34	12.54
(B) LABOR & TRADES (HOURLY)		
Civic Center Assistant	10.31	12.05
Custodian	13.36	19.90
Electric Line Crew Chief	30.75	40.64
Electric Journeyman Lineman	28.55	38.44
Electric Lineman	26.06	33.00

Electric Service Technician	25.12	31.25
Electric Seasonal Groundman	19.68	23.20
Meter Maintenance Utility Worker	18.20	23.92
Utilities Locator	17.64	33.00
Assistant Public Properties Director	21.89	27.56
Public Properties Maintenance Worker	15.11	22.06
Street Division Foreman	23.82	29.81
Street Maintenance Worker III	18.72	24.70
Street Maintenance Worker II	16.64	22.62
Street Maintenance Worker I	16.12	20.28
Burn Site Assistant	10.55	15.15
Recycling Center Worker	10.55	15.15
Facility Maintenance Supervisor	23.74	31.86
WW Treatment/Sanitary System Operator	20.60	27.40
Senior Utility Maintenance Worker II	21.69	29.43
Utility Maintenance Worker II	20.54	28.06
Utility Maintenance Worker I	17.64	23.50
Water/Wastewater Seasonal Laborer	13.42	13.95
Summer Seasonal Laborer	13.42	13.95
Pool Manager	12.59	14.89
Assistant Pool Manager	10.88	12.90
Swim Program Coordinator	10.60	12.53
Lifeguard	10.31	11.45
Pool Office/Concession Work	10.31	11.45
Water Safety Instructor	10.31	11.45
~~Swim Lesson Aide~~ Water Safety Instructor Aide	6.87	7.45

(C) PUBLIC SAFETY (HOURLY)

Police Sergeant	26.00	34.32
Police Officer II	23.92	29.64
Police Officer I	21.84	27.67
Administrative Secretary/Records Clerk	16.64	22.88
Community Service Officer	13.95	20.02

(D) SUPERVISORY, TECHNICAL & ADMINISTRATIVE (MONTHLY)

City Administrator	9,927	10,700
Chief of Police	6,393	8,022
City Engineer	6,282	8,375
Police Captain	5,539	6,670

Electric Superintendent	5,711	7,543
Public Properties Director	5,361	6,666
City Clerk/Human Resources Director	5,286	7,338
Water/Wastewater Director	5,082	7,551
Street Superintendent	4,899	6,190
Finance Director/Treasurer	6,141	7,436
Library Director	4,649	5,768
Deputy Treasurer	4,465	5,460
Golf Course Grounds Superintendent	4,465	5,207
Building/Zoning/Code Enforcement Director	4,551	5,678
Assistant Recreation Director	3,245	4,777
Golf Shop Manager	3,121	4,061
Assistant Library Director	3,114	4,210
Civic Center Manager	3,304	3,661

Section 2. LONGEVITY PAY. Each employee, who is a full-time employee, will, for each two years of service to the City, receive five dollars ($5.00) per month in addition to the established base pay in his classification as set forth in Section One of this ordinance.

Section 3. COMPENSATION PAYABLE BIWEEKLY. The compensation and salary fixed for the respective officers and employees of the City by this ordinance shall be paid biweekly.

Section 4. PART-TIME EMPLOYEES. Persons employed by the City on a part-time or occasional basis shall be paid on an hourly rate and at such time as shall be fixed by the Mayor and Council by motion.

Section 5. REPEAL. Any City of Seward ordinance, resolution, or employee handbook or part of any ordinance, resolution, or employee handbook of the City of Seward, Nebraska in conflict with this Ordinance is hereby repealed to the extent of such conflict.

Section 6. WHEN OPERATIVE. This ordinance shall be effective after its approval, passage and publication as required by law and the ordinances of the City.

Passed and approved this_____day of_____, 2022.

ATTEST:

THE CITY OF SEWARD, NEBRASKA

_____
Joshua Eickmeier, Mayor

_____
Derek Bargmann
City Clerk

2021-2022 (EFFECTIVE 1ST FULL PAY PERIOD FOLLOWING OCTOBER 1, 2021)

CLERICAL (HOURLY)

POSITION	1	2	3	4	5	6	7	8	9
PAYROLL CLERK	17.71	18.47	19.23	19.98	20.74	21.50	22.26	23.01	23.77
UTIL BILLING CLK-CUST SERV REP	16.44	17.11	17.78	18.45	19.12	19.79	20.46	21.13	21.80
ADMIN ASSISTANT	15.91	16.60	17.29	17.98	18.67	19.35	20.04	20.73	21.42
ADMIN ASSISTANT - MUNI BUILDLING	15.08	15.76	16.45	17.13	17.81	18.49	19.18	19.86	20.54
LIBRARY ASSISTANT II/Social Media/IT	17.01	17.68	18.35	19.02	19.70	20.37	21.04	21.71	22.38
LIBRARY ASSISTANT I/Community Outreach	13.00	13.27	13.55	13.82	14.09	14.36	14.64	14.91	15.18
LIBRARY ASSISTANT I/Children's Services	12.38	12.73	13.08	13.43	13.78	14.13	14.48	14.83	15.18
LIBRARY CLERK I	10.51	10.83	11.16	11.48	11.81	12.13	12.45	12.78	13.10
AGING SERV. COMM. ASSISTANT	15.86	16.73	17.60	18.46	19.33	20.20	21.07	21.93	22.80
GOLF SHOP SEASONAL EMPLOYEE	10.34	10.62	10.89	11.17	11.44	11.72	11.99	12.27	12.54

LABOR & TRADES (HOURLY)

POSITION	1	2	3	4	5	6	7	8	9
CIVIC CENTER ASSISTANT	10.31	10.53	10.75	10.96	11.18	11.40	11.62	11.83	12.05
CUSTODIAN	13.36	14.18	15.00	15.81	16.63	17.45	18.27	19.08	19.90
ELECTRIC LINE CREW CHIEF	30.75	31.99	33.22	34.46	35.70	36.93	38.17	39.40	40.64
ELECTRIC JOURNEYMAN LINEMAN	28.55	29.79	31.02	32.26	33.50	34.73	35.97	37.20	38.44
ELECTRIC LINEMAN	26.06	26.93	27.80	28.66	29.53	30.40	31.27	32.13	33.00
ELEC SERVICE TECHNICIAN	25.12	25.89	26.65	27.42	28.19	28.95	29.72	30.48	31.25
ELECTRIC SEASONAL GROUNDMAN	19.68	20.12	20.56	21.00	21.44	21.88	22.32	22.76	23.20
METER MAINTENANCE UTILITY WORKER	18.20	18.92	19.63	20.35	21.06	21.78	22.49	23.21	23.92
UTILITIES LOCATOR	**17.64**	**19.56**	**21.48**	**23.40**	**25.32**	**27.24**	**29.16**	**31.08**	**33.00**
ASSIST. PUBLIC PROP. DIRECTOR	21.89	22.60	23.31	24.02	24.73	25.43	26.14	26.85	27.56
PUBLIC PROP. MAINTENANCE WORKER	15.11	15.98	16.85	17.72	18.59	19.45	20.32	21.19	22.06

LABOR & TRADES (HOURLY)

POSITION	1	2	3	4	5	6	7	8	9
STREET DIVISION FOREMAN	23.82	24.57	25.32	26.07	26.82	27.56	28.31	29.06	29.81
STREET MAINT. WORKER III	18.72	19.47	20.22	20.96	21.71	22.46	23.21	23.95	24.70
STREET MAINT. WORKER II	16.64	17.39	18.14	18.88	19.63	20.38	21.13	21.87	22.62
STREET MAINT. WORKER I	16.12	16.64	17.16	17.68	18.20	18.72	19.24	19.76	20.28
RECYCLING WORKER	10.55	11.13	11.70	12.28	12.85	13.43	14.00	14.58	15.15
BURN SITE ASSISTANT	10.55	11.13	11.70	12.28	12.85	13.43	14.00	14.58	15.15
FACILITY MAINTENANCE SUPERV	23.74	24.76	25.77	26.79	27.80	28.82	29.83	30.85	31.86
WW PLANT / WATER PLANT OPER	20.60	21.45	22.30	23.15	24.00	24.85	25.70	26.55	27.40
SENIOR UTIL. MAINT. WORKER II	21.69	22.66	23.63	24.59	25.56	26.53	27.50	28.46	29.43
UTIL MAINT. WORKER II	20.54	21.48	22.42	23.36	24.30	25.24	26.18	27.12	28.06
UTIL MAINT. WORKER I	17.64	18.37	19.11	19.84	20.57	21.30	22.04	22.77	23.50

WATER/WASTEWATER SEASONAL LABORER	13.42	13.95							
SUMMER SEASONAL LABORER	13.42	13.95							
POOL MANAGER	12.59	12.88	13.17	13.45	13.74	14.03	14.32	14.60	14.89
ASST. POOL MANAGER	10.88	11.13	11.39	11.64	11.89	12.14	12.40	12.65	12.90
SWIM PROGRAM COORDINATOR	10.60	10.84	11.08	11.32	11.57	11.81	12.05	12.29	12.53
POOL LIFEGUARD	10.31	10.45	10.60	10.74	10.88	11.02	11.17	11.31	11.45
POOL OFFICE/CONCESSIONS	10.31	10.45	10.60	10.74	10.88	11.02	11.17	11.31	11.45
WATER SAFETY INSTR.	10.31	10.45	10.60	10.74	10.88	11.02	11.17	11.31	11.45
WATER SAFETY INSTR. AIDE	6.87	6.94	7.02	7.09	7.16	7.23	7.31	7.38	7.45

POLICE (HOURLY)

POSITION	1	2	3	4	5	6	7	8	9
POLICE SERGEANT	26.00	27.04	28.08	29.12	30.16	31.20	32.24	33.28	34.32
POLICE OFFICER II	23.92	24.64	25.35	26.07	26.78	27.50	28.21	28.93	29.64
POLICE OFFICER I	21.84	22.57	23.30	24.03	24.76	25.48	26.21	26.94	27.67
ADM/SEC RECORDS CLK PD	16.64	17.42	18.20	18.98	19.76	20.54	21.32	22.10	22.88
COMMUNITY SERVICE OFFICER	13.95	14.71	15.47	16.23	16.99	17.74	18.50	19.26	20.02

SUPERVISORY, TECHNICAL, ADMINISTRATIVE (MONTHLY)

POSITION	1	2	3	4	5	6	7	8	9
CITY ADMINISTRATOR	9,927	10,024	10,120	10,217	10,314	10,410	10,507	10,603	10,700
CHIEF OF POLICE	6,393	6,597	6,800	7,004	7,208	7,411	7,615	7,818	8,022
CITY ENGINEER	6,282	6,544	6,805	7,067	7,329	7,590	7,852	8,113	8,375
POLICE CAPTAIN	5,539	5,680	5,822	5,963	6,105	6,246	6,387	6,529	6,670
ELECTRIC SUPERINTENDENT	5,711	5,940	6,169	6,398	6,627	6,856	7,085	7,314	7,543
PUBLIC PROPERTIES DIRECTOR	5,361	5,524	5,687	5,850	6,014	6,177	6,340	6,503	6,666
CITY CLERK/HR DIRECTOR	5,286	5,543	5,799	6,056	6,312	6,569	6,825	7,082	7,338
W/WWTW DIRECTOR	5,082	5,391	5,699	6,008	6,317	6,625	6,934	7,242	7,551
STREET SUPERINTENDENT	4,899	5,060	5,222	5,383	5,545	5,706	5,867	6,029	6,190
FINANCE DIRECTOR/TREASURER	6,141	6,303	6,465	6,627	6,789	6,950	7,112	7,274	7,436
LIBRARY DIRECTOR	4,649	4,789	4,929	5,069	5,209	5,348	5,488	5,628	5,768
DEPUTY TREASURER	4,465	4,589	4,714	4,838	4,963	5,087	5,211	5,336	5,460
GOLF COURSE GROUNDS SUPERINTENDENT	4,465	4,558	4,651	4,743	4,836	4,929	5,022	5,114	5,207
BLDG/ZONING/CODE ENFORCEMENT	4,551	4,692	4,833	4,974	5,115	5,255	5,396	5,537	5,678
ASSISTANT RECREATION DIRECTOR	3,245	3,437	3,628	3,820	4,011	4,203	4,394	4,586	4,777
GOLF SHOP MANAGER	3,121	3,239	3,356	3,474	3,591	3,709	3,826	3,944	4,061
ASST LIBRARY DIRECTOR	3,114	3,251	3,388	3,525	3,662	3,799	3,936	4,073	4,210
CIVIC CENTER MANAGER	3,304	3,349	3,393	3,438	3,483	3,527	3,572	3,616	3,661

5. Authorization to Revise Financial Commitment Letter for the Seward Interior Drainage and Pump Station Improvements Project (FEMA-4420-DR-NE-0015) - City Administrator Butcher

P.O. Box 38, 537 Main Street, Seward, Nebraska 68434. Phone: 402-643-2928. Fax: 402-643-6491. www.CityofSewardNE.gov

Office of the Mayor

April 5, 2022

Nebraska Emergency Management Agency
Attn: Mitigation Section
2433 NW 24th Street
Lincoln, NE 68524-1801

RE: Seward Interior Drainage and Pump Station Improvements – Financial Commitment Letter

To whom it may concern:

The City of Seward hereby commits to cover the local share amount of $410,507.50 in cash towards the Seward Interior Drainage and Pump Station Improvements Project (FEMA-4420-DR-NE-0015). This commitment has been approved by the City Council at our regular April 5th, 2022 meeting. These funds will available and will remain so for the duration of the project, or 24-months from Project Approval and Obligation of Funds.

If you should have any questions regarding this financial commitment letter, please feel free to contact City Hall at 402-643-2928.

Sincerely,

Joshua Eickmeier
Mayor, City of Seward

6. Motion to Rescind Resolution 2022-12, Setting Sewer Rates Based on January & February 2022 Consumption for a 12-Month Period Starting April 1, 2022 - City Administrator Butcher

REPORTS

1. City Administrator's Report - City Administrator Butcher

CITY ADMINISTRATORS REPORT – 4/5/22

- Monitoring a number of street projects Waverly Road (seeding and painting), design work on East Seward, East Hillcrest, Plum Creek Bridge on Hillcrest.
- Covid-19 response to inquiries and issues, no known employees out.
- Working on finalizing grants for Petsource/Rail Campus – EOP.
- Assisting City Attorney with a number of real estate items and related matters.
- Briefed with Wellness Center Committee on a number of legislative items related to grant funding. Reviewed budget for Wellness Center with various entities.
- Reviewed a number of floodplain permits.
- Answering DTR Grant questions as they come in.
- Reviewed items for Petsource expansion TIF application, meetings to be held in April.
- Attended Ameritas Employee and Police Pension meetings.
- Worked with City Engineer on a number of follow-up items with County and NDOT on long term north-south solutions, speeds on highways in town, and short term items related to E. Seward Street. Presented to neighborhood at Civic Center potential ideas, worked with staff of survey responses. Reviewed cost estimates. Attended County Planning Commission meeting.
- Assisted with Junior Achievement at the Seward Elementary School.
- Preparing meeting for CDBG Reuse Loan Fund for review of terms for Bottle Rocket Brewing Loan.
- Meet with all Department Heads to review 6 month targets and performance evaluations.
- Attended and assisted with Harassment Training with all employees and Department Heads.
- Reviewed Wastewater Treatment Plant design items related to internal pump system in future facility.
- Met with representatives of ALLO to review 2022 implementation plans and timing.
- Help develop Locator job description.
- Held Budget Kick Off meeting with City Finance Director.
- Met with citizen regarding land issues along Plum Creek.
- Reviewed sign ordinance with staff and made plans for amendment this summer.
- Attended three (3) NDOT stakeholder meetings with property owners along Highway 15 to discuss the 2024-2025 Highway 15 Project through town.
- Met with the Golf Team to discuss sign change outs and new designs.

The departments are working on the following projects to name a few:

Police Department

- Civil Service testing March 31 at the Library
- Civil Service interviews March 31 at the Library.
- 4th of July meeting March 31 at the Civic Center.

City Clerk/Human Resources/City Hall

- Disposal of unclaimed free items from surplus bids was March 29.
- Flexible Spending Account (FSA) implementation
- There was a written test in the afternoon and oral interviews in the evening for the Police Officer Vacancy.
- Revised job description complete for Pool Manager, Pool Assistant Manager, Lifeguard, Pool Office/Concessions Worker, Swim Program Coordinator, Water Safety Instructor/Aide.

Water/Wastewater Department

- Mark and cut pool for underground water line repairs/ongoing more camera work.
- Install rebuilt filter pump at pool/ongoing.

- Root cut two sewers.
- Meeting with JEO on Well Head Protection.

Parks and Rec/Cemetery/Golf/Pool

- Trimming trees at the Bandshell.
- Turning on irrigation at the 4 Plex.
- Replacing bad boards on the backstops at the 4 Plex.

Civic Center

- Quiz Bowl.

Electric Department

- CFS coming Thursday – Friday for annual truck inspections.
- Thursday Logan, Michelle and Larry have training on software for new meter system.
- Replace two poles on 2nd and Ash transfer overhead lines.
- Pull poles that phone and cable have transferred.

Street Department

- Cement projects on Manor Lane and West Lincoln St.
- Stumping areas along levee.
- Traffic counts.
- Sign replacement non reflective all areas of town.

Library

- Last week of spring programs.
- National Library week kicks off on Sunday, April 3rd.
- Summer program finalizing.

Building Inspection/Planning Department

- The Planning Commission Meeting for April will include Petsource TIF and the Stormwater ordinance.
- East Seward Road Plan surveys were due back by March 30 to start evaluating for the April 5th City Council meeting.
- DTR code violation reports.
- Inspections and plan reviews.

Engineering

- Short and long-term plans for altered traffic patterns and traffic counts data analysis for East Seward.
- Traffic counts, ban trucks and modify status as collector street for East Seward Street.
- Stakeholder meetings review tree slated removal list for Highway 15 widening.

Finance Dept.

- Budget Kick-off meeting with City Administration.
- Electric RF Training.
- Update workers comp rates in payroll.

FUTURE REQUESTS FOR COUNCIL AGENDA ITEMS OR ADMINSTRATIVE ACTION

ANNOUNCEMENT OF UPCOMING EVENTS

STRATEGY SESSION

1. Strategy Session with City Attorney to Provide Negotiation Guidance Concerning Real Estate Interests at the Commercial Rail Campus Development Area - City Attorney Hoffschneider

MOTION TO ADJOURN

I, Derek Bargmann, the duly appointed qualified and acting City Clerk of the City of Seward, Nebraska, hereby certify that the foregoing Notice of Meeting and Agenda for such meeting has been posted in the following places: Seward City Hall, Seward Municipal Building, Seward County Courthouse, Seward Memorial Library and CityofSewardNE.gov

IN WITNESS WHEREOF, I have hereunto set my hand officially and affixed the seal of the City.

_____ _____

Derek Bargmann, City Clerk Date