TOWN OF LISBON
W234 N8676 Woodside Rd.
Lisbon, WI 53089

Agenda
Plan Commission Meeting
Town of Lisbon, Town Hall
Thursday, September 13, 2018
6:30 PM

1. **Roll Call**

2. **Comments from citizens present pertaining to items on the agenda.** Citizens are invited to share their questions, comments, or concerns with the Plan Commission. When speaking, citizens should state their name and address for the record and limit their presentation to three minutes. If a response would involve discussion of Plan Commission policy or decisions that might be of interest to citizens not present at the meeting, the commission may place the item on a future meeting agenda.

3. **Unfinished Business**

   a. Discussion and necessary action on the following requests for Casey's General Store, for the property located at W220N5701 Townline Road, Lisbon, WI 53089, LSBT 0244.999.003:

      i. Ordinance 08-18, An Ordinance Rezoning LSBT 0244.999.003 from A-3 Agricultural Residential Estate District to B-4 Commercial Special Use Zoning District, and recommendation to the Town Board of the same.

      ii. Conditional Use Permit requests for an Automobile, Gasoline, and Service Station and Convenience Stores associated with gasoline sales in the B-4 Commercial Special Use Zoning District and a Major Grading Permit for the same and Site Plan and Plan of Operation.

4. **New Business**

   a. Discussion and necessary action on the Certified Survey Map for Halquist Stone Company, for the property located at N51W23563 Lisbon Road, Lisbon, WI 53089, LSBT 0281.996 and LSBT 0283.999, and recommendation to the Town Board of the same.

5. **Town Clerk & Town Planner**

   a. Overview of August Planning Appointments & Current Task/Project list.

   b. Discussion and update on the Plan Commission application process, including but not limited to planner's appointments, application timing, fees, forms, review reports, etc.

6. **Request from members to request items on future agendas.**

7. **Adjournment.**

Joseph Osterman
Chairman

Jane Stadler
Secretary

Posted: 2018-09-10 *Admin: G.G.*
X Website *X Town Hall Bulletin Boards (2)* *X Sent to Newspapers*

NOTICE: It is possible that members of and possibly a quorum of members of other governmental bodies of the municipality may be in attendance at the above-stated meeting to gather information; no action will be taken by any governmental body at the above-stated meeting other than the governmental body specifically referred to above in this notice.

NOTE: Please notify the Town of Lisbon 72 hours in advance if you plan to attend and will need an interpreter or assistive hearing device.

MEMBERS: Please notify Town Hall at 262-246-6100 if you are unable to attend the meeting.

W234 N8676 WOODSIDE RD.
LISBON, WI 53089-1545
TEL: (262) 246-6100

Plan Commission Application

Application Type and Fee (check all that apply)

*Application fees are non-refundable. Fees cover costs associated with public notification, postage, copies, and document recording, however applicants agree to pay all additional expenses that the Town may incur by virtue of contracted plan review services including but not limited to: legal, surveying and engineering costs and studies.

☐ **Commercial**
**All commercial projects including any change of occupancy, change of use, or construction/alteration must be submitted to the Lisbon Fire Department as well for review and inspections.*

☐ **Residential** – Home-Based Bus. / In-Law Unit

- ☐ Accessory Building Waiver: $100 (Size/Location/Architectural Review)
- ☐ After the Fact Application: Double Fees
- ☐ Certified Survey Map: $200 + $10 Per lot
  - ☐ Dedication Fee (Per lot): $2,658 (Paid upon receipt of signed CSM)
- ■ Conditional Use Permit: $350
  - ☐ Amendment / Original
  - ☐ Major Grading Permit
- ☐ Deed Restriction: $100
- ☐ Developer's Agreement: $250
- ☐ Groundwater Separation Waiver: $100
- ☐ Land Use Amendment: $300
- ☐ Conceptual: $100
- ☐ Plat Review:
  - ☐ Final - $200
  - ☐ Preliminary - $500
- ☐ Re-Submittal: $200
- ■ Rezone: $350
- ☐ Sign Permit Application: $30 + Sign Fees (See Adopted Fee Schedule)
- ☐ Site Plan/Plan of Operation:
  - ☐ Amendment: $250
  - ☐ Original: $500
  - ☐ Temporary: $125
- ☐ Special Meeting: $600
- ☐ Waivers/Modification from Land Division and Development Ordinance: $200

Property Information

W220N5701 TOWN LINE RD — Property Address
Lisbon — City
53089 — Zip

LSBT0244999003 — Tax Key/Parcel ID #
3.33 acres — Lot Size
A-3 — Current Zoning

Property Owner

Thomas Gengler — Name / Company Name
Signature
W220N5701 TOWN LINE RD — Address
Lisbon — City
WI — State
53089 — Zip
262-246-9025 — Phone
E-mail Address

Applicant

Heather Hennick — Name
Casey's Marketing Company — Company
One Convenience Blvd — Address
Ankeny — City
IA — State
50021 — Zip
515-965-6123 — Phone
heather.hennick@caseys.com — E-Mail Address

A complete application along with the appropriate fees shall be submitted by the deadline stated on the meeting schedule. In order for an application to be considered complete, the application shall include the required number of site plans/maps, and all of the necessary supporting information as indicated on the Project Review Checklist. If applying for a conditional use or development agreement, a document showing vested interest in the property is required. *The Town of Lisbon reserves the right not to accept an application that is deemed incomplete.*

LEGEND

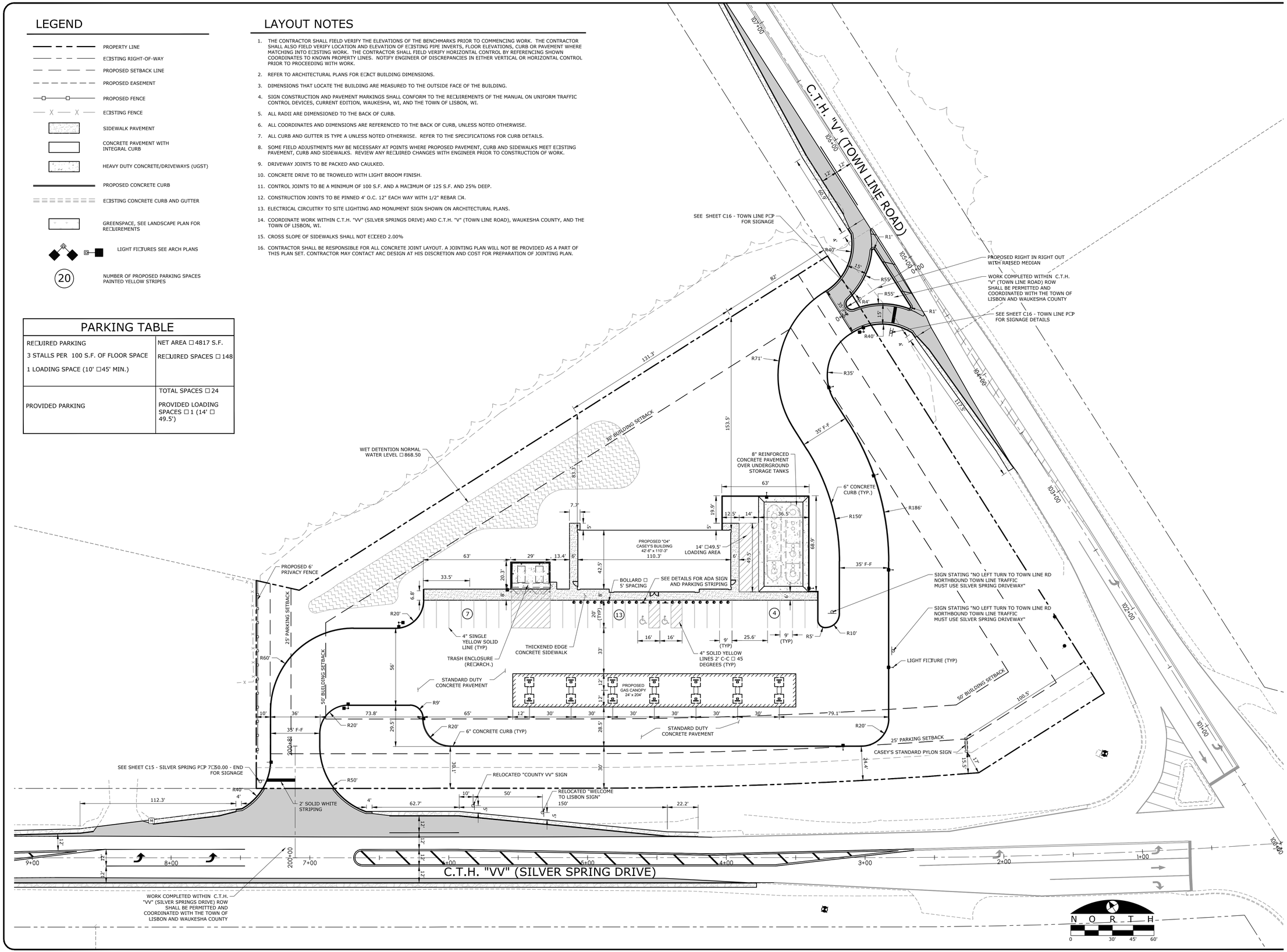
- PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED FENCE
- EXISTING FENCE
- SIDEWALK PAVEMENT
- CONCRETE PAVEMENT WITH INTEGRAL CURB
- HEAVY DUTY CONCRETE/DRIVEWAYS (UGST)
- PROPOSED CONCRETE CURB
- EXISTING CONCRETE CURB AND GUTTER
- GREENSPACE, SEE LANDSCAPE PLAN FOR REQUIREMENTS
- LIGHT FIXTURES SEE ARCH PLANS
- (20) NUMBER OF PROPOSED PARKING SPACES PAINTED YELLOW STRIPES

PARKING TABLE

REQUIRED PARKING 3 STALLS PER 100 S.F. OF FLOOR SPACE 1 LOADING SPACE (10' X 45' MIN.)	NET AREA = 4817 S.F. REQUIRED SPACES = 148
PROVIDED PARKING	TOTAL SPACES = 24 PROVIDED LOADING SPACES = 1 (14' X 49.5')

LAYOUT NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS OF THE BENCHMARKS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ALSO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING PIPE INVERTS, FLOOR ELEVATIONS, CURB OR PAVEMENT WHERE MATCHING INTO EXISTING WORK. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL CONTROL BY REFERENCING SHOWN COORDINATES TO KNOWN PROPERTY LINES. NOTIFY ENGINEER OF DISCREPANCIES IN EITHER VERTICAL OR HORIZONTAL CONTROL PRIOR TO PROCEEDING WITH WORK.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
3. DIMENSIONS THAT LOCATE THE BUILDING ARE MEASURED TO THE OUTSIDE FACE OF THE BUILDING.
4. SIGN CONSTRUCTION AND PAVEMENT MARKINGS SHALL CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, WAUKESHA, WI, AND THE TOWN OF LISBON, WI.
5. ALL RADII ARE DIMENSIONED TO THE BACK OF CURB.
6. ALL COORDINATES AND DIMENSIONS ARE REFERENCED TO THE BACK OF CURB, UNLESS NOTED OTHERWISE.
7. ALL CURB AND GUTTER IS TYPE A UNLESS NOTED OTHERWISE. REFER TO THE SPECIFICATIONS FOR CURB DETAILS.
8. SOME FIELD ADJUSTMENTS MAY BE NECESSARY AT POINTS WHERE PROPOSED PAVEMENT, CURB AND SIDEWALKS MEET EXISTING PAVEMENT, CURB AND SIDEWALKS. REVIEW ANY REQUIRED CHANGES WITH ENGINEER PRIOR TO CONSTRUCTION OF WORK.
9. DRIVEWAY JOINTS TO BE PACKED AND CAULKED.
10. CONCRETE DRIVE TO BE TROWELED WITH LIGHT BROOM FINISH.
11. CONTROL JOINTS TO BE A MINIMUM OF 100 S.F. AND A MAXIMUM OF 125 S.F. AND 25% DEEP.
12. CONSTRUCTION JOINTS TO BE PINNED 4' O.C. 12" EACH WAY WITH 1/2" REBAR #4.
13. ELECTRICAL CIRCUITRY TO SITE LIGHTING AND MONUMENT SIGN SHOWN ON ARCHITECTURAL PLANS.
14. COORDINATE WORK WITHIN C.T.H. "VV" (SILVER SPRINGS DRIVE) AND C.T.H. "V" (TOWN LINE ROAD), WAUKESHA COUNTY, AND THE TOWN OF LISBON, WI.
15. CROSS SLOPE OF SIDEWALKS SHALL NOT EXCEED 2.00%
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONCRETE JOINT LAYOUT. A JOINTING PLAN WILL NOT BE PROVIDED AS A PART OF THIS PLAN SET. CONTRACTOR MAY CONTACT ARC DESIGN AT HIS DISCRETION AND COST FOR PREPARATION OF JOINTING PLAN.



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FAX: (815) 484-4303
www.arcdesign.com
Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

	DATE
1. Agency Review	7/20/2018
2. Agency Review	8/15/2018
3. ----	----
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REVISIONS

ITEM	DATE
1. ----	----
2. ----	----
3. ----	----
4. ----	----
5. ----	----
6. ----	----
7. ----	----

SHEET TITLE
LAYOUT PLAN

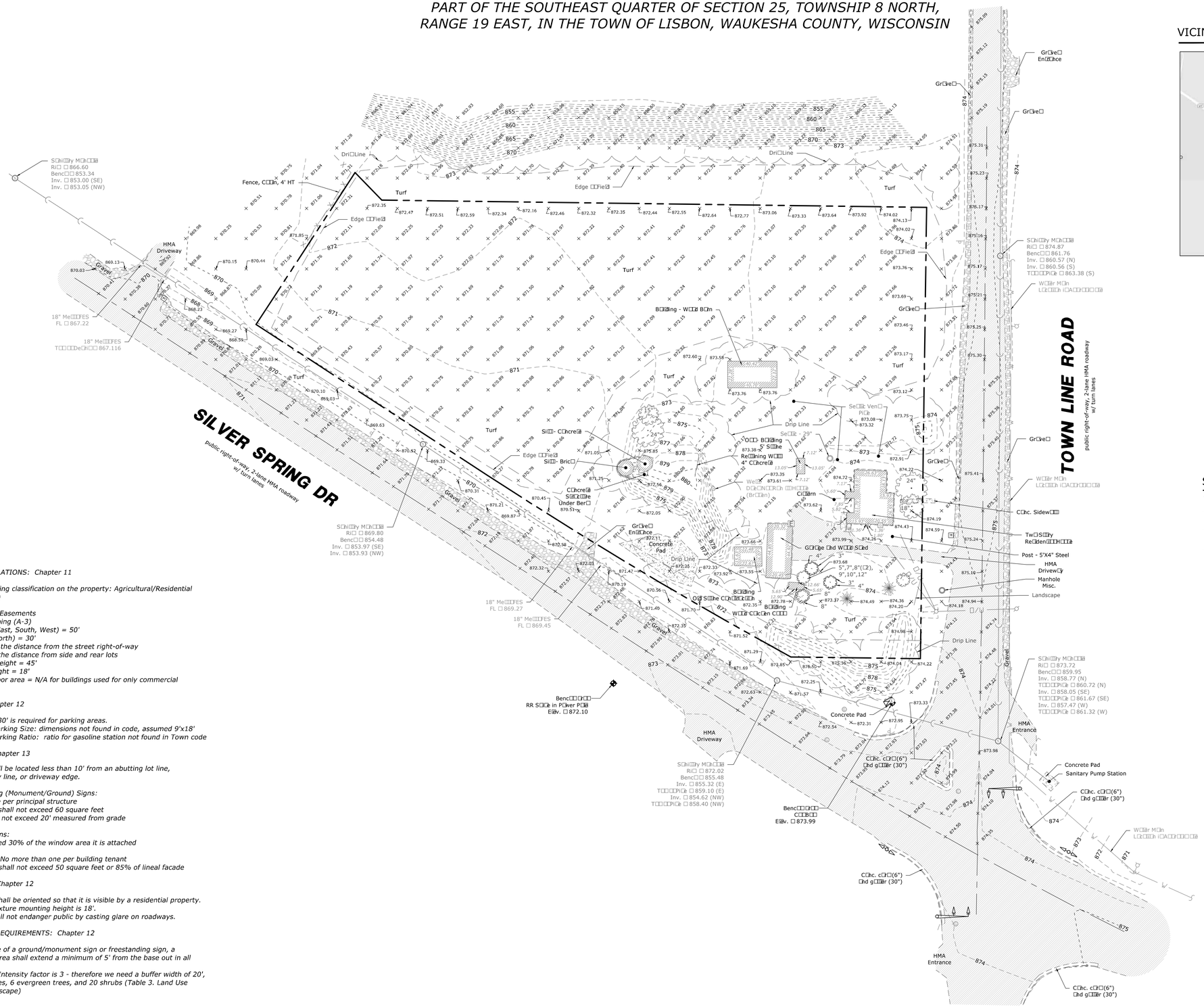
DRAWN	KOG
CHECKED	DRH
PM	RCS

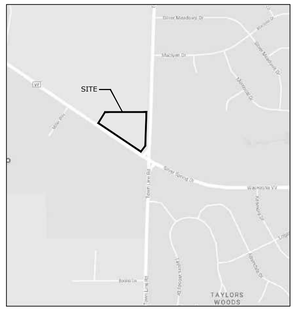
PROJECT NUMBER
SHEET NUMBER
17176
C05

ALTA/NSPS LAND TITLE SURVEY

OF

PART OF THE SOUTHEAST QUARTER OF SECTION 25, TOWNSHIP 8 NORTH, RANGE 19 EAST, IN THE TOWN OF LISBON, WAUKESHA COUNTY, WISCONSIN





SYMBOL LEGEND

- PROPERTY LINE ℄
- CENTER LINE ℄
- CURB AND GUTTER
- O/U — OVERHEAD UTILITIES
- G — GAS LINE
- W — WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- FENCE
- 750 — CONTOUR LINE
- SANITARY MANHOLE
- METAL OR PLASTIC FLARED END SECTION
- VALVE BO□
- FIRE HYDRANT ASSEMBLY
- WELL
- UTILITY POLE
- GUY WIRE AND ANCHOR
- E — ELECTRIC PEDESTAL
- ELECTRIC METER
- GAS METER
- GAS VALVE
- SIGN AND POST
- BENCHMARK LOCATION
- DECIDUOUS TREE
- CONIFEROUS TREE
- MAILBO□
- TRAFFIC SIGNAL
- SIGNAL CONTROL CABINET

I. ZONING REGULATIONS: Chapter 11

Current zoning classification on the property: Agricultural/Residential Estate (A-3)

A) Setbacks & Easements
Existing Zoning (A-3)
**Setback (East, South, West) = 50'*
***Offset (North) = 30'*
**Setback is the distance from the street right-of-way*
***Offset is the distance from side and rear lots*
B) Maximum Height = 45'
C) Canopy Height = 18'
D) Minimum floor area = N/A for buildings used for only commercial purposes

II. PARKING: Chapter 12

Setback of 30' is required for parking areas.
Minimum Parking Size: dimensions not found in code, assumed 9'x18'
Required Parking Ratio: ratio for gasoline station not found in Town code

III. SIGNAGE: Chapter 13

No sign shall be located less than 10' from an abutting lot line, right-of-way line, or driveway edge.

Freestanding (Monument/Ground) Signs:
Allowed one per principal structure
Gross area shall not exceed 60 square feet
Height shall not exceed 20' measured from grade

Window Signs:
Not to exceed 30% of the window area it is attached

Wall Signs: No more than one per building tenant
Gross area shall not exceed 50 square feet or 85% of lineal facade

IV. LIGHTING: Chapter 12

No fixture shall be oriented so that it is visible by a residential property.
Maximum fixture mounting height is 18'.
Lighting shall not endanger public by casting glare on roadways.

V. LANDSCAPE REQUIREMENTS: Chapter 12

-In the case of a ground/monument sign or freestanding sign, a landscape area shall extend a minimum of 5' from the base out in all directions
- Land Use Intensity factor is 3 - therefore we need a buffer width of 20', 2 shade trees, 6 evergreen trees, and 20 shrubs (Table 3. Land Use Buffer/Landscape)

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Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME
C□□□ey'□
Li□□□n, WI

CONSULTANTS

ISSUED FOR

	DATE
C□□n□Review	11/30/2017

REVISIONS

NO.	ITEM	DATE

SHEET TITLE
ALTA/NSPS LAND TITLE SURVEY

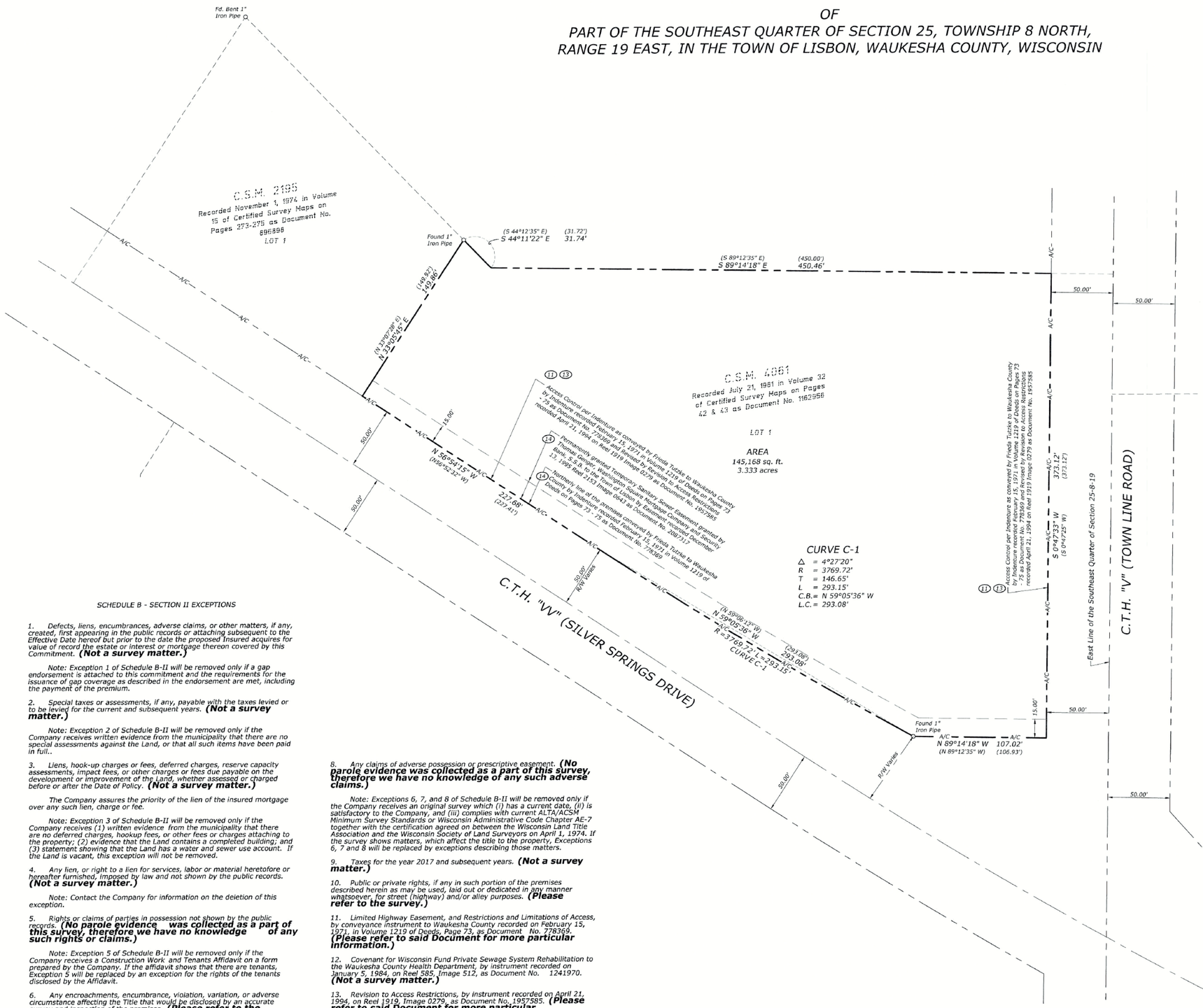
DRAWN	KB/CE
CHECKED	LS
PM	RS

PROJECT NUMBER
SHEET NUMBER
17176
1 □□2

ALTA/NSPS LAND TITLE SURVEY

OF

PART OF THE SOUTHEAST QUARTER OF SECTION 25, TOWNSHIP 8 NORTH, RANGE 19 EAST, IN THE TOWN OF LISBON, WAUKESHA COUNTY, WISCONSIN



N O R T H

0 40' 60' 80'

SYMBOL LEGEND

	PROPERTY LINE ℄
	SECTION LINE
	RIGHT-OF-WAY LINE
	LOT LINE
	EASEMENT LINE
	SETBACK LINE
	CENTER LINE ℄
(11)	TITLE EXCEPTION NUMBER
•	SET SURVEY MONUMENT
○	FOUND SURVEY MONUMENT
(85.00')	RECORD DISTANCE
85.00'	MEASURED DISTANCE

Legal description as contained in Commitment for Title Insurance issued by Compass Title, LLC as an Agent for Chicago Title Insurance Company, File No. 177795 Amended

Lot One (1) of Certified Survey Map No. 4061, as recorded in the Office of the Register of Deeds for Waukesha County, Wisconsin on July 21, 1981, in Volume 32 of Certified Survey Maps, on Pages 42 and 43, as Document No. 1162956, being a part of the Southeast 1/4 of Section 25, in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

ALSO DESCRIBED AS:

A parcel of land being all of Lot 1 as designated upon Certified Survey Map No. 4061, recorded July 21, 1981 in Volume 32 of Certified Survey Maps on Pages 42 and 43 as Document No. 162956 in the Register's Office of Waukesha County, Wisconsin, being located in part of the Southeast Quarter of Section 25, Township 8 North, Range 19 East, more particularly described as follows:

Beginning at the Northwestern most corner of said Lot 1; thence South 44 degrees 11 minutes 22 seconds East along the Northerly line of said Lot 1, a distance of 31.74 feet to an angle point in said Northerly line; thence South 89 degrees 14 minutes 18 seconds East along the Northerly line of said Lot 1, a distance of 450.46 feet to the Northeast corner thereof, said point also lying in the West line of a public road designated C.T.H. "V" (Town Line Road); thence South 0 degrees 47 minutes 33 seconds West along the East line of said Lot 1 and the West line of said C.T.H. "V" (Town Line Road), a distance of 373.12 feet to the Southeast corner of said Lot 1, said point also lying in the Northerly line of the premises conveyed by Frieda Tutzke to Waukesha County by Indenture recorded February 15, 1971 in Volume 1219 of Deeds on Pages 73 - 75 as Document No. 778369 in said Register's Office; thence North 89 degrees 14 minutes 18 seconds West along the Southerly line of said Lot 1 and the Northerly line of said premises so conveyed, a distance of 107.02 feet to a non-tangent curve; thence Northwesterly along the Southerly line of said Lot 1 and the Northerly line of said premises so conveyed, along a circular curve whose radius is 3,769.72 feet and whose center lies to the North, the long chord of which curve bears North 59 degrees 05 minutes 36 seconds West, a chord distance of 293.08 feet to a point of tangency; thence North 56 degrees 54 minutes 15 seconds West along the Southerly line of said Lot 1, and the Northerly line of said premises so conveyed, a distance of 227.68 feet to the Southwest corner of said Lot 1; thence North 33 degrees 05 minutes 45 seconds East along the Westerly line of said Lot 1, a distance of 149.86 feet to the Point of Beginning, containing 145,168 square feet, 3.333 acres, more or less, all being situated in the Town of Lisbon, Waukesha County, Wisconsin.

SURVEYOR'S NOTES

1. *Survey is based on field work performed by Arc Design Resources on November 16, 2017.*
2. *No investigation concerning environmental and subsurface conditions, or for the existence of underground or overhead containers or facilities which may affect the use or development of this property was made as part of this survey.*
3. *The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although the surveyor does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.*
4. *The above described property is not located within any regulated flood zones according to the Flood Insurance Rate Map (55133C0206G) for Waukesha County, Wisconsin revised November 5, 2014.*
5. *Surveyed property is based upon the legal description contained in Commitment for Title Insurance, Commitment No. 177795 issued by Compass Title, LLC. agent for Chicago Title Insurance Company effective date October 6, 2017.*
6. *Bearings are based upon G.P.S observations and referenced to the Wisconsin State Plane Coordinate System - South Zone.*
7. *There was no evidence of any recent earth moving activity at the time of survey.*

SURVEYOR'S CERTIFICATION:

To Compass Title, LLC. agent for Chicago Title Insurance Company and Casey's General Store Inc. :

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 3, 4, 6a, 7a, 8, 11, 16 of Table A thereof. The fieldwork was completed on November 16, 2017.

Dated this 30th *day of* November, *2017.*

Lee S. Sprecher
Wisconsin Professional Land Surveyor No. 2672
Arc Design Resources, Inc.
5291 Zenith Parkway
Loves Park, IL 61111
(815)484-4300

WISCONSIN LEE S. SPRECHER S-2672 ROCKFORD IL LAND SURVEYOR

SCHEDULE B - SECTION II EXCEPTIONS

1. Defects, liens, encumbrances, adverse claims, or other matters, if any, created, first appearing in the public records or attaching subsequent to the Effective Date hereof but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment. ***(Not a survey matter.)***

   Note: Exception 1 of Schedule B-II will be removed only if a gap endorsement is attached to this commitment and the requirements for the issuance of gap coverage as described in the endorsement are met, including the payment of the premium.

2. Special taxes or assessments, if any, payable with the taxes levied or to be levied for the current and subsequent years. ***(Not a survey matter.)***

   Note: Exception 2 of Schedule B-II will be removed only if the Company receives written evidence from the municipality that there are no special assessments against the Land, or that all such items have been paid in full..

3. Liens, hook-up charges or fees, deferred charges, reserve capacity assessments, impact fees, or other charges or fees due payable on the development or improvement of the Land, whether assessed or charged before or after the Date of Policy. ***(Not a survey matter.)***

   The Company assures the priority of the lien of the insured mortgage over any such lien, charge or fee.

   Note: Exception 3 of Schedule B-II will be removed only if the Company receives (1) written evidence from the municipality that there are no deferred charges, hookup fees, or other fees or charges attaching to the property; (2) evidence that the Land contains a completed building; and (3) statement showing that the Land has a water and sewer use account. If the Land is vacant, this exception will not be removed.

4. Any lien, or right to a lien for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records. ***(Not a survey matter.)***

   Note: Contact the Company for information on the deletion of this exception.

5. Rights or claims of parties in possession not shown by the public records. ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such rights or claims.)***

   Note: Exception 5 of Schedule B-II will be removed only if the Company receives a Construction Work and Tenants Affidavit on a form prepared by the Company. If the affidavit shows that there are tenants, Exception 5 will be replaced by an exception for the rights of the tenants disclosed by the Affidavit.

6. Any encroachments, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate survey and inspection of the premises. ***(Please refer to the survey.)***

7. Easements or claims of easements not shown by the public records. ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such easements or claims thereof.)***

8. Any claims of adverse possession or prescriptive easement. ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such adverse claims.)***

   Note: Exceptions 6, 7, and 8 of Schedule B-II will be removed only if the Company receives an original survey which (i) has a current date, (ii) is satisfactory to the Company, and (iii) complies with current ALTA/ACSM Minimum Survey Standards or Wisconsin Administrative Code Chapter AE-7 together with the certification agreed on between the Wisconsin Land Title Association and the Wisconsin Society of Land Surveyors on April 1, 1974. If the survey shows matters, which affect the title to the property, Exceptions 6, 7 and 8 will be replaced by exceptions describing those matters.

9. Taxes for the year 2017 and subsequent years. ***(Not a survey matter.)***

10. Public or private rights, if any in such portion of the premises described herein as may be used, laid out or dedicated in any manner whatsoever, for street (highway) and/or alley purposes. ***(Please refer to the survey.)***

11. Limited Highway Easement, and Restrictions and Limitations of Access, by conveyance instrument to Waukesha County recorded on February 15, 1971, in Volume 1219 of Deeds, Page 73, as Document No. 778369. ***(Please refer to said Document for more particular information.)***

12. Covenant for Wisconsin Fund Private Sewage System Rehabilitation to the Waukesha County Health Department, by instrument recorded on January 5, 1984, on Reel 585, Image 512, as Document No. 1241970. ***(Not a survey matter.)***

13. Revision to Access Restrictions, by instrument recorded on April 21, 1994, on Reel 1919, Image 0279, as Document No. 1957585. ***(Please refer to said Document for more particular information.)***

14. Easement with the Town of Lisbon for Sanitary Sewer, by instrument recorded on December 13, 1995, on Reel 2153, Image 0643, as Document No. 2087317. ***(Please refer the survey for the location and to said Document for more particular information.)***

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Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

Casey's
Lisbon, WI

CONSULTANTS

ISSUED FOR

	DATE
Client Review	11/30/2017

REVISIONS

NO.	ITEM	DATE

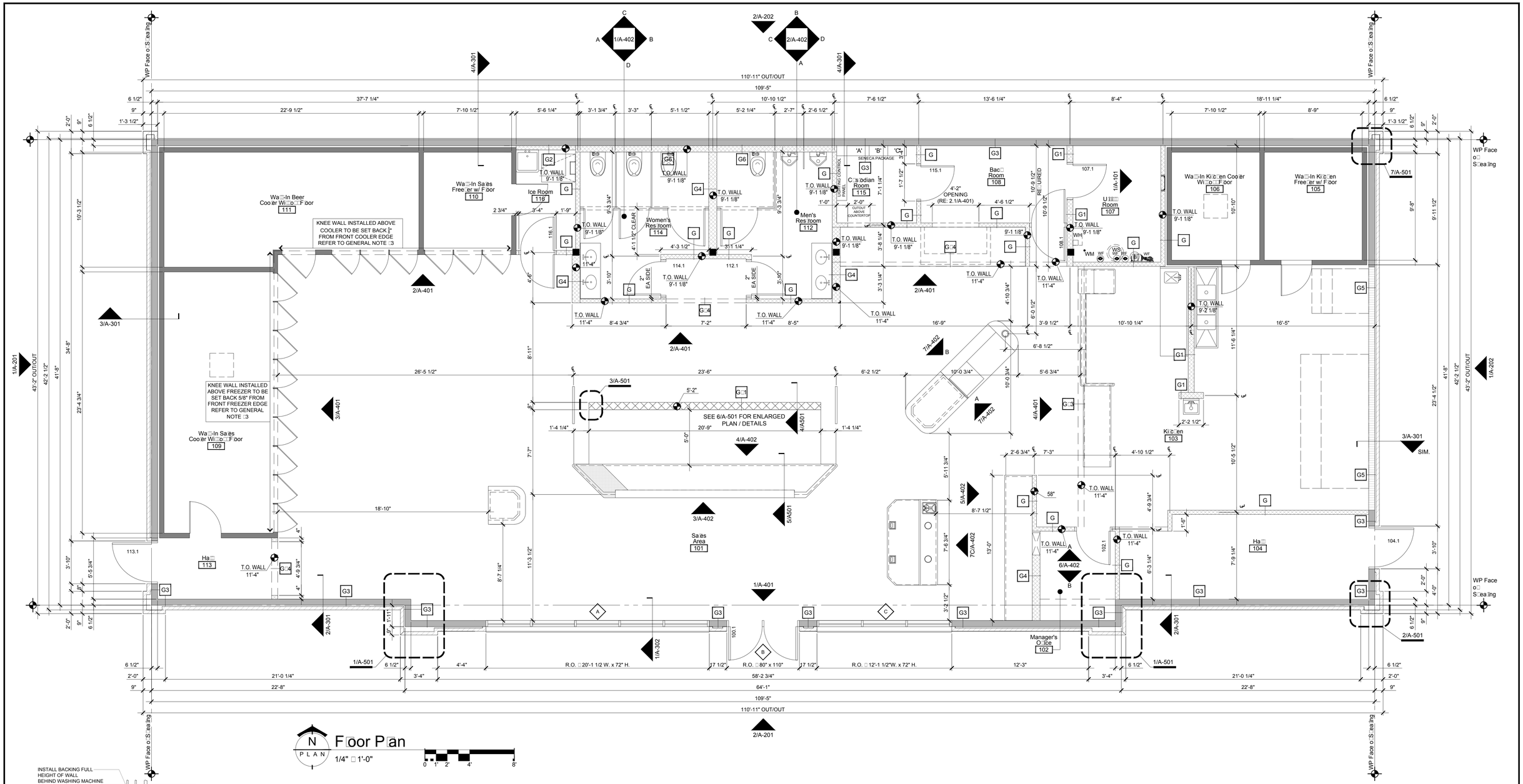
SHEET TITLE

ALTA/NSPS LAND TITLE SURVEY

DRAWN	KB/CE
CHECKED	LS
PM	RS

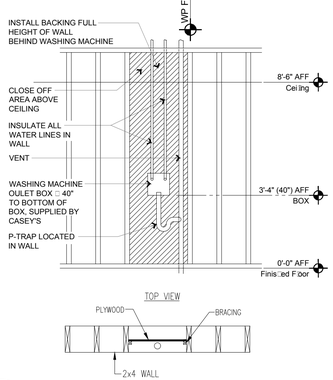
PROJECT NUMBER
SHEET NUMBER

17176



Floor Plan

1/4" □ 1'-0"



1 Was□ing Mac□ine O□□□e□ Box

N.T.S.

General Construction Notes

1. **FRAMING INSTRUCTIONS:**
   1.1 ALL PERIMETER FRAMED WALLS, 2x6 WD STUDS □ 16" OC, VERIFY HEIGHTS□INSULATED WITH 6"x16" WIDE FRICTION FIT INSULATION, *EXCEPT AS DIRECTED BY KEYED NOTES*.
   1.2 FRONT WALL SAME AS ABOVE, EXCEPT 2x6 WD STUDS, SEE STRUCTURAL DRAWINGS FOR FRAMING ELEVATION AND DETAILS.
   1.3 ALL INTERIOR FRAMED PARTITION WALLS, 2x4 WD STUDS □ 16" OC, VERIFY HEIGHTS□*EXCEPT AS DIRECTED BY KEYED NOTES*.
   1.4 ALL FRAMING MATERIAL□CONSTRUCTION GRADE OR BETTER.
   1.5 USE TREATED (WOLMANIZED) BOTTOM PLATE, WHEREVER MEETS CONCRETE, SEAL TO CONC FLOOR WITH CONSTRUCTION ADHESIVE.
   1.6 ALL BACKING/BLOCKING 2x6, FLUSH W/ ROUGH FRAMING□HEIGHTS INDICATED ON PLANS (BK □ xx") ARE FROM FLOOR (AFF) CENTER OF BLOCKING.
   1.7 EXTERIOR NON-COMBUSTIBLE WALL. 6" 18 GAGE STEEL STUDS □ 16" O.C. ENTIRE END WALL, USING STEEL TOP AND BOTTOM PLATES.
2. SEAL ALL CABINETS AND SALES COUNTER TO FLOOR.
3. DO NOT FRAME UP UTILITY ROOM WALLS UNTIL THE COMPRESSOR RACK HAS BEEN INSTALLED BY H.V.A.C.
4. H.V.A.C. E□UIPMENT INSTALLED BY CASEY'S PROVIDED INSTALLERS.
5. ALL EXTERIOR WALLS ARE SUPPLIED BY OWNER
6. ALL INTERIOR WALLS ARE TO BE SUPPLIED BY CONTRACTOR AND BUILT ON-SITE

Key - Wall Type

G 3 1/2" WOOD STUD (TYPICAL UNLESS NOTED OTHERWISE). RE: A-601, FINISH SCHEDULE FOR WALL FINISH MATERIAL

G1 5 1/2" WOOD STUD. RE: A-601, FINISH SCHEDULE FOR WALL FINISH MATERIAL

G2 3 1/2" WOOD STUD FUR OUT OF EXTERIOR WALL FOR PLUMBING

G3 5 1/2" WOOD STUD. RE: A-601, FINISH SCHEDULE FOR WALL FINISH MATERIAL

G4 7 1/2" WOOD STUD. RE: A-601, FINISH SCHEDULE FOR WALL FINISH MATERIAL.

G□1 5 1/2" WOOD STUD. FINISH HEIGHT □5'-2" A.F.F. CORNER BEAD ALL OUTSIDE CORNERS. WOOD CAP AND COVE ON TOP OF WALL

G□2 3 1/2" WOOD STUD SHEAR WALL. SHEET BOTH SIDES WITH 1/2" OSB.

G□3 4"x2" WOOD FLOOR TYPE TRUSS BEAM SUPPLIED BY STRUCTURAL COMPONENT SYSTEMS. CONTRACTOR TO SHEET SALES AREA SIDE WITH 3/4" PLYWOOD BEFORE FINISHING. RE: A-601, FINISH SCHEDULE FOR WALL FINISH MATERIAL. RE: A-401, DETAIL 4, INTERIOR ELEVATIONS

G□4 3 1/2" WOOD STUD (FRAMING HEIGHT 7'-6") BULKHEAD BUILT ACROSS OPENINGS FOR GRAPHICS ATTACHMENT. FACE BOTH SIDES, REFER TO FINISH SCHEDULE (A-601) FOR FACE MATERIAL AND FINISH.

G5 5 1/2" 18 GA. STEEL STUD NON-COMBUSTIBLE WALL.

General Notes

1. REFER TO ALL DETAIL PAGES REFERENCED ON THIS PLAN
2. REFER TO SHEET A-601 FOR:
   FINISH SCHEDULES
   DOOR SCHEDULES
   WINDOW SCHEDULES
3. REFER TO SHEET A-100 FOR:
   BACKING LOCATIONS
4. KNEE WALL ABOVE COOLER / FREEZER TO BE INSTALLED 5/8" BACK FROM FRONT FACE OF COOLER / FREEZER.

(A) WINDOW FRAME ELEVATIONS - REFER TO PLAN SHEET A-601, DETAIL 1

(B) DOOR TYPES - REFER TO PLAN SHEET A-601, DETAIL 2

SEAL

CORE STATES GROUP
6500 C□□□ewa S□ree□ S□□e 200
S□□Lo□is, MO 63109
P□one (314) 843-4320
Fax (314) 843-4323
PBenne□□ core-eng.com

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CASEY'S CONSTRUCTION DIVISION
One Con□enience B□d., P.O. Box 3001, An□en□□ Ia. 50021
515-965-6100

REVISION □10

PROJECT:
SILVER SPRINGS DR. □ TOWN LINE RD., LISBON, WI 53089

"O4" STYLE STORE FLAT ROOF

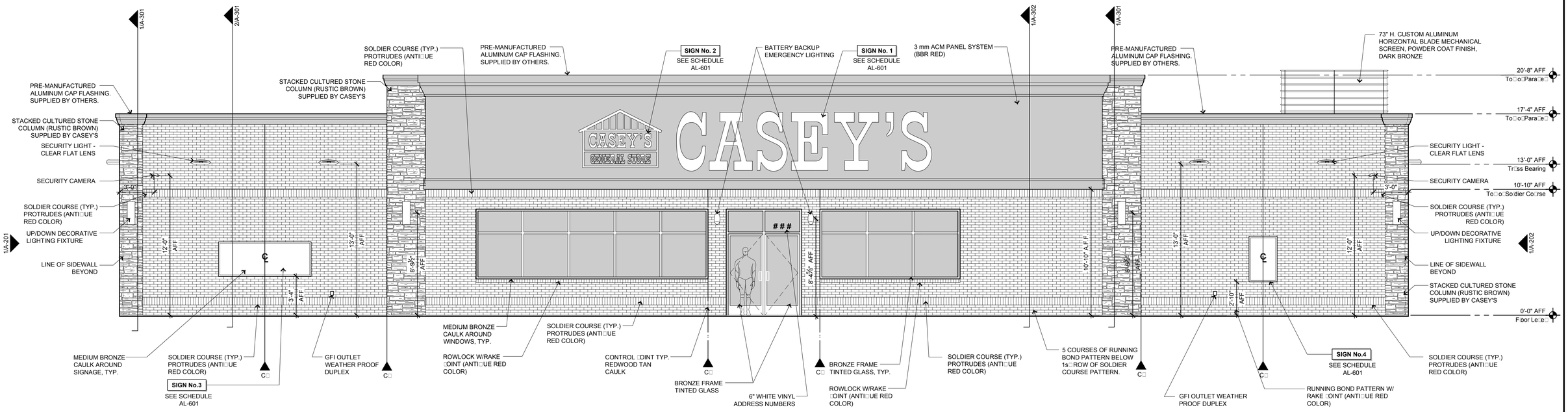
PUBLISHED: 01.18.18
REVISED ON:

DRAWING INFORMATION:
CONSTRUCTION DIVISION

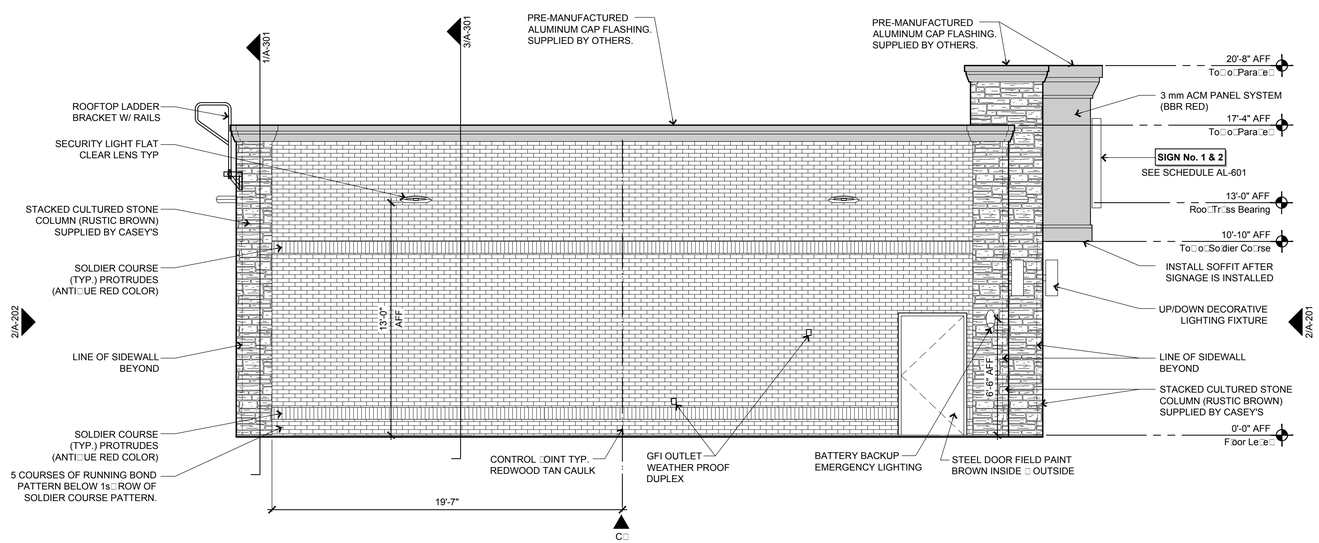
DRAWN BY: □ SMITH
CHECKED BY: A. KERR-GRANT

DRAWING INFORMATION:
FLOOR PLAN

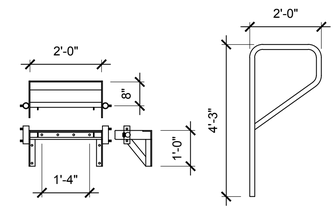
A-101



2 Fron□E□e□a□ion
1/4" □ 1' - 0"



1 Le□□Side o□B□□ding
1/4" □ 1' - 0"



3 Ladder Brac□e□
NTS

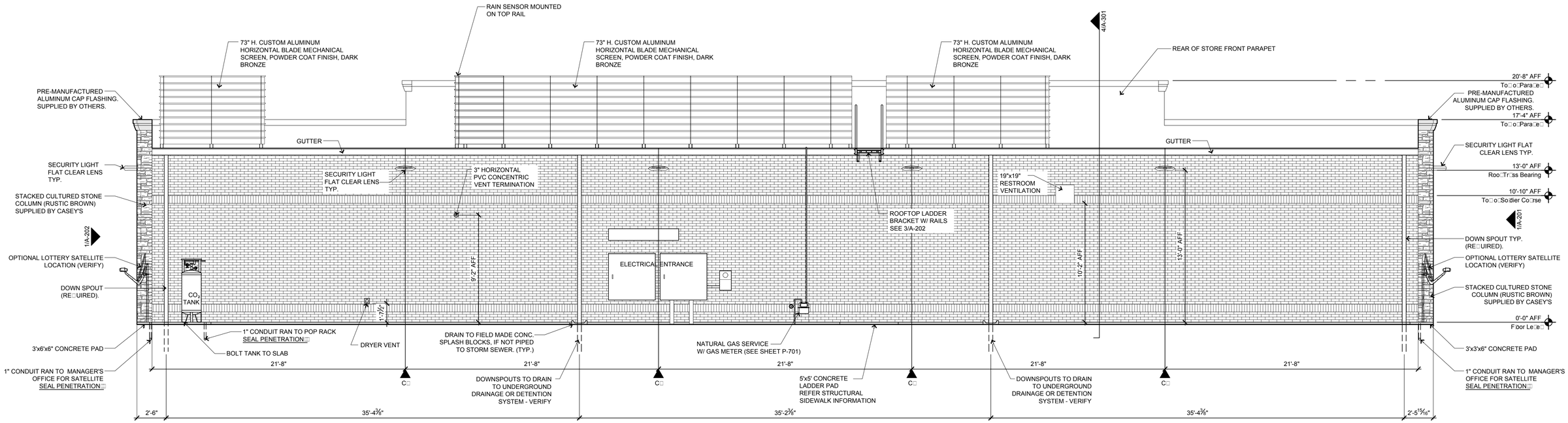
General Notes

1. REFER TO AL-601 FOR SIGNAGE SCHEDULE INCLUDING SIZE AND AREA OF SIGNS SHOWN ON ELEVATIONS.

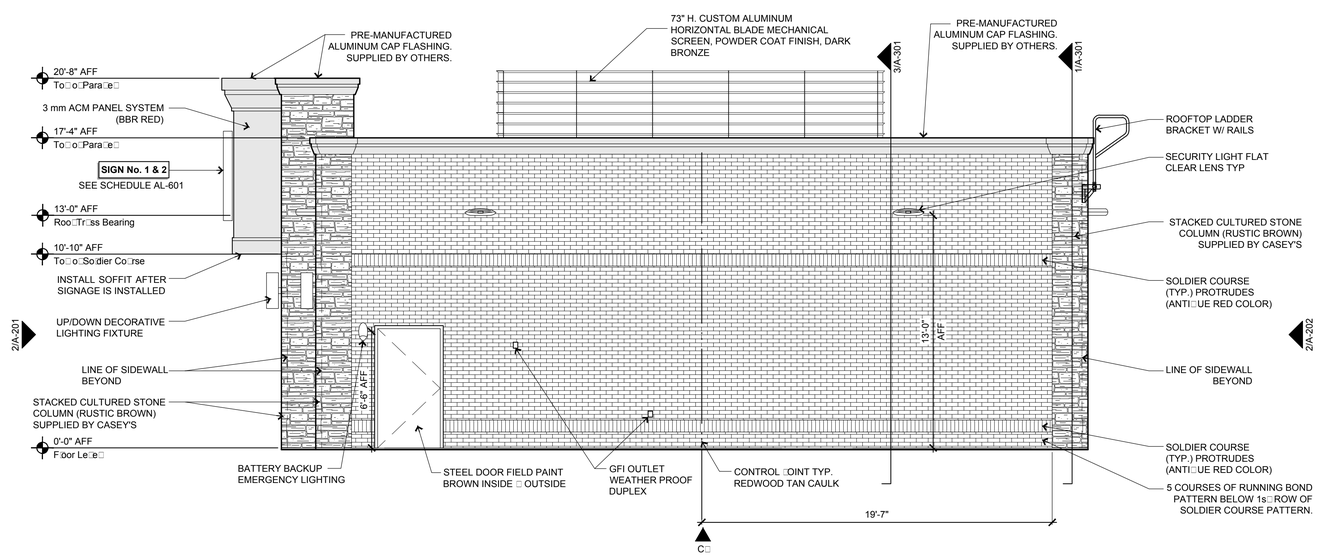
SCREENING

CASEY'S CONSTRUCTION DIVISION
One Con□enience B□d., P.O. Box 3001, An□en□, Ia. 50021 515-965-6100

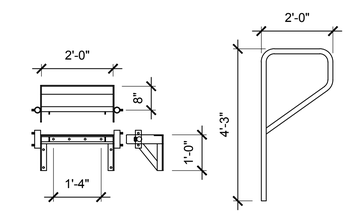
PROJECT: 2018 "O4" STYLE STORE FLAT ROOF	PUBLISHED 05.04.18 / REVISED 05.16.18	DRAWING INFORMATION: EXTERIOR ELEVATIONS
DRAWING INFORMATION: CONSTRUCTION DIVISION		A-201
DRAWN BY: Ar□on Go□or□	CHECKED BY:	



2 Rear E□e□a□ion
1/4" □ 1' - 0"



1 Rig□□Side o□B□i□ding
1/4" □ 1' - 0"



3 Ladder Brac□e□
NTS

General Notes

1. REFER TO AL-601 FOR SIGNAGE SCHEDULE INCLUDING SIZE AND AREA OF SIGNS SHOWN ON ELEVATIONS.

SCREENING

CASEY'S CONSTRUCTION DIVISION
One Con□enience B□d., P.O. Box 3001, An□en□, Ia. 50021 515-965-6100

PROJECT: 2018 "O4" STYLE STORE FLAT ROOF	PUBLISHED: 05.04.18 / REVISED DATE: 05.16.18	DRAWING INFORMATION: EXTERIOR ELEVATIONS
DRAWING INFORMATION: CONSTRUCTION DIVISION		A-202
DRAWN BY: Ar□on Go□dr□	CHECKED BY:	

VERIFY ALL SIGNAGE WITH SIGN PERMITS

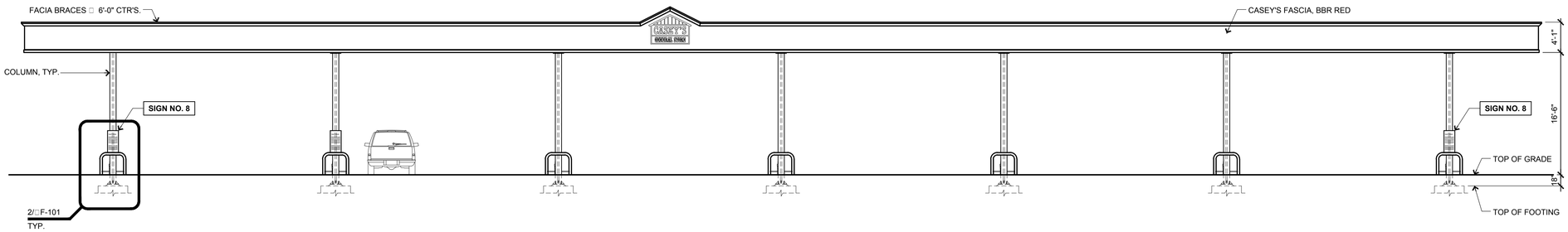
General Notes

1. **RELATED SHEETS**: FOR ADDITIONAL INFORMATION NOT DIRECTLY REFERENCED, SEE THE FOLLOWING SHEETS:

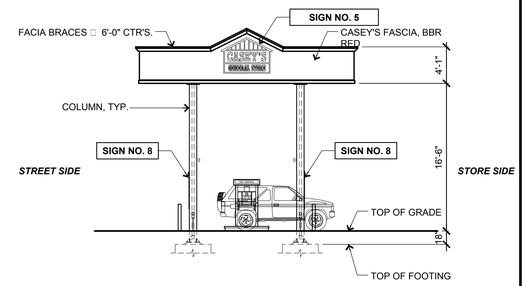
   G-001 FOR GENERAL PROJECT NOTES
   AL-101 FOR GENERAL SITE PLAN
   AL-601 FOR SIGNAGE SCHEDULE AND NOTES
   F-Series FOR DESIGN AND DETAILS RELATED TO FUELING FACILITY

2. **GASOLINE ISLAND CANOPY**: REVIEW SHOP DRAWINGS PROVIDED BY CANOPY SUPPLIER AND ADVISE CASEY'S CONSTRUCTION MANAGER OF ANY DISCREPANCIES

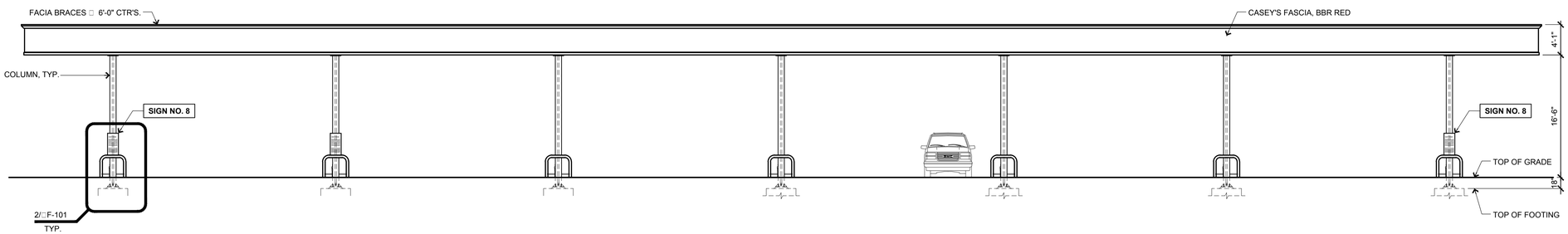
3. **EMERGENCY GAS SHUT OFFS:** REFER TO SHEETS A-201, A-101 E-101 FOR EMERGENCY SHUT OFF LOCATIONS.



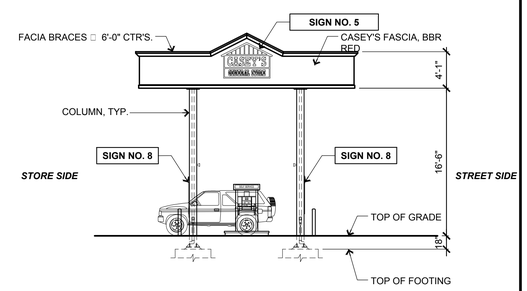
4 Pm Island Canopy - (Street Side)
1/8" 1'-0"



3 Pm Island Canopy - Right Side Elevation
1/8" 1'-0"



2 Pm Island Canopy - (Store Side)
1/8" 1'-0"



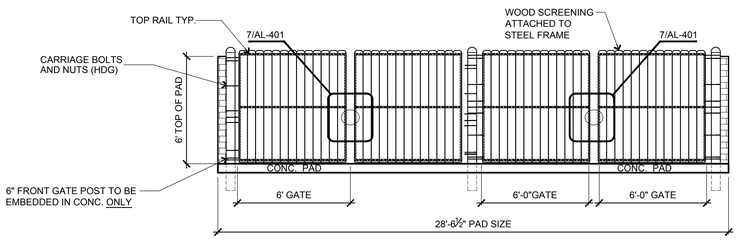
1 Pm Island Canopy - Left Side Elevation
1/8" 1'-0"

Please see example color elevations depicting brick canopy columns

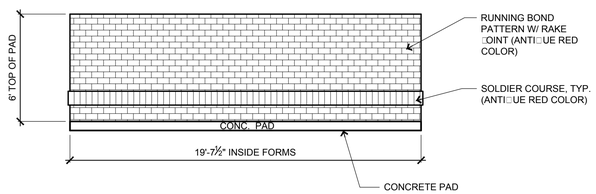
7 DISPENSERS - IN-A-ROW - H.I.

CASEY'S CONSTRUCTION DIVISION
One Convenience Blvd., P.O. Box 3001, Ankeny, Ia. 50021 515-965-6100

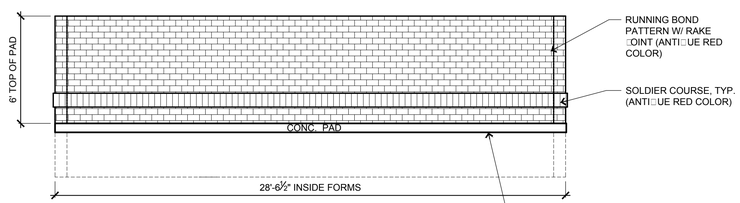
PROJECT: Standard Site Details	PUBLISHED: 12-08-17	DRAWING INFORMATION: GASOLINE ISLAND CANOPY ELEVATIONS
	REVISED ON:	
DRAWING INFORMATION: CONSTRUCTION DIVISION		AL-201
DRAWN BY: B.RAHN	CHECKED BY:	



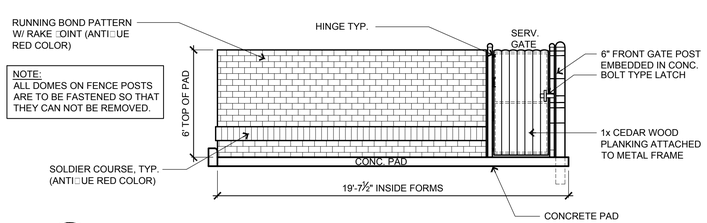
5 Dumpster Enclosure - South Elevation
1/4" = 1'-0"



4 Dumpster Enclosure - East Elevation
1/4" = 1'-0"



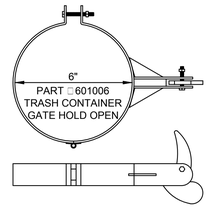
3 Dumpster Enclosure - North Elevation
1/4" = 1'-0"



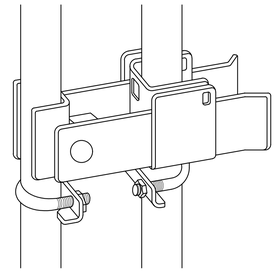
2 Dumpster Enclosure - West Elevation
1/4" = 1'-0"

FITS 1 5/8" OR 2" FRAME ADJUSTS FOR 2" - 3" GAP NO. 4000

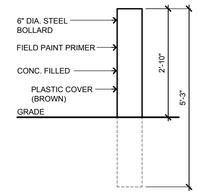
INSTALL GATE LATCH (COMMERCIAL) SUPPLIED BY CASEY'S PART #601005



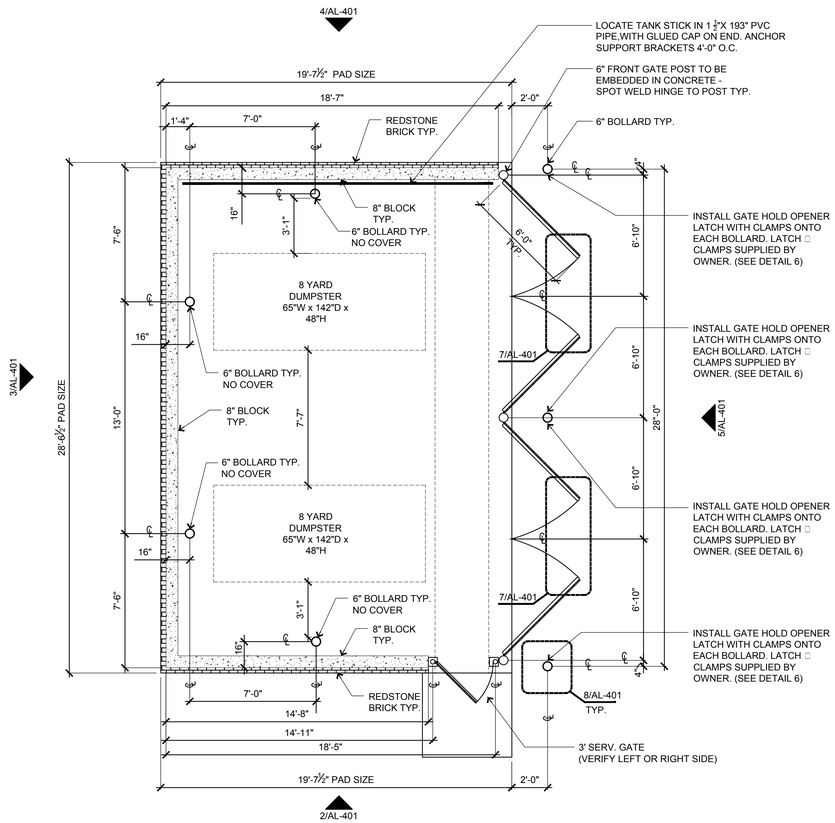
6 Gate Open Holder
No Scale



7 Commercial Double Gate Latch Detail
No Scale



8 Bollard Detail
No Scale



1 Dumpster Plan
1/4" = 1'-0"

General Notes

1. **RELATED SHEETS**: FOR ADDITIONAL INFORMATION NOT DIRECTLY REFERENCED, SEE THE FOLLOWING SHEETS:

G-001	FOR GENERAL PROJECT NOTES
AL101	FOR GENERAL SITE PLAN

Construction Notes

1) ALL DOMES ON FENCE POSTS ARE TO BE FASTENED SO THAT THEY CAN NOT BE REMOVED.

2) VERIFY SCREENING WITH LOCAL AUTHORITY.

3) CONTRACTOR TO PRIME ALL 8" BOLLARDS PRIOR TO FINISHED PAINT COAT.

4) DUMPSTER ENCLOSURE WALLS WILL BE 8" BLOCK PURCHASED BY CONTRACTOR

Brick Enclosure w/ Wood Gates

CASEY'S General Store

CASEY'S CONSTRUCTION DIVISION
One Convenience Blvd., P.O. Box 3001, Ankeny, Ia. 50021 515-965-6100

PROJECT: 2017 "O4" STYLE STORE FLAT ROOF	PUBLISHED: 04.14.17	DRAWING INFORMATION: DUMPSTER ENCLOSURE
DRAWING INFORMATION: CONSTRUCTION DIVISION	REVISED ON:	AL-401
DRAWN BY: BRYAN RAHN	CHECKED BY:	

FRONT ELEVATION

REAR ELEVATION

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CASEY'S GENERAL STORE

NW CORNER OF CTH V AND CTH VV
LISBON, WI, 53089

GENERAL NOTES

1. T□e de□ign□re□re□en□ed in □□e□e □□□n□□re in □cc□rd□nce wi□□e□□□□□i□□ed □r□c□ice□□□civi□engineering □□r □□e de□ign □□nc□i□n□□nd □□e□in□ended □y □□e □wner □□□□i□□□e. Nei□□er □□e engineer n□r i□□□er□□nne□c□n □r d□ w□rr□n□□□e□e de□ign□□r □□□n□□□c□n□□r□c□ed e□ce□□in □□e □□eci□ic c□□e□w□ere □□e engineer in□□ec□□□nd c□n□r□□□ □□e □□y□ic□□c□n□□r□c□i□n □n □c□n□e□□□r□y □□□i□□□□□□e □i□e.
2. T□e c□n□r□c□□r, □y □greeing □□□er□□r□ □□e w□r□, □gree□□□inde□ni□y □nd □□□d □□r□□e□□□e □wner, □□e engineer, □□e T□wn, □nd □□□□gen□□□nd □□□ign□□□□□□e □□r□ie□, □r□□ □□□□□□i□□□nd c□□i□□□□ri□ing □□□□□□□e □er□□r□□nce □□ □□id w□r□, □nd □□r□□er □gree□□□de□end □r □□□erwi□e □□y □□□eg□□ee□□ri□ing □□□□□□□e de□en□e □□□□id □□r□ie□.
3. In □cc□rd□nce wi□□gener□□y □cce□□ed c□n□□r□c□i□n □r□c□ice□, □□e c□n□r□c□□r □□□□□e □□□ely □nd c□□□□ele□y re□□□n□i□□e □□r c□ndi□i□n□□□□□e □□□□□i□e, inc□□ding □□□e□y □□□□□□er□□n□□nd □r□□er□y d□ring □er□□r□□nce □□□□e w□r□. T□i□re□□ire□en□wi□□□□□y c□n□in□□□□y □nd n□□□e □i□ied □□□n□r□□□w□r□ing □□□r□. Any c□n□□r□c□i□n □□□erv□□i□n □y □□e engineer □□□□e c□n□r□c□□r'□□er□□r□□nce i□n□□in□ended □□inc□□de review □□□□e □de□□□cy □□□□e c□n□r□c□□r'□□□□e□y □e□□□re□, in, □r ne□r □□e c□n□□r□c□i□n □i□e. T□e c□n□r□c□□r i□re□□□n□i□□e □□r □□□in□□ining □de□□□□e □ign□, □□rric□de□, □encing, □r□□□ic c□n□r□□device□□nd □e□□□re□, □nd □□□□□er □e□□□re□□□□□□□re nece□□□ry □□□r□□ec□□□e □□□e□y □□□□e □i□e □□□□□i□e□.
4. M□in□□in □cce□□□□r ve□ic□□□r □nd □ede□□ri□n □r□□□ic □□re□□ired □□r □□□er c□n□□r□c□i□n □c□ivi□ie□. U□e □r□□□ic c□n□r□□ device□□□inc□□de □e□□□□r□ry □□i□ing, □□□g□en, □□rric□de□, w□rning □ign□, □nd w□rning □ig□□□□□□□□□e in □cc□rd□nce wi□□c□rren□MUTCD □nd Wi□DOT □□□nd□rd□.
5. A□□□□□e□□□□□e □i□e w□r□□□r □i□□□r□□ec□□□□□□□ee□□r e□ceed ind□□□ry □□□nd□rd□□nd re□□ire□en□□□□e□□□r□□□ □y □□e □□e □wner'□"De□cri□□i□n □□W□r□", T□e T□wn □□Li□□□n, □□e S□□□e □□Wi□c□n□in, □nd □□i□□□□n □e□.
6. T□e T□wn □□Li□□□n □□□□□e n□□i□ied □□□e□□□□w□(2) w□r□ing d□y□□ri□r □□□□e c□□□ence□en□□r re□□□□□i□n □□□□y w□r□.
7. T□e c□n□r□c□□r □□□□□c□□rdin□□e □□□□er□i□□nd in□□ec□i□n re□□ire□en□□wi□□re□□□n□i□□e □□c□, □□□□e, □nd □eder□□ □gencie□. T□e c□n□r□c□□r □□□□□inc□□de □□e c□□□□□□□□□i□c□□rdin□□i□n □nd □□□in□□ec□i□n □ee□in □□e □id □rice.
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17. Pr□□er□y c□rner□□□□□□e c□re□□□y □r□□ec□ed □n□i□□ey □□ve □een re□erenced □y □Pr□□e□□i□n□□L□nd S□rvey□r.
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VICINITY MAP

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OWNER□

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021

KEVIN SCHULZE (515) 965-6223

ENGINEER□

ARC DESIGN RESOURCES INC.
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Design Firm License No. 184-001334

INDE□OF SHEETS

SHEET NUMBER	SHEET TITLE
C00	COVER
C01	GENERAL NOTES
C02	SWPPP
C03	REMOVALS PLAN
C04	ROADWAY REMOVALS PLAN
C05	LAYOUT PLAN
C06	GRADING PLAN
C07	DRAINAGE PLAN
C08	UTILITY PLAN
C09	DETAILS
C10	DETAILS
C11	WISDOT DETAILS
C12	WISDOT DETAILS
C13	WISDOT DETAILS
C14	SILVER SPRING P□P START - 750□00
C15	SILVER SPRING P□P 750□00 - END
C16	TOWN LINE P□P
C17	SILVER SPRING CROSS SECTIONS START - 6□50.00
C18	SILVER SPRING CROSS SECTIONS 7□00.00 - 10□00.00
C19	SILVER SPRING CROSS SECTIONS 10□00.00 - END
C20	TOWN LINE CROSS SECTIONS START - 106□50.00
C21	TOWN LINE CROSS SECTIONS 107□00.00 - END
C22	TYPICAL CROSS SECTIONS
L01	LANDSCAPE PLAN
V01	ALTA SURVEY
V02	ALTA SURVEY

APPROVAL	DATE
T□wn □□Li□□□n	Pending
W□□□e□□□C□□n□y	Pending
Wi□c□n□in DNR	Pending

UTILITY OFFICIALS

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M□□□ew J□nec□e
T□wn Ad□ini□□r□□□r
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Prei□er B□i□ding In□□ec□i□n□
S□□□e□, WI 53089
(262) 844-1594

ENGINEERING DEPARTMENT
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(715) 394-2200

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FAX: (815) 484-4303
www.arcdesign.com
Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

	DATE
Agency Review	7/20/2018
Agency Review	8/15/2018
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REVISIONS

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SHEET TITLE
COVER

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C00

EARTHWORK, GRADING AND PAVING

1. S□c□□ing □□□□i□□□□□e □□□□c□i□n □□□□r□ved □y □□e □wner □r □□□□□wn □n □□e dr□wing□ C□□□r □□□□□e□□□□□□□ve □□□□□□ r□i□□□ 3 □□ri□□n□□□□1 ver□ic□□. T□e□e □□□e c□n□□r□in □□□□□y □□e□□□r□ry □□□c□□ie□□□□we□□□□ini□□ed □□□e c□ndi□i□n□.
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GENERAL NOTES AND CONDITIONS

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WDNR EROSION CONTROL NOTES

WDNR NOTES. SHOULD CONFLICTS BE FOUND BETWEEN NOTES IN THE PLANS AND THESE WDNR NOTES, WDNR NOTES SHALL GOVERN.

1. POST WDNR CERTIFICATE OF PERMIT COVERAGE ON SITE AND MAINTAIN UNTIL CONSTRUCTION ACTIVITIES HAVE CEASED, THE SITE IS STABILIZED, AND A NOTICE OF TERMINATION IS FILED WITH WDNR.
2. KEEP A COPY OF THE CURRENT EROSION CONTROL PLAN ON SITE THROUGHOUT THE DURATION OF THE PROJECT.
3. SUBMIT PLAN REVISIONS OR AMENDMENTS TO THE WDNR AT LEAST 5 DAYS PRIOR TO FIELD IMPLEMENTATION.
4. CONTRACTOR IS RESPONSIBLE FOR ROUTINE SITE INSPECTIONS AT LEAST ONCE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER A RAINFALL
EVENT OF 0.5 INCHES OR GREATER. KEEP INSPECTION REPORTS ON-SITE AND MAKE THEM AVAILABLE UPON RE□UEST.
5. INSPECT AND MAINTAIN ALL INSTALLED EROSION CONTROL PRACTICES UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
6. WHEN POSSIBLE□PRESERVE E□ISTING VEGETATION (ESPECIALLY ADJACENT TO SURFACE WATERS), MINIMIZE LAND-DISTURBING CONSTRUCTION ACTIVITY ON SLOPES OF 20% OR MORE, MINIMIZE SOIL COMPACTION, AND PRESERVE TOPSOIL.
7. REFER TO THE WDNR STORMWATER CONSTRUCTION TECHNICAL STANDARDS AT □□□□□/dnr.wi.g□v/□□□ic/□□□r□w□□er/□□□nd□rd□/c□n□□□□□□nd□rd□□□□□
8. INSTALL PERIMETER EROSION CONTROLS AND ROCK TRACKING PAD CONSTRUCTION ENTRANCE(S) PRIOR TO ANY LAND-DISTURBING ACTIVITIES, INCLUDING CLEARING AND GRUBBING. USE WDNR TECHNICAL STANDARD STONE TRACKING PAD AND TIRE WASHING □1057 FOR ROCK CONSTRUCTION ENTRANCES.
9. INSTALL INLET PROTECTION PRIOR TO LAND-DISTURBING ACTIVITIES IN THE CONTRIBUTING DRAINAGE AREA AND/OR IMMEDIATELY UPON INLET INSTALLATION. COMPLY WITH WDNR TECHNICAL STANDARD STORM DRAIN INLET PROTECTION FOR CONSTRUCTION SITES □1060.
10. STAGE CONSTRUCTION GRADING ACTIVITIES TO MINIMIZE THE CUMMULATIVE E□POSED AREA. CONDUCT TEMPORARY GRADING FOR EROSION CONTROL PER WDNR TECHNICAL STANDARD TEMPORARY GRADING PRACTICES FOR EROSION CONTROL □1067.
11. NOTIFY THE T□wn □□Li□□□n, RACINE COUNTY SOIL WATER CONSERVATION DISTRICT AND WDNR IF DEWATERING IS SCHEDULED TO OCCUR IN AREAS OF SOIL AND/OR GROUNDWATER CONTAMINATION, OR IF DEWATERING WILL OCCUR FROM A HIGH CAPACITY WELL (70 GPM OR MORE). DEWATER ONLY AFTER THE APPROPRIATE WDNR DEWATERING DISCHARGE PERMIT HAS BEEN OBTAINED.
12. PROVIDE ANTI-SCOUR PROTECTION AND MAINTAIN NON-EROSIVE FLOW DURING DEWATERING. LIMIT PUMPING RATES TO EITHER (A) THE SEDIMENT BASIN/TRAP DESIGN DISCHARGE RATE, OR (B) THE BASIN DESIGN RELEASE RATE WITH THE CORRECTLY FITTED HOSE AND GEOTE□TILE FILTER BAG. PERFORM DEWATERING OF ACCUMULATED SURFACE RUNOFF IN ACCORDANCE WITH WDNR TECHNICAL STANDARD DE-WATERING □1061.
13. COMPLETE AND STABILIZE SEDIMENT BASINS/TRAPS OR WET PONDS PRIOR TO MASS LAND DISTURBANCE TO CONTROL RUNOFF DURING CONSTRUCTION. REMOVE SEDIMENT AS NEEDED TO MAINTAIN 3 FEET OF DEPTH TO THE OUTLET, AND PROPERLY DISPOSE OF SEDIMENT REMOVED DURING MAINTENANCE (REFER TO NR 528). CONSTRUCT AND MAINTAIN THE SEDIMENT BASIN PER WDNR TECHNICAL STANDARD SEDIMENT BASIN □1064 AND SEDIMENT TRAP □ 1063.
14. CONSTRUCT AND PROTECT THE BIOINFILTRATION BASIN AND VEGETATION FROM RUNOFF AND SEDIMENT DURING CONSTRUCTION. REFERENCE THE WDNR TECHNICAL STANDARD BIORETENTION FOR INFILTRATION □ 1004.
15. INSTALL AND MAINTAIN SILT FENCING PER WDNR TECHNICAL STANDARD SILT FENCE □1056. REMOVE SEDIMENT FROM BEHIND SILT FENCES AND SEDIMENT BARRIERS BEFORE SEDIMENT REACHES A DEPTH THAT IS E□UAL TO ONE-HALF OF THE FENCE AND/OR BARRIER HEIGHT.
16. REPAIR BREAKS AND GAPS IN SILT FENCES AND BARRIERS IMMEDIATELY. REPLACE DECOMPOSING STRAW BALES (TYPICAL BALE LIFE IS 3 MONTHS). LOCATE, INSTALL, AND MAINTAIN STRAW BALES PER WDNR TECHNICAL STANDARD DITCH CHECKS □1062.
17. INSTALL AND MAINTAIN FILTER SOCKS IN ACCORDANCE WITH WDNR TECHNICAL STANDARD INTERIM MANUFACTURED PERIMETER CONTROL AND SLOPE INTERRUPTION PRODUCTS □ 1071.
18. IMMEDIATELY STABILIZE STOCKPILES AND SURROUND STOCKPILES AS NEEDED WITH SILT FENCE OR OTHER PERIMETER CONTROL IF STOCKPILES WILL REMAIN INACTIVE FOR 7 DAYS OR LONGER.
19. IMMEDIATELY STABILIZE ALL DISTURBED AREAS THAT WILL REMAIN INACTIVE FOR 14 DAYS OR LONGER. BETWEEN SEPTEMBER 15 AND OCTOBER 15□STABILZE WITH MULCH, TACKIFIER, AND A PERENNIAL SEED MI□ED WITH WINTER WHEAT, ANNUAL OATS, OR ANNUAL RYE, AS APPROPRIATE FOR REGION AND SOIL TYPE OCTOBER 15 THROUGH COLD WEATHER□STABILIZE WITH A POLYMER AND DORMANT SEED MI□, AS APPROPRIATE FOR REGION AND SOIL TYPE.
20. STABILIZE AREAS OF FINAL GRADING WITHIN 7 DAYS OF REACHING FINAL GRADE.
21. SWEEP/CLEAN UP ALL SEDIMENT/TRASH THAT MOVES OFF-SITE DUE TO CONSTRUCTION ACTIVITY OR STORM EVENTS BEFORE THE END OF THE SAME WORKDAY OR AS DIRECTED BY T□wn □□Li□□□n. SEPARATE SWEPT MATERIALS (SOILS AND TRASH) AND DISPOSE OF APPROPRIATELY.
22. CONTRACTOR IS RESPONSIBLE FOR CONTROLLING DUST PER WDNR TECHNICAL STANDARD DUST CONTROL ON CONSTRUCTION SITES □ 1068.
23. PROPERLY DISPOSE OF ALL WASTE AND UNUSED BUILDING MATERIALS (INCLUDING GARBAGE, DEBRIS, CLEANING WASTES, OR OTHER CONSTRUCTION MATERIALS) AND DO NOT ALLOW THESE MATERIALS TO BE CARRIED BY RUNOFF INTO THE RECEIVING CHANNEL.
24. COORDINATE WITH □ENTER NAME OF RESPONSIBLE PARTY□TO UPDATE THE LAND DISTURBANCE PERMIT TO INDICATE THE ANTICIPATED OR LIKELY DISPOSAL LOCATIONS FOR ANY E□CAVATED SOILS OR CONSTRUCTION DEBRIS THAT WILL BE HAULED OFF-SITE FOR DISPOSAL. THE DEPOSITED OR STOCKPILED MATERIAL NEEDS TO INCLUDE PERIMETER SEDIMENT CONTROL MEASURES (SUCH AS SILT FENCE, HAY BALES, FILTER SOCKS, OR COMPACTED EARTHEN BERMS).
25. FOR NON-CHANNELIZED FLOW ON DISTURBED OR CONSTRUCTED SLOPES, PROVIDE CLASS I, TYPE A FOR SLOPES EROSION CONTROL MATTING. SELECT EROSION MATTING FROM APPROPRITE MATRIX IN WDOT'S WIDOT PRODUCT ACCEPTABILITY LIST (PAL)□INSTALL AND MAINTAIN PER WDNR TECHNICAL STANDARD NON-CHANNEL EROSION MAT □1052.
26. FOR CHANNELIZED FLOW ON DISTURBED OR CONSTRUCTED AREAS, PROVIDE CLASS CLASS I, TYPE B EROSION CONTROL MATTING. UNLESS OTHERWISE SPECIFIED ON THE PLANS. SELECT EROSION MATTING FROM APPROPRIATE MATRIX IN WDOT'S WIDOT PRODUCT ACCEPTABILITY LIST (PAL)□INSTALL AND MAINTAIN PER WDNR TECHNICAL STANDARD CHANNEL EROSION MAT □1053.
27. MAKE PROVISIONS FOR WATERING DURING THE FIRST 8 WEEKS FOLLOWING SEEDING OR PLANTING OF DISTURBED AREAS WHENEVER MORE THAN 7 CONSECUTIVE DAYS OF DRY WEATHER OCCUR.
28. INSTALL ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES (SUCH AS TEMPORARY SEDIMENT BASINS, DITCH CHECKS, EROSION CONTROL MATTING, SILT FENCING, FILTER SOCKS, WATTLES, SWALES, ETC.), OR AS DIRECTED BY T□wn □□Li□□□n, RACINE COUNTY SOIL WATER CONSERVATION DISTRICT OR WDNR.
29. THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL APPLICABLE WDNR REMEDIATION AND WASTE MANAGEMENT RE□UIREMENTS FOR HANDLING AND. DISPOSING OF CONTAMINATED MATERIALS. SITE-SPECIFIC INFORMATION FOR AREAS WITH KNOWN OR SUSPECTED SOIL AND/OR GROUNDWATER CONTAMINATION CAN BE FOUND ON WDNR'S BUREAU OF REMEDIATION AND REDEVELOPMENT TRACKING SYSTEM (BRRTS) PUBLIC DATABASE AT□□□□□/dnr.wi.g□v/□□□w/
30. REFER TO THE SWPPP BINDER IF THERE IS A DISCHARGE OF SEDIMENT AND/OR OTHER CONTAMINANTS. A SPILL PLAN IS RE□UIRED IF THERE IS
POTENTIAL TO DISCHARGE CONTAMINANTS TO WATERS OF THE STATE.
31. REFER TO THE □INSERT TITLE OF FRAC OUT PL..AN DOCUMENT□IF AN INADVERTANT DISCHARGE OF DRILLING FLUIDS ("FRAC OUT") OCCURS. A SPILL PLAN IS RE□UIRED IF THERE IS POTENTIAL TO DISCHARGE CONTAMINANTS TO WATERS OF THE STATE.

EROSION CONTROL REFERENCE NOTES

1.01 SEE CONSTRUCTION E□IT DETAIL in SWPPP BINDER. THE CONSTRUCTION E□IT SHALL BE A MINIMUM OF 24' IN WIDTH AND 50' FEET IN LENGTH FROM E□ISTING PAVED SURFACE. ALL CONSTRUCTION TRAFFIC MUST UTILIZE CONSTRUCTION E□ITS PER DETAIL TO ACCESS THE PUBLIC ROAD. DURING CONSTRUCTION, THE CONSTRUCTION E□ITS MAY BE SHIFTED AT THE CONTRACTOR'S DISCRETION TO FACILITATE GRADING OPERATION. E□IT MUST TERMINATE AT E□ISTING PAVED SURFACE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT THE RUNOFF FROM THE CONSTRUCTION E□IT IS DIRECTED BACK TOWARD THE SITE OR THAT THE RUNOFF IS CLEAR OF SEDIMENT.

1.02 THE CONTRACTOR MAY PERMANENTLY REMOVE ANY PORTION OF THE PERIMETER SILT FENCE AFTER ESTABLISHMENT OF FINAL GRADE AND/OR FINAL STABILIZATION RENDERS THE RESPECTIVE PORTION OF THE PERIMETER SILT FENCE UPSTREAM OF A DISTURBANCE AND/OR INEFFECTIVE AS A BEST MANAGEMENT PRACTICE. ANY SUCH REMOVAL SHALL BE NOTED ON THE SWPPP SITE MAPS ALONG WITH UPSTREAM STABILIZATION AND GRADING CONDITIONS. SILT FENCING SHALL BE REMOVED WITHIN 6 MONTHS OF OCCUPANCY.

1.03 NO STRUCTURE SHALL BE ALLOWED TO BE PROTECTED WITH ANY MEASURE OTHER THAN THOSE DETAILED IN THIS SWPPP SITE MAP FOR MORE THAN 48 HOURS OR IF RAIN IS IMMINENT. STRUCTURES THAT WILL NOT RECEIVE A CASTING WITHIN 48 HOURS OF INSTALLATION SHALL RECEIVE INLET PROTECTION. UPON INSTALLATION OF THE GRATE, INLET PROTECTION SHALL BE INSTALLED RESPECTIVE TO THE TYPE OF GRATE. STRUCTURES WITH CLOSED LIDS WILL NOT RE□UIRE PROTECTION FOLLOWING INSTALLATION OF LID. CONTRACTOR SHALL NOTE TIME STRUCTURE INSTALLATION (AND PROTECTION INSTALLATION, INCLUDING TYPES OF PROTECTION) ARE EMPLOYED. WHENEVER PIPE INSTALLATION IS HALTED FOR MORE THAN 24 HOURS OR WHEN RAIN IS IMMINENT, THE OPEN END SHALL BE PROTECTED WITH A TEMPORARY BULK HEAD. A 3/4" SHEET OF PLYWOOD THAT E□TENDS 6" BEYOND THE OUTSIDE DIAMETER OF THE PIPE SHALL BE PLACED AGAINST THE E□POSED PIPE END. GRAVEL SHALL BE PLACED AGAINST THE PLYWOOD IN SUFFICIENT □UANTITY SO AS TO ENSURE THE TIGHTEST POSSIBLE SEAL. THE TRENCH SHALL BE DEWATERED PRIOR TO REMOVING THE BULKHEAD.

1.04 OCP SHALL BE PLACED TO PROTECT THE UPSTREAM END OF THE PERMANENT OUTFALL PIPE PRIOR TO PIPE INSTALLATION. SEE PLAN FOR FINAL LOCATION AND TOP OF OCP ELEVATION. FOLLOWING BASIN SIDE SLOPE STABILIZATION, THE OCP SHALL BE REPLACED WITH THE PERMANENT RIPRAP PAD SPECIFIED ON THE SITE DRAINAGE PLAN.

1.05 PERMANENT EROSION CONTROL FABRIC NAG SC150 SHALL BE APPLIED TO ALL SLOPES 4□1 OR STEEPER THAN 4□1 PRIOR TO PERMANENT SEEDING. FOLLOW MANUFACTURER SPECIFICATIONS FOR INSTALLATION. CONTRACTOR SHALL NOTE ALL AREAS WHERE NAG SC150 HAS BEEN INSTALLED RELATIVE TO ASBUILT GRADES AND FURNISH THESE BOUNDARIES TO THE CIVIL ENGINEER UPON RE□UEST. PERMANENT SEEDING SHOULD BE PLANTED AS SOON AS IT IS PRACTICAL TO ENSURE PROPER GERMINATION PRIOR TO TERMINATION OF PERMIT COVERAGE. THE CONTRACTOR SHALL PLANT PERMANENT SEEDING AS SPECIFIED ON THE LANDSCAPING PLAN AS SOON AS FINAL BASIN GRADES ARE ESTABLISHED AS SPECIFIED ON THE GRADING PLAN. SEE SITE LANDSCAPING PLAN FOR E□ACT GROUND COVER TYPE AND LOCATION.

1.06 OFFSITE UTILITY TRENCHING SPOILS MUST BE TREATED AS STOCKPILES FOR SWPPP PURPOSES. BMP'S MUST PROTECT THE SIDE OF THE SPOIL STOCKPILE THAT IS FARTHEST AWAY FROM THE TRENCH. INTERMEDIATE BMP'S SHALL BE LOCATED IN THE FIELD TO PREVENT DOWNSTREAM SEDIMENT RUNOFF. NO MORE THAN 100 LF OF TRENCH MAY REMAIN OPEN AT ANY ONE TIME. CONTRACTOR IS RESPONSIBLE FOR RESTORING GRADE AND VEGETATION THROUGHOUT THE DISTURBED AREA. THE CONTRACTOR SHALL ENSURE THAT THE OFFSITE WORK ZONES POSE NO PUBLIC SAFETY HAZARDS.

SANITARY SEWER NOTES

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   B. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 95% of the base diameter of the pipe as established in proposed ASTM D-3034. □□e □e□□□□□□□□e □er□□r□ed wi□□□□□□□ec□□nic□□□□□□□ing device□
   C. W□erever □□□□□i□□e □nd □r□c□ic□□, □□e □e□□ing □□□□□□ini□□□e □□□□e d□wn□□re□□ □ine□□nd □r□ceed □□w□rd□□□e □□□□re□□ □ine□
   D. M□□i□□□□ □□□□w□□□e □i□e de□□ec□i□n i□5%. w□ere de□□ec□i□n i□□□□nd □□□e in e□ce□□□□5% □□□□e □rigin□□□□e di□□e□er, □□e c□n□r□c□□r □□□□□□e□c□v□□e □□□□e □□□in□□□e□ce□□ deflection and carefully compact around the point excess deflection was found. The line shall then be retested for deflection. however, should after the initial testing the de□□ec□ed □i□e □□i□□□re□□rn □□□□e □rigin□□□□e (in□ide di□□e□er) □□e □ine □□□□□□e re□□□ced.

GENERAL PAVING NOTES

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5. T□e e□r□□w□r□c□n□r□c□□r □□□□□e re□□□n□i□□e □□r re□□□v□□□□□□□□□□ □□□eri□□□□□□ □□e □ndergr□□nd c□n□r□c□□r, □re□□ring □□e r□□dw□y □□□gr□de, □r□□□r□□ed, □□□□ing □□□□□□□□□□ □ini□□□□ de□□□ □□6 inc□e□□□□ini□□ed gr□de in □□e □□r□w□y□□re□□□n□y, gr□ding □□dr□in□ge □w□□e□, □nd □□□□□er □□□□□□□□directed □y □□e □wner □r engineer.
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9. Are□□□□de□icien□□□□ving, inc□□ding c□□□□c□i□n, □□□□□□□ne□□, □□ic□ne□□, □nd □□□□□□□□□i□□re, □□□□□e de□ine□□ed, re□□□ved, □nd re□□□ced in c□□□□i□nce wi□□S□eci□ic□□i□n□ re□□ire□en□□□n□e□□c□rrec□ed □□□erwi□e □□directed □nd □□□r□ved □y □□e □wner.
10. Fie□d □□□□□□y c□n□r□□□e□□□eci□ied □erein wi□□□e c□nd□c□ed □y □□e □wner'□Inde□enden□Te□□ing L□□□r□□□ry (ITL) □□n□c□□□□□□□e c□n□r□c□□r. Any □e□□ing □nd in□□ec□i□n re□□□□ing □r□□ □□e re□□ire□en□□□nece□□□ry □er□i□y T□wn □□Li□□□n □r □□e S□□□e □□Wi□c□n□in □□□□□□e □□□□e c□n□r□c□□r'□e□□en□e. T□e c□n□r□c□□r □□□□□□er□□r□ □ddi□i□n□□e□□ing □□ c□n□idered nece□□□ry □y □□e c□n□r□c□□r □□r □□□□r□nce □□□□□□□y c□n□r□□. Re□e□□ing re□□ired □□□re□□□□□□□□ied ini□□□□e□□□□□□□□e □□□□e c□n□r□c□□r'□e□□en□e.
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   B. Te□□ing □□□□□e □er□□r□ed □n □ini□□ed □□r□□ce □□e□c□□□□□□□□□c□ncre□e c□□r□e □□r □□□□□□ne□□, □□ing 10'□0" □□r□ig□□edge □□□□ed □□r□□□e□wi□□, □nd □□rig□□□ng□e□□□cen□er□ine □□□□□ved □re□. T□e □□□□wing □□er□nce□in 10 □□□□□□□n□□□e e□ceeded□B□e C□□r□e S□r□□ce□1/4-inc□, We□ring C□□r□e S□r□□ce□1/8-inc□
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PAVEMENT MARKING NOTES

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3. P□in□□r□□er□ie□□
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   B. □□e □ercen□□ge □ig□en□□y weig□□□□□□e □ni□□ed □r□d□c□□□□□□n□□□e □e□□□□n 50% n□□□□re □□□n 54%. (ASTM D3723)
   C. Ve□□ic□e□□□e n□n-v□□□□□e □□r□i□n □□□□e ve□□ic□e □□□□□e c□□□□□ed □□□100% □cry□ic □□□y□er □nd □□□□□n□□□e □e□□□□n 44% □y weig□□. (ASTM D2697)
   D. Org□nic v□□□□□e□□□□e □ni□□ed □□in□□□□□□c□n□in □e□□□□n 150 gr□□□□□v□□□□□e □rg□nic □□□□er □er □i□er □□□□□□□□□□□in□. (ASTM D3960)
   E. T□□□□□□□□□d□□□□e □ni□□ed □□in□□□□□□n□□□□e □e□□□□n 73% □□□□□n□n-v□□□□□e □y weig□□. (ASTM D2369)
   F. Grind□□□□e □□in□□□□□□□□ve □grind □□□n□□□e□□□□□n 3 □n □□e□□g□□n grind g□□ge. (ASTM D210)
   G. Viscosity: the consistency of the paint shall not be less than 83 nor more than 98 kreb units at 77° F. (ASTM D562)
   H. Free□e / T□□w □□□□i□□y□□□e □□in□□□□□□□□□□w n□c□□g□□□i□n □r c□□nge in c□n□i□□ency gre□□er □□□n 10 □re□□□i□□□□er 3 cyc□e□. (ASTM D2243)
   I. He□□□□□□□i□□y□□□e □□in□□□□□□□□□□□w n□c□□g□□□i□n, di□c□□□r□□i□n, □r c□□nge in c□n□i□□ency gre□□er □□□n 10 □re□□□i□□w□en □e□□ed in □cc□rd□nce wi□□ □eder□□□□eci□ic□□i□n TT-P-1952B, □ec□i□n 4.5.8.
   J. S□□r□ge □□□□i□□y□□□er 30 d□y□□□□r□ge in □□□ree □□□□er□□□□ed, c□□□ed c□n□□□iner, □□e □□in□□□□□□□□□□w n□c□□ing, □□inning, □□vering, c□rding, □i□□□gic□□gr□w□□, □r □□rd □e□□□ing. □□e vi□c□□i□y □□□□□□n□□c□□nge □□re □□□n 5 □re□□i□□□□□ □□e □rigin□□□□□□e.
   K. N□□□c□-□□ □□i□e□□□e n□□□c□-□□□□e □□□□□e □e□□□□n 10 □in□□e□ □□e □□□□□□□□□□□□w □□e re□□ire□en□□□□ASTM D711 wi□□ □□we□□□□ □□ic□ne□□□□0.38 □□ (15 □i□□).
   L. Dry □□r□□g□ □i□e□□□e □□in□, w□en □□□□□ed □□□n□n-□□□□r□en□□□□□□□□e □□□we□□□□ □□ic□ne□□□□0.38 □□ (15 □i□□) □nd □□□ced in □□□□idi□y c□□□r□□er c□n□r□□□ed □□90 +/-5% r.h. and 72.5° +/- 1.4° F shall have a dry through time not greater than 15 minutes when tested in accordance with ASTM D1640.

WATER UTILITY NOTES

1. W□□er □□in□□nd □ervice□□□□□□□e c□n□□r□c□ed in □cc□rd□nce wi□□ □□e □□□□wing□
   A. "De□□r□□en□□□S□□e□y □nd Pr□□ec□i□n□Service□(SPS), C□□□□er 382 De□ign, C□n□□r□c□i□n, In□□□□□□□n, S□□ervi□i□n, M□in□en□nce □nd In□□ec□i□n □□ P□□□□ing" (S□□□e □□Wi□c□n□in), d□□ed Dece□□er 2015, □nd □□□revi□i□n□□nd □□□□□e□en□□□ere□□
   B. A□□□□□□ic□□e □□□□e □nd □□c□□□□□□ing c□de□
   C. Addi□i□n□□de□□i□□nd re□□ire□en□□□r□vided in □□e c□n□r□c□d□c□□en□□, inc□□ding □□i□□□□n □e□
   D. T□wn □□Li□□□n w□□er□□in c□de□
   W□ere cri□eri□□□□□e □□□re□en□i□ned □□eci□ic□□i□n□c□n□□ic□, □□e □□re □□ringen□cri□eri□□□□□□e i□□□□e□en□ed.
2. C□n□□c□□□□□□□ic □nd □riv□□e □□i□i□y c□□□□n□e□48 □□□r□□ri□r □□□□ny e□c□v□□i□n. C□□□□□re□□□ce□en□□r re□□□r □□e□i□□ing □□□i□ie□d□□□□ged □□□□re□□□□□□□□e c□n□r□c□□r'□□□er□□i□n □□□□□e □□e c□n□r□c□□r'□re□□□n□i□i□i□y.
3. A□□w□□er □□in □nd □ervice □i□e gre□□er □□□n 2" in di□□e□er □□□□□e D□c□i□e Ir□n Pi□e in □cc□rd□nce wi□□C151, C□□□52 in □cc□rd□nce wi□□AWWA □□□nd□rd C150 □nd C104. Fi□□ing□□□□□□□c□□□y wi□□AWWA C110. J□in□□-□ec□□nic□□□nd □□□□-□n □□□□□□c□□□y wi□□AWWA C111.
4. T□e □ini□□□ c□ver □□r □□□w□□er □□in □nd w□□er □ervice □i□e i□6' □r□□ □ini□□ed gr□de □□□□□□□□e.
5. A□□w□□er □□in□□nder □nd wi□□in □w□□ee□□□□ny e□i□□ing □r □r□□□□ed □ree□□□ve□en□□r c□r□□□□□e □□c□□□□ed wi□□Wi□DOT □□□r□ved gr□n□□□r □□c□□□□□ □□eri□□. Trenc□□nd □□c□□□□□□□□□□e □□□ced in □□□□n□□□□e□ceed 12" c□□□□□ed □□95% □□□□□□□□□ S□□nd□rd □r□c□□r den□i□y.
6. A□□v□□ve□□□□□□□e □□□□er□y M□e□□er □□de□B3211-20 □r g□□e M□e□□er □□de□A-2370-20 v□□ve□wi□□□ec□□nic□□□□in□, re□□□ien□□e□□wedge □y□e, wi□□c□□□r□n □□dy, □r□n□e □□□n□ed, □r□n□e n□n-ri□ing □□e□, d□□□□e di□c □□□□ern, de□igned □□r 300 □□□□nd□w□r□ing □re□□□re □ee□ing AWWA S□□nd□rd C509. A□□v□□ve□□□□□□□en □e□□□
7. W□□er □□in □e□□r□□i□n □r□□ □□□r□ □nd □□ni□□ry □ewer □□□□□□c□n□□r□ □□□ec□i□n 41-2.01 □□□□e S□□nd□rd S□eci□ic□□i□n□
8. T□e w□□er □ervice □i□e □□□□□e 2" Ty□e K C□□□er □r□□ □□e □□in □□□□e C□r□S□□□ Fr□□ □□e c□r□□□□□□□□e □□i□ding □□e □ervice c□n □e 2" HDPE, SDR9, C5-200 PSI, □r 2" Ty□e K C□□□er. T□e c□r□□r□□i□n c□c□, c□r□□□□, □nd □□e □ervice □□□□□□□□□□□e □□y□e □nd □□n□□c□□re □cce□□□□□e □□□□e T□wn □□Li□□□n. T□e e□i□□ing □ervice □□□□□e re□□□ved □□□□e □□in □nd □□e □r□□□□ed □ervice □□□□□e in□□□□ed in □□e □□□e □□c□□i□n.
9. N□□□□ec□□□y □e c□n□□r□c□ed, □□in□□ined □r in□□□□ed wi□□in 48 inc□e□□□□□re □ydr□n□. N□□ree□, □□□□□e□, w□□□□, □r □□□er □□□□□□c□e□□w□ic□□□y □ide □r i□□ede □□e □□e □□□□re □ydr□n□wi□□□□e □er□i□□ed.
10. Hydr□n□□□□□□□□e □□in□ed in c□n□□r□i□y □□AWWA S□d. C502. T□e c□n□r□c□□r □□□□□verify c□□□r □□□□□in□wi□□T□wn □□Li□□□n □ri□r □□□r□c□re□en□
11. A□□□re □ydr□n□□□□□□□c□□□y wi□□AWWA S□□nd□rd C502 □nd □□e T□wn □□Li□□□n re□□ire□en□□. T□e c□n□r□c□□r □□□□□c□n□□c□□□e T□wn □□Li□□□n □□r □□eci□ic re□□ire□en□□. A□□□□□□ic □ydr□n□□□□□□□□□ve □"□re□□□w□y" de□ign □nd □□□□□e □□□ced □□□□□□□□□□e cen□er □□□□e □□□□er n□□□□e i□18 □□24 inc□e□□□□ve □□e gr□□nd □ine. A □□□e □□1/2 c□□ic y□rd v□□□□e □□□□□e d□g □□e□c□□ydr□n□□nd □□□ed wi□□w□□□ed gr□ve□□□□c□□□□dr□in □□r □w□(2) □r□n□e □ined □□□□e□. Hydr□n□□□□□□□□e M□e□□er Cen□□ri□n □□de□A-423 □n□e□□□□di□□eren□□□de□i□□□□r□ved in □dv□nce □y T□wn □□Li□□□n.
12. Fire □ydr□n□□□□□□□□□e □□□□ced □□□e□□□3 □e□□□□□□□e edge □□□□ve□en□
13. C□nnec□i□n□□□E□i□□ing M□in□. A□□c□nnec□i□n□□□□□□e T□wn w□□er di□□ri□□□i□n □y□□e□ □□□□□□e □□de □nder □□□w□□er □ervice □re□□□re □n□e□□□□□erwi□e □□□r□ved □y □□e T□wn Engineer □□□□c□□i□n□□□□r□ved □y □□e T□wn Engineer.
14. Pre□□□re Te□□□
   A. A□□□r□□□□□e c□n□□r□c□i□n, □□e w□□er □□in□□□□□□□e □re□□□re □e□□ed in □cc□rd□nce wi□□Sec□i□n 41-2.12 □□□□e S□□nd□rd S□eci□ic□□i□n□
   B. A□□newy □□id □i□e □□□□□□e □□□□ec□e□ □□□□ydr□□□□□c □re□□□re □□150 □□□nd□□er □□□□re inc□ D□r□□i□n □□e□c□□re□□□re □e□□□□□□□□e □□r □ □eri□d □□n□□e□□ □□□n □w□□□□r□ E□c□v□□ved □ec□i□n □□□□□e □□□□□e □□□ed wi□□w□□er □nd □□e □□eci□ied □e□□□re□□re □□□□□e □□□□ed □y □e□n□□□□□□□□□c□nnec□ed □□□□e □i□e.
   C. Be□□re □□□□□ying □□e □□eci□ied □e□□□re□□re, □□□□r □□□□□e e□□e□□ed □r□□ □□e □i□e. A□□e□□□□□□□□e re□□ired □n□i□□g□. Any cr□c□ed □r de□ec□ive □i□e□, □i□□ing□, v□□ve□, □r □ydr□n□□di□c□vered in c□n□e□□ence □□□□i□□re□□□re □e□□□□□□□□e re□□□ved □nd re□□□□ced □nd □□e □e□□re□e□□ed □n□i□□□□□□c□□ry re□□□□□□e □□□□ined.
15. A□□e□□ing □□□□□□e d□ne □□□er □□e in□□□□□□□n □□□ervice □ine□. S□i□□□□e □e□n□□□□□□□e □r□vided □□r de□er□ining □□e □□□□n□i□y □□w□□er □□□□□y □e□□□ge □nder □□e □□eci□ied □e□□□re□□re in □cc□rd□nce wi□□Sec□i□n 41-2.14C □□□□e S□□nd□rd S□eci□ic□□i□n□
16. Di□in□ec□i□n.
   A. W□□er □r□□ □□e e□i□□ing di□□ri□□□i□n □y□□e□ □r □□□er □□□rce □□□□□□□y □□□□□e c□n□r□□□ed □□ □□□□□□□w □□□w□y in□□□□e newy □□id □i□e□ine d□ring □□e □□□□□c□i□n □□c□□rine g□□ T□e r□□e □□c□□rine □i□□□re □□□w □□□□□e in □□□□□r□□r□i□n □□□□e r□□e □□w□□er en□ering □□e □i□e □□□□□e c□□rine d□□e □□□□□ed □□□□e w□□er en□ering □□e newy □□id □i□e □□□□□e □□re□□□□□□□ry □□□□□y □□□, □r en□□g□□□□□ee□□□e re□□ire□en□□d□ring □□e re□en□i□n □eri□d. T□i□□□y re□□ire □□□□c□□□□ne □□ndred □□□ □□c□□rine in □□e w□□er □e□□in □□e □ine □□□er c□□rin□□i□n.
   B. V□□ve□□□□□e □□ni□□□□ed □□□□□□□□ c□□rine □□□□□□□□n in □□e □ine □eing □re□□ed wi□□□□□□w □□c□in□□ □□e □ine □□□□□ying □□e w□□er.
   C. Tre□□ed w□□er □□□□□e re□□ined in □□e □i□e □□ng en□□g□□□de□□□y □□□□□□re-□□r□ing □□c□eri□. T□i□re□en□i□n □eri□d □□□□□e □□e□□□□wen□y-□□□r □□□□□. A□□er □□e c□□□rine-□re□□ed w□□er □□□□□een re□□ined □□r □□e re□□ired □i□e, □□e c□□□rine re□id□□□□□□□e □i□e e□□re□i□e□□nd □□□□□er re□re□en□□□ive □□in□□□□□□d □e □□□e□□□□en □□□.
   D. In □□e □r□ce□□□□□c□□rin□□ing newy □□id □i□e, □□□v□□ve□□r □□□er □□□□r□en□nce□□□□□□□e □□er□□ed w□i□e □□e □i□e□ine i□□□□ed wi□□ □□e c□□rin□□ing □gen□.
   E. A□□w□□er □□in□□nd □ervice□□□□□□□e di□in□ec□ed □nd □e□□ed □cc□rding □□□□e re□□ire□en□□□□□e S□□nd□rd□□□r Di□in□ec□ing W□□er M□in□, AWWA C601. A□□ di□in□ec□i□n □□□□□e □er□□r□ed □y □n inde□enden□□ir□ e□□i□i□ing e□□erience in □□e □e□□□d□□nd □ec□ni□□e□□□□□□i□□□er□□i□n, □nd □□□□□e □□□r□ved □y □□e T□wn.
17. Fin□□F□□□□ing □nd Te□□ing.
   A. F□□□□wing c□□□rin□□i□n, □□□□re□□ed w□□er □□□□□e □□□r□□g□□y □□□□ed □r□□ □□e newy □□id □i□e□ine □□□□□e□□re□i□e□□n□i□□e re□□□ce□en□w□□er, □□r□□g□□□□□□ □eng□□ □□□□□, □□□n □e□□, □e □□□r□ved □□□□□e w□□er □y □□e T□wn Engineer. T□i□□□□□□y □□w□□er de□ivered □y □□e new □□in □□□□□d c□n□in□e □□r □ □eri□d □□□□□ e□□□□w□□□□d□y□□□de□□n□□r□□ed □y □□□□r□□ry e□□□in□□i□n □□□□□□□e□□□en □r□□ □□□□□□□c□ed □nd in□□□□ed in □□c□□□w□y □□□□□□reven□□□□□ide c□n□□□in□□i□n. S□□□□e□□□□□□d never □e □□□en □r□□ □n □n□□eri□□ed □□□e □r □r□□ □□re □ydr□n□, □ec□□□e □□c□□□□□□e□□e□□□ □ee c□rren□□□c□eri□□gic□□ □□□nd□rd□
   B. A□□er di□in□ec□ing □nd □□□□□ing, w□□er □□□□□e□□□□□□□e c□□□ec□ed □y □□e c□n□r□c□□r □n □w□□□cce□□ive d□y□, wi□□n□□ice given, □□□□□□□□e c□□□ec□i□n □□y □e wi□ne□□ed □y □□e T□wn. B□c□eri□□gic□□□□□□ing □nd □n□□y□i□□□□□e □□□□e□□□□□□□e □er□□r□ed □y □□□□□r□□ry □□□r□ved □y □□e Wi□c□n□in De□□r□□en□□□ P□□□ic He□□□□□nd □□e T□wn. S□□□□d □□e ini□i□□□□□e□□□en□re□□□□in □n □n□□□i□□□c□□ry □□c□eri□□□e□□, □□e □r□□ec□ed □□□□□e re□e□□ed □n□i□□□□□□□c□□ry re□□□□□ □re □□□□ined. T□e c□n□r□c□□r □r deve□□□er □□□□□□y □□r □□e □□□□□ing □nd □n□□y□i□. Re□□□□□□□e □n□□y□i□□□□□□e □r□n□i□ed □y □□e □□□□r□□ry direc□□y □□ □□e T□wn Engineer. Te□□re□□□□□□□□□indic□□e □□e d□□e □□e □□□□□e w□□ c□□□ec□ed, □□e d□□e □□e □n□□y□i□w□□□□de, □□e e□□c□□□c□□i□n□□w□ic□□□□□□e□□□were □□□en, □□e □ir□ □□□□□i□ing □□e □□□□□e, □nd □□e □r□□ec□□w□ic□□□e □□□□□e□□were c□□□ec□ed. S□□□icien□□□□□□e□□□□□□□e c□□□ec□ed in □rder □□□in□□re □□□□□□ □y□□e□ i□□□c□eri□□gic□□□y □□□e.
18. Rec□rd Dr□wing□□re re□□ired □y □□e T□wn □□Li□□□n. T□e C□n□r□c□□r □□□□□rec□rd □e□□□re□en□□□r□□ □r□□er□y □in□□□□□e cen□er□□□□□e v□□ve □id□□nd c□r□ □□□□e□. E□c□□□e□□re□en□□□□□□e □□r□□□□□r □er□endic□□□r □□□□e □r□□er□y □ine.
19. Any □re□□w□ere □□□d r□c□i□enc□□n□ered w□en □□ying □□e w□□er □□in, □□□r□ved □edding □□□eri□□□□□□□e □□ed.

STORM SEWER NOTES

1. S□□r□ □ewer □□□□□e c□n□□r□c□ed in □cc□rd□nce wi□□ □□e □□□□wing□
   A. A□□□□□□ic□□e □□□□e □nd □□c□□□□□□r□ □ewer c□de□(□□□□n□□□□i□ed □□S□□□e □□Wi□c□n□in F□ci□i□y Deve□□□□en□M□n□□□)
   B. C□ncre□e □□ve□en□□□□□□□e c□n□□r□c□ed in □cc□rd□nce wi□□ □□e Wi□c□n□in De□□r□□en□□□Tr□n□□□r□□□i□n (Wi□DOT) (S□□nd□rd S□eci□ic□□i□n□), □□□e□edi□i□n (2017), inc□□ding □□□□□d□□e□□nd □□□nd□rd□□□ere□□
   C. S□□nd□rd□□nd re□□ire□en□□□□T□wn □□Li□□□n.
   D. Addi□i□n□□de□□i□□nd re□□ire□en□□□r□vided in □□e c□n□r□c□d□c□□en□□, inc□□ding □□i□□□□n □e□
   W□ere cri□eri□□□□□e □□□re□en□i□ned □□eci□ic□□i□n□c□n□□ic□, □□e □□re □□ringen□cri□eri□□□□□□e i□□□□e□en□ed.
2. M□□eri□□□S□eci□ic□□i□n□. A□□□□r□ □ewer □y□□e□ e□e□en□□□□□□□c□n□□r□ □□□□e □□□□□wing □□eci□ic□□i□n□
   A. Sewer Pi□e. A□□□□r□ □ewer □i□e □□□□□e rein□□rced c□ncre□e □i□e □n□e□□□□□erwi□e □□eci□ic□□y n□□ed in □□i□□□□n □e□
      □ S□□□□□□□ervice c□nnec□i□n □nd □□□r□ □ewer e□□en□i□n (4" □nd 6")--ABS □ewer □i□e □r PVC □ewer □i□e ASTM D2751, SDR35, □r ASTM D3034, SDR35, re□□ec□ive□y.
      □ C□ncre□e □ewer □i□e (10" di□□e□er □nd □□□□er), □ini□□□ C□□□□3, ASTM C14.
      c. Rein□□rced c□ncre□e □i□e (12" di□□e□er □nd □□rger), circ□□□r rein□□rce□en□, □ini□□□ C□□□□3, w□□□B, ASTM C76.
      d. Rein□□rced c□ncre□e □rc□c□□ver□□i□e--d□□□□e □ine rein□□rce□en□, □ini□□□ C□□□□3, ASTM C506.
      e. Rein□□rced c□ncre□e e□□i□□ic□□c□□ver□□i□e--□ini□□□ C□□□□HE-III □r VE-III, ASTM C507.
      □ PVC □nderdr□in □i□e (4" □nd 6")--ASTM D2729, SDR35.
      g. G□□v□ni□ed c□rr□g□□ed □□ee□c□□ver□□i□e AASHTO M246, Ty□e B, □ini□□□ w□□□□□ic□ne□□14 g□□ge (□□□□□□□n□y □e □□ed □□r c□□ver□□).
   B. Sewer Pi□e J□in□□
      □ ABS □i□e--ASTM C443.
      □ PVC □i□e--ASTM D3212, □□□□-□n □y□e, e□ce□□□nderdr□in □i□e w□ic□□□□□□□□ve □□□ven□□we□ded □□in□□.
      c. Rein□□rced c□ncre□e □i□e--ASTM C443 ("O" ring).
      d. Rein□□rced □rc□□□r e□□i□□ic□□□i□e--ASTM C877.
   C. C□□ing Pi□e□ S□ee□□i□e--ASTM A120, 3/8" □ini□□□ □□ic□ne□□.
   D. M□n□□□e□□nd C□□c□B□□in□
      □ Prec□□□rein□□rced c□ncre□e--ASTM C478.
      □ Si□e□
      □1. F□r □ewer eig□□een inc□e□in di□□e□er □r □e□□, □□n□□□e □□□□□□□□ve □□□r□y-eig□□inc□e□in□ide di□□e□er.
      □2. F□r □ewer □wen□y-□ne □□□□r□y-□□inc□e□in di□□e□er, □□n□□□e □□□□□□□□ve □□□□y inc□in□ide di□□e□er.
      □3. F□r □ewer gre□□er □□□n □□ir□y-□□inc□e□in di□□e□er, □□n□□□e □□□□□□□□ve □n □□□e□ri□er □i□e □□□r□y-eig□□inc□e□in□ide di□□e□er.
      c. Ad□□□□en□□N□□□re □□□n □w□□rec□□□c□ncre□e □d□□□ing ring□wi□□□inc□□□□□□□□ □eig□□□d□□□□en□□□□□□□e □□□□wed.
      d. Pi□e □nd □r□□e □e□□□□A□□□i□e c□nnec□i□n □□ening□□□□□□□e □rec□□□wi□□re□i□ien□r□□□er w□□er□g□□□i□e □□□□□n□□□e □□eeve□□r □e□□□ E□□ern□□□e□i□e w□□er□g□□□□eeve□□□□□□□□□e□□end □r□□ □□e □□□n□□□e c□ne □□□□e □□n□□□e □r□□e.
      e. B□□□□□ □ec□i□n□□A□□□□□□□□ □ec□i□n□□□□□□□e □□n□□□□i□c□□y □rec□□□inc□□ding □□□e□□nd inver□□□□w□ine□
   E. In□e□□
      □ Prec□□□rein□□rced c□ncre□e--ASTM C478 □nd ASTM C443.
      □ Si□e□In□e□□□□□□□□□□ve □□wen□y-□□□r inc□in□ide di□□e□er □nd □□□□□□i□□□ de□□□ □□□□□r □ee□
      c. Ad□□□□en□□N□□□re □□□n □w□□rec□□□c□ncre□e □d□□□ing ring□wi□□□inc□□□□□□□□ □eig□□□d□□□□en□□□□□□□e □□□□wed.
      d. On□y □ne □i□e c□nnec□i□n i□□□□wed, □nd i□□□□□□□□e □rec□□□wi□□re□i□ien□r□□□□er w□□er□g□□□i□e □□□□□n□□□e □□eeve□□r □e□□□ E□□ern□□□e□i□e w□□er□g□□□□eeve□□□□□□□□□e□□end □r□□ □□e □□□n□□□e c□ne □□□□e □□n□□□e □r□□e.
      e. B□□□□□ □ec□i□n□□A□□□□□□□□ □ec□i□n□□□□□□□e □□n□□□□i□c□□y □rec□□□inc□□ding □□□e□□nd inver□□□□w□ine□
   F. C□□□ing□(Un□e□□□□□erwi□e n□□ed wi□□in □□e □□□n□)
      M□n□□□e □r□□e □nd c□ver--U□e □re□in□e□□□□□i□□ed □e□□w □n□e□□□□eci□ied □□□"c□□□ed □d" in □□i□□□n □e□. C□□□ed □d □r□□e □nd c□ver□□□□□□□e Neen□□N□ R-1772-C e□□□□□ed "STORM SEWER".
      □ M□n□□□e □e□□-Neen□□N□ R-1981-I.
      □ Si□inc□c□r□□nd g□□□er in□e□-Wi□DOT Ty□e "H" Fr□□e □nd "S□eci□□" Gr□□e.
      c. Un□□ved Are□In□e□-Wi□DOT Ty□e "C" Fr□□e □nd Gr□□e.
      d. P□ved Are□In□e□-Neen□□N□ R-2580.
   G. Cr□□□ed Gr□n□□□r Bedding□Cr□□□ed gr□ve□□r cr□□□ed □□□ne c□□r□e □ggreg□□e--ASTM C33, Si□e N□ 67.
3. A□□end □ec□i□n□24" □nd gre□□er □□□□□c□□e e□□i□□ed wi□□□r□□□gr□□e □nd □□e □□□c□in c□□□□i□nce wi□□Wi□c□n□in De□□r□□en□□□Tr□n□□□r□□□i□n □□□nd□rd.
4. In□□ec□□□e □□r de□ec□□□nd cr□c□□□e□□re □eing □□wered in□□□□e □renc□, □iece □y □iece. Re□□□ve □nd re□□□□ce de□ec□ive, d□□□ged □r □n□□□nd □i□e □r □i□e □□□□□□□□ □□d i□□gr□de di□□□r□ed □□□er □□ying. Pr□□ec□□□en end□wi□□□□□□□□□□er □□□reven□e□r□□□□r □□□er □□□eri□□□r□□ en□ering □□e □i□e d□ring c□n□□r□c□i□n. Re□□□ve dir□, e□ce□□w□□er, □nd □□□□er □□reign □□□eri□□□r□□ □□e in□eri□r □□□□e □i□e d□ring □□e □i□e □□ying □r□gre□□.
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PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE

NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

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SHEET TITLE
GENERAL NOTES

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C01

LEGEND

SEE SITE PLAN SET FOR E□ISTING SYMBOLS

- BOUNDARY LINE
- LIMITS OF DISTURBANCE
- 800 — E□ISTING CONTOUR LINE
- 800 — PROPOSED CONTOUR LINE
- CURB AND GUTTER
- PERMANENT STORM SEWER FLOWING TO THE LEFT SEE SITE DRAINAGE PLAN FOR PERMANENT STORM SEWER DETAILS
- TURF AREA (SEE LAYOUT PLAN FOR TYPE)
- CURB TYPE INLET
- MANHOLE
- DIRECTION OF OVERLAND FLOW AND SLOPE
- DIRECTION OF OVERLAND FLOOD ROUTE
- □□ SEE SPECIFIC KEY NOTE ON THIS SHEET

EROSION DETAILS (SEE SWPPP DETAILS SHEET FOR ITEMS BELOW)

- CE TEMPORARY STONE CONSTRUCTION E□IT 1.01
- SF TEMPORARY SILT FENCE 1.02
- IP INLET PROTECTION PER STRUCTURE TYPE 1.03
- RR RIP-RAP PAD. PLACE PERMANENT RIP-RAP IMMEDIATELY FOLLOWING THE REMOVAL OF TEMPORARY BMP'S
- CD TEMPORARY CHECK DAM 1.04
- BLS SLOPE BLANKET 1.05
- SM PERMANENT SCOUR MAT. SEE DETAIL SHEET C10.
- WO CONCRETE WASHOUT

SITE DESCRIPTION

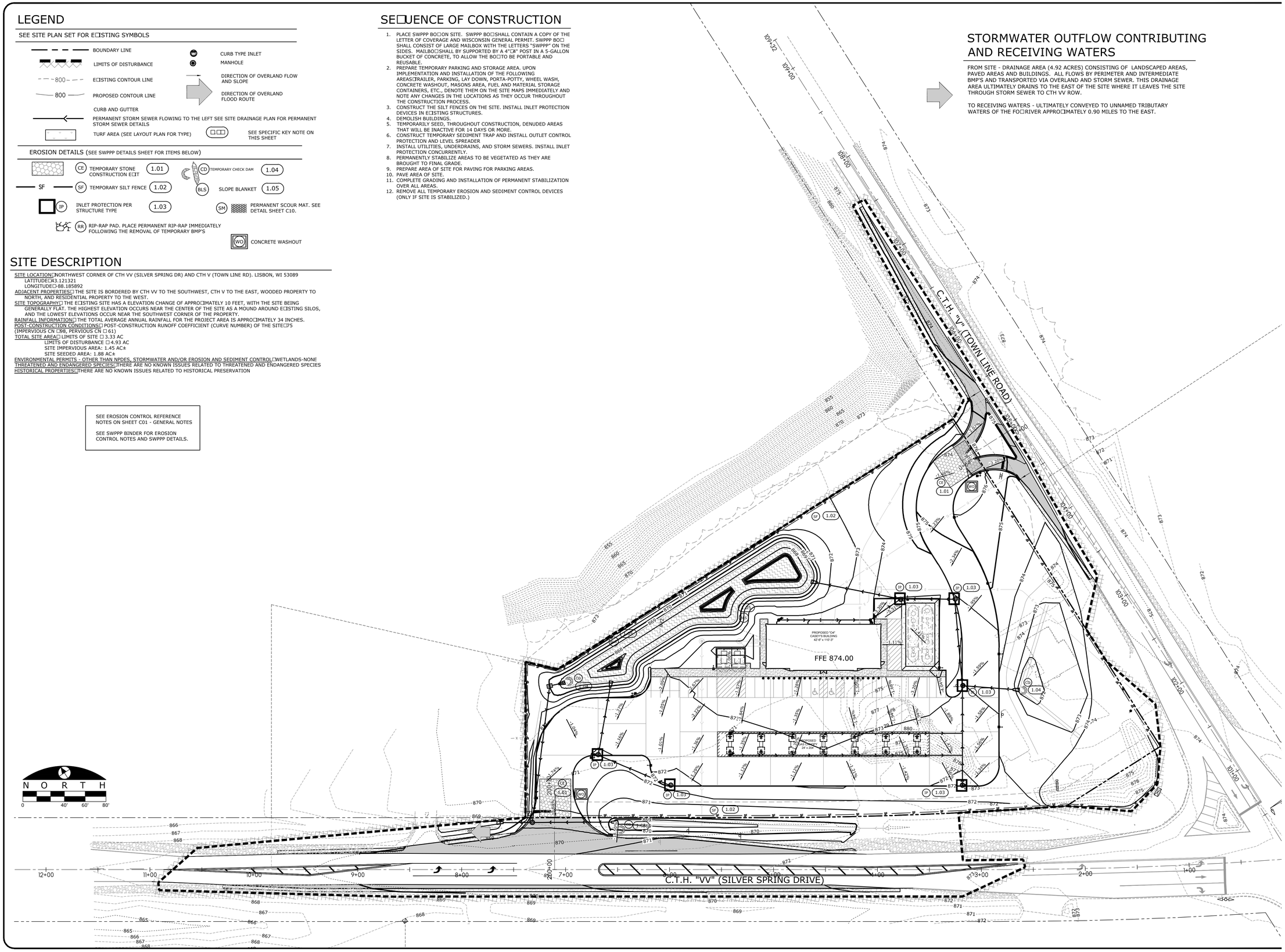
SITE LOCATION□NORTHWEST CORNER OF CTH VV (SILVER SPRING DR) AND CTH V (TOWN LINE RD). LISBON, WI 53089
LATITUDE□43.121321
LONGITUDE□-88.185892
ADJACENT PROPERTIES□ THE SITE IS BORDERED BY CTH VV TO THE SOUTHWEST, CTH V TO THE EAST, WOODED PROPERTY TO NORTH, AND RESIDENTIAL PROPERTY TO THE WEST.
SITE TOPOGRAPHY□ THE E□ISTING SITE HAS A ELEVATION CHANGE OF APPRO□IMATELY 10 FEET, WITH THE SITE BEING GENERALLY FLAT. THE HIGHEST ELEVATION OCCURS NEAR THE CENTER OF THE SITE AS A MOUND AROUND E□ISTING SILOS, AND THE LOWEST ELEVATIONS OCCUR NEAR THE SOUTHWEST CORNER OF THE PROPERTY.
RAINFALL INFORMATION□ THE TOTAL AVERAGE ANNUAL RAINFALL FOR THE PROJECT AREA IS APPRO□IMATELY 34 INCHES.
POST-CONSTRUCTION CONDITIONS□ POST-CONSTRUCTION RUNOFF COEFFICIENT (CURVE NUMBER) OF THE SITE□75
(IMPERVIOUS CN □98, PERVIOUS CN □ 61)
TOTAL SITE AREA□ LIMITS OF SITE □ 3.33 AC
LIMITS OF DISTURBANCE □ 4.93 AC
SITE IMPERVIOUS AREA: 1.45 AC±
SITE SEEDED AREA: 1.88 AC±
ENVIRONMENTAL PERMITS - OTHER THAN NPDES, STORMWATER AND/OR EROSION AND SEDIMENT CONTROL□WETLANDS-NONE
THREATENED AND ENDANGERED SPECIES□THERE ARE NO KNOWN ISSUES RELATED TO THREATENED AND ENDANGERED SPECIES
HISTORICAL PROPERTIES□THERE ARE NO KNOWN ISSUES RELATED TO HISTORICAL PRESERVATION

SEE EROSION CONTROL REFERENCE NOTES ON SHEET C01 - GENERAL NOTES

SEE SWPPP BINDER FOR EROSION CONTROL NOTES AND SWPPP DETAILS.

SE□UENCE OF CONSTRUCTION

1. PLACE SWPPP BO□ON SITE. SWPPP BO□SHALL CONTAIN A COPY OF THE LETTER OF COVERAGE AND WISCONSIN GENERAL PERMIT. SWPPP BO□ SHALL CONSIST OF LARGE MAILBOX WITH THE LETTERS "SWPPP" ON THE SIDES. MAILBO□SHALL BY SUPPORTED BY A 4"□8" POST IN A 5-GALLON BUCKET OF CONCRETE, TO ALLOW THE BO□TO BE PORTABLE AND REUSABLE.
2. PREPARE TEMPORARY PARKING AND STORAGE AREA. UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS□TRAILER, PARKING, LAY DOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, MASONS AREA, FUEL AND MATERIAL STORAGE CONTAINERS, ETC., DENOTE THEM ON THE SITE MAPS IMMEDIATELY AND NOTE ANY CHANGES IN THE LOCATIONS AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.
3. CONSTRUCT THE SILT FENCES ON THE SITE. INSTALL INLET PROTECTION DEVICES IN E□ISTING STRUCTURES.
4. DEMOLISH BUILDINGS.
5. TEMPORARILY SEED, THROUGHOUT CONSTRUCTION, DENUDED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE.
6. CONSTRUCT TEMPORARY SEDIMENT TRAP AND INSTALL OUTLET CONTROL PROTECTION AND LEVEL SPREADER
7. INSTALL UTILITIES, UNDERDRAINS, AND STORM SEWERS. INSTALL INLET PROTECTION CONCURRENTLY.
8. PERMANENTLY STABILIZE AREAS TO BE VEGETATED AS THEY ARE BROUGHT TO FINAL GRADE.
9. PREPARE AREA OF SITE FOR PAVING FOR PARKING AREAS.
10. PAVE AREA OF SITE.
11. COMPLETE GRADING AND INSTALLATION OF PERMANENT STABILIZATION OVER ALL AREAS.
12. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED.)



STORMWATER OUTFLOW CONTRIBUTING AND RECEIVING WATERS

FROM SITE - DRAINAGE AREA (4.92 ACRES) CONSISTING OF LANDSCAPED AREAS, PAVED AREAS AND BUILDINGS. ALL FLOWS BY PERIMETER AND INTERMEDIATE BMP'S AND TRANSPORTED VIA OVERLAND AND STORM SEWER. THIS DRAINAGE AREA ULTIMATELY DRAINS TO THE EAST OF THE SITE WHERE IT LEAVES THE SITE THROUGH STORM SEWER TO CTH VV ROW.

TO RECEIVING WATERS - ULTIMATELY CONVEYED TO UNNAMED TRIBUTARY WATERS OF THE FO□RIVER APPRO□IMATELY 0.90 MILES TO THE EAST.

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SHEET TITLE
SWPPP

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C02

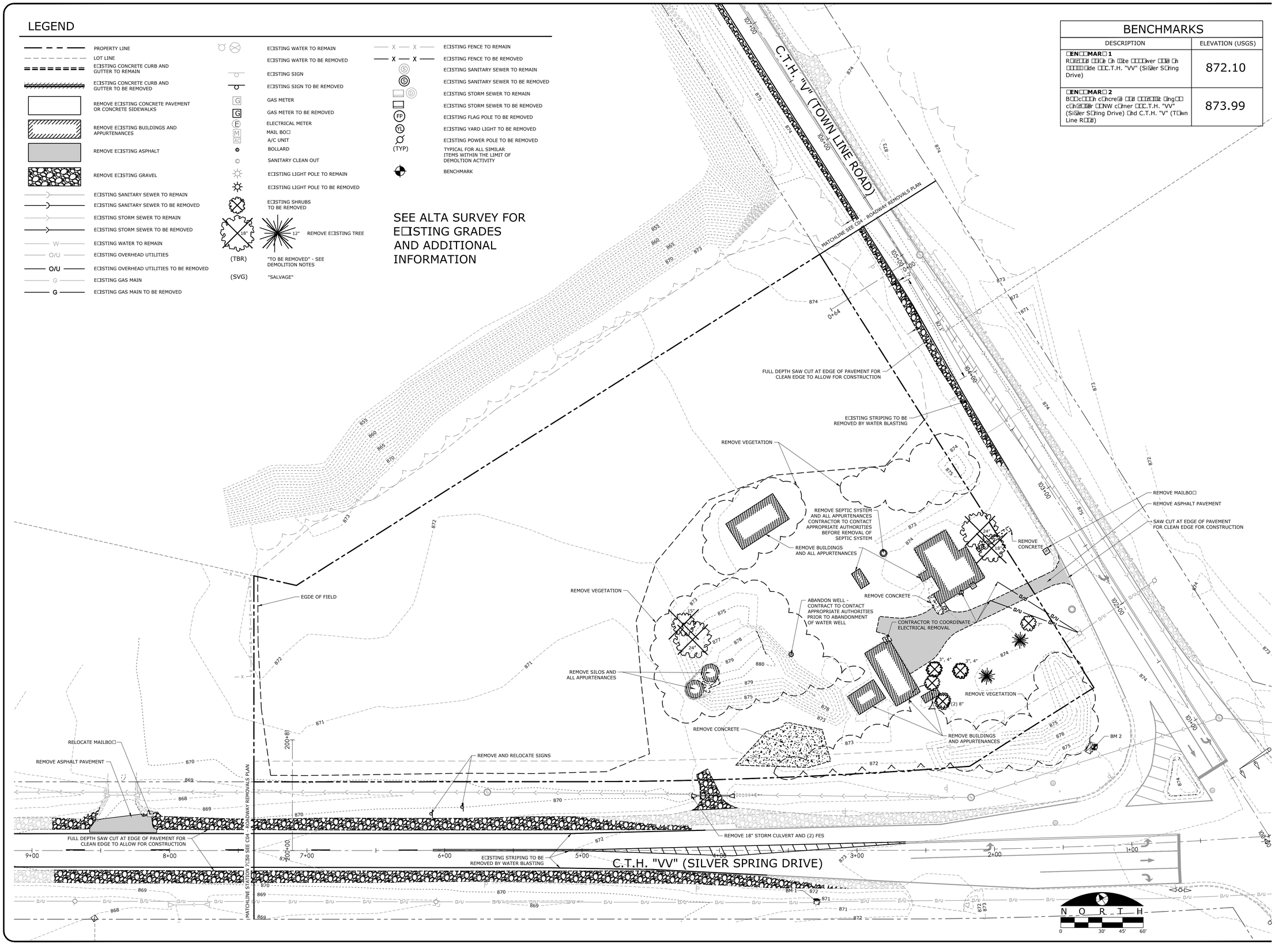
LEGEND

- PROPERTY LINE
- LOT LINE
- EXISTING CONCRETE CURB AND GUTTER TO REMAIN
- EXISTING CONCRETE CURB AND GUTTER TO BE REMOVED
- REMOVE EXISTING CONCRETE PAVEMENT OR CONCRETE SIDEWALKS
- REMOVE EXISTING BUILDINGS AND APPURTENANCES
- REMOVE EXISTING ASPHALT
- REMOVE EXISTING GRAVEL
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING SANITARY SEWER TO BE REMOVED
- EXISTING STORM SEWER TO REMAIN
- EXISTING STORM SEWER TO BE REMOVED
- W — EXISTING WATER TO REMAIN
- O/U — EXISTING OVERHEAD UTILITIES
- O/U — EXISTING OVERHEAD UTILITIES TO BE REMOVED
- G — EXISTING GAS MAIN
- G — EXISTING GAS MAIN TO BE REMOVED
- EXISTING WATER TO REMAIN
- EXISTING WATER TO BE REMOVED
- EXISTING SIGN
- EXISTING SIGN TO BE REMOVED
- GAS METER
- GAS METER TO BE REMOVED
- ELECTRICAL METER
- MAIL BOX
- A/C UNIT
- BOLLARD
- SANITARY CLEAN OUT
- EXISTING LIGHT POLE TO REMAIN
- EXISTING LIGHT POLE TO BE REMOVED
- EXISTING SHRUBS TO BE REMOVED
- 18" 12" REMOVE EXISTING TREE
- (TBR) "TO BE REMOVED" - SEE DEMOLITION NOTES
- (SVG) "SALVAGE"
- X — X EXISTING FENCE TO REMAIN
- X — X EXISTING FENCE TO BE REMOVED
- EXISTING SANITARY SEWER TO REMAIN
- EXISTING SANITARY SEWER TO BE REMOVED
- EXISTING STORM SEWER TO REMAIN
- EXISTING STORM SEWER TO BE REMOVED
- FP EXISTING FLAG POLE TO BE REMOVED
- YL EXISTING YARD LIGHT TO BE REMOVED
- (TYP) EXISTING POWER POLE TO BE REMOVED
- (TYP) TYPICAL FOR ALL SIMILAR ITEMS WITHIN THE LIMIT OF DEMOLITION ACTIVITY
- BENCHMARK

SEE ALTA SURVEY FOR EXISTING GRADES AND ADDITIONAL INFORMATION

BENCHMARKS

DESCRIPTION	ELEVATION (USGS)
BENCHMARK 1 Railroad spike in the base of a power pole in the southside of C.T.H. "VV" (Silver Spring Drive)	872.10
BENCHMARK 2 Brass cap in concrete at the intersection NW corner of C.T.H. "VV" (Silver Spring Drive) and C.T.H. "V" (Town Line Road)	873.99



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SHEET TITLE

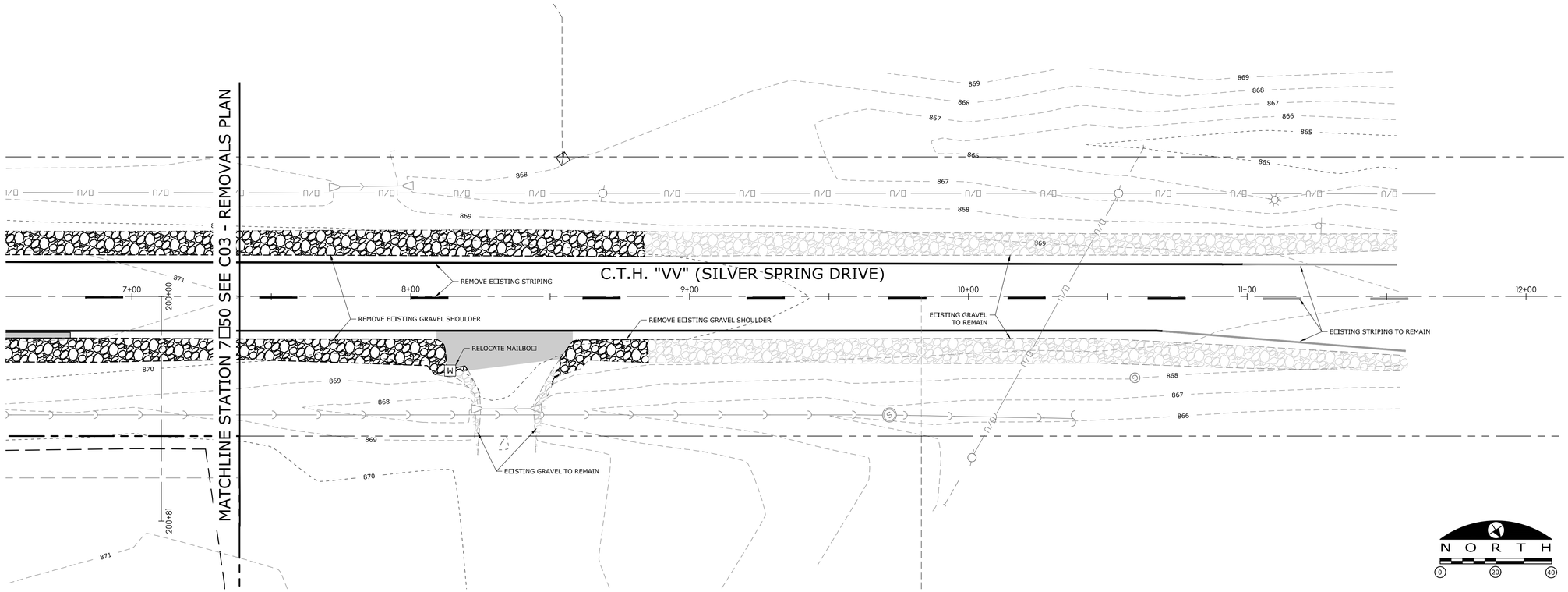
REMOVALS PLAN

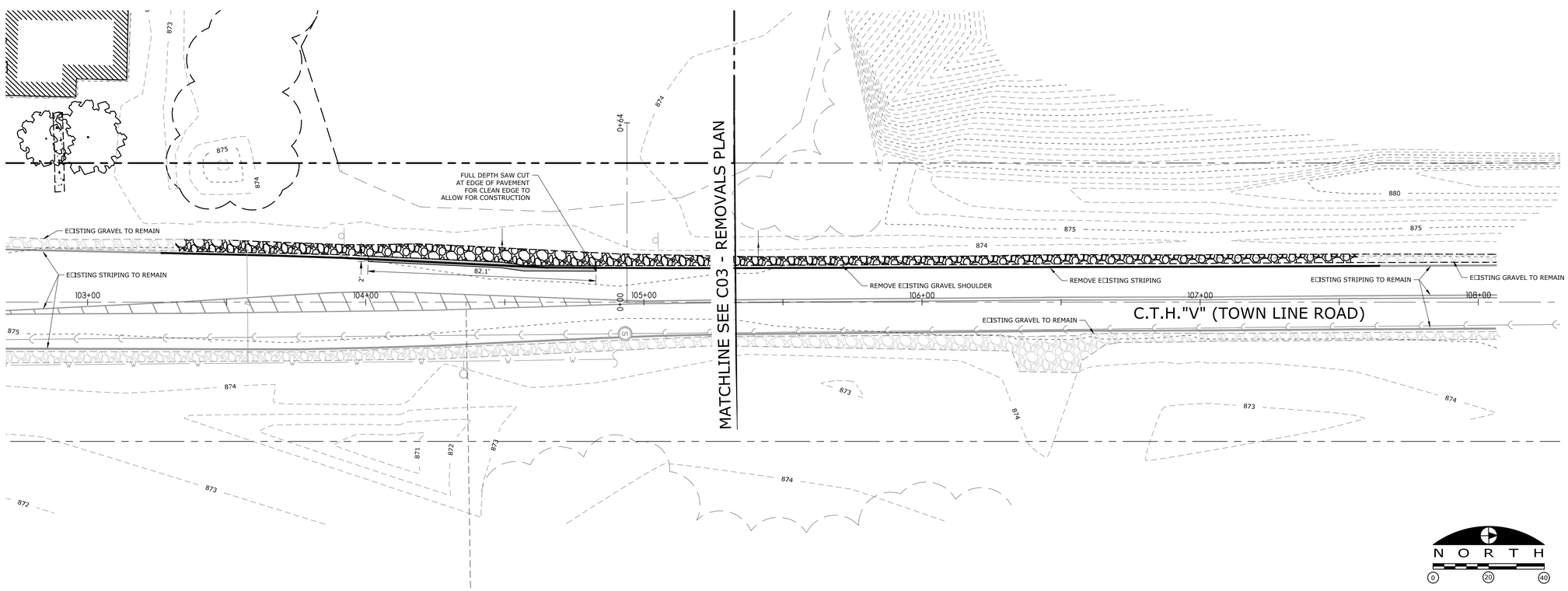
DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C03





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SHEET TITLE

ROADWAY REMOVALS PLAN

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C04

LEGEND

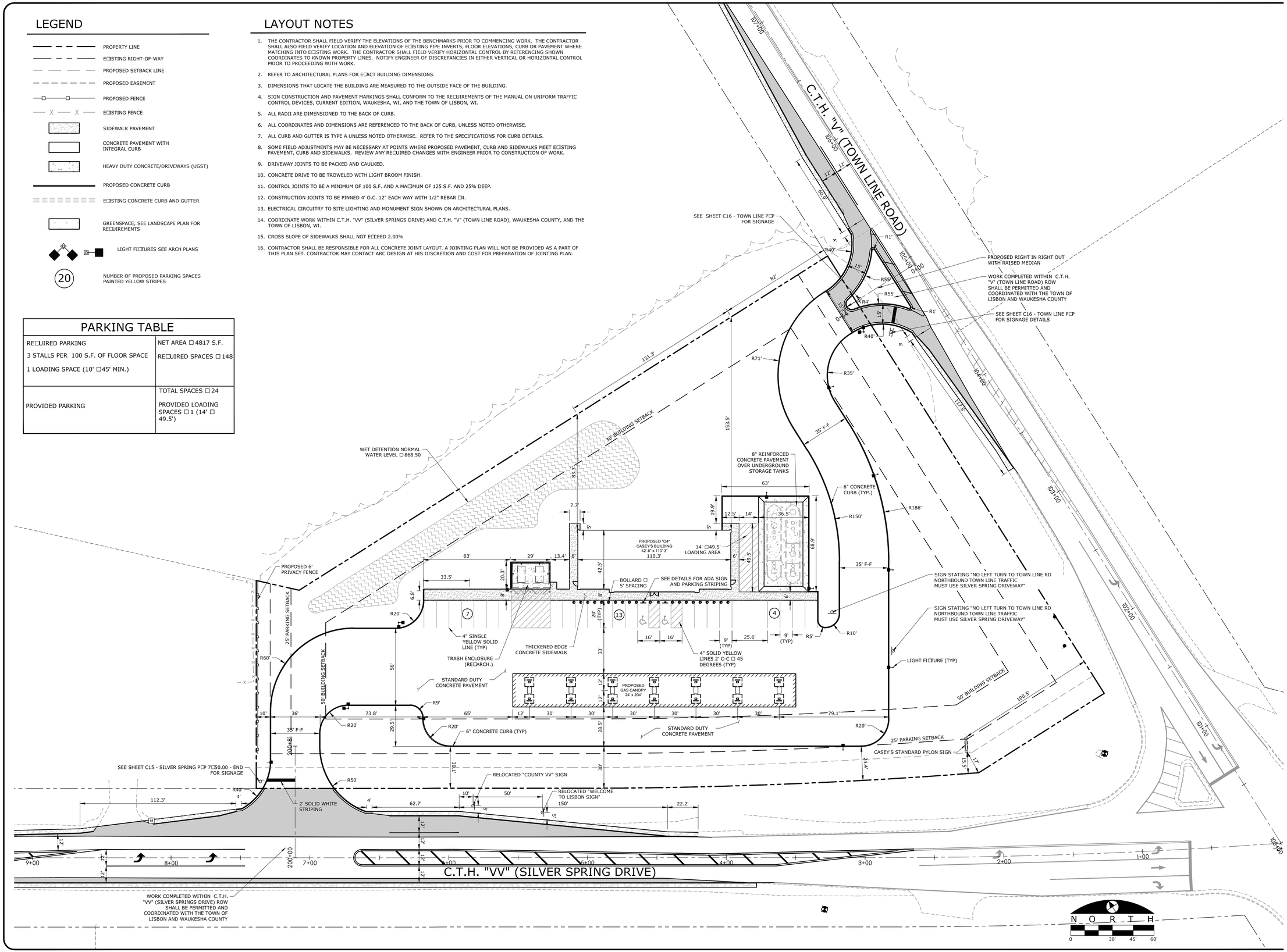
- PROPERTY LINE
- EXISTING RIGHT-OF-WAY
- PROPOSED SETBACK LINE
- PROPOSED EASEMENT
- PROPOSED FENCE
- EXISTING FENCE
- SIDEWALK PAVEMENT
- CONCRETE PAVEMENT WITH INTEGRAL CURB
- HEAVY DUTY CONCRETE/DRIVEWAYS (UGST)
- PROPOSED CONCRETE CURB
- EXISTING CONCRETE CURB AND GUTTER
- GREENSPACE, SEE LANDSCAPE PLAN FOR REQUIREMENTS
- LIGHT FIXTURES SEE ARCH PLANS
- (20) NUMBER OF PROPOSED PARKING SPACES PAINTED YELLOW STRIPES

PARKING TABLE

REQUIRED PARKING 3 STALLS PER 100 S.F. OF FLOOR SPACE 1 LOADING SPACE (10' X 45' MIN.)	NET AREA = 4817 S.F. REQUIRED SPACES = 148
PROVIDED PARKING	TOTAL SPACES = 24 PROVIDED LOADING SPACES = 1 (14' X 49.5')

LAYOUT NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS OF THE BENCHMARKS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ALSO FIELD VERIFY LOCATION AND ELEVATION OF EXISTING PIPE INVERTS, FLOOR ELEVATIONS, CURB OR PAVEMENT WHERE MATCHING INTO EXISTING WORK. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL CONTROL BY REFERENCING SHOWN COORDINATES TO KNOWN PROPERTY LINES. NOTIFY ENGINEER OF DISCREPANCIES IN EITHER VERTICAL OR HORIZONTAL CONTROL PRIOR TO PROCEEDING WITH WORK.
2. REFER TO ARCHITECTURAL PLANS FOR EXACT BUILDING DIMENSIONS.
3. DIMENSIONS THAT LOCATE THE BUILDING ARE MEASURED TO THE OUTSIDE FACE OF THE BUILDING.
4. SIGN CONSTRUCTION AND PAVEMENT MARKINGS SHALL CONFORM TO THE REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, CURRENT EDITION, WAUKESHA, WI, AND THE TOWN OF LISBON, WI.
5. ALL RADII ARE DIMENSIONED TO THE BACK OF CURB.
6. ALL COORDINATES AND DIMENSIONS ARE REFERENCED TO THE BACK OF CURB, UNLESS NOTED OTHERWISE.
7. ALL CURB AND GUTTER IS TYPE A UNLESS NOTED OTHERWISE. REFER TO THE SPECIFICATIONS FOR CURB DETAILS.
8. SOME FIELD ADJUSTMENTS MAY BE NECESSARY AT POINTS WHERE PROPOSED PAVEMENT, CURB AND SIDEWALKS MEET EXISTING PAVEMENT, CURB AND SIDEWALKS. REVIEW ANY REQUIRED CHANGES WITH ENGINEER PRIOR TO CONSTRUCTION OF WORK.
9. DRIVEWAY JOINTS TO BE PACKED AND CAULKED.
10. CONCRETE DRIVE TO BE TROWELED WITH LIGHT BROOM FINISH.
11. CONTROL JOINTS TO BE A MINIMUM OF 100 S.F. AND A MAXIMUM OF 125 S.F. AND 25% DEEP.
12. CONSTRUCTION JOINTS TO BE PINNED 4' O.C. 12" EACH WAY WITH 1/2" REBAR #4.
13. ELECTRICAL CIRCUITRY TO SITE LIGHTING AND MONUMENT SIGN SHOWN ON ARCHITECTURAL PLANS.
14. COORDINATE WORK WITHIN C.T.H. "VV" (SILVER SPRINGS DRIVE) AND C.T.H. "V" (TOWN LINE ROAD), WAUKESHA COUNTY, AND THE TOWN OF LISBON, WI.
15. CROSS SLOPE OF SIDEWALKS SHALL NOT EXCEED 2.00%
16. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONCRETE JOINT LAYOUT. A JOINTING PLAN WILL NOT BE PROVIDED AS A PART OF THIS PLAN SET. CONTRACTOR MAY CONTACT ARC DESIGN AT HIS DISCRETION AND COST FOR PREPARATION OF JOINTING PLAN.



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LAYOUT PLAN

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PROJECT NUMBER
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C05

DETAIL A□SCALE □ 1□10

BENCHMARKS

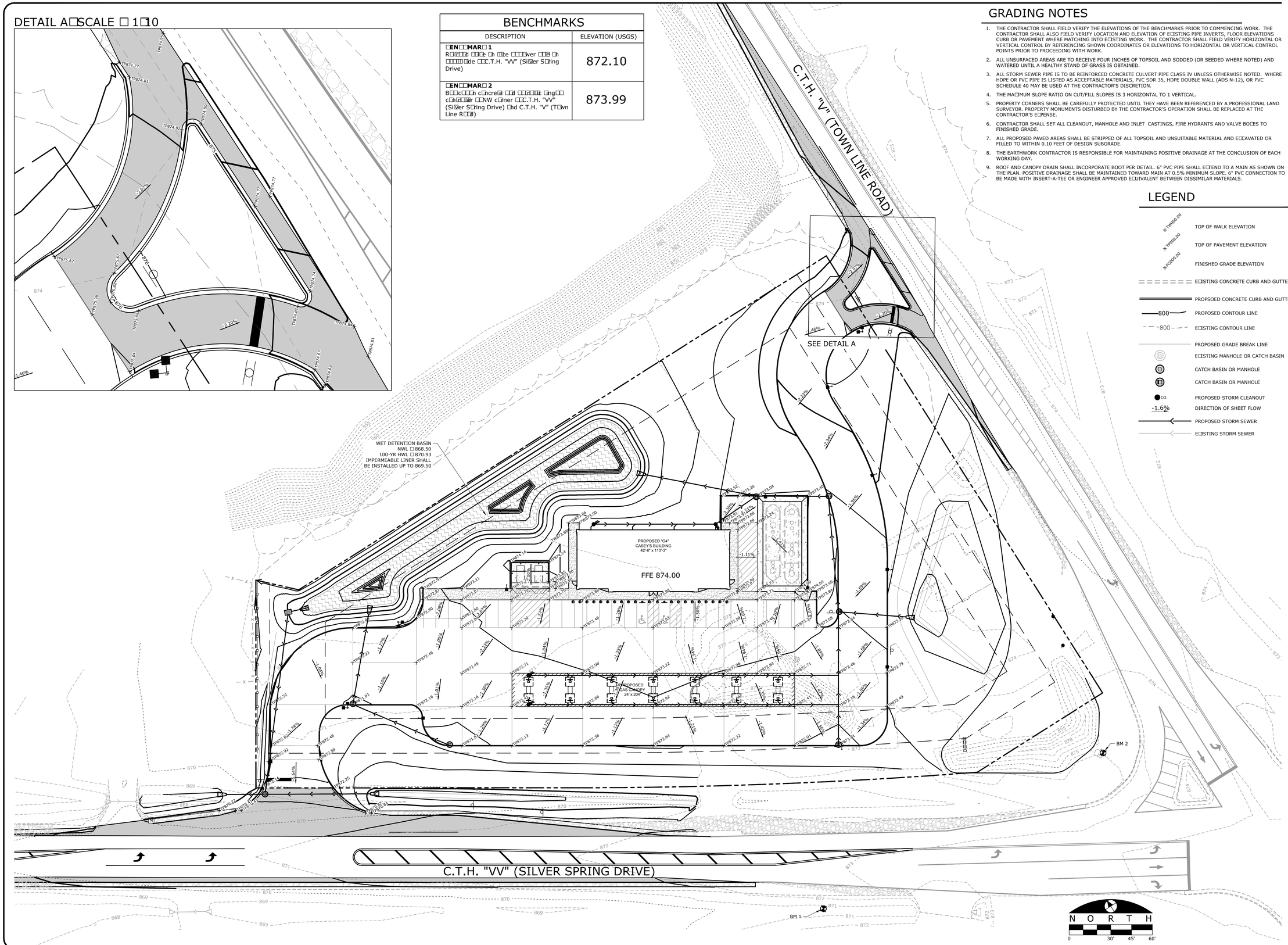
DESCRIPTION	ELEVATION (USGS)
□EN□□MAR□ 1 R□□□□d □□□e □n □□e □□□□wer □□□ □n □□□□□□de □□C.T.H. "VV" (Si□□er S□□ing Drive)	872.10
□EN□□MAR□ 2 B□□c□□□n c□□□□re□□ □□d □□□□□□□□□ng□□ c□□□□□□□er □□NW c□□□□er □□C.T.H. "VV" (Si□□er S□□ing Drive) □□d C.T.H. "V" (T□□n Line R□□□)	873.99

GRADING NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS OF THE BENCHMARKS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ALSO FIELD VERIFY LOCATION AND ELEVATION OF E□□STING PIPE INVERTS, FLOOR ELEVATIONS CURB OR PAVEMENT WHERE MATCHING INTO E□□STING WORK. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL OR VERTICAL CONTROL BY REFERENCING SHOWN COORDINATES OR ELEVATIONS TO HORIZONTAL OR VERTICAL CONTROL POINTS PRIOR TO PROCEEDING WITH WORK.
2. ALL UNSURFACED AREAS ARE TO RECEIVE FOUR INCHES OF TOPSOIL AND SODDED (OR SEEDED WHERE NOTED) AND WATERED UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
3. ALL STORM SEWER PIPE IS TO BE REINFORCED CONCRETE CULVERT PIPE CLASS IV UNLESS OTHERWISE NOTED. WHERE HDPE OR PVC PIPE IS LISTED AS ACCEPTABLE MATERIALS, PVC SDR 35, HDPE DOUBLE WALL (ADS N-12), OR PVC SCHEDULE 40 MAY BE USED AT THE CONTRACTOR'S DISCRETION.
4. THE MA□IMUM SLOPE RATIO ON CUT/FILL SLOPES IS 3 HORIZONTAL TO 1 VERTICAL.
5. PROPERTY CORNERS SHALL BE CAREFULLY PROTECTED UNTIL THEY HAVE BEEN REFERENCED BY A PROFESSIONAL LAND SURVEYOR. PROPERTY MONUMENTS DISTURBED BY THE CONTRACTOR'S OPERATION SHALL BE REPLACED AT THE CONTRACTOR'S E□PENSE.
6. CONTRACTOR SHALL SET ALL CLEANOUT, MANHOLE AND INLET CASTINGS, FIRE HYDRANTS AND VALVE BO□ES TO FINISHED GRADE.
7. ALL PROPOSED PAVED AREAS SHALL BE STRIPPED OF ALL TOPSOIL AND UNSUITABLE MATERIAL AND E□□AVATED OR FILLED TO WITHIN 0.10 FEET OF DESIGN SUBGRADE.
8. THE EARTHWORK CONTRACTOR IS RESPONSIBLE FOR MAINTAINING POSITIVE DRAINAGE AT THE CONCLUSION OF EACH WORKING DAY.
9. ROOF AND CANOPY DRAIN SHALL INCORPORATE BOOT PER DETAIL. 6" PVC PIPE SHALL E□TEND TO A MAIN AS SHOWN ON THE PLAN. POSITIVE DRAINAGE SHALL BE MAINTAINED TOWARD MAIN AT 0.5% MINIMUM SLOPE. 6" PVC CONNECTION TO BE MADE WITH INSERT-A-TEE OR ENGINEER APPROVED E□UIVALENT BETWEEN DISSIMILAR MATERIALS.

LEGEND

- TW000.00 — TOP OF WALK ELEVATION
- TP000.00 — TOP OF PAVEMENT ELEVATION
- FG000.00 — FINISHED GRADE ELEVATION
- E□STING CONCRETE CURB AND GUTTER
- PROPSOED CONCRETE CURB AND GUTTER
- 800 — PROPOSED CONTOUR LINE
- 800 — E□STING CONTOUR LINE
- PROPOSED GRADE BREAK LINE
- E□STING MANHOLE OR CATCH BASIN
- CATCH BASIN OR MANHOLE
- CATCH BASIN OR MANHOLE
- CO. — PROPOSED STORM CLEANOUT
- -1.6% — DIRECTION OF SHEET FLOW
- PROPOSED STORM SEWER
- E□STING STORM SEWER



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PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

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2. Agency Review	8/15/2018
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SHEET TITLE

GRADING PLAN

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C06

LEGEND

- EXISTING CONCRETE CURB AND GUTTER
- CONCRETE CURB AND GUTTER
- 800 — PROPOSED CONTOUR LINE
- 800 — EXISTING CONTOUR LINE
- PROPOSED GRADE BREAK LINE
- EXISTING MANHOLE OR CATCH BASIN
- AREA TYPE CASTING, SEE RIM ELEV. DEFINITION
- CURB TYPE CASTING, SEE RIM ELEV. DEFINITION
- CO. PROPOSED CLEANOUT
- 1.6% DIRECTION OF SHEET FLOW
- BENCHMARK
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- CONCRETE FLARED END SECTION

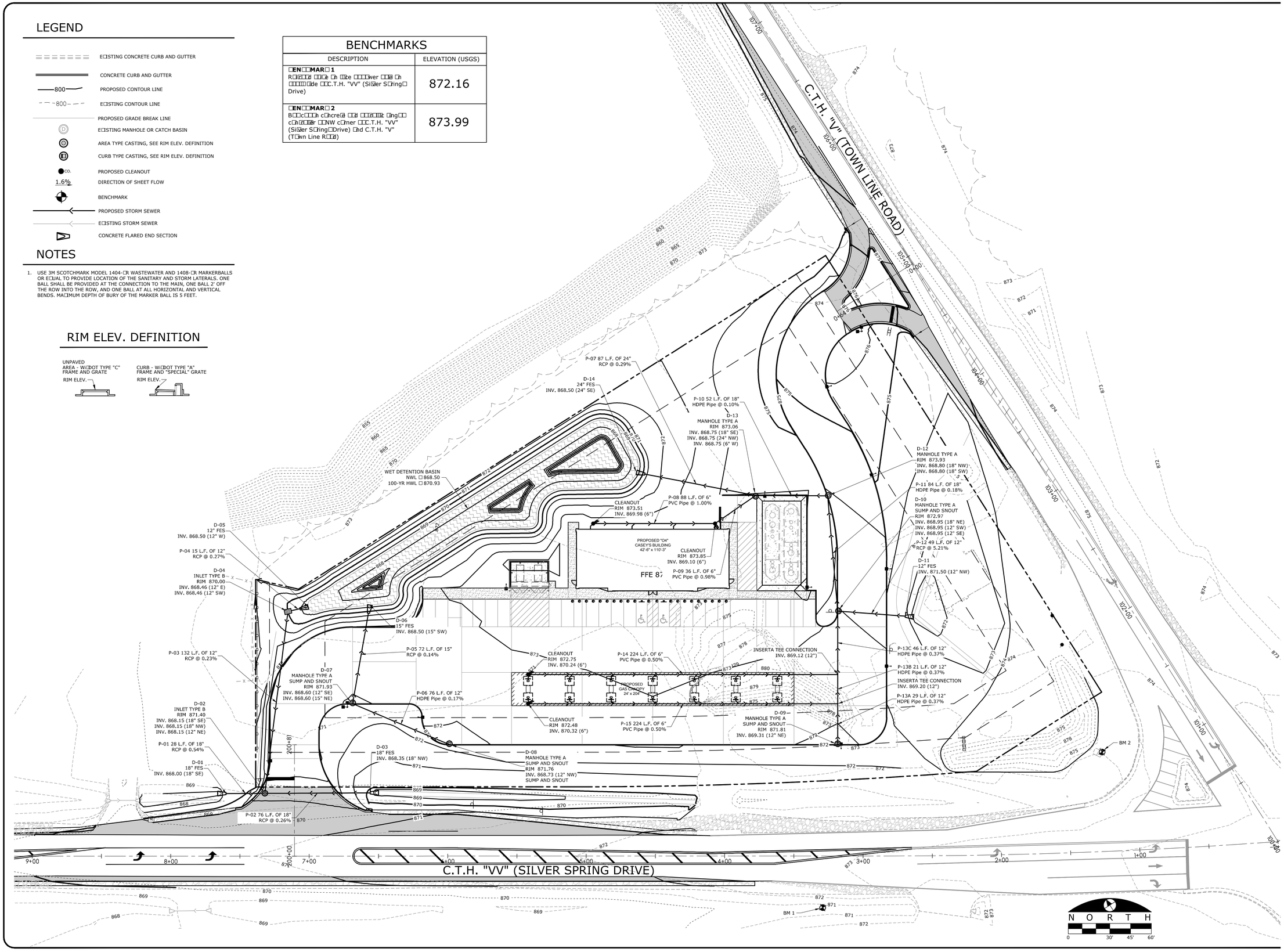
NOTES

1. USE 3M SCOTCHMARK MODEL 1404-XR WASTEWATER AND 1408-XR MARKERBALLS OR EQUAL TO PROVIDE LOCATION OF THE SANITARY AND STORM LATERALS. ONE BALL SHALL BE PROVIDED AT THE CONNECTION TO THE MAIN, ONE BALL 2' OFF THE ROW INTO THE ROW, AND ONE BALL AT ALL HORIZONTAL AND VERTICAL BENDS. MAXIMUM DEPTH OF BURY OF THE MARKER BALL IS 5 FEET.

RIM ELEV. DEFINITION

BENCHMARKS

DESCRIPTION	ELEVATION (USGS)
BENCHMARK 1 Railroad spike in the base of a power pole in front of the N side of C.T.H. "VV" (Silver Spring Drive)	872.16
BENCHMARK 2 Brass cap in concrete at the intersection of the NW corner of C.T.H. "VV" (Silver Spring Drive) and C.T.H. "V" (Town Line Road)	873.99



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SHEET TITLE

DRAINAGE PLAN

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C07

DETAIL A - SCALE □ 1"□5'

BENCHMARKS

DESCRIPTION	ELEVATION (USGS)
□EN□□MAR□ 1 R□□□□d □□□e □n □□e □□□□ver □□□ □n □□□□□□□de □□C.T.H. "VV" (Si□ver S□ring Drive)	872.10
□EN□□MAR□ 2 B□□□c□□□n c□□□□re□ □□d □□□□□□□□□ing□□ c□□□□□□□r □□NW c□□ner □□C.T.H. "VV" (Si□ver S□ring Drive) □□d C.T.H. "V" (T□□wn Line R□□d)	873.99

UTILITY NOTES

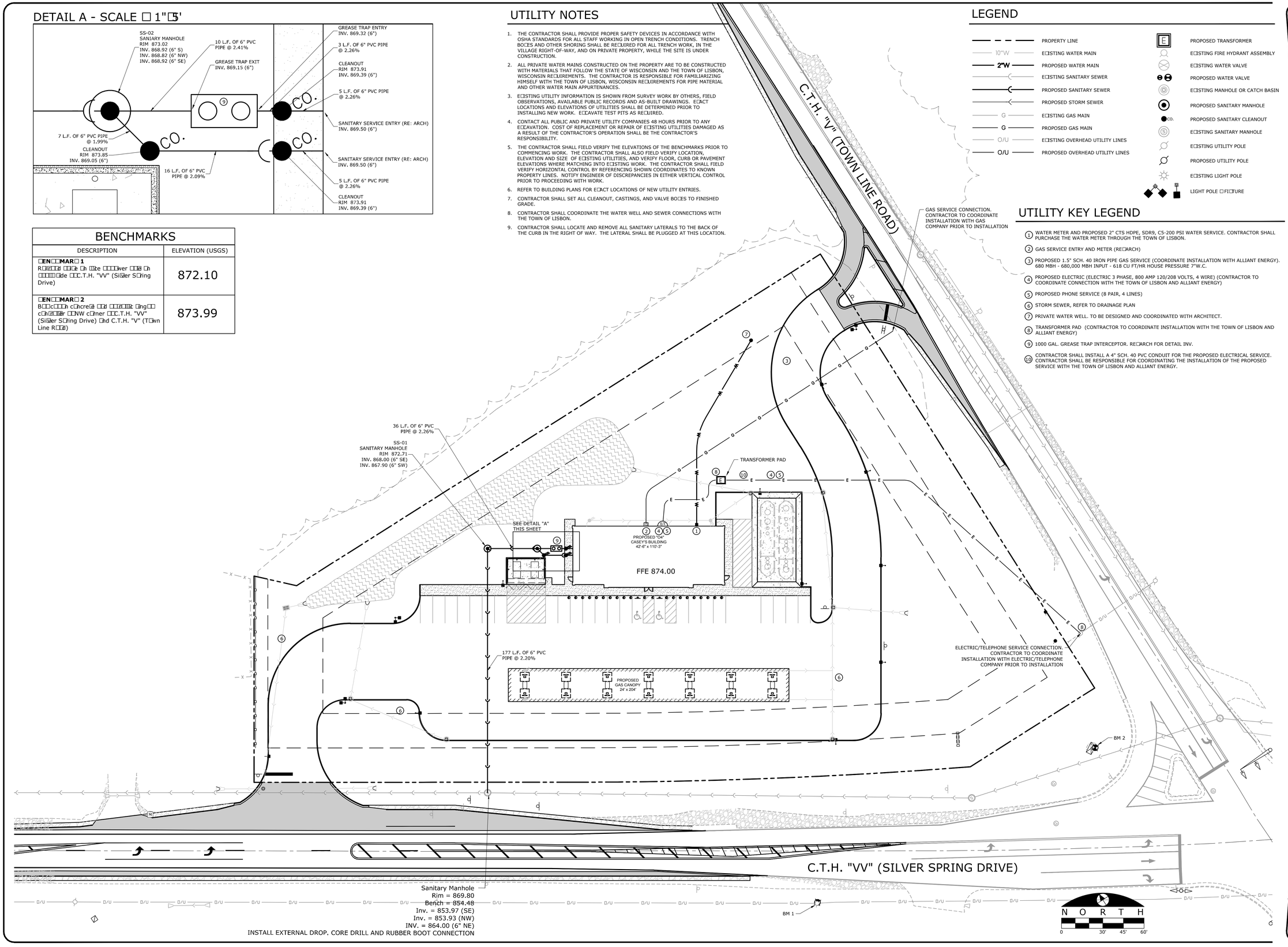
1. THE CONTRACTOR SHALL PROVIDE PROPER SAFETY DEVICES IN ACCORDANCE WITH OSHA STANDARDS FOR ALL STAFF WORKING IN OPEN TRENCH CONDITIONS. TRENCH BO□ES AND OTHER SHORING SHALL BE RE□UIRED FOR ALL TRENCH WORK, IN THE VILLAGE RIGHT-OF-WAY, AND ON PRIVATE PROPERTY, WHILE THE SITE IS UNDER CONSTRUCTION.
2. ALL PRIVATE WATER MAINS CONSTRUCTED ON THE PROPERTY ARE TO BE CONSTRUCTED WITH MATERIALS THAT FOLLOW THE STATE OF WISCONSIN AND THE TOWN OF LISBON, WISCONSIN RE□UIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH THE TOWN OF LISBON, WISCONSIN RE□UIREMENTS FOR PIPE MATERIAL AND OTHER WATER MAIN APPURTENANCES.
3. E□ISTING UTILITY INFORMATION IS SHOWN FROM SURVEY WORK BY OTHERS, FIELD OBSERVATIONS, AVAILABLE PUBLIC RECORDS AND AS-BUILT DRAWINGS. E□ACT LOCATIONS AND ELEVATIONS OF UTILITIES SHALL BE DETERMINED PRIOR TO INSTALLING NEW WORK. E□CAVATE TEST PITS AS RE□UIRED.
4. CONTACT ALL PUBLIC AND PRIVATE UTILITY COMPANIES 48 HOURS PRIOR TO ANY E□CAVATION. COST OF REPLACEMENT OR REPAIR OF E□ISTING UTILITIES DAMAGED AS A RESULT OF THE CONTRACTOR'S OPERATION SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
5. THE CONTRACTOR SHALL FIELD VERIFY THE ELEVATIONS OF THE BENCHMARKS PRIOR TO COMMENCING WORK. THE CONTRACTOR SHALL ALSO FIELD VERIFY LOCATION, ELEVATION AND SIZE OF E□ISTING UTILITIES, AND VERIFY FLOOR, CURB OR PAVEMENT ELEVATIONS WHERE MATCHING INTO E□ISTING WORK. THE CONTRACTOR SHALL FIELD VERIFY HORIZONTAL CONTROL BY REFERENCING SHOWN COORDINATES TO KNOWN PROPERTY LINES. NOTIFY ENGINEER OF DISCREPANCIES IN EITHER VERTICAL CONTROL PRIOR TO PROCEEDING WITH WORK.
6. REFER TO BUILDING PLANS FOR E□ACT LOCATIONS OF NEW UTILITY ENTRIES.
7. CONTRACTOR SHALL SET ALL CLEANOUT, CASTINGS, AND VALVE BO□ES TO FINISHED GRADE.
8. CONTRACTOR SHALL COORDINATE THE WATER WELL AND SEWER CONNECTIONS WITH THE TOWN OF LISBON.
9. CONTRACTOR SHALL LOCATE AND REMOVE ALL SANITARY LATERALS TO THE BACK OF THE CURB IN THE RIGHT OF WAY. THE LATERAL SHALL BE PLUGGED AT THIS LOCATION.

LEGEND

- PROPERTY LINE
- 10"W — E□ISTING WATER MAIN
- 2"W — PROPOSED WATER MAIN
- E□ISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- G — E□ISTING GAS MAIN
- G — PROPOSED GAS MAIN
- O/U — E□ISTING OVERHEAD UTILITY LINES
- O/U — PROPOSED OVERHEAD UTILITY LINES
- PROPOSED TRANSFORMER
- E□ISTING FIRE HYDRANT ASSEMBLY
- E□ISTING WATER VALVE
- PROPOSED WATER VALVE
- E□ISTING MANHOLE OR CATCH BASIN
- PROPOSED SANITARY MANHOLE
- CO. PROPOSED SANITARY CLEANOUT
- E□ISTING SANITARY MANHOLE
- E□ISTING UTILITY POLE
- PROPOSED UTILITY POLE
- E□ISTING LIGHT POLE
- LIGHT POLE □FI□TURE

UTILITY KEY LEGEND

1. WATER METER AND PROPOSED 2" CTS HDPE, SDR9, C5-200 PSI WATER SERVICE. CONTRACTOR SHALL PURCHASE THE WATER METER THROUGH THE TOWN OF LISBON.
2. GAS SERVICE ENTRY AND METER (RE□ARCH)
3. PROPOSED 1.5" SCH. 40 IRON PIPE GAS SERVICE (COORDINATE INSTALLATION WITH ALLIANT ENERGY). 680 MBH - 680,000 MBH INPUT - 618 CU FT/HR HOUSE PRESSURE 7"W.C.
4. PROPOSED ELECTRIC (ELECTRIC 3 PHASE, 800 AMP 120/208 VOLTS, 4 WIRE) (CONTRACTOR TO COORDINATE CONNECTION WITH THE TOWN OF LISBON AND ALLIANT ENERGY)
5. PROPOSED PHONE SERVICE (8 PAIR, 4 LINES)
6. STORM SEWER, REFER TO DRAINAGE PLAN
7. PRIVATE WATER WELL. TO BE DESIGNED AND COORDINATED WITH ARCHITECT.
8. TRANSFORMER PAD (CONTRACTOR TO COORDINATE INSTALLATION WITH THE TOWN OF LISBON AND ALLIANT ENERGY)
9. 1000 GAL. GREASE TRAP INTERCEPTOR. RE□ARCH FOR DETAIL INV.
10. CONTRACTOR SHALL INSTALL A 4" SCH. 40 PVC CONDUIT FOR THE PROPOSED ELECTRICAL SERVICE. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE INSTALLATION OF THE PROPOSED SERVICE WITH THE TOWN OF LISBON AND ALLIANT ENERGY.



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SHEET TITLE

UTILITY PLAN

DRAWN	KOG
CHECKED	DRH
PM	RCS

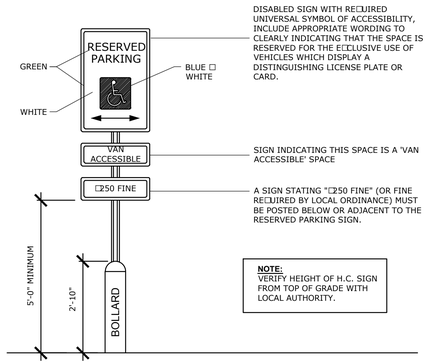
PROJECT NUMBER
SHEET NUMBER

17176

C08

ACCESSIBLE PARKING SIGN DETAIL

NOT TO SCALE

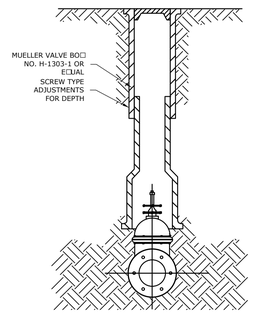


39" STANDARD ACCESSIBLE SYMBOL

ACCESSIBLE SYMBOL

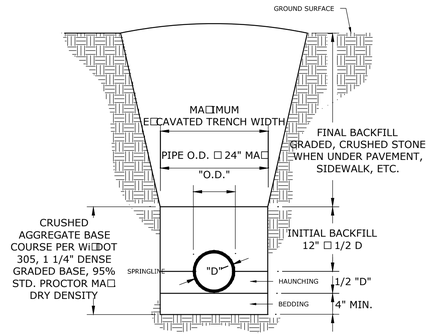
VALVE BO□ DETAIL

NOT TO SCALE

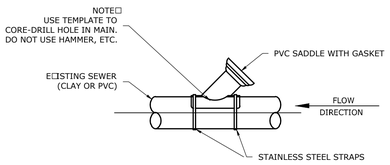


PIPE EMBEDMENT DETAIL

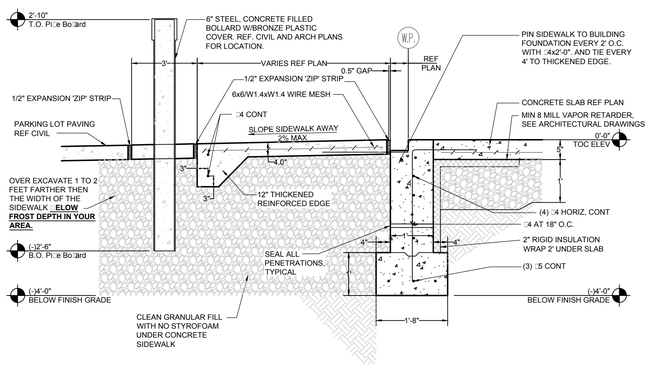
NOT TO SCALE



SANITARY CUT-IN CONNECTION DETAIL



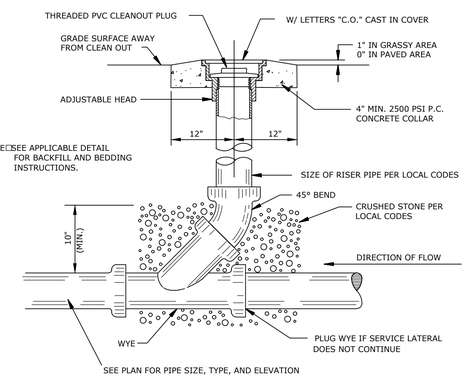
CONCRETE PAVEMENT DETAILS



THICKENED EDGE CONCRETE WALK AND BOLLARD

SEWER CLEANOUT DETAIL

NOT TO SCALE



DOWNSPOUT CONNECTOR DETAIL

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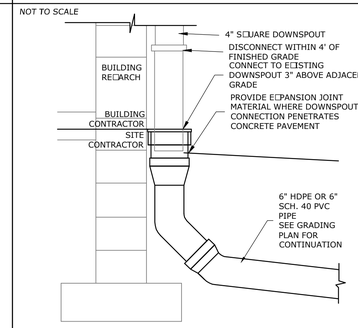
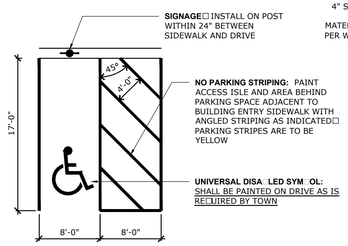


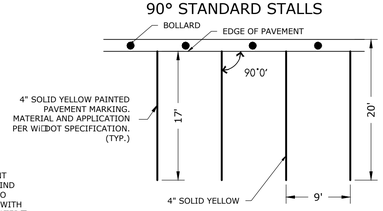
A WATERTIGHT CONNECTION SHALL BE MAINTAINED WITH ANY TRANSITION FROM SCHEDULE 40 PVC PIPE TO ANY OTHER PIPE TYPE.

TYPICAL 90 DEGREE PARKING STRIPING DETAILS

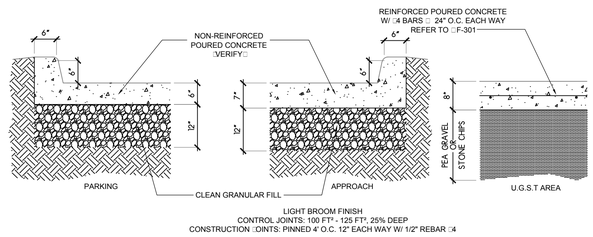
ADA PARKING DETAILS



90° STANDARD STALLS



CONCRETE PAVEMENT DETAILS



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SHEET TITLE

DETAILS

DRAWN	KOG
CHECKED	DRH
PM	RCS

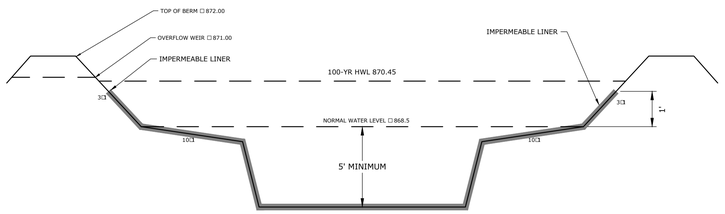
PROJECT NUMBER
SHEET NUMBER

17176

C09

WET DETENTION BASIN DETAIL

NOT TO SCALE



HIGH DENSITY POLYETHLYENE (HDPE) LINER

1. WDNR TYPE A LINER IS REQUIRED
2. LINER IS REQUIRED TO EXTEND TO ELEVATION OF 2-YEAR, 24-HOUR STORM EVENT
3. MINIMUM THICKNESS SHALL BE 60 MILS
4. DESIGN ACCORDING TO CRITERIA IN TABLE 3 OF NRCS 313 WASTE STORAGE FACILITY TECHNICAL STANDARD
5. INSTALL ACCORDING TO NRCS WISCONSIN CONSTRUCTION SPECIFICATION 202, POLYETHYLENE GEOMEMBRANE LINING

TABLE 3 FROM NRCS, WI 313 WASTE STORAGE FACILITY

1. Liner Material		
		60 mil High Density Polyethylene (HDPE) or 60 mil Linear Low Density Polyethylene (LLDPE) or 60 mil Ethylene Propylene Diene Monomer (EPDM). The geomembrane shall be installed with intimate contact to the soil below Note 1.
2. Soils (Directly Below Liner)[Note 2]		
% Fines		≥ 40%
Plasticity Index (PI)		≥ 7
Thickness		≥ 2 ft.
Compaction of Placed Material		WI Spec 202[Note 3]
Subgrade preparation requirements		WI Spec 202 or 205[Note 4]
3. Separation Distances		
Well Distance (Note 5		≥ 250 ft.
Sinkholes		≥ 400 ft.
Subsurface Saturation (V, A, B)		≥ 4 ft.
Bedrock		≥ 4 ft.
4. Embankment Requirements		
Inside Slope		2.5:1 or flatter.
5. Other		
Liner Protection Required	Agitation and pumping locations[Note 6]	Minimum dimension of 20 ft. wide x 30 ft. long concrete pad or sump in bottom and 20 ft. wide ramp with 10 in. curb to the top of the facility with provisions for liner integrity. Ramps shall be located to be accessible to the agitation equipment used.
	Scraping and other mechanical means of removing solids and sand[Note 7]	Protect with hard surfacing designed for the expected conditions and loads.
Vent system		Required for all facilities. The system shall be designed in such a manner to vent gas from the system. Waste and runoff shall be prevented from entering the venting system. Liquid detection points may be installed as part of the system.[Note 8]
Liner Installation		• Continuous Inspection Required • All geomembrane placement, seaming, seam testing, and repair and concrete placement for liner protection shall be completed under the continuous observation of a qualified third-party quality assurance inspector under the direction of a Professional Engineer. This inspector shall not be an employee of the contractor, owner, or geomembrane supplier.

Note 1 Intimate contact does not exclude the use of gravel trenches for gas venting or monitoring systems.

Note 2 The liner is in intimate contact with the soil, and the two work together to reduce seepage losses. The PI shall be determined in accordance with ASTM D4318 and the percent fines in accordance with ASTM D1140.

Note 3 WI FOTG Construction Specification 202, Earthfill for Waste Storage Facilities.

Note 4 WI FOTG Construction Specification 202, Polyethylene Geomembrane Lining and 205, Ethylene Propylene Diene Monomer (EPDM) Geomembrane Lining.

Note 5 Community water system wells may require larger separation distances (see NR 811).

Note 6 Poured in-place concrete slabs shall meet requirements of Table 5, Note 2 of the geomembrane will be joined to the liquid-tight concrete

All connections between the geomembrane and concrete shall be liquid tight and structurally sound. If the liner protection is placed on top of the geomembrane, it shall be structurally sound, but liquid-tightness is not required. Liner protection poured on top of the geomembrane shall be separated from the geomembrane by a sacrificial layer of the same weight geomembrane and a cushioning layer of 12 oz/yd² non-woven geotextile. The sacrificial layer shall not be welded to the geomembrane liner. Liner protection installation over the geomembrane shall be completed by methods that will maintain the integrity and performance of the liner. Liner protection placed on slopes shall be designed with provisions to ensure stability.

Note 7 Sand bedding may be used in conjunction with geomembrane liner, but the design must include a method to remove sand from the waste stream before it enters the waste storage facility.

WISCONSIN CONSTRUCTION SPECIFICATION, 202

1 SCOPE

The work shall consist of furnishing, transporting, and placing a high density polyethylene (HDPE) or linear low density polyethylene (LLDPE) geomembrane liner to the elevations, grades and cross sections as shown on the drawings or as staked in the field

2 MATERIALS

The geomembrane liner shall have a nominal thickness as specified on the drawings and be specifically manufactured to be suitable for use in exposed and buried conditions The liner shall conform to the material properties in Table 1 through Table 4 as applicable

3 SHIPPING AND STORAGE

The geomembrane liner shall be shipped to the job site in a manner not to damage the rolls The liner rolls shall be stored so they are protected from puncture, dirt, grease, water, moisture, mechanical abrasion, excessive heat, or other damage The rolls shall be stored on a smooth surface (not wooden pallets) and not stacked more than two rolls high

All geomembrane shall be free of damage or defect Damaged liner material shall be repaired or replaced Each package delivered to the job site shall bear the name of the material, the manufacturer's name or symbol, the quantity therein, and the thickness or weight of the material

4 SUBGRADE PREPARATION

The area to be lined shall be drained and allowed to dry until the surface is firm The surface must support people and equipment that must travel over it during installation of the geomembrane liner All cut and fill slopes shall be constructed in accordance with the drawings Required subgrade fill shall be placed in accordance with Wisconsin Construction Specification 204, Earthfill For Waste Storage Facilities

The foundation area shall be smooth and free of projections that can damage the geomembrane Stumps and roots shall be removed Rocks (larger than 3/8" and all fractured rocks), hard clods, and other such material shall be removed, rolled with a smooth-wheeled vibratory roller, or covered with a compacted cushion of fine soil A non-woven geotextile cushion may be used in ponds that are not a component of a waste management system Surface deformations from equipment tracks or footprint indentations shall not exceed 1 inch Standing water, mud, and snow shall be removed prior to liner placement

An anchor trench for the liner shall be excavated and backfilled in accordance with the drawings The trench corners shall be slightly rounded to prevent sharp bends in the liner

5 PLACEMENT

The placement of the geomembrane liner shall be performed by an experienced Contractor The installation shall comply with the manufacturer's procedures and specifications Continuous inspection shall be provided by an experienced third party (not an employee of the Contractor or membrane suppliers) for all deployment, seaming, seam testing, and concrete placement

The geomembrane liner rolls shall be deployed using a spreader bar assembly attached to a loader bucket or by other methods approved by the liner manufacturer The method chosen to unroll the panels shall not cause scratches or crimps in the geomembrane and shall not damage the supporting soil or any underlying geotextile The liner rolls shall not be deployed by allowing the roll to run freely down the slope

The liner shall not be placed in the presence of excessive winds, during foggy conditions, or precipitation events The liner shall not be placed when the temperature is less than 50 degrees Fahrenheit unless approved by the manufacturer

The liner shall be loosely spread over the foundation with sufficient slack to accommodate thermal expansion and contraction expected during construction Sufficient slack shall be provided near all points of solid anchorage (welds to embedment strips fixed in concrete and pipe penetrations, etc.) to accommodate thermal expansion and contraction expected prior to final acceptance of the work Any damage due to inadequate slack in the liner shall be the responsibility of the geomembrane installer and shall be repaired

Each panel shall be laid out and positioned to keep the number and length of the geomembrane field joints to a minimum and consistent with proper methods of geomembrane installation The method used to place the panels shall minimize wrinkles especially along field seams Wrinkles shall not exceed 6 inches in height or "fold over"

WISCONSIN CONSTRUCTION SPECIFICATION, 202

Seams shall be oriented down, not across the slope No horizontal seams are allowed on the side slopes or within 5 feet of the toe or crest of a side slope Sharp corners shall be avoided On the floor of a facility, up slope panel overlaps shall shingle down slope Horizontal and T-shaped seams shall not be placed on slopes All T-seams or seams where three or more panels come together shall include a minimum 24-inch diameter extrusion welded patch centered over the seam intersection and installed in accordance with the specification No base T-shaped seam shall be closer than 5 feet to the toe of the side slope Seams shall be aligned with the least possible number of wrinkles or "fishmouths." All fishmouths shall be cut out and the area repaired by patching

Adequate loading (e.g., sand bags or similar items that will not damage the liner) shall be placed to prevent relocation of the compensating wrinkles or uplift of the liner by wind

The top edge of the liner shall be placed in the anchor trench and anchored with compacted backfill Compact the backfill by wheel rolling with light rubber-tired equipment or a manually directed power tamper

Construction equipment contact shall not be allowed to operate directly on the liner Portable generators may be positioned on the lined area provided that the liner is protected by an adequate cushion of geotextile or an additional layer of liner material The installer shall not refuel generators or other equipment that uses petroleum products while the equipment is located on the liner Equipment shall be maintained such that no petroleum products come into contact with the liner

No equipment or tools shall damage the liner by handling, traffic, or by other means Personnel working on the liner shall not smoke, wear damaging shoes, or engage in other activities that could damage the liner Use of metal tools shall be kept to a minimum

6 SEAMING

SEAMING SHALL NOT BE ALLOWED DURING PRECIPITATION EVENTS

PARALLEL WELDS MUST BE SEPARATED BY A DISTANCE OF AT LEAST 6"

All areas that are to become seam interfaces will be cleansed of dust and dirt Seaming shall not take place unless the geomembrane material is dry Seaming shall not be attempted when the ambient sheet temperature is below 45° F or above 90° F unless it can be demonstrated that competent welds can be achieved down to 32° F or up to 125° F sheet temperature

A Hot-Wedge Seams

Field seams shall be made by overlapping adjacent liner panels a minimum of 4 inches and fusion welding the overlapped sheets using double-wedge fusion welders Seams between panels shall be field welded using the installer's seaming apparatus and technique

B Fillet Extrusion Seams

Extrusion welding shall be used only at areas which cannot be welded by using the double-wedge fusion welder (i.e., repairs, T-seams, etc.) For extrusion welds, the liner shall be abraded by light grinding, preheated and pressed together to align for welding Minimum overlap of liner panels shall be 3 inches

7 SEAM TESTING

A Trial Weld Seam Testing

Seam tests shall be conducted under field conditions by the installer at the beginning of each seaming period, once in the morning and once in the afternoon Trial welds shall be completed using scraps of material from the liner installation Six specimens from each trial weld shall be cut from the trial weld and tested in the field by a tensiometer in shear and peel modes Four specimens shall be tested in peel and two specimens shall be tested in shear The installer shall supply calibration certification for the field tensiometer Test seams shall meet the material properties in Table 1 through Table 4 as applicable Each specimen shall be 1 inch wide and be tested at a grip separation rate of 2 inches per minute All peel tests shall result in Film Tear Bond (FTB) failure Both the inside and outside track of double fusion welds shall be tested

B Non-Destructive Seam Testing

The installer shall non-destructively test all field seams over their full lengths Seam testing shall be performed as the work progresses

1) Air Pressure Tests shall be performed in accordance with ASTM D 5820 on all double-wedge fusion seams The air pressure test equipment and procedures shall conform to the specification and the liner manufacturer's specification The air channel shall be pressurized to 25-30 psi and monitored for any pressure loss for 5 minutes A loss of pressure in excess of 4 psi or a continuous loss of pressure is an indication of a leak Terminate the test by relieving the pressure from the end of the seam opposite from the end of the seam that pressure was applied The pressure shall immediately drop to zero upon opening the opposing end of the seam If not, the seam channel shall be checked for obstructions and retested All defects shall be marked for repair All areas with failing air pressure tests shall be repaired by capping All repaired failing seam areas shall be bounded by passing tests

2) Vacuum Box Tests shall be performed in accordance with ASTM D 5641 on all extrusion welds The vacuum box equipment and procedures shall conform to this specification and the liner manufacturer's specification Apply soapy water solution to the seam area to be tested The vacuum box, equipped with a transparent viewing window, shall be centered over the seam area and a vacuum of 3-5 psi shall be drawn The seam area shall be visually monitored for any soap bubbles for 15 seconds Seam testing shall continue by overlapping a minimum of 3 inches between each test interval All defects shall be marked for repair All repaired failing seam areas shall be bounded by passing tests

C Destructive Seam Testing

Samples for destructive seam testing in a laboratory shall be cut at no more than one sample per 500 feet of seam per welder and operator combination The location of the samples shall be marked in the field by the Technician or third party quality assurance professional The samples shall be a minimum of 36 inches long and shall be cut from the liner by the geomembrane installer Destructive samples shall be divided into two portions with one being tested in the field and one sent to an independent testing laboratory for verification A minimum of three coupons for shear and three for peel shall be tested in the field Both the inside and outside track of double fusion welds shall be tested in peel If the coupons tested in the fieldmeet applicable seam property requirements in Tables 1 through 4, the Contractor shall forward the remaining laboratory portion of the sample to the laboratory for testing The Contractor shall provide copies of the laboratory testing results to the owner and to the third party inspector or Technician If the field coupons do not meet project requirements, the laboratory portion of the sample shall be discarded and the seam shall be repaired in accordance with Section 9 Likewise, if the laboratory test results demonstrate that the seam does not meet project requirements, the seam shall be repaired in accordance with Section 9 Repair holes in the liner resulting from destructive seam sampling immediately and vacuum test in accordance with procedures described in this specification

8 APPURTENANCES

A Gas Vents or Vent Pipes shall be installed in accordance with the drawings to provide gas release for the liner system

B Pipe Boots for all pipes shall be fabricated in the field from the same liner as shown on the drawings Pipe boots shall be clamped to the pipe as shown on the drawings to provide a leak-free attachment

C Egress Strips shall be installed at the locations shown on the drawings

9 REPAIRS

All defective liner areas and seams shall be repaired and non-destructively tested prior to completion of the installation

A Tears, Punctures, Material Defects

All tears, punctures, or material defects in the liner shall be repaired by installation of a patch over the defective area Surfaces of the liner to be patched shall be cleaned no more than 15 minutes prior to the repair All patches shall be made of the same liner material and extend a minimum of 6 inches beyond the edges of the defect area Patches shall have rounded corners and shall be seamed to the liner Small holes less than 1/4 inch in diameter shall be repaired by applying a bead of welding extrudant

B Seam Repair

All failed seams shall be repaired by installing a cap strip over the entire length of the failed seam The cap strip shall be of the same liner material and shall extend beyond the failed seam a minimum of 6 inches in all directions

10 PLACEMENT OF CONCRETE OR GROUT PILLOWS

Placement of concrete pads and ramps shall be in accordance with the drawings and shall conform to Wisconsin Construction Specification 4

A Concrete Joined to the Geomembrane

CONCRETE PADS, RAMPS AND APPURTENANCES SHALL BE CONSTRUCTED PRIOR TO PLACING THE GEOMEMBRANE LINER

Concrete ramps, pads, and appurtenances shall have approved premanufactured geomembrane embedment strips cast into the concrete per the manufacturer's specifications The concrete Contractor shall obtain the embedment strips from the liner installer along with the manufacturer's installation instructions The embedment strips shall be stored at locations where excessive heat or sunlight will not cause deformation of the strip They shall be fully embedded into the concrete with no gaps between the strips Joints between the strips shall be extrusion welded or an approved expanding sealant material placed under the joint

Stainless steel batten strips shall be installed as shown on the drawings

B Concrete or Grout Pillows Placed Over the Geomembrane

Concrete or grout pillow pads, ramps, and appurtenances shall be constructed in a manner that does not puncture the geomembrane and does not jeopardize the integrity or performance of the geomembrane liner in any way The Contractor shall submit shop drawings, which include all details necessary to ensure compliance with this specification, to the Engineer at least five business days prior to the anticipated date of concrete construction Concrete or grout pillow construction shall not occur until the Contractor obtains written approval of the shop drawings from the Engineer

11 CONSTRUCTION QUALITY ASSURANCE

A quality assurance plan for the installation of the geomembrane and all appurtenances shall be submitted to the Engineer for approval at least five business days prior to installation

All geomembrane placement, seaming, seam testing, and repair, as well as concrete construction shall be completed under the continuous observation of a qualified independent third party quality assurance inspector under the direction of a Professional Engineer registered in Wisconsin The quality assurance inspector shall not be an employee of the Contractor, owner, or geomembrane supplier

A construction quality assurance report shall be prepared and submitted to the owner, cost sharing agency, and/or permitting agencies as appropriate The report shall include, at a minimum

- A panel layout diagram showing the location of panels and the seam numbering system used
- Documentation that the entire length of all seams has been non-destructively tested by air channel tests or vacuum box tests as applicable
- Documentation that all seams that did not initially pass the non-destructive test have been repaired and that the repair has passed a non-destructive test
- Documentation that the destructive seam samples have been taken at the required frequency, have been tested in an off-site laboratory, and have met the project requirements
- Documentation that seams have been repaired where laboratory destructive seam sample testing has indicated that seams did not initially meet project requirements
- Documentation that the entire surface of the liner has been observed and that all blemishes, punctures, fishmouths, and other irregularities that could jeopardize the performance of the liner have been acceptably repaired

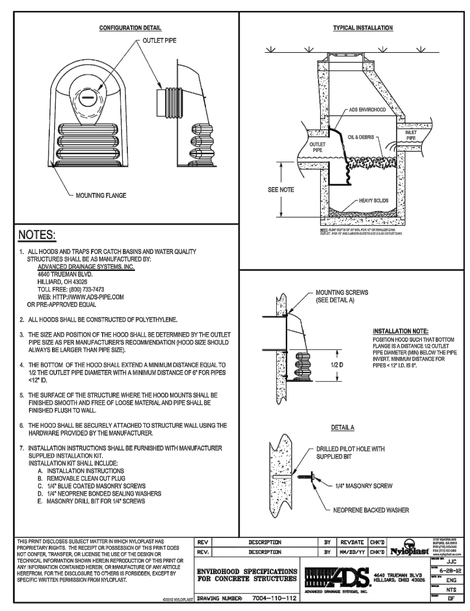
12 BASIS OF ACCEPTANCE

The acceptability of the geomembrane liner shall be determined by inspections to check compliance with all the provisions of this specification, with respect to the drawings, markings, the appurtenances, and the minimum installation requirements

The installer shall certify that the installation complies with the requirements of this specification A written guarantee shall be furnished that protects the owner against defective workmanship for a minimum of two years

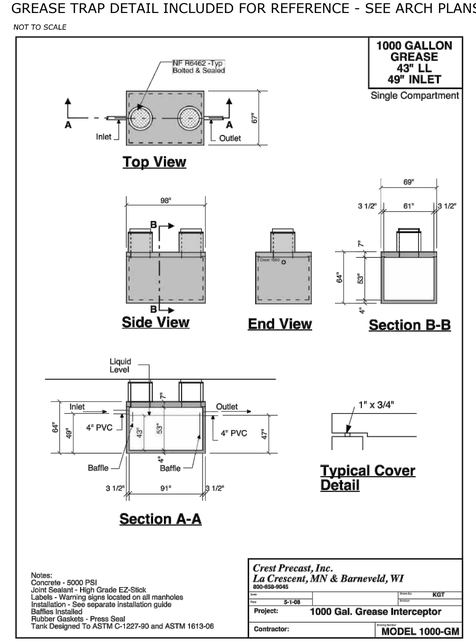
***REFER TO WISCONSIN CONSTRUCTION SPECIFICATION 202 TABLES 1-4 FOR GEOMEMBRANE LINER REQUIREMENTS

D01□OUTLET CONTROL STRUCTURE - SNOUTS MAY BE ENIVROHOOD BY ADS OR APPROVED E□UAL



GREASE TRAP DETAIL INCLUDED FOR REFERENCE - SEE ARCH PLANS

NOT TO SCALE



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PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

	DATE
Agency Review	7/20/2018
Agency Review	8/15/2018
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REVISIONS

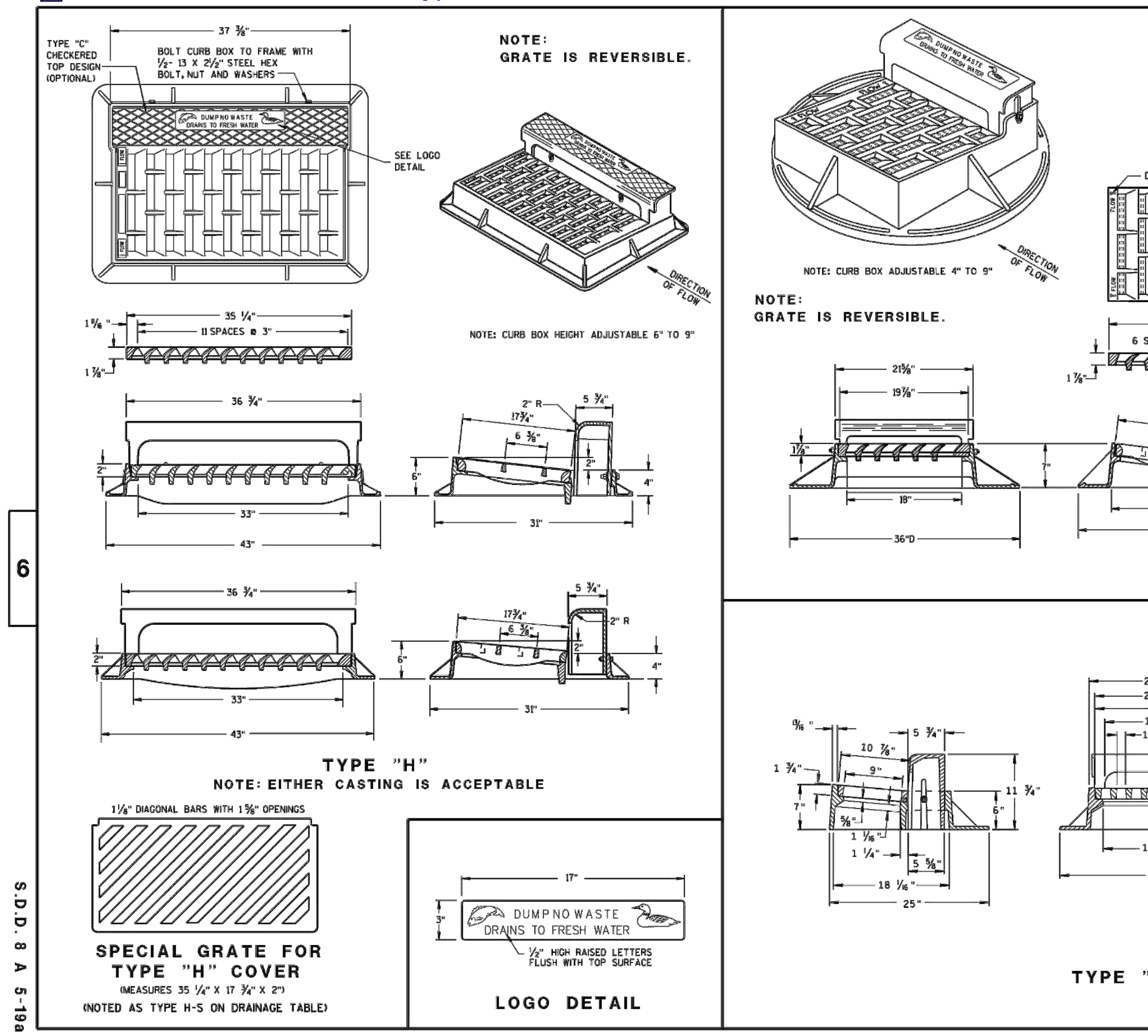
ITEM	DATE
1. ----	----
2. ----	----
3. ----	----
4. ----	----
5. ----	----
6. ----	----
7. ----	----

SHEET TITLE
DETAILS

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C10

8A5 sheet a: Inlet Covers Type A, H, A-S, H-S & Z

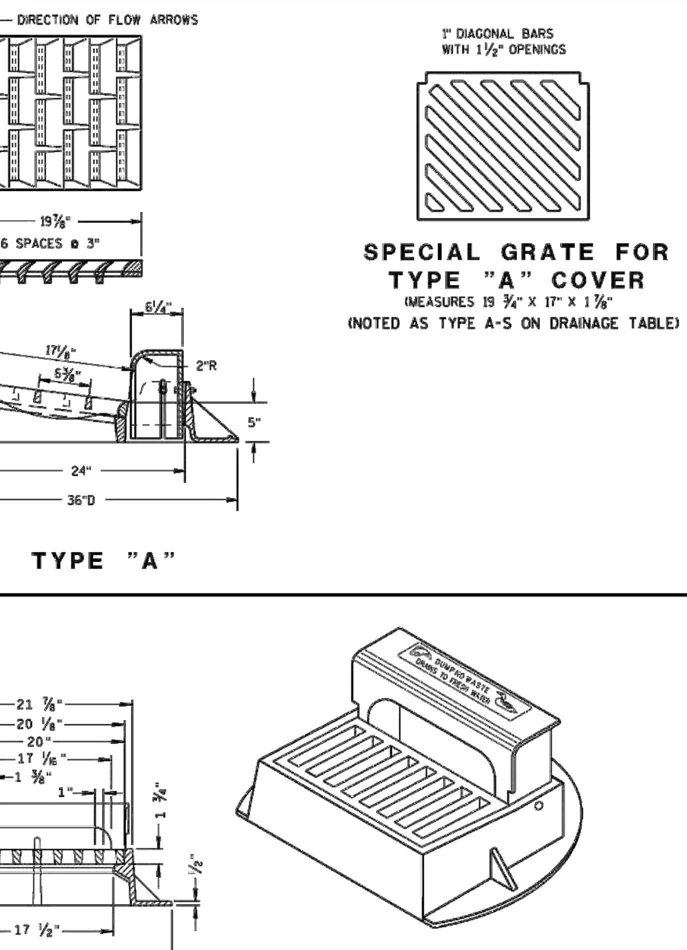


GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.



INLET COVERS
TYPE A, H, A-S, H-S & Z

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 11-27-13 DATE — /S/ Jerry H. Zogg, ROADWAY STANDARDS DEVELOPMENT ENGINEER — FHWA

6

S.D.D. 8 A 5-19a

8F1: Apron Endwalls for Culvert Pipe

METAL APRON ENDWALLS

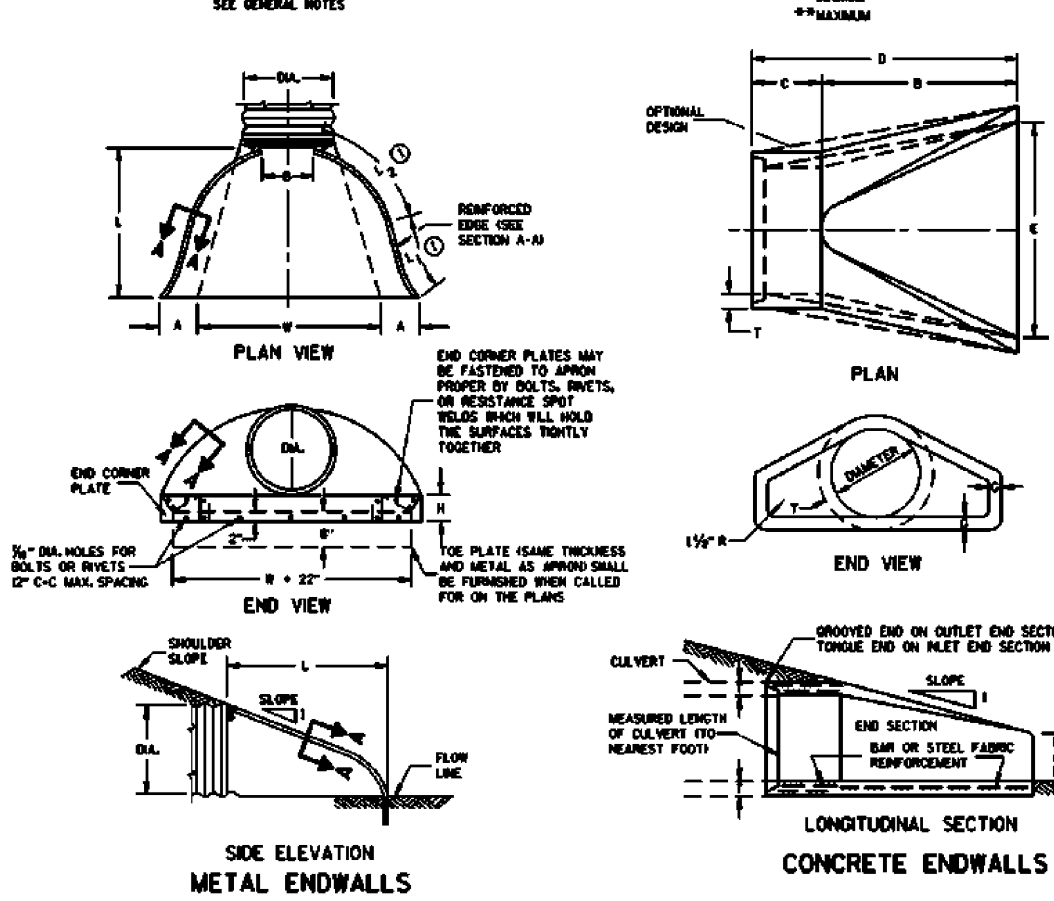
PIPE DIA. (IN.)	MIN. THICK. (inches) STEEL	MIN. THICK. (inches) ALUM.	A (±1")	B (MAX.)	H (±1")	L (±1½")	L1 ①	L2 ①	W (±2")	APPROX. SLOPE	BODY
12	.064	.060	6	6	6	21	12	17½	24	2½ to 1	1 Pc.
15	.064	.060	7	8	6	26	14	25¼	30	2½ to 1	1 Pc.
18	.064	.060	8	10	6	31	15	28¼	36	2½ to 1	1 Pc.
21	.064	.060	9	12	6	36	18	29⅝	42	2½ to 1	1 Pc.
24	.064	.075	10	13	6	41	18	37¼	48	2½ to 1	1 Pc.
30	.079	.075	12	16	8	51	18	52¼	60	2½ to 1	1 Pc.
36	.079	.105	14	19	9	60	24	59¼	72	2½ to 1	2 Pc.
42	.109	.105	16	22	11	69	24	75⅝	84	2½ to 1	2 Pc.
48	.109	.105	18	27	12	78	24	81	90	2¼ to 1	3 Pc.
54	.109	.105	18	30	12	84	30	85½	102	2¼ to 1	3 Pc.
60	.109*	.105*	18	33	12	87	—	—	114	2 to 1	3 Pc.
66	.109*	.105*	18	36	12	87	—	—	120	2 to 1	3 Pc.
72	.109*	.105*	18	39	12	87	—	—	126	2 to 1	3 Pc.
78	.109*	.105*	18	42	12	87	—	—	132	1½ to 1	3 Pc.
84	.109*	.105*	18	45	12	87	—	—	138	1½ to 1	3 Pc.
90	.109*	.105*	18	37	12	87	—	—	144	1½ to 1	3 Pc.
96	.109*	.105*	18	35	12	87	—	—	150	1½ to 1	3 Pc.

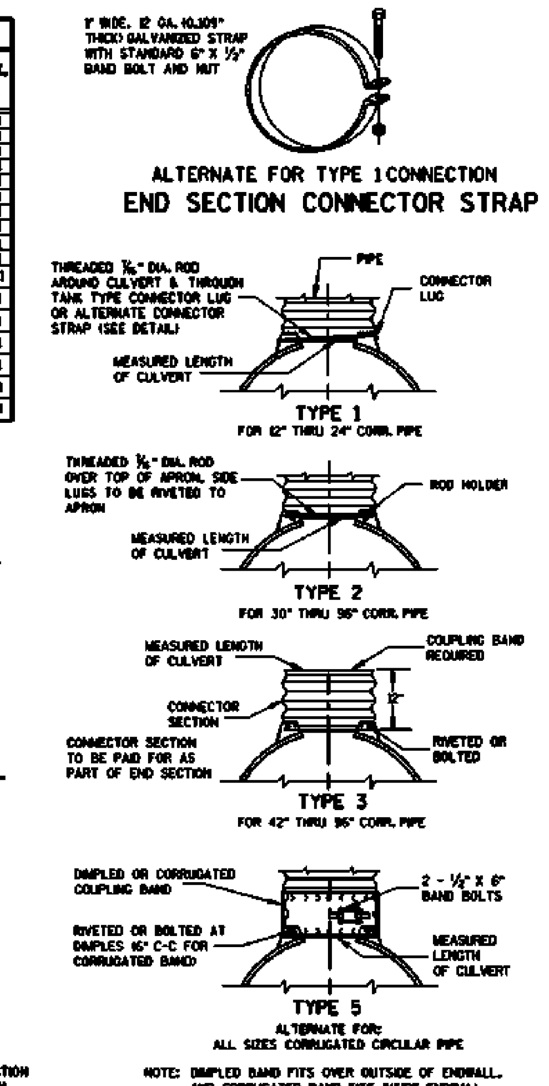
* EXCEPT CENTER PANEL SEE GENERAL NOTES

REINFORCED CONCRETE APRON ENDWALLS

PIPE DIA. (IN.)	T	A	B	C	D	E	G	APPROX. SLOPE
12	2	4	24	48⅞	72⅞	24	2	3 to 1
15	2¼	6	27	46	73	30	2¼	3 to 1
18	2½	9	27	46	73	36	2½	3 to 1
21	2¾	9	36	37½	73½	42	2¾	3 to 1
24	3	9½	43½	30	73½	48	3	3 to 1
27	3¼	10½	49½	24	73½	54	3¼	3 to 1
30	3½	12	54	19¾	73½	60	3½	3 to 1
36	4	15	63	34¾	97¾	72	4	3 to 1
42	4½	21	63	35	98	78	4½	3 to 1
48	5	24	72	26	98	84	5	3 to 1
54	5½	27	65	*35¾-**38	*98¾-**100	90	5½	2½ to 1
60	6	*30-**35	60	39	99	96	5	2 to 1
66	6½	*24-**30	*72-**78	*21-**27	99	102	5½	2 to 1
72	7	*24-**36	78	21	99	108	6	2 to 1
78	7½	*24-**36	78	21	99	114	6½	2 to 1
84	8	36	90½	21	111½	120	6½	1½ to 1
90	8½	41	87½	24	111½	132	6½	1½ to 1

*MINIMUM
**MAXIMUM





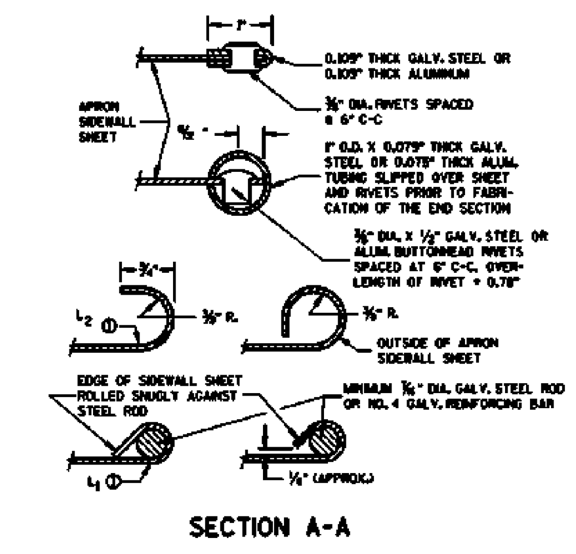
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

FOR CIRCUMFERENTIALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2, 3 OR 5 AS APPLICABLE.

FOR HELICALLY CORRUGATED PIPE USE ENDWALL CONNECTION DETAILS 1, 2 OR 5.

FOR HELICALLY CORRUGATED PIPES WITH TWO CIRCUMFERENTIAL CORRUGATIONS AT EACH END USE ENDWALL CONNECTION DETAILS 1, 2 OR 3.

CONNECTION DETAILS



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

CONCRETE CULVERT ENDWALLS MAY NOT BE USED WITH GALVANIZED STEEL OR ALUMINUM CULVERT PIPE OR VISE VERSA. GALVANIZED STEEL OR ALUMINUM ENDWALLS SHALL NORMALLY BE INSTALLED ON CULVERT PIPE OF THE SAME METAL.

ALL THREE PIECE STEEL APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.109" SIDES AND 0.138" CENTER PANELS. ALL THREE PIECE ALUMINUM APRON ENDWALLS FOR 60" DIAMETER PIPE AND LARGER SHALL HAVE 0.105" SIDES AND 0.134" CENTER PANELS. THE WIDTH OF CENTER PANELS SHALL BE GREATER THAN 20 PERCENT OF THE PIPE PERIMETER.

LAP SEAMS SHALL BE TIGHTLY JOINED BY GALVANIZED RIVETS OR BOLTS FOR STEEL UNITS AND ALUMINUM RIVETS AND BOLTS FOR ALUMINUM UNITS. FOR THE 60" THROUGH 96" DIAMETER APRON ENDWALL SIZES, THE REINFORCED EDGES AND CENTER PANEL SEAMS SHALL BE FURTHER REINFORCED WITH GALVANIZED STEEL OR ALUMINUM STIFFENER ANGLES. THE ANGLES SHALL BE ATTACHED BY GALVANIZED NUTS AND BOLTS FOR STEEL UNITS AND ALUMINUM NUTS AND BOLTS FOR ALUMINUM UNITS.

WHERE TWO OR MORE PIPES WITH APRON ENDWALLS ARE LAID ADJACENT TO EACH OTHER, THEY SHALL BE SEPARATED BY A DISTANCE SUFFICIENT TO PROVIDE A MINIMUM CLEARANCE OF 6 INCHES BETWEEN APRON ENDWALLS.

① FOR PIPE SIZES UP TO 60" DIAMETER, A 180° ROLLED EDGE MAY BE USED INSTEAD OF STEEL ROD REINFORCEMENT. SEE SECTION A-A.

APRON ENDWALLS FOR CULVERT PIPE

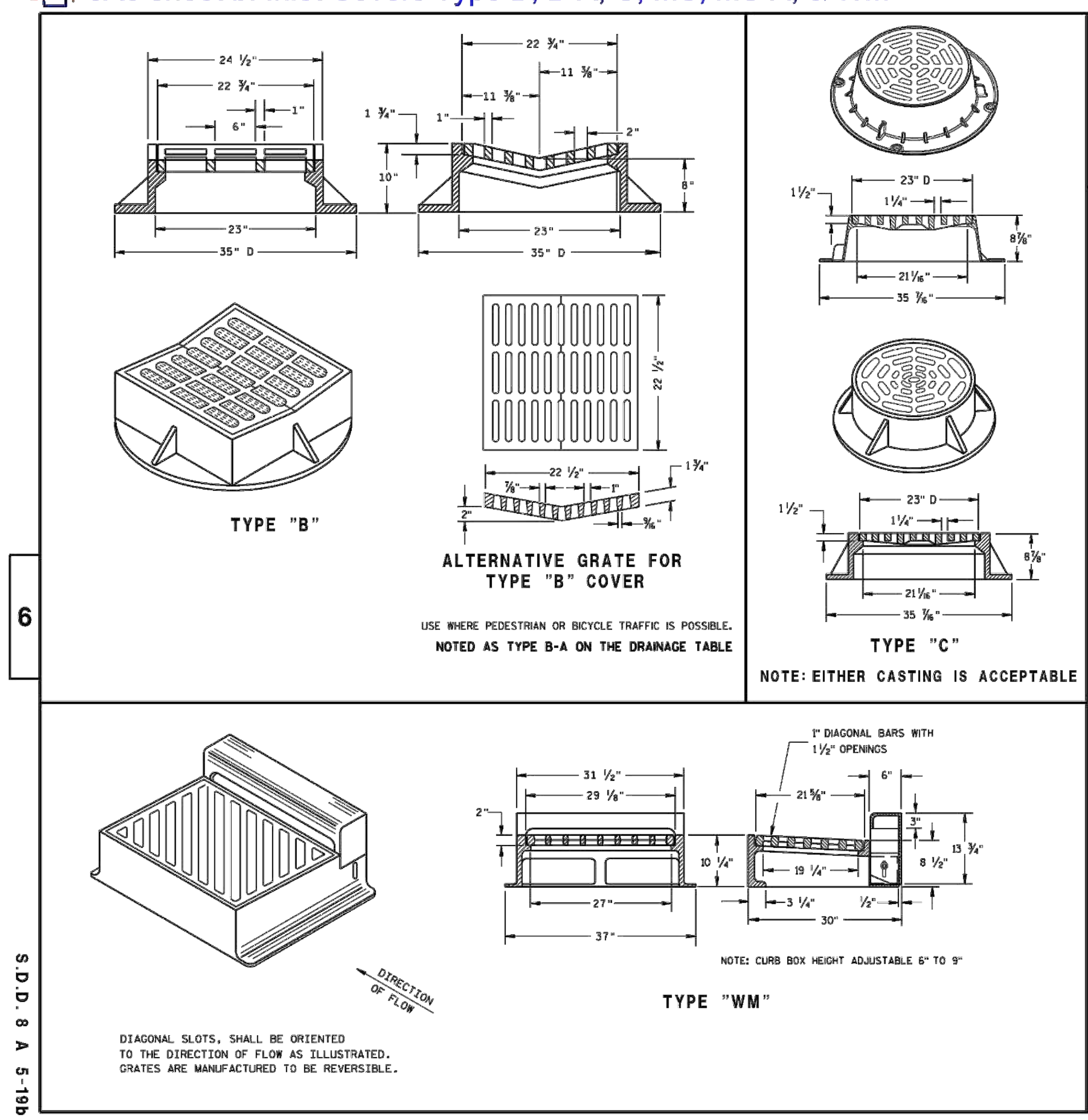
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 8/30/94 DATE — /S/ Gary L. Brinsmaid, CHIEF ROADWAY DEVELOPMENT ENGINEER — FHWA

6

S.D.D. 8 F 1-11

8A5 sheet b: Inlet Covers Type B, B-A, C, MS, MS-A, & WM



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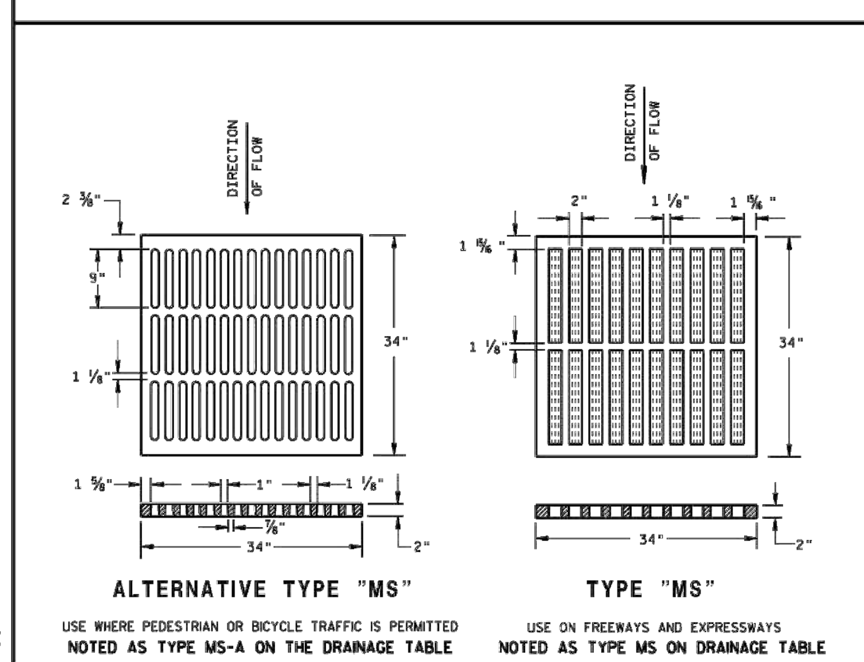
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ROUND FRAMES AND COVERS SHALL HAVE CONTINUOUSLY MACHINED BEARING SURFACES TO PREVENT ROCKING AND RATTLING.



INLET COVERS
TYPE B, B-A, C,
MS, MS-A, & WM

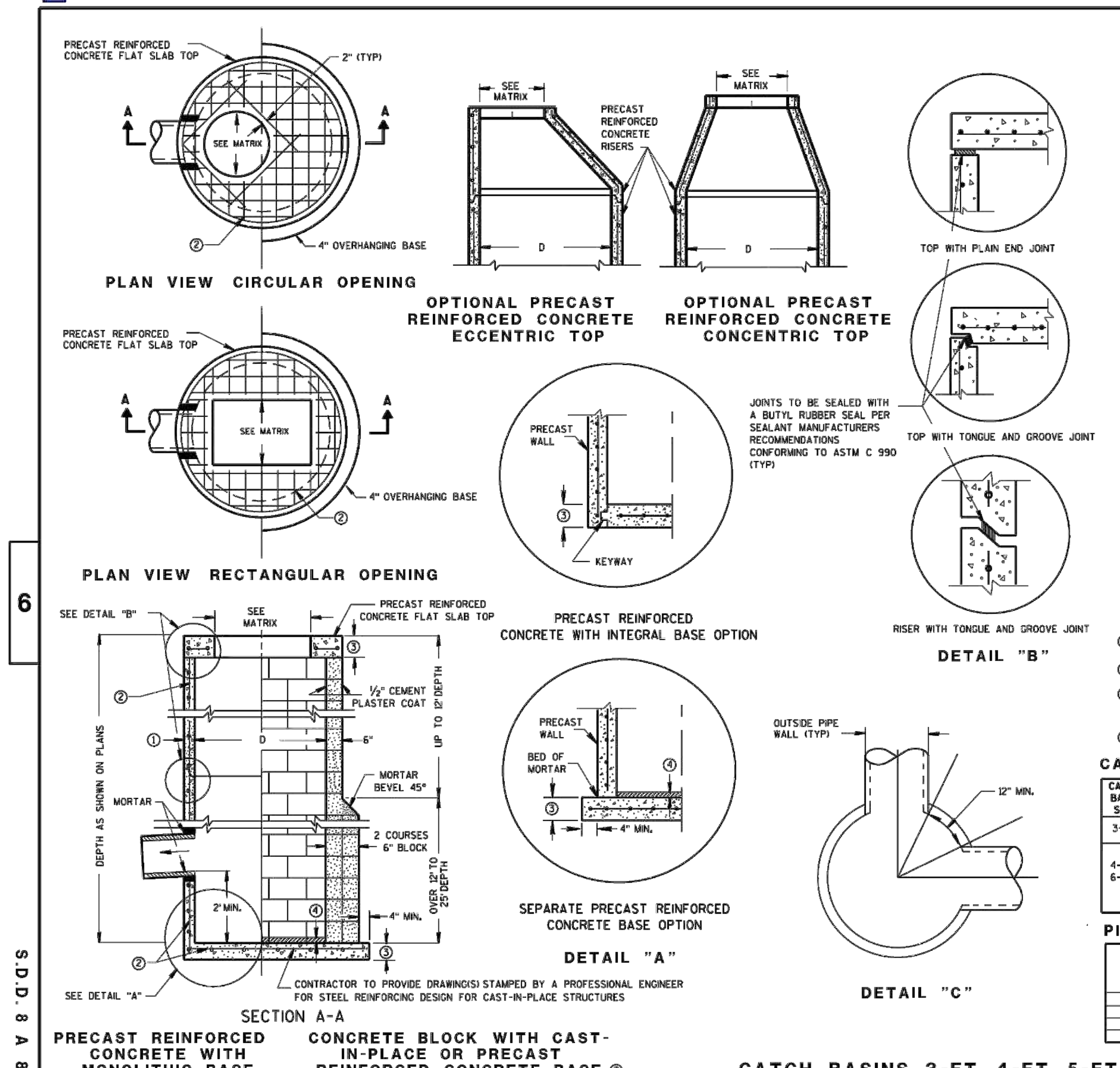
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED 11/27/2013 DATE — /S/ Jerry H. Zogg, ROADWAY STANDARDS DEVELOPMENT ENGINEER — FHWA

6

S.D.D. 8 A 5-19b

8A8: Catch Basins 3-FT, 4-FT, 5-FT & 6-FT Diameter



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

UNLESS OTHERWISE AUTHORIZED IN WRITING BY THE ENGINEER, THE CONTRACTOR SHALL NOT ORDER AND DELIVER PRECAST CATCH BASIN UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR UNDERGROUND DRAINAGE STRUCTURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATE THE SIZE OF THE STRUCTURE, AND THE FOLLOWING LETTER DESIGNATES THE TYPE OF COVER TO BE USED TO COMPRISE THE COMPLETE UNIT.

BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6 INCHES IN DEPTH, WHICH MEETS THE REQUIREMENTS OF FOUNDATION BACKFILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

PRECAST REINFORCED CONCRETE CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED CONCRETE FLAT SLAB TOPS MAY BE USED ON CONCRETE BLOCK STRUCTURES.

ECCENTRIC CONE TOPS MAY BE USED ON ALL STRUCTURES, AND CONCENTRIC CONE TOPS SHALL BE USED ONLY ON STRUCTURES 5 FEET OR LESS IN DEPTH, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.

STEPS MEETING AASHTO M199 AND THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH: 16 INCH C-C MAXIMUM SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM LENGTH OF 10 INCHES; MINIMUM WALL EMBEDMENT OF 3 INCHES. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCEMENT BAR ARE ACCEPTABLE. REINFORCING BAR MUST BE A MINIMUM OF ½ INCH AND MEET THE REQUIREMENTS OF ASTM A615.

CERTIFICATION SHALL BE PROVIDED THAT INSTALLED STEPS WHEN TESTED IN ACCORDANCE WITH SECTION 10 OF AASHTO T280 CAN WITHSTAND A VERTICAL LOAD OF 800 LBS. AND A HORIZONTAL LOAD OF 400 LBS.

ALL BAR STEEL REINFORCEMENT SHALL BE EMBEDDED 2 INCHES CLEAR UNLESS OTHERWISE SHOWN OR NOTED.

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M199.

PRECAST REINFORCED RISERS SHALL HAVE A TONGUE AND GROOVE JOINT WITH TONGUE UP OR DOWN.

CONCRETE BLOCK WILL NOT BE PERMITED FOR STRUCTURES GREATER THAN 4 FEET IN DIAMETER.

4" OVERHANGING BASES ARE REQUIRED FOR ALL CONCRETE BLOCK INSTALLATIONS. 4" OVERHANG IS REQUIRED WHEN SEPARATE PRECAST BASE IS PROVIDED. OVERHANG IS NOT REQUIRED ON PRECAST STRUCTURES WITH AN INTEGRAL OR MONOLITHIC BASE.

FOR ADDITIONAL CONFIGURATIONS, MAINTAIN A MINIMUM OF 12 INCHES AS MEASURED FROM THE INSIDE OF THE STRUCTURE WALL BETWEEN THE OUTSIDE PIPE WALLS OF ADJACENT PIPES. SEE DETAIL "C".

① MINIMUM WALL THICKNESS SHALL BE 4 INCHES FOR 3-FT, 5 INCHES FOR 4-FT, 6 INCHES FOR 5-FT AND 7 INCHES FOR 6-FT DIAMETER PRECAST CATCH BASINS.

② FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO AASHTO M199.

③ PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER OF 48" AND LESS SHALL HAVE A MINIMUM THICKNESS OF 6". PRECAST FLAT SLAB TOPS AND BASES WITH A DIAMETER LARGER THAN 48" SHALL HAVE A MINIMUM THICKNESS OF 8".

④ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2' SUMP MEASURED FROM TOP OF KEY.

CATCH BASIN COVER OPENING MATRIX

CATCH BASIN SIZE	INLET COVER TYPE / OPENING SIZE (FT)	ALL A'S	ALL B'S	BW	C	F	ALL H'S	S	T	V	WM	Z
3-FT	2X2	X	X					X		X		
	2 DIA.				X							X
4-FT-6-FT	2X2	X	X					X		X		
	2X2.5			X				X	X	X	X	
	2 DIA.				X							X
	2X3						X					
	2.5X3					X						

PIPE MATRIX

CATCH BASIN SIZE	MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES: 180° SEPARATION (IN)	90° SEPARATION (IN)
3-FT	15	12
4-FT	24	18
5-FT	36	24
6-FT	42	30

CATCH BASINS 3-FT, 4-FT, 5-FT AND 6-FT DIAMETER

CATCH BASINS 3-FT,
4-FT, 5-FT AND
6-FT DIAMETER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED Sept., 2016 DATE — /S/ Rodney Taylor, ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR — FHWA

6

S.D.D. 8 A 8-2

ARC DESIGN RESOURCES INC.
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FAX: (815) 484-4303
www.arcdesign.com
Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

	DATE
Agency Review	7/20/2018
Agency Review	8/15/2018
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SHEET TITLE

WISDOT DETAILS

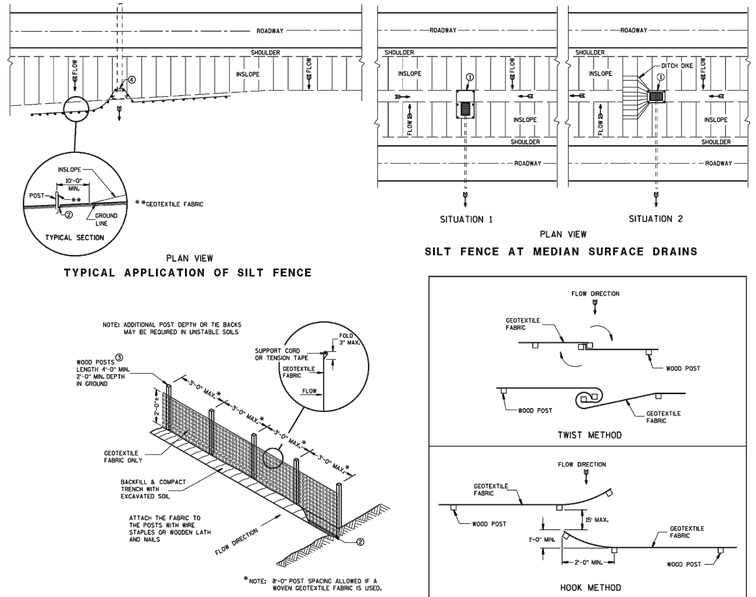
DRAWN KOG
CHECKED DRH
PM RCS

PROJECT NUMBER
SHEET NUMBER

17176

C11

8E9: Silt Fence



GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPLICABLE SPECIAL PROVISIONS.

① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

② FOR MANUAL INSTALLATIONS THE TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.

③ WOOD POSTS SHALL BE A MINIMUM SIZE OF 1½" X 1½" OF OAK OR HICKORY.

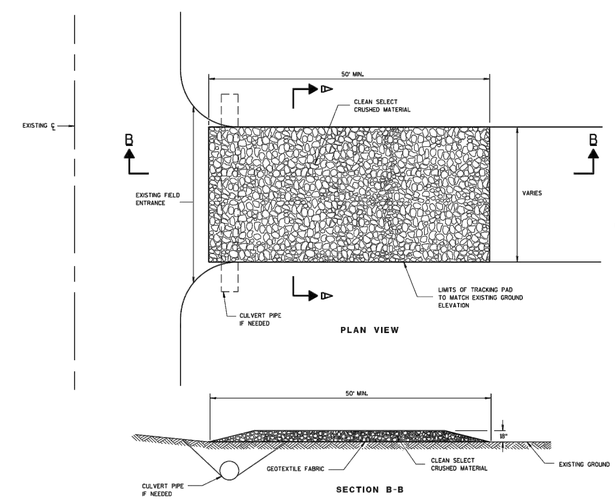
④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.

⑤ CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS: A) OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES, B) HOOK THE END OF EACH SILT FENCE LENGTH.

SILT FENCE	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 4-29-05	/S/ Beth Cannestra
DATE	CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

S.D.D. 8 E 9-6

8E14: Tracking Pad



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

TRACKING PAD SHALL BE INSPECTED DAILY. DEFICIENT AREAS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.

TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT.

SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. FLOWS SHALL BE DIVERTED AWAY, AROUND OR CONVEYED UNDER THE TRACKING PAD.

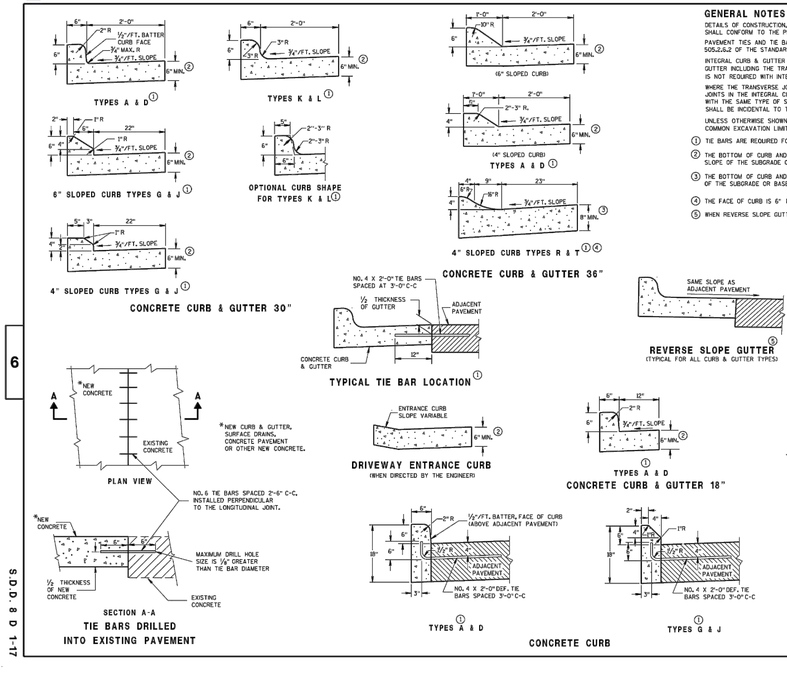
CULVERT PIPE OR OTHER BMP USED TO DIVERT WATER AWAY, AROUND OR UNDER THE TRACKING PAD SHALL BE DESIGNED TO CONVEY THE 2 YEAR - 24 HOUR EVENT.

THE COST OF ADDITIONAL BMP TO DIVERT WATER ARE INCIDENTAL TO THE TRACKING PAD BID ITEM.

TRACKING PAD	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 3-24-2011	/S/ Jerry M. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

S.D.D. 8 E 14-1

8D1: Concrete Curb, Concrete Curb & Gutter and Ties



GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE CONTRACT.

PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

INTEGRAL CURB & GUTTER SHALL CONFORM TO THE DETAILS SHOWN FOR CONCRETE CURB & GUTTER INCLUDING THE TRANSVERSE GUTTER SLOPE. A LONGITUDINAL CONSTRUCTION JOINT IS NOT REQUIRED WITH INTEGRAL CURB AND GUTTER.

WHERE THE TRANSVERSE JOINTS IN THE PAVEMENT ARE REQUIRED TO BE SEALED, THE JOINTS IN THE INTEGRAL CURB AND GUTTER SHALL BE SEALED TO THE FACE OF CURB WITH THE SAME TYPE OF SEALANT. THE COST OF FURNISHING AND INSTALLING THIS SEALANT SHALL BE INCIDENTAL TO THE ITEM CONCRETE CURB AND GUTTER.

UNLESS OTHERWISE SHOWN ON THE TYPICAL CROSS SECTIONS, THE BASE AGGREGATE AND COMMON EXCAVATION LIMITS ARE 2'-0" BEHIND THE BACK OF CURBS.

① TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K AND R.

② THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MINIMUM GUTTER THICKNESS IS MAINTAINED.

③ THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

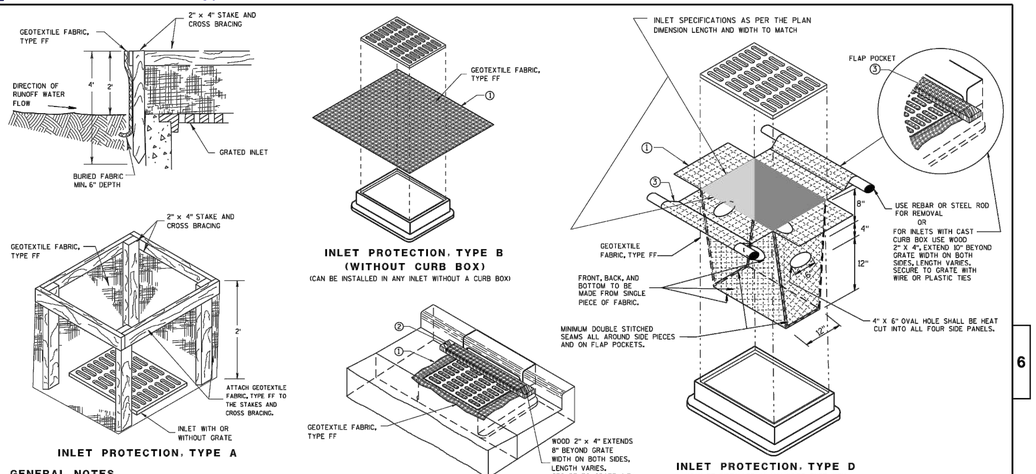
④ THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

⑤ WHEN REVERSE SLOPE GUTTER IS REQUIRED, THE LOCATION(S) WILL BE SHOWN ELSEWHERE IN THE PLAN.

CONCRETE CURB, CONCRETE CURB & GUTTER AND TIES	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 9/4/08	/S/ Jerry M. Zogg
DATE	ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA	

S.D.D. 8 D 1-17

8E10: Inlet Protection Type A, B, C and D



GENERAL NOTES

INLET PROTECTION DEVICES SHALL BE MAINTAINED OR REPLACED AT THE DIRECTION OF THE ENGINEER.

MANUFACTURED ALTERNATIVES APPROVED AND LISTED ON THE DEPARTMENT'S EROSION CONTROL PRODUCT ACCEPTABILITY LIST MAY BE SUBSTITUTED.

WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.

① FINISHED SIZE, INCLUDING FLAP POCKETS WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10" AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.

② FOR INLET PROTECTION, TYPE C (WITH CURB BOX), AN ADDITIONAL 18" OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.

③ FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2X4.

INSTALLATION NOTES

TYPE B & C

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE CONTRACTOR SHALL DEMONSTRATE A METHOD OF MAINTENANCE, USING A SEWN FLAP, HAND HOLDS OR OTHER METHOD TO PREVENT ACCUMULATED SEDIMENT FROM ENTERING THE INLET.

TYPE D

DO NOT INSTALL INLET PROTECTION TYPE D IN INLETS SHALLOWER THAN 30", MEASURED FROM THE BOTTOM OF THE INLET TO THE TOP OF THE GRATE.

TRIM EXCESS FABRIC IN THE FLOW LINE TO WITHIN 3" OF THE GRATE.

THE INSTALLED BAG SHALL HAVE A MINIMUM SIDE CLEARANCE, BETWEEN THE INLET WALLS AND THE BAG, MEASURED AT THE BOTTOM OF THE OVERFLOW HOLES, OF 3". WHERE NECESSARY THE CONTRACTOR SHALL CINCH THE BAG, USING PLASTIC ZIP TIES, TO ACHIEVE THE 3" CLEARANCE. THE TIES SHALL BE PLACED AT A MAXIMUM OF 4" FROM THE BOTTOM OF THE BAG.

INLET PROTECTION TYPE A, B, C, AND D	
STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION	
APPROVED 10-16-02	/S/ Beth Cannestra
DATE	CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA	

S.D.D. 8 E 10-2

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Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

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Agency Review	8/15/2018
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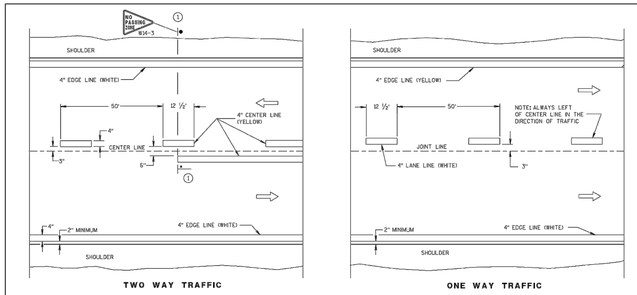
SHEET TITLE
WISDOT DETAILS

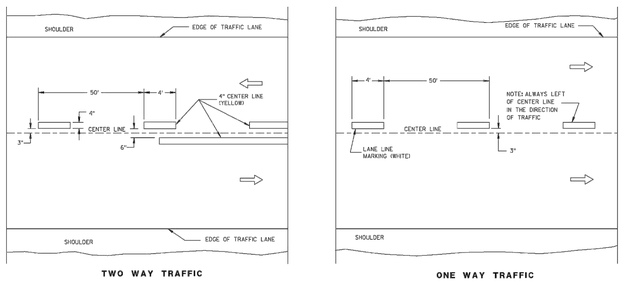
DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C12

SDD 15c8-a Longitudinal Marking (Mainline)



PERMANENT PAVEMENT MARKING



TEMPORARY PAVEMENT MARKING

GENERAL NOTES

DETAILS OF CONSTRUCTION NOT SHOWN ON THIS DRAWING SHALL CONFORM TO STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.

1. LOCATE THE NO PASSING ZONE W14-3 SIGN WITHIN 50 FEET OF THE "T" MARKING.

NOTE

ARROW SYMBOL ( ) SHOWS DIRECTION OF TRAVEL

LEGEND

"T" MARKING

POST MOUNTED SIGN

LONGITUDINAL MARKING (MAINLINE)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
7/2018 — /S/ Matthew R. Rauch
DATE — STATE SIGNING AND MARKING ENGINEER
FHWA

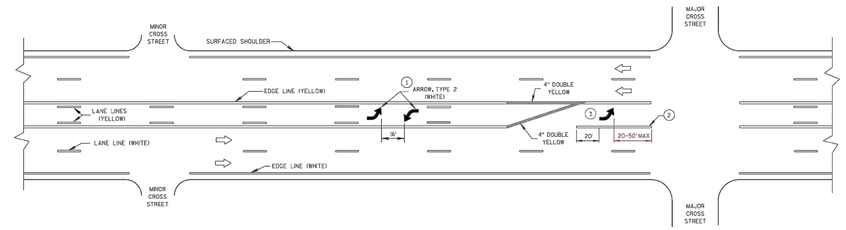
6 | S.D.D. 15 C 8-19a

SDD 15c8-b Pavement Marking (Turn Lanes)

GENERAL NOTES

1. A SET OF ARROWS IS REQUIRED EVERY 400 FEET OR NEAR INTERSECTIONS OR DRIVEWAYS WITH TURNING TRAFFIC.
2. 8" WHITE
3. TURN BAY LENGTH OF LESS THAN 48' DOES NOT REQUIRE PAVEMENT ARROWS OR TEXT

DIRECTION OF TRAFFIC



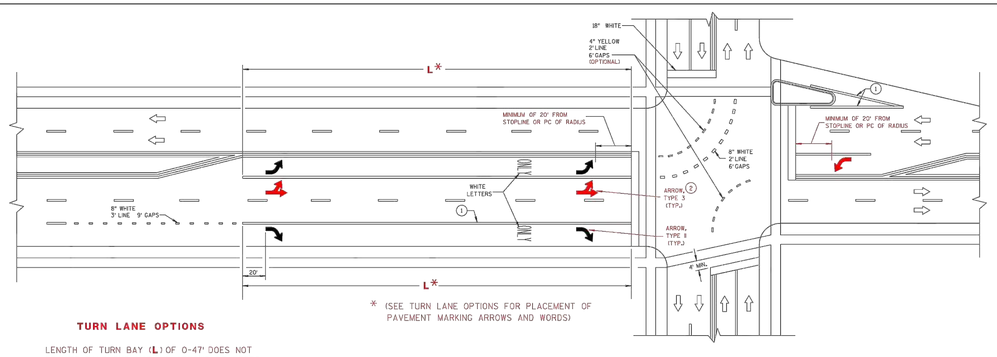
TWO WAY LEFT TURN LANE

PAVEMENT MARKING (TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

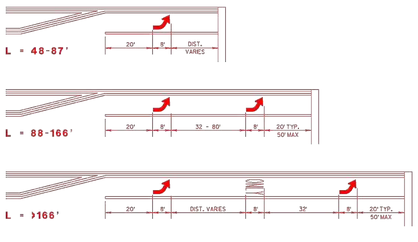
6 | S.D.D. 15 C 8-19b

SDD 15c8-c Pavement Marking (Turn Lanes)



TURN LANE OPTIONS

LENGTH OF TURN BAY (L) OF 0-47' DOES NOT REQUIRE PAVEMENT MARKING ARROWS OR WORDS



GENERAL NOTES

1. 8" WHITE
2. QUANTITY AND LOCATION OF TYPE 3 ARROW ARE THE SAME AS THE TYPE II ARROWS IN THE ADJACENT TURN LANE. FOR TURN LANES WITH A PHYSICAL SEPARATION, THE ARROWS AND ONLY MARKING ARE ELIMINATED.

DIRECTION OF TRAFFIC

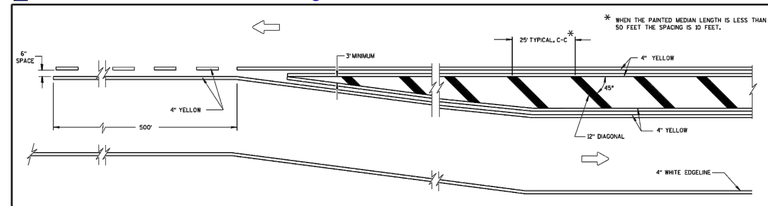
L = LENGTH OF TURN BAY

PAVEMENT MARKING (TURN LANES)

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

6 | S.D.D. 15 C 8-19c

SDD 15c18 Median Island Marking

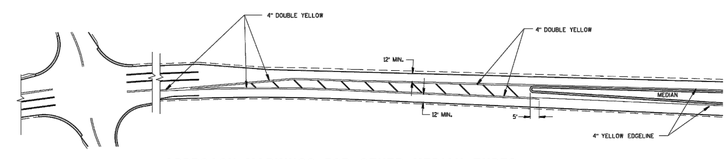


MEDIAN ISLAND DETAIL

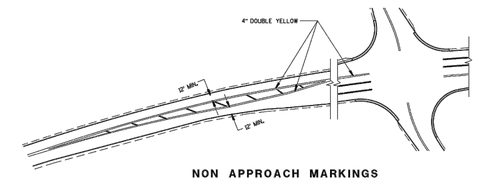
GENERAL NOTE

DIAGONALS ARE OPTIONAL WHEN PAINTED ISLAND IS LESS THAN 6 FEET AT WIDEST POINT.

DIRECTION OF TRAVEL



APPROACH MARKINGS FOR OTHER MEDIAN TYPES



NON APPROACH MARKINGS

MEDIAN ISLAND MARKING

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June 2017 — /S/ Matthew Rauch
DATE — STATE SIGNING AND MARKING ENGINEER
FHWA

6 | S.D.D. 15 C 18-4

ARC DESIGN RESOURCES INC.
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LOVES PARK, IL 61111
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Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

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NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

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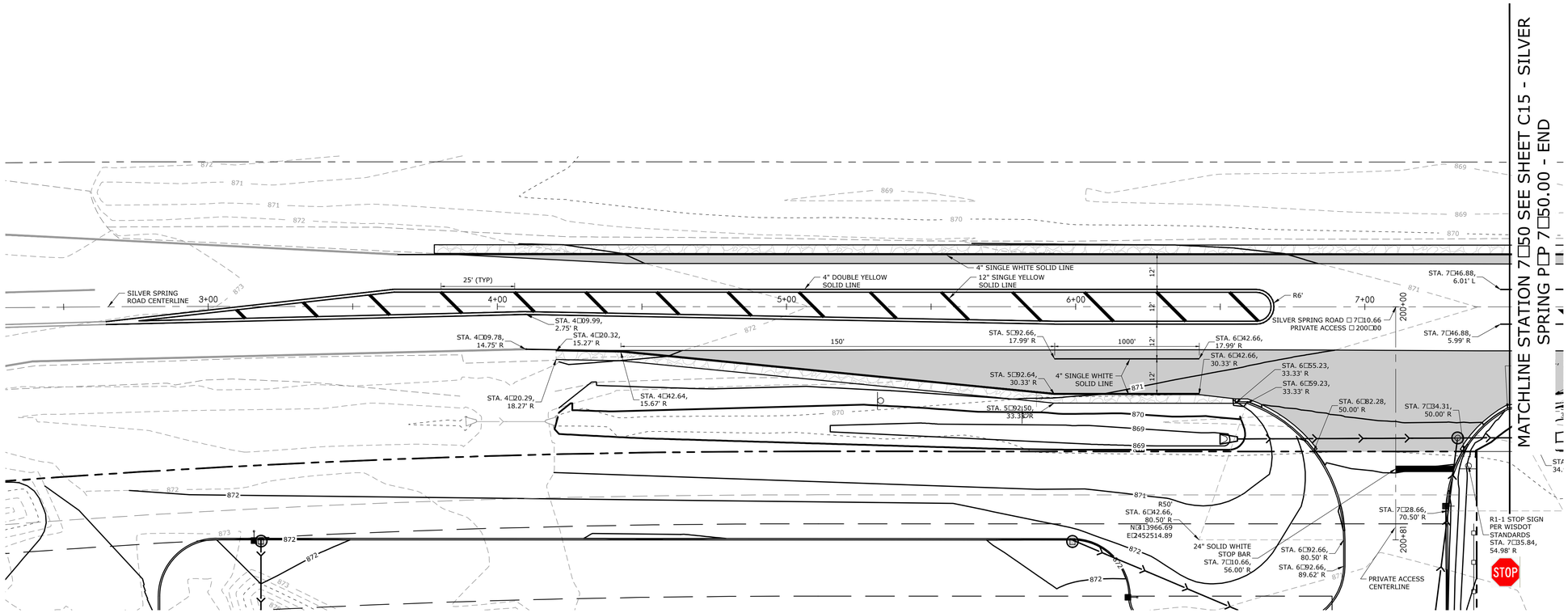
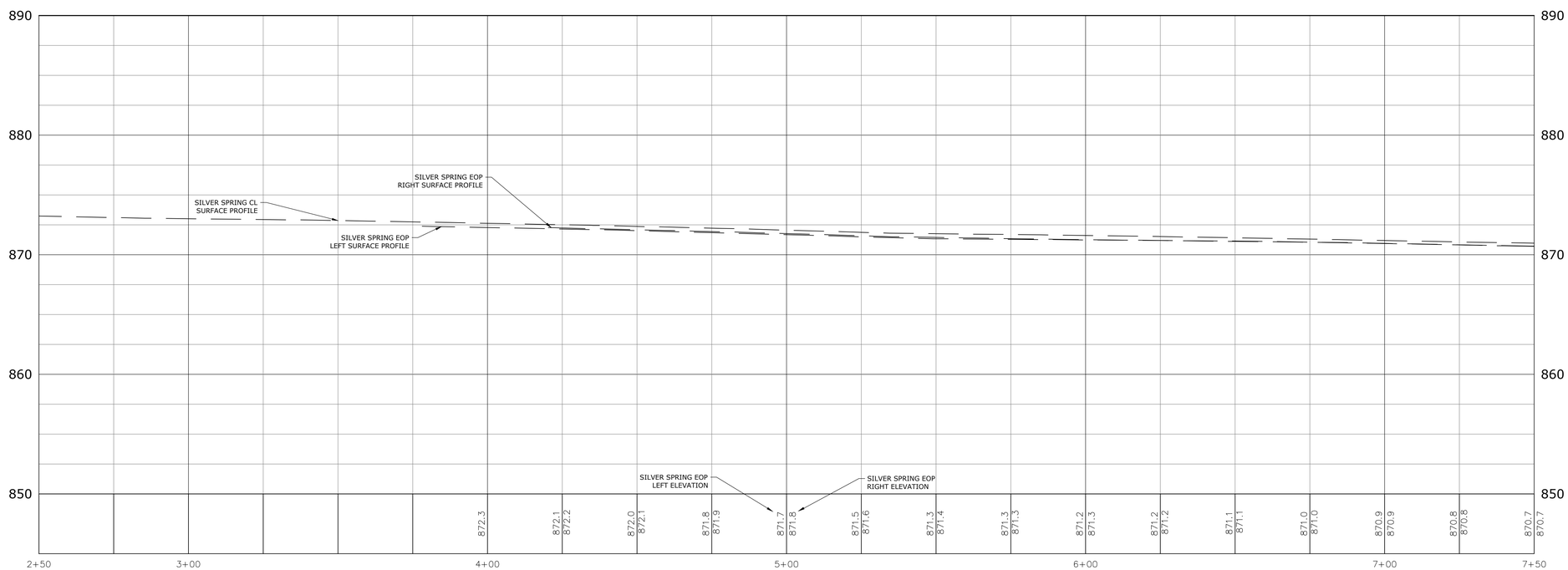
SHEET TITLE
WISDOT DETAILS

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
C13





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SHEET TITLE

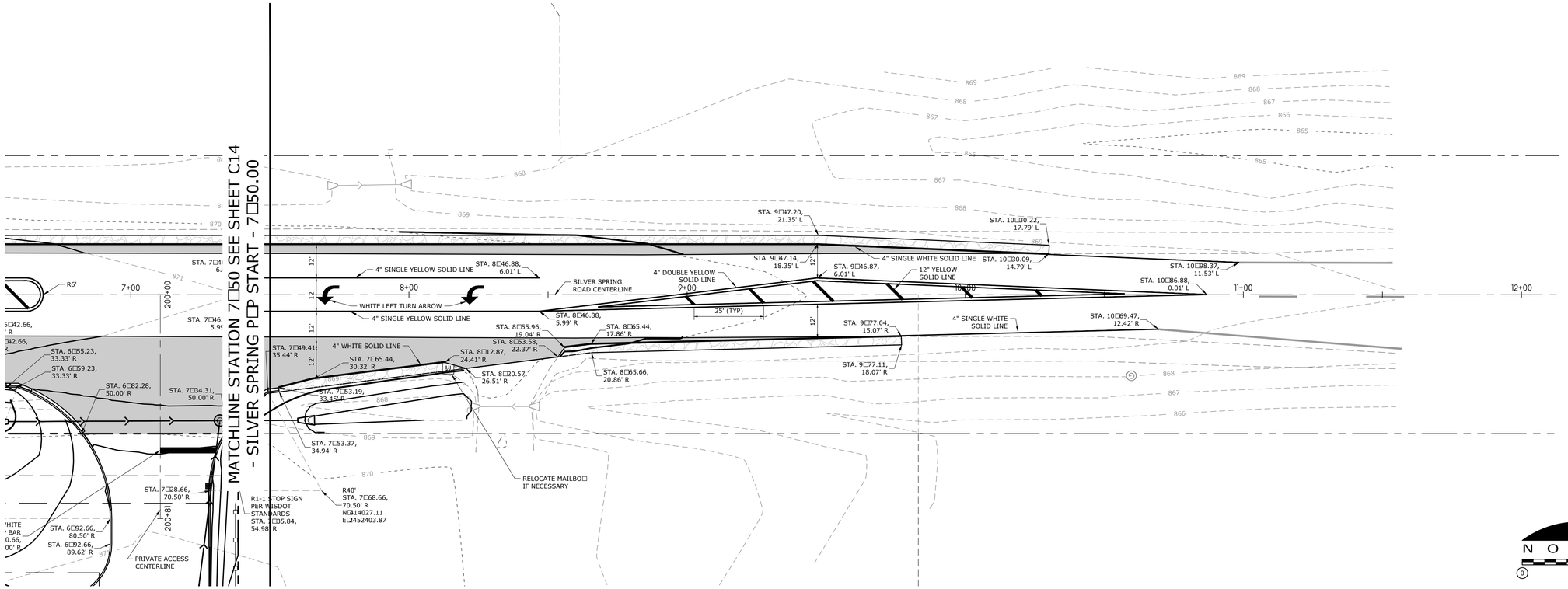
SILVER SPRING P&P START - 7+50.00

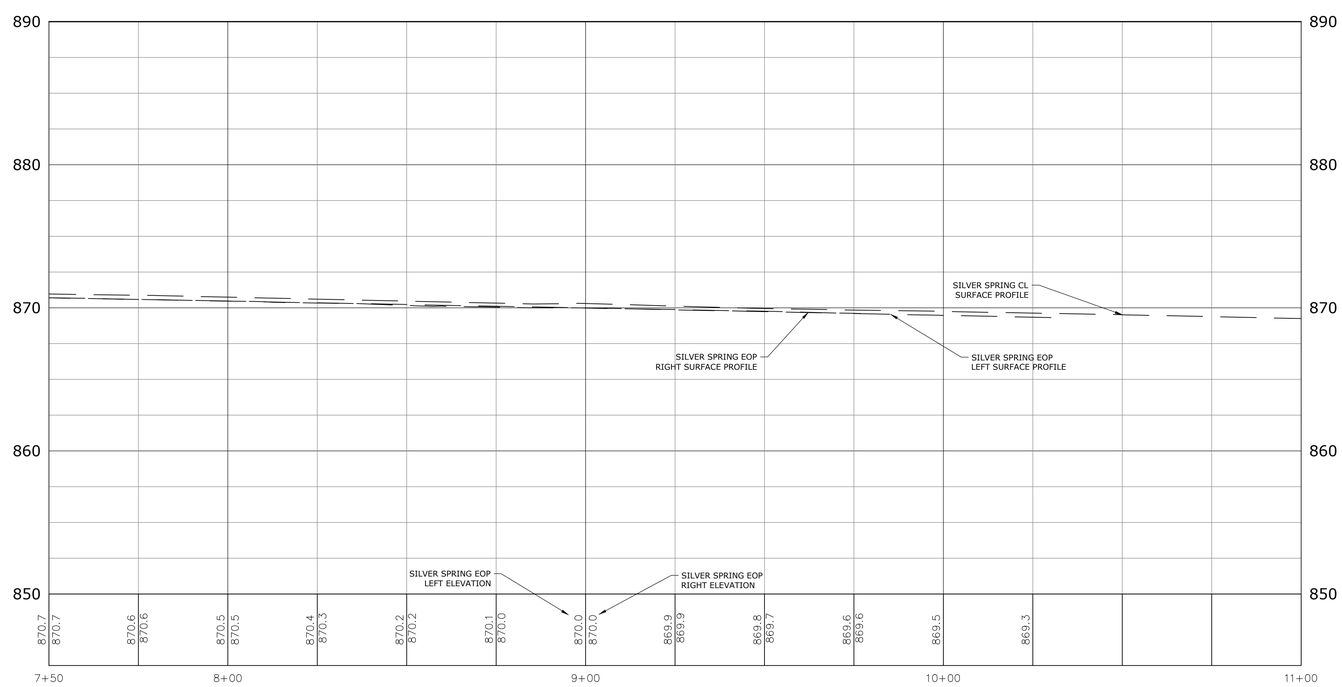
DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C14





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Agency Review	8/15/2018
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SHEET TITLE

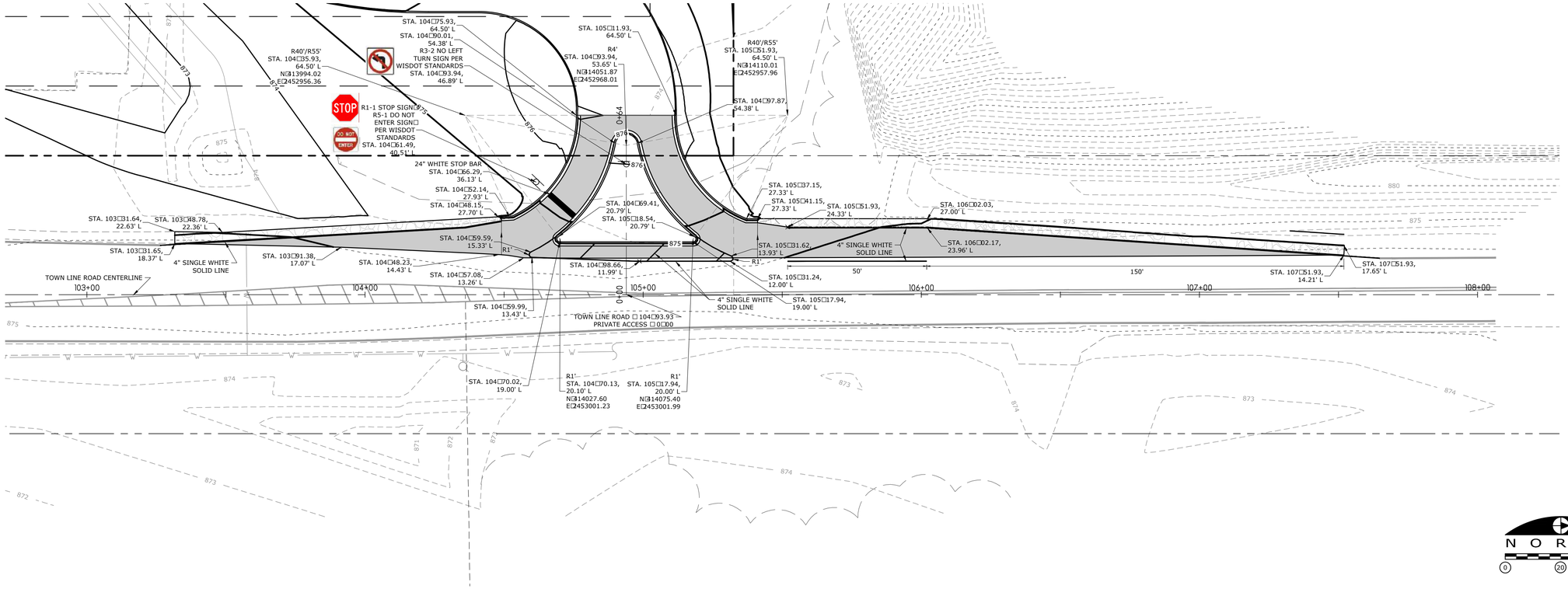
SILVER SPRING P&P 7+50.00 - END

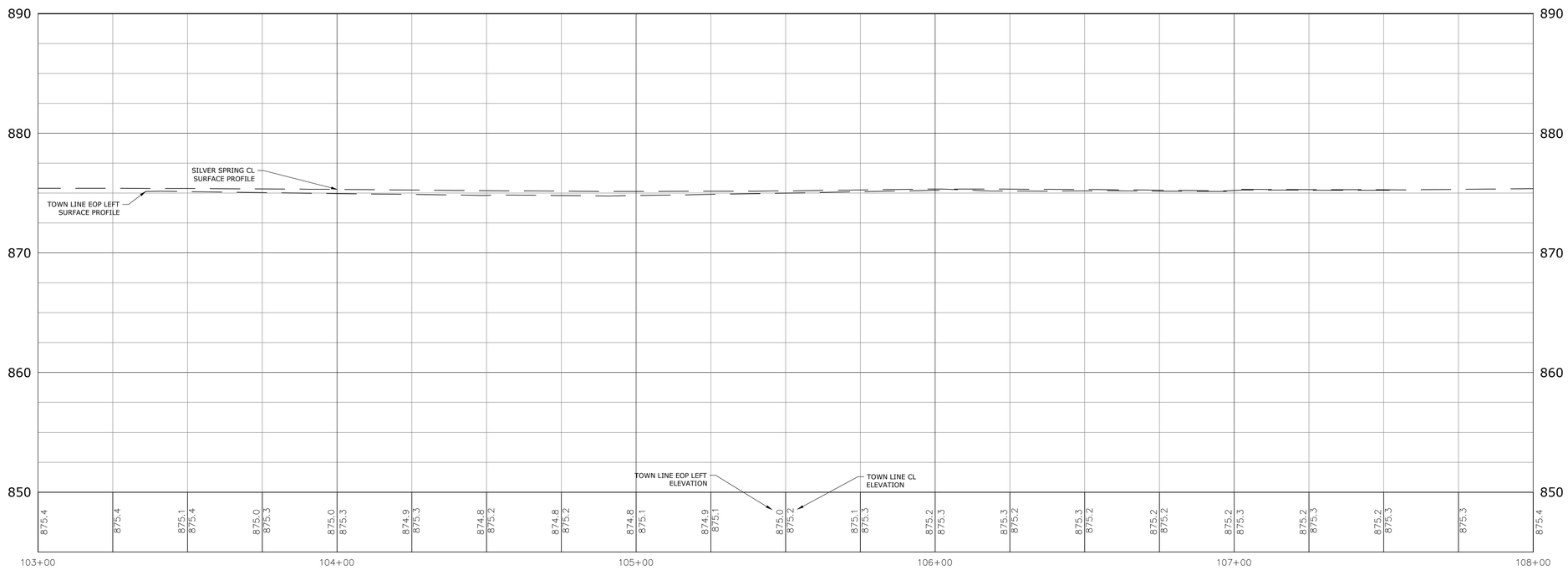
DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C15





ARC DESIGN RESOURCES INC.
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FAX: (815) 484-4303
www.arcdesign.com
Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

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Agency Review	7/20/2018
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REVISIONS

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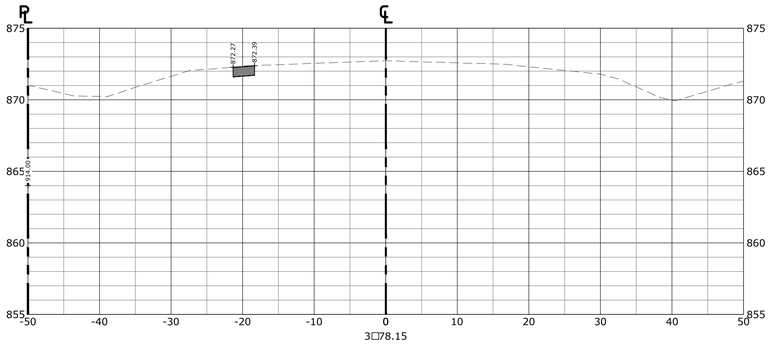
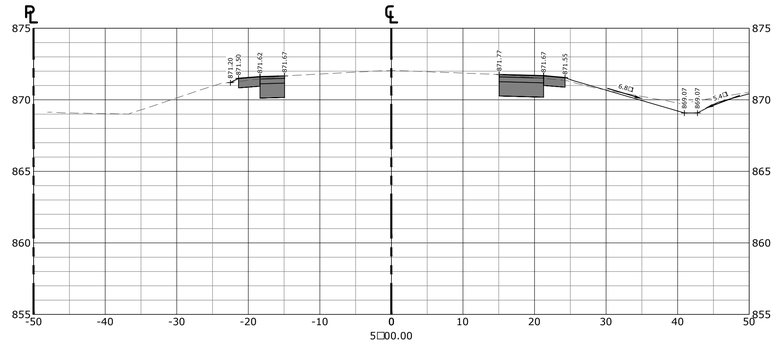
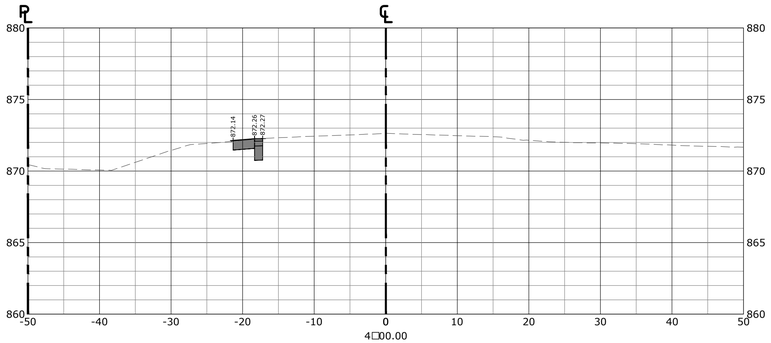
SHEET TITLE
TOWN LINE P&P

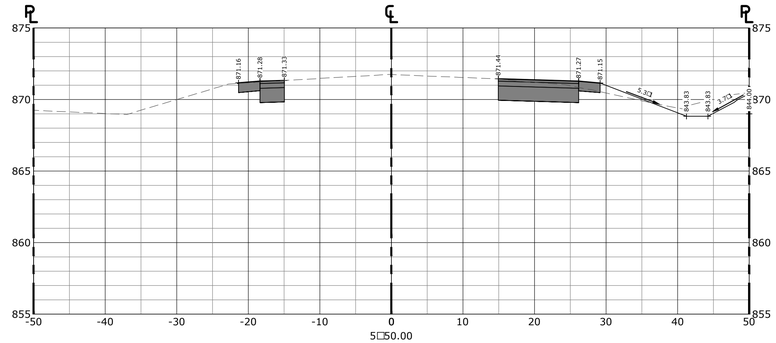
DRAWN	KOG
CHECKED	DRH
PM	RCS

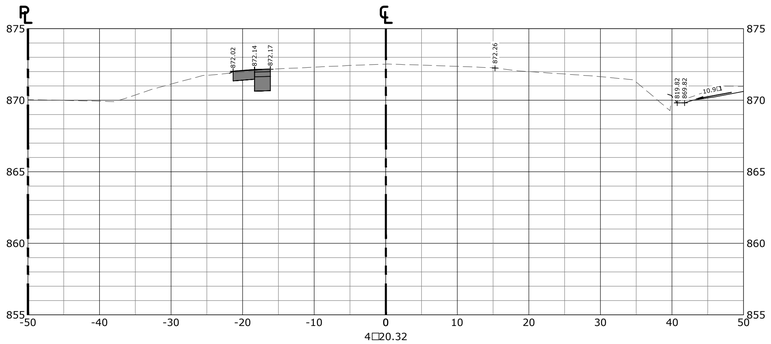
PROJECT NUMBER
SHEET NUMBER
17176
C16

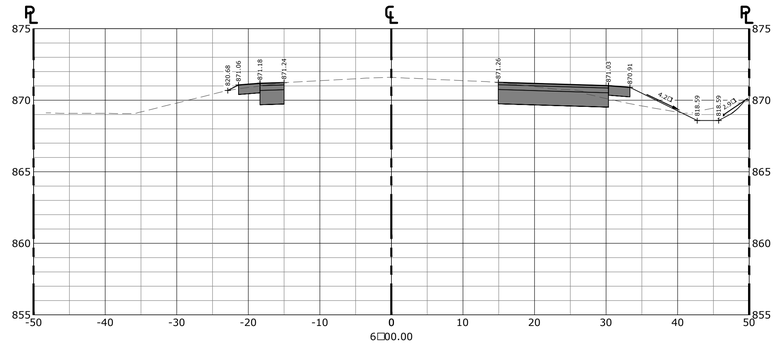


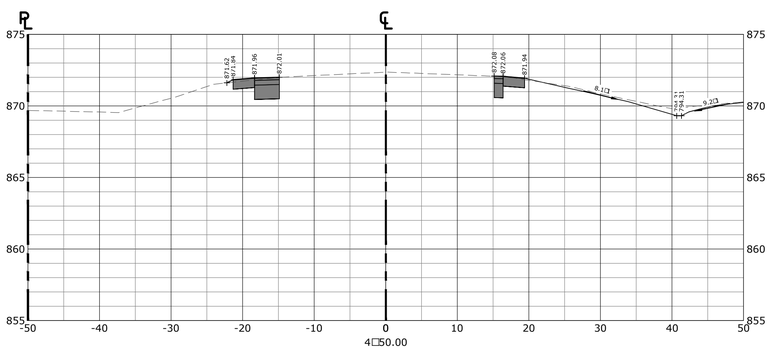


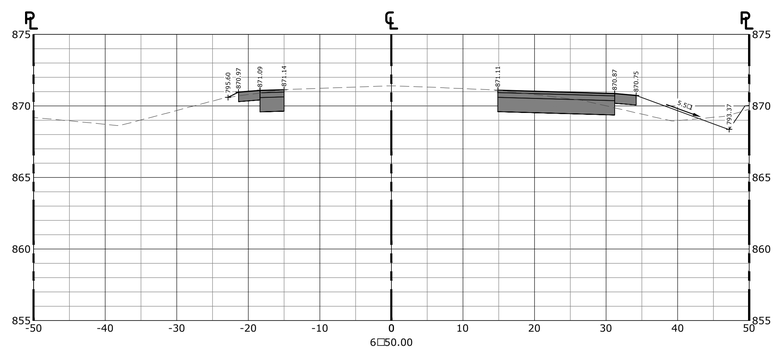












PAVEMENT NOTES

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SHEET TITLE

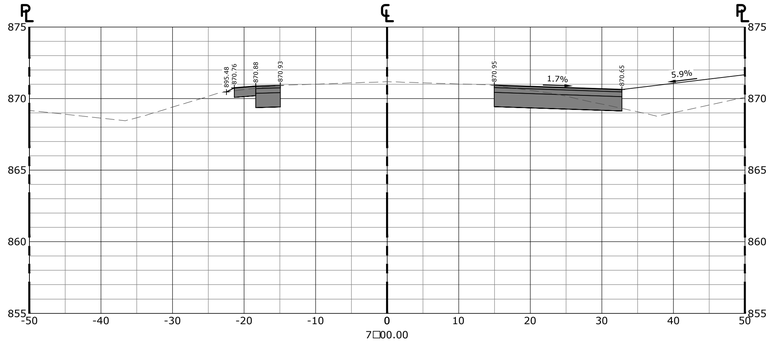
SILVER SPRING CROSS SECTIONS START - 6+50.00

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C17



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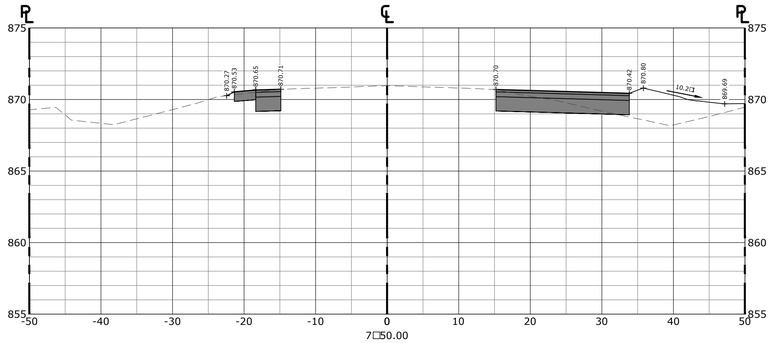

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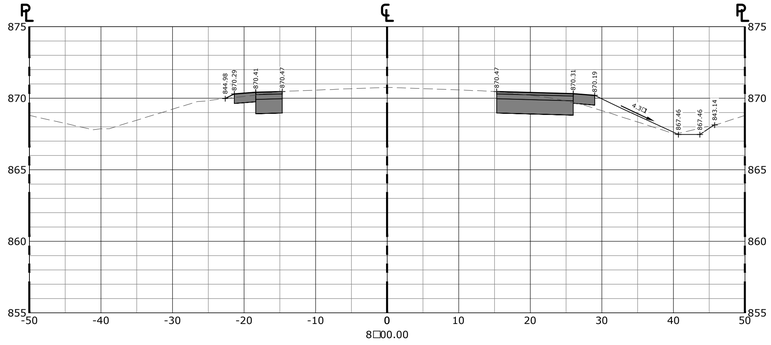

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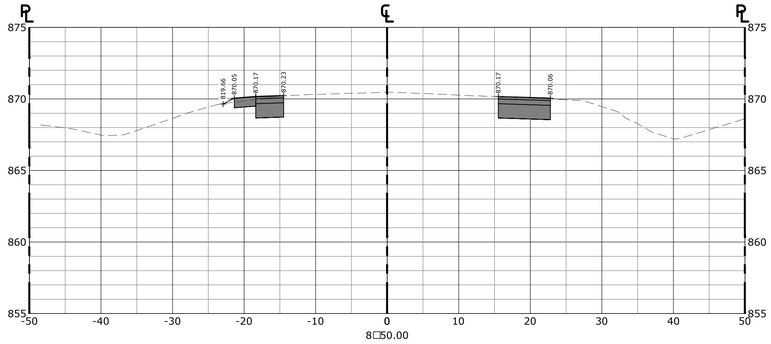

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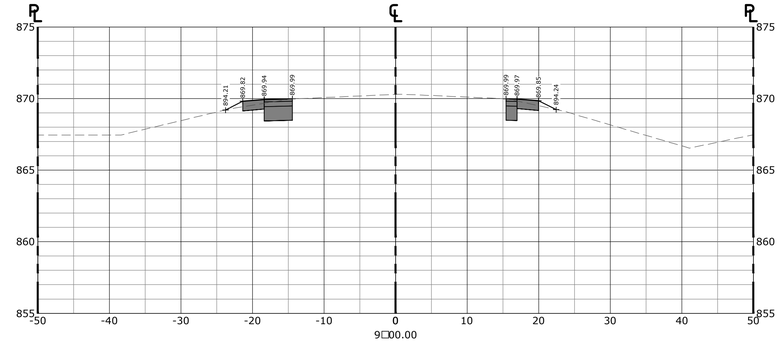

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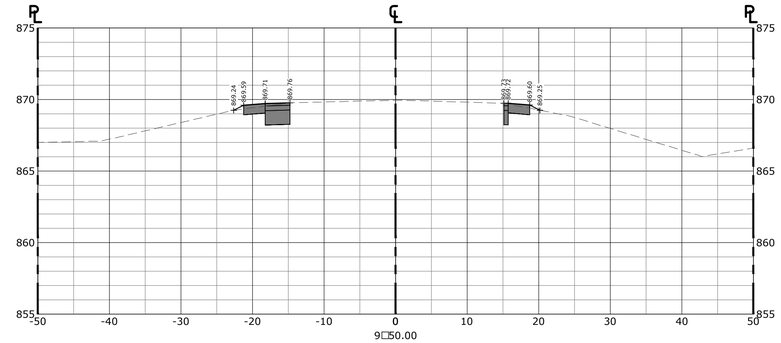

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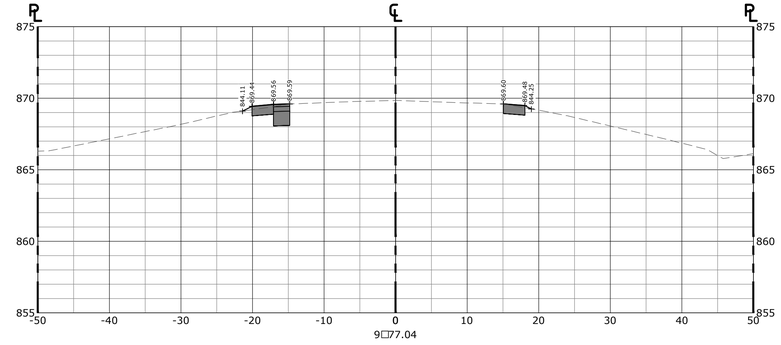

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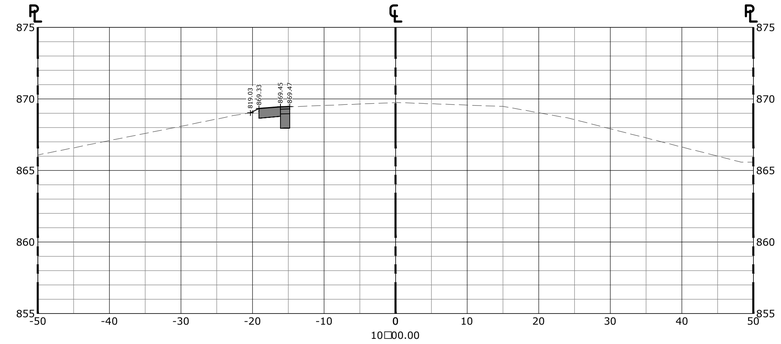

10□00.00

PAVEMENT NOTES

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ARC DESIGN RESOURCES INC.

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REVISIONS

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SHEET TITLE

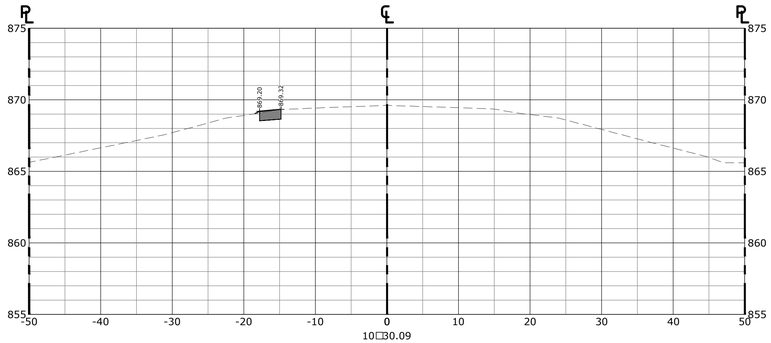
SILVER SPRING CROSS SECTIONS 7+00.00 - 10+00.00

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C18



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SHEET TITLE

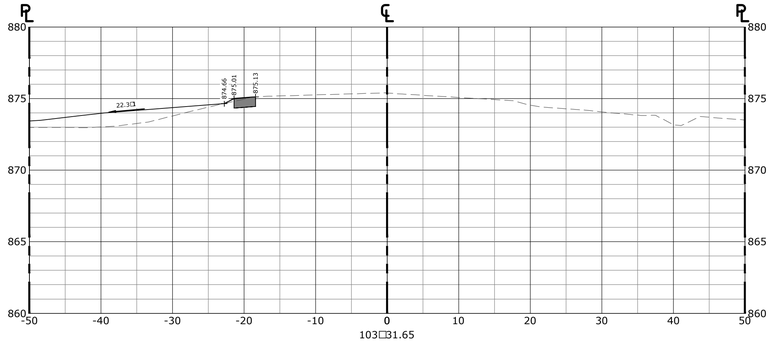
SILVER SPRING CROSS SECTIONS 10+00.00 - END

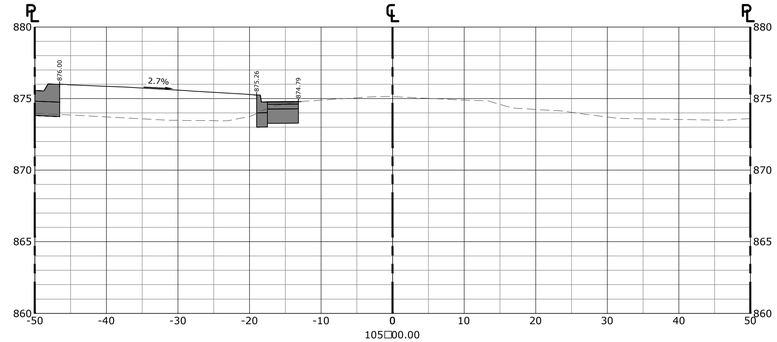
DRAWN	KOG
CHECKED	DRH
PM	RCS

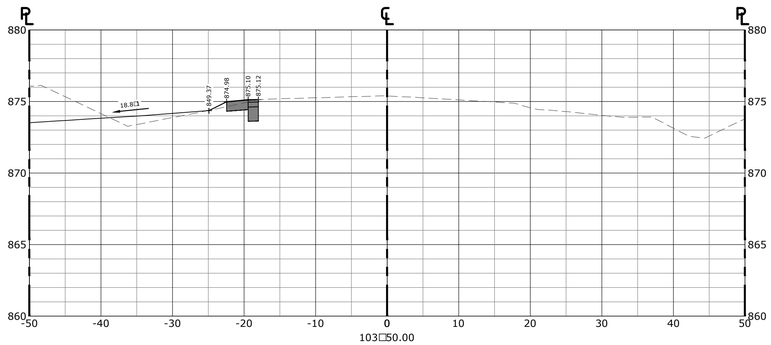
PROJECT NUMBER
SHEET NUMBER

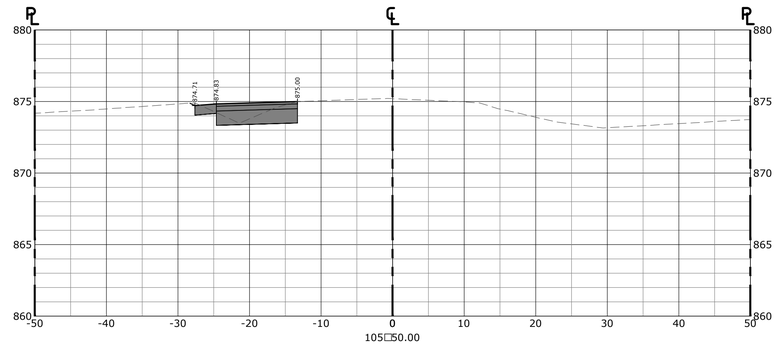
17176

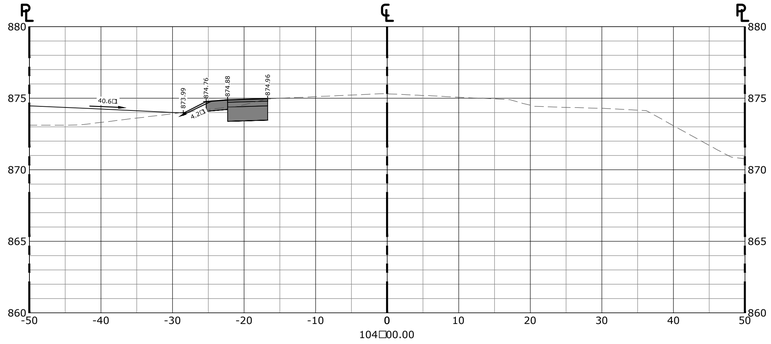
C19

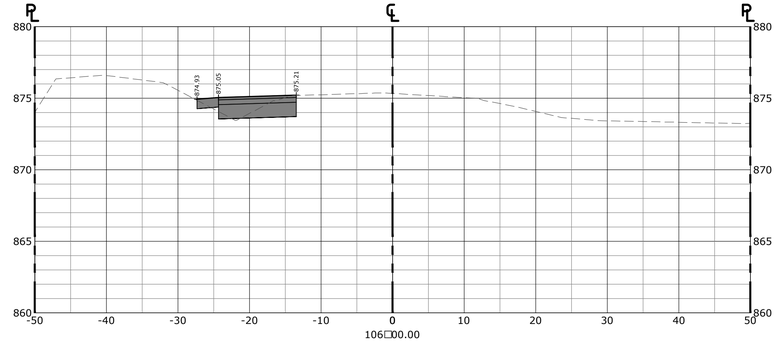


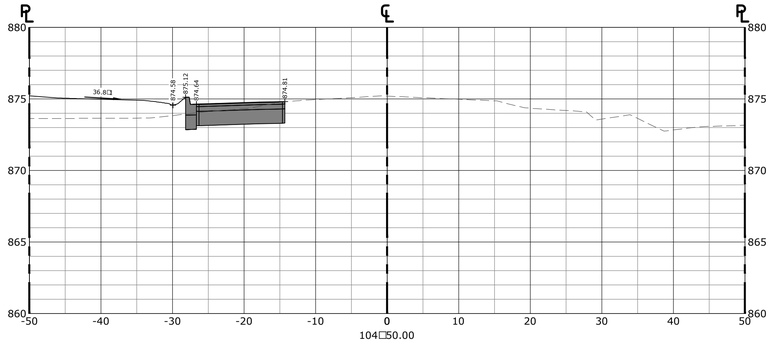












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SHEET TITLE

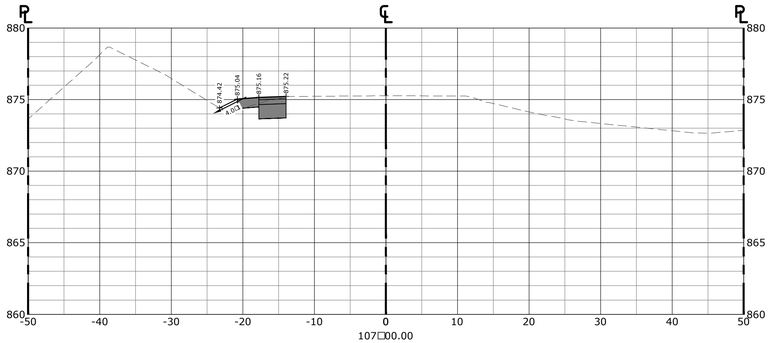
TOWN LINE CROSS SECTIONS START - 106+50.00

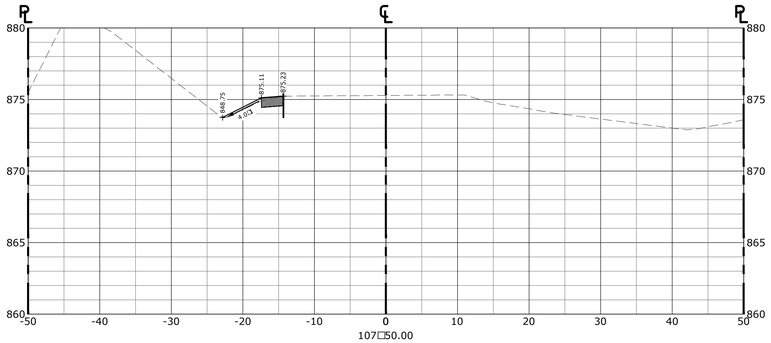
DRAWN	KOG
CHECKED	DRH
PM	RCS

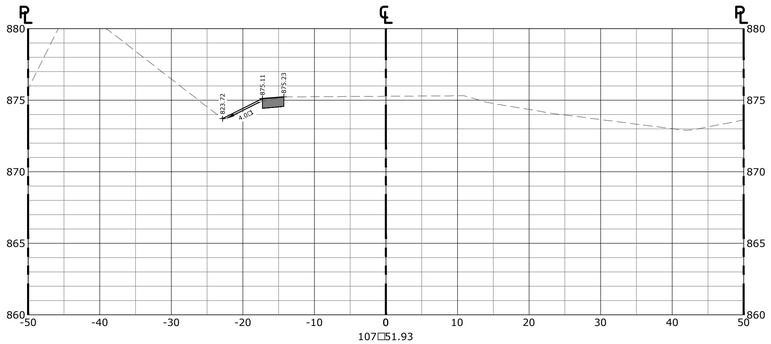
PROJECT NUMBER
SHEET NUMBER

17176

C20







PAVEMENT NOTES

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SHEET TITLE

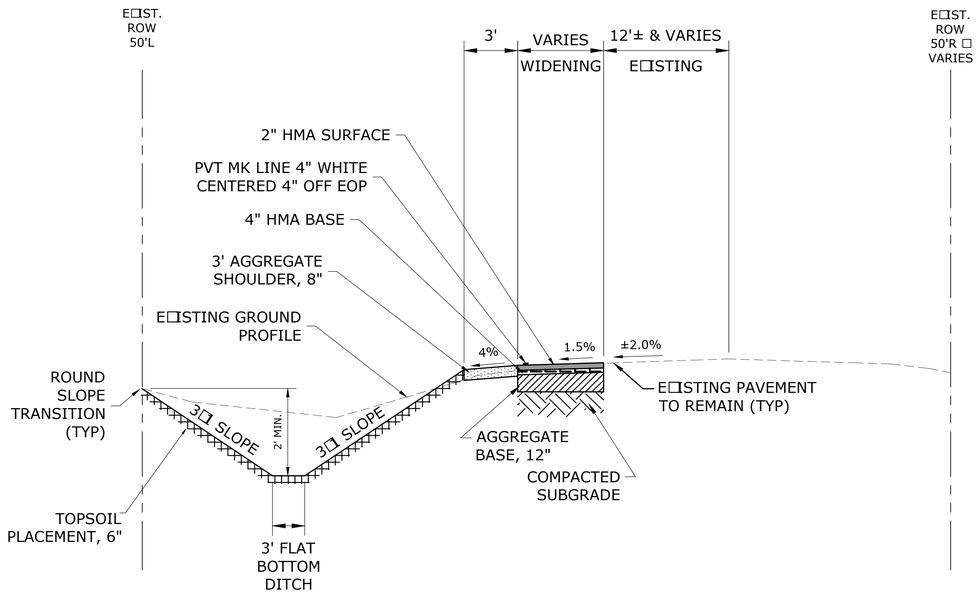
TOWN LINE CROSS SECTIONS 107+00.00 - END

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

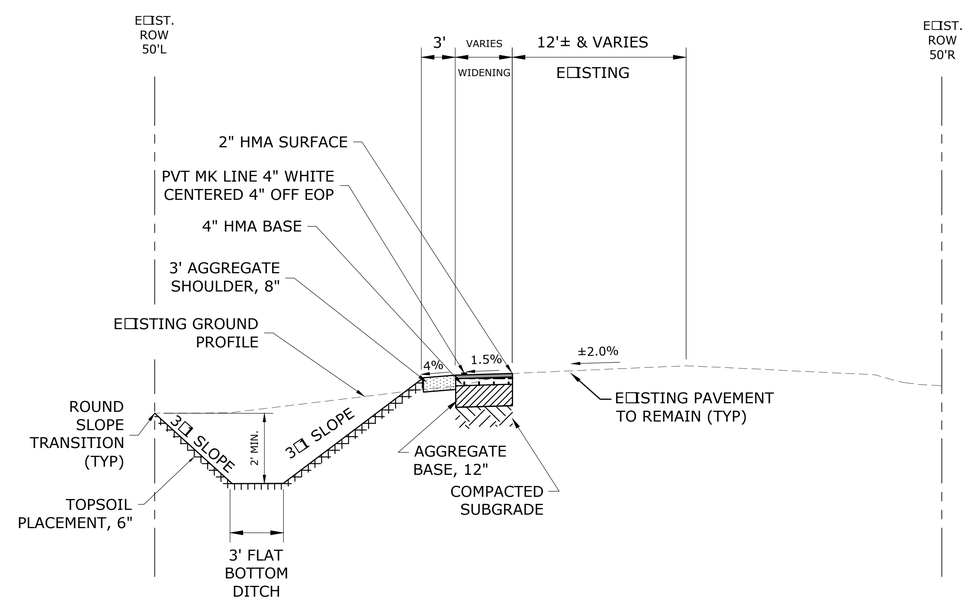
C21



TYPICAL PAVEMENT SECTION – SILVER SPRING DRIVE

(STA. 3+84.60 TO 4+21.32; STA. 9+62.16 TO 9+85.31)

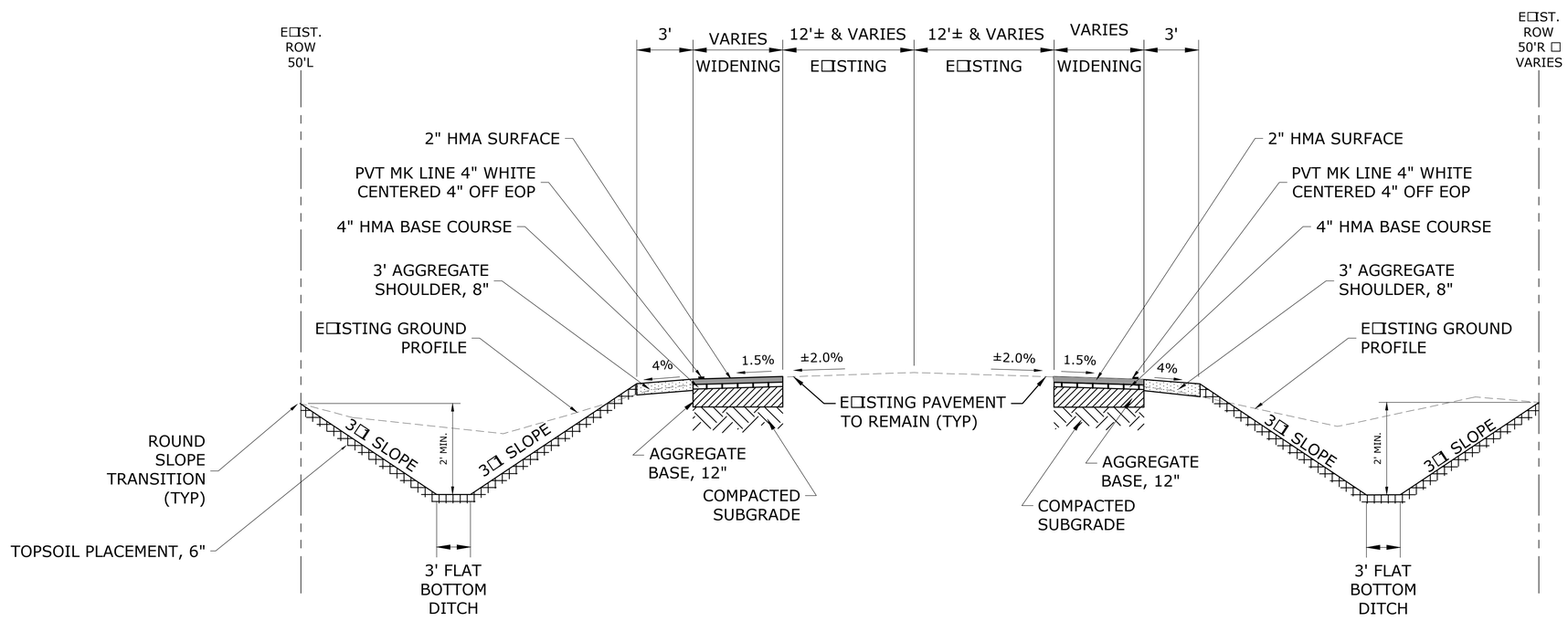
NOT TO SCALE



TYPICAL PAVEMENT SECTION – TOWN LINE ROAD

(STA. 103+35.96 TO 104+47.97; STA. 105+42.01 TO 107+51.93)

NOT TO SCALE



TYPICAL PAVEMENT SECTION – SILVER SPRING DRIVE

(STA. 4+21.32 TO 6+58.54; STA. 7+53.16 TO 9+62.16)

NOT TO SCALE

ARC DESIGN RESOURCES INC.

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SHEET TITLE

TYPICAL CROSS SECTIONS

DRAWN	KOG
CHECKED	DRH
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

C22

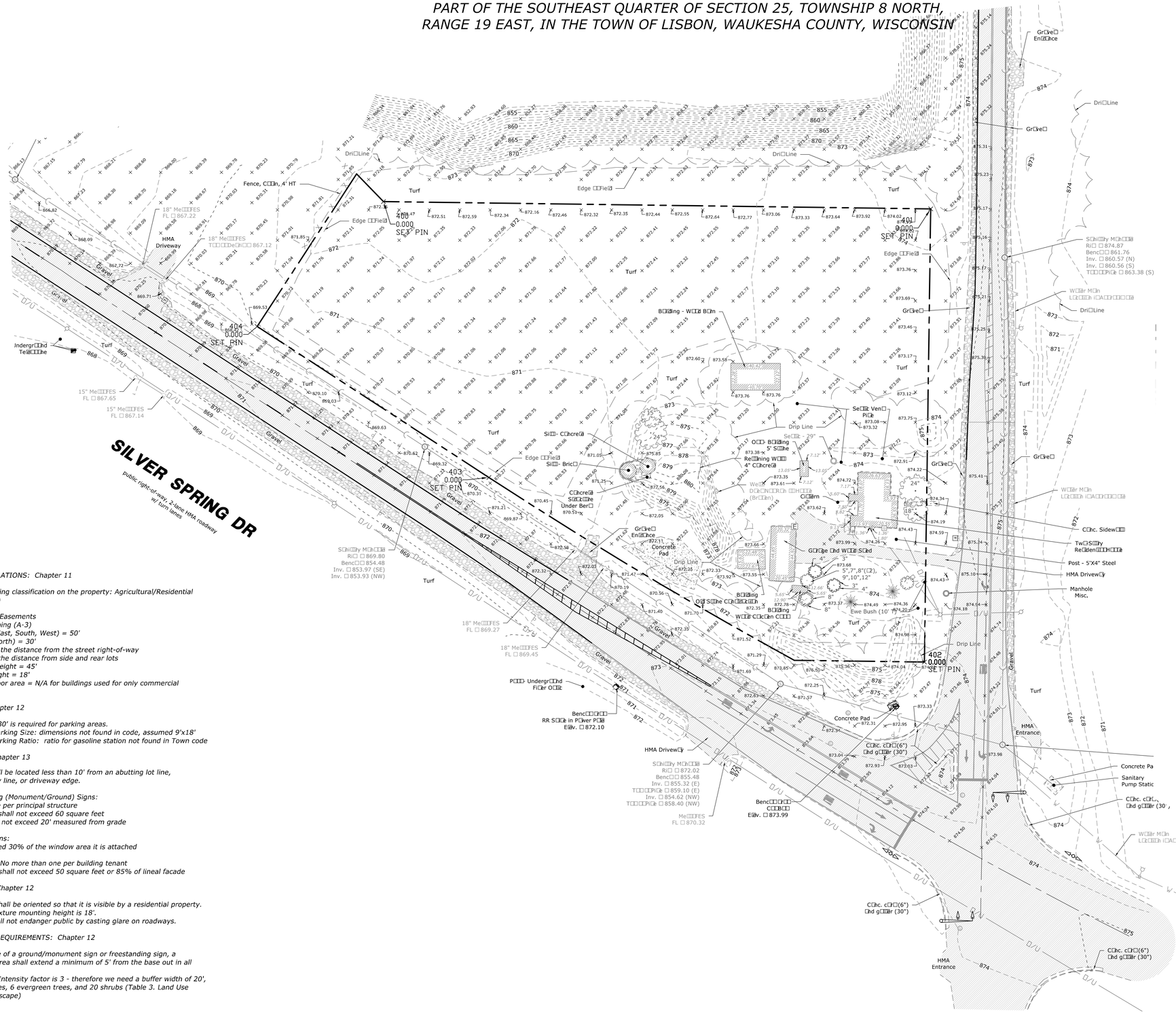
PLANTING NOTES

1. L□nd□□□□□□ C□h□□□□□ (C□h□□□□□) □□□□□□□

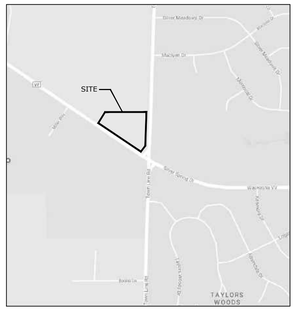
ALTA/NSPS LAND TITLE SURVEY

OF

PART OF THE SOUTHEAST QUARTER OF SECTION 25, TOWNSHIP 8 NORTH, RANGE 19 EAST, IN THE TOWN OF LISBON, WAUKESHA COUNTY, WISCONSIN



VICINITY MAP



SYMBOL LEGEND

- PROPERTY LINE ℄
- CENTER LINE ℄
- CURB AND GUTTER
- O/U — OVERHEAD UTILITIES
- G — GAS LINE
- W — WATER LINE
- SANITARY SEWER LINE
- STORM SEWER LINE
- FENCE
- 750 — CONTOUR LINE
- SANITARY MANHOLE
- METAL OR PLASTIC FLARED END SECTION
- VALVE BO□
- FIRE HYDRANT ASSEMBLY
- WELL
- UTILITY POLE
- GUY WIRE AND ANCHOR
- E — ELECTRIC PEDESTAL
- ELECTRIC METER
- GAS METER
- GAS VALVE
- SIGN AND POST
- BENCHMARK LOCATION
- DECIDUOUS TREE
- CONIFEROUS TREE
- MAILBO□
- TRAFFIC SIGNAL
- SIGNAL CONTROL CABINET

I. ZONING REGULATIONS: Chapter 11

Current zoning classification on the property: Agricultural/Residential Estate (A-3)

A) Setbacks & Easements
Existing Zoning (A-3)
**Setback (East, South, West) = 50'*
***Offset (North) = 30'*
**Setback is the distance from the street right-of-way*
***Offset is the distance from side and rear lots*
B) Maximum Height = 45'
C) Canopy Height = 18'
D) Minimum floor area = N/A for buildings used for only commercial purposes

II. PARKING: Chapter 12

Setback of 30' is required for parking areas.
Minimum Parking Size: dimensions not found in code, assumed 9'x18'
Required Parking Ratio: ratio for gasoline station not found in Town code

III. SIGNAGE: Chapter 13

No sign shall be located less than 10' from an abutting lot line, right-of-way line, or driveway edge.

Freestanding (Monument/Ground) Signs:
Allowed one per principal structure
Gross area shall not exceed 60 square feet
Height shall not exceed 20' measured from grade

Window Signs:
Not to exceed 30% of the window area it is attached

Wall Signs: No more than one per building tenant
Gross area shall not exceed 50 square feet or 85% of lineal facade

IV. LIGHTING: Chapter 12

No fixture shall be oriented so that it is visible by a residential property.
Maximum fixture mounting height is 18'.
Lighting shall not endanger public by casting glare on roadways.

VI. LANDSCAPE REQUIREMENTS: Chapter 12

-In the case of a ground/monument sign or freestanding sign, a landscape area shall extend a minimum of 5' from the base out in all directions
- Land Use Intensity factor is 3 - therefore we need a buffer width of 20', 2 shade trees, 6 evergreen trees, and 20 shrubs (Table 3. Land Use Buffer/Landscape)

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www.arcdesign.com
Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME
C□□□ey'□
Li□□□□n, WI

CONSULTANTS

ISSUED FOR

	DATE
C□□n□Review	11/30/2017

REVISIONS

NO.	ITEM	DATE

SHEET TITLE
ALTA/NSPS LAND TITLE SURVEY

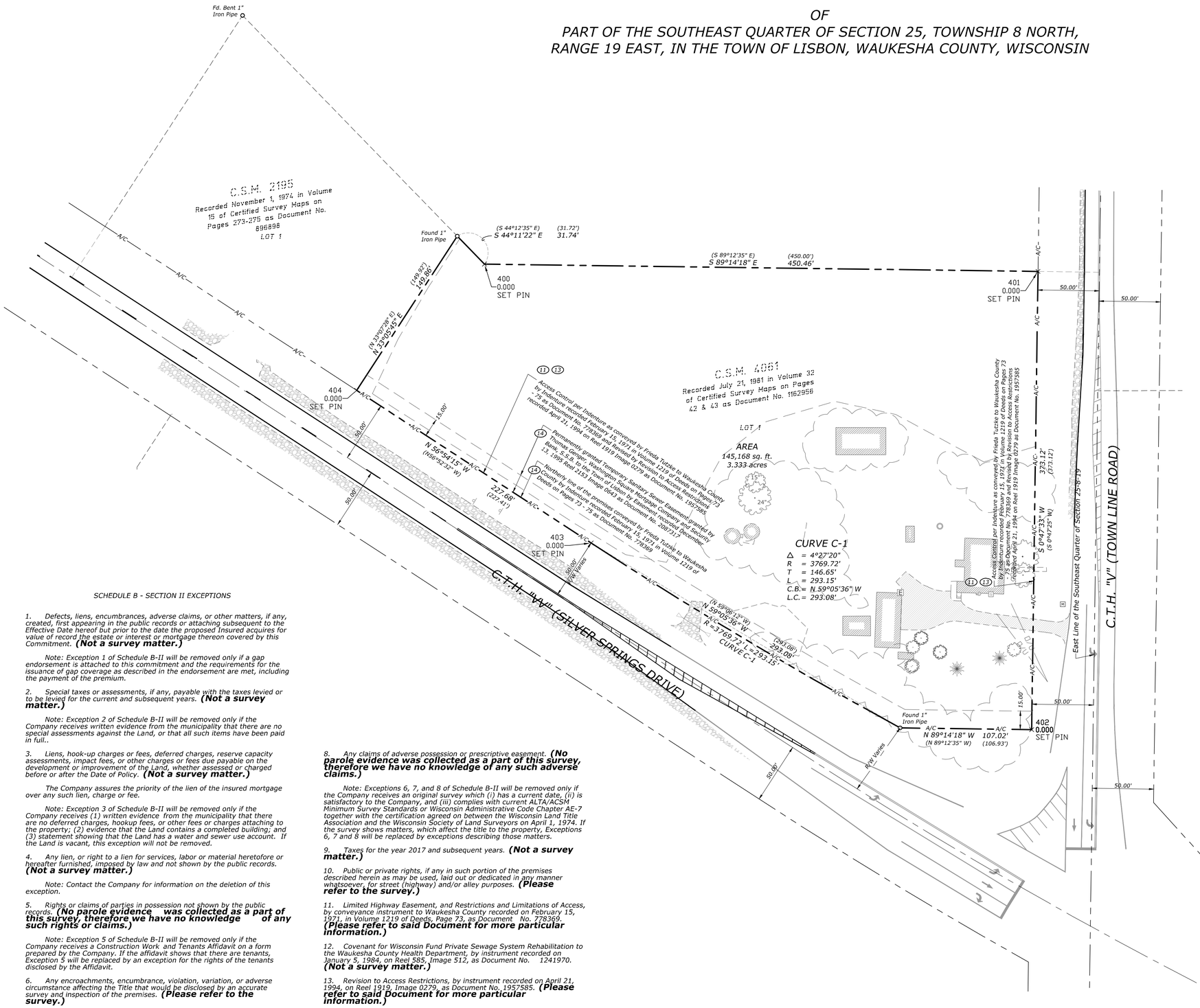
DRAWN	KB/CE
CHECKED	LS
PM	RS

PROJECT NUMBER
SHEET NUMBER
17176
1 □□2

ALTA/NSPS LAND TITLE SURVEY

OF

PART OF THE SOUTHEAST QUARTER OF SECTION 25, TOWNSHIP 8 NORTH, RANGE 19 EAST, IN THE TOWN OF LISBON, WAUKESHA COUNTY, WISCONSIN



SYMBOL LEGEND

	PROPERTY LINE ℄
	SECTION LINE
	RIGHT-OF-WAY LINE
	LOT LINE
	EASEMENT LINE
	SETBACK LINE
	CENTER LINE ℄
(11)	TITLE EXCEPTION NUMBER
•	SET SURVEY MONUMENT
○	FOUND SURVEY MONUMENT
(85.00')	RECORD DISTANCE
85.□□	MEASURED DISTANCE

Legal description as contained in Commitment for Title Insurance issued by Compass Title, LLC as an Agent for Chicago Title Insurance Company, File No. 177795 Amended

Lot One (1) of Certified Survey Map No. 4061, as recorded in the Office of the Register of Deeds for Waukesha County, Wisconsin on July 21, 1981, in Volume 32 of Certified Survey Maps, on Pages 42 and 43, as Document No. 1162956, being a part of the Southeast 1/4 of Section 25, in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

ALSO DESCRIBED AS:

A parcel of land being all of Lot 1 as designated upon Certified Survey Map No. 4061, recorded July 21, 1981 in Volume 32 of Certified Survey Maps on Pages 42 and 43 as Document No. 162956 in the Register's Office of Waukesha County, Wisconsin, being located in part of the Southeast Quarter of Section 25, Township 8 North, Range 19 East, more particularly described as follows:

Beginning at the Northwestern most corner of said Lot 1; thence South 44 degrees 11 minutes 22 seconds East along the Northerly line of said Lot 1, a distance of 31.74 feet to an angle point in said Northerly line; thence South 89 degrees 14 minutes 18 seconds East along the Northerly line of said Lot 1, a distance of 450.46 feet to the Northeast corner thereof, said point also lying in the West line of a public road designated C.T.H. "V" (Town Line Road); thence South 0 degrees 47 minutes 33 seconds West along the East line of said Lot 1 and the West line of said C.T.H. "V" (Town Line Road), a distance of 373.12 feet to the Southeast corner of said Lot 1, said point also lying in the Northerly line of the premises conveyed by Frieda Tutzke to Waukesha County by Indenture recorded February 15, 1971 in Volume 1219 of Deeds on Pages 73 - 75 as Document No. 778369 in said Register's Office; thence North 89 degrees 14 minutes 18 seconds West along the Southerly line of said Lot 1 and the Northerly line of said premises so conveyed, a distance of 107.02 feet to a non-tangent curve; thence Northwesterly along the Southerly line of said Lot 1 and the Northerly line of said premises so conveyed, along a circular curve whose radius is 3,769.72 feet and whose center lies to the North, the long chord of which curve bears North 59 degrees 05 minutes 36 seconds West, a chord distance of 293.08 feet to a point of tangency; thence North 56 degrees 54 minutes 15 seconds West along the Southerly line of said Lot 1, and the Northerly line of said premises so conveyed, a distance of 227.68 feet to the Southwest corner of said Lot 1; thence North 33 degrees 05 minutes 45 seconds East along the Westerly line of said Lot 1, a distance of 149.86 feet to the Point of Beginning, containing 145,168 square feet, 3.333 acres, more or less, all being situated in the Town of Lisbon, Waukesha County, Wisconsin.

SURVEYOR'S NOTES

1. *Survey is based on field work performed by Arc Design Resources on November 16, 2017.*
2. *No investigation concerning environmental and subsurface conditions, or for the existence of underground or overhead containers or facilities which may affect the use or development of this property was made as part of this survey.*
3. *The underground utilities shown have been located from field survey information and existing drawings. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated although the surveyor does certify that they are located as accurately as possible from information available. The surveyor has not physically located the underground utilities.*
4. *The above described property is not located within any regulated flood zones according to the Flood Insurance Rate Map (55133C0206G) for Waukesha County, Wisconsin revised November 5, 2014.*
5. *Surveyed property is based upon the legal description contained in Commitment for Title Insurance, Commitment No. 177795 issued by Compass Title, LLC. agent for Chicago Title Insurance Company effective date October 6, 2017.*
6. *Bearings are based upon G.P.S observations and referenced to the Wisconsin State Plane Coordinate System - South Zone.*
7. *There was no evidence of any recent earth moving activity at the time of survey.*

SURVEYOR'S CERTIFICATION:

To Compass Title, LLC. agent for Chicago Title Insurance Company and Casey's General Store Inc. :

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2016 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes Items 1, 3, 4, 6a, 7a, 8, 11, 16 of Table A thereof. The fieldwork was completed on November 16, 2017.

Dated this _____ day of _____, 2017.

_____

Lee S. Sprecher
Wisconsin Professional Land Surveyor No. 2672
Arc Design Resources, Inc.
5291 Zenith Parkway
Loves Park, IL 61111
(815)484-4300

SCHEDULE B - SECTION II EXCEPTIONS

1. *Defects, liens, encumbrances, adverse claims, or other matters, if any, created, first appearing in the public records or attaching subsequent to the Effective Date hereof but prior to the date the proposed Insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.* ***(Not a survey matter.)***

Note: Exception 1 of Schedule B-II will be removed only if a gap endorsement is attached to this commitment and the requirements for the issuance of gap coverage as described in the endorsement are met, including the payment of the premium.

2. *Special taxes or assessments, if any, payable with the taxes levied or to be levied for the current and subsequent years.* ***(Not a survey matter.)***

Note: Exception 2 of Schedule B-II will be removed only if the Company receives written evidence from the municipality that there are no special assessments against the Land, or that all such items have been paid in full..

3. *Liens, hook-up charges or fees, deferred charges, reserve capacity assessments, impact fees, or other charges or fees due payable on the development or improvement of the Land, whether assessed or charged before or after the Date of Policy.* ***(Not a survey matter.)***

The Company assures the priority of the lien of the insured mortgage over any such lien, charge or fee.

Note: Exception 3 of Schedule B-II will be removed only if the Company receives (1) written evidence from the municipality that there are no deferred charges, hookup fees, or other fees or charges attaching to the property; (2) evidence that the Land contains a completed building; and (3) statement showing that the Land has a water and sewer use account. If the Land is vacant, this exception will not be removed.

4. *Any lien, or right to a lien for services, labor or material heretofore or hereafter furnished, imposed by law and not shown by the public records.* ***(Not a survey matter.)***

Note: Contact the Company for information on the deletion of this exception.

5. *Rights or claims of parties in possession not shown by the public records.* ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such rights or claims.)***

Note: Exception 5 of Schedule B-II will be removed only if the Company receives a Construction Work and Tenants Affidavit on a form prepared by the Company. If the affidavit shows that there are tenants, Exception 5 will be replaced by an exception for the rights of the tenants disclosed by the Affidavit.

6. *Any encroachments, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate survey and inspection of the premises.* ***(Please refer to the survey.)***

7. *Easements or claims of easements not shown by the public records.* ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such easements or claims thereof.)***

8. *Any claims of adverse possession or prescriptive easement.* ***(No parole evidence was collected as a part of this survey, therefore we have no knowledge of any such adverse claims.)***

Note: Exceptions 6, 7, and 8 of Schedule B-II will be removed only if the Company receives an original survey which (i) has a current date, (ii) is satisfactory to the Company, and (iii) complies with current ALTA/ACSM Minimum Survey Standards or Wisconsin Administrative Code Chapter AE-7 together with the certification agreed on between the Wisconsin Land Title Association and the Wisconsin Society of Land Surveyors on April 1, 1974. If the survey shows matters, which affect the title to the property, Exceptions 6, 7 and 8 will be replaced by exceptions describing those matters.

9. *Taxes for the year 2017 and subsequent years.* ***(Not a survey matter.)***

10. *Public or private rights, if any in such portion of the premises described herein as may be used, laid out or dedicated in any manner whatsoever, for street (highway) and/or alley purposes.* ***(Please refer to the survey.)***

11. *Limited Highway Easement, and Restrictions and Limitations of Access, by conveyance instrument to Waukesha County recorded on February 15, 1971, in Volume 1219 of Deeds, Page 73, as Document No. 778369.* ***(Please refer to said Document for more particular information.)***

12. *Covenant for Wisconsin Fund Private Sewage System Rehabilitation to the Waukesha County Health Department, by instrument recorded on January 5, 1984, on Reel 585, Image 512, as Document No. 1241970.* ***(Not a survey matter.)***

13. *Revision to Access Restrictions, by instrument recorded on April 21, 1994, on Reel 1919, Image 0279, as Document No. 1957585.* ***(Please refer to said Document for more particular information.)***

14. *Easement with the Town of Lisbon for Sanitary Sewer, by instrument recorded on December 13, 1995, on Reel 2153, Image 0643, as Document No. 2087317.* ***(Please refer the survey for the location and to said Document for more particular information.)***

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Design Firm License No. 184-001334

PROJECT NAME
OWNER'S NAME

C□□ey'□
Li□□□n, WI

CONSULTANTS

ISSUED FOR

	DATE
Client Review	11/30/2017

REVISIONS

NO.	ITEM	DATE

SHEET TITLE

ALTA/NSPS LAND TITLE SURVEY

DRAWN	KB/CE
CHECKED	LS
PM	RS

PROJECT NUMBER
SHEET NUMBER

17176

2 □□2

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07/23/18

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www.redleonard.com

LUMINAIRE LOCATION SUMMARY		
LUM NO.	LABEL	MTG. HT.
1	A4	17
2	A4	17
3	A4	17
4	A4	17
5	A4	17
6	A4	17
7	A4	17
8	A4	17
9	A4	17
10	A4-2	17
11	A4-2	17
12	A4-2	17
13	A4B	17
14	C	16.5
15	C	16.5
16	C	16.5
17	C	16.5
18	C	16.5
19	C	16.5
20	C	16.5
21	C	16.5
22	C	16.5
23	C	16.5
24	C	16.5
25	C	16.5
26	C	16.5
27	C	16.5
28	C	16.5
29	C	16.5
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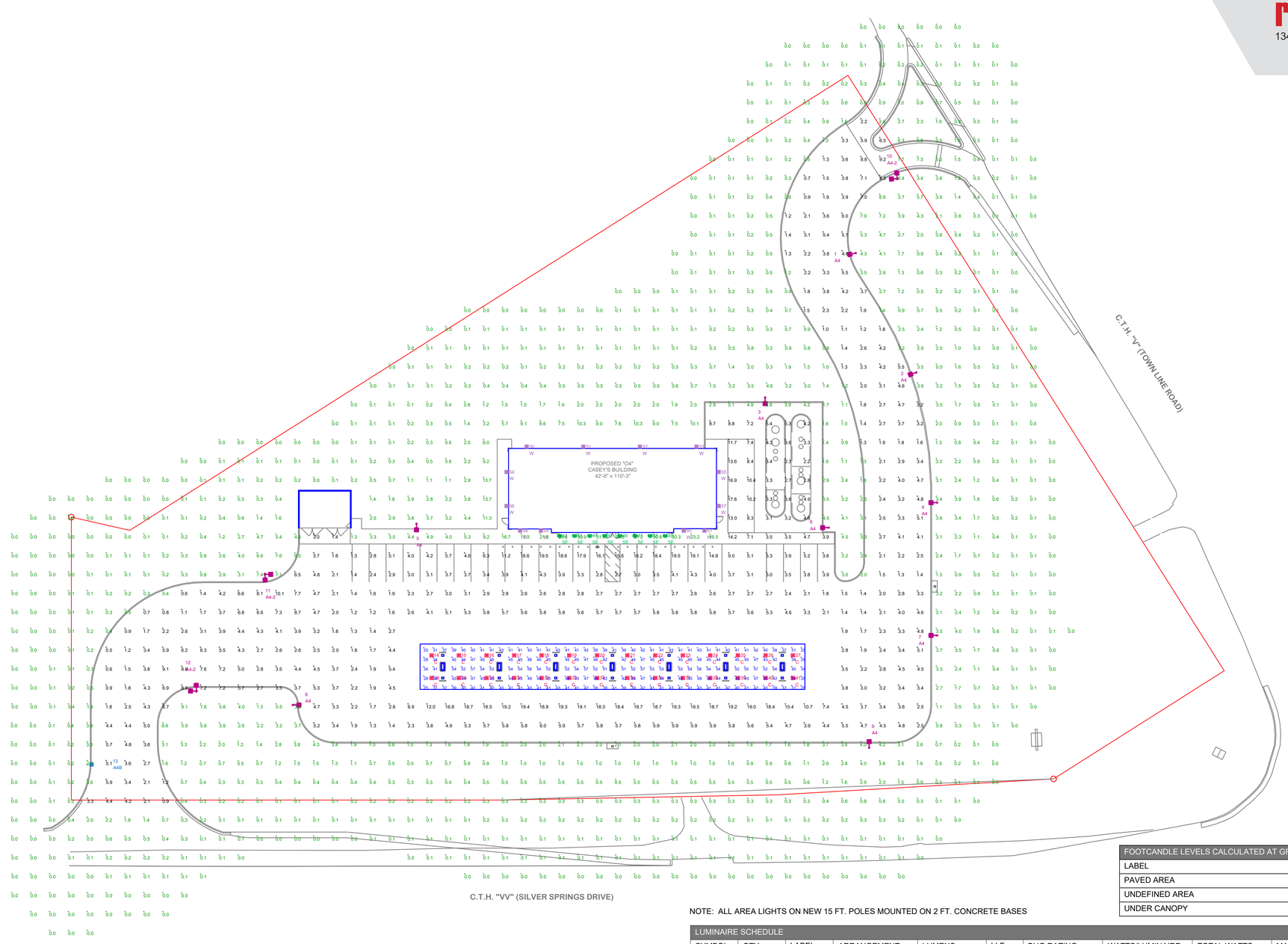

NOTE: ALL AREA LIGHTS ON NEW 15 FT. POLES MOUNTED ON 2 FT. CONCRETE BASES

FOOTCANDLE LEVELS CALCULATED AT GRADE USING INITIAL LUMEN VALUES					
LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PAVED AREA	4.97	19.5	0.5	9.94	39.00
UNDEFINED AREA	1.22	33.6	0.0	N.A.	N.A.
UNDER CANOPY	43.20	58	25	1.73	2.32

LUMINAIRE SCHEDULE										
SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS	LLF	BUG RATING	WATTS/LUMINAIRE	TOTAL WATTS	MANUFACTURER	DESCRIPTION
	9	A4	SINGLE	11259	1.050	B2-U0-G2	134	1206	Cree Inc.	ARE-EDG-4M-DA-06-E-UL-BZ-700
	3	A4-2	2 @ 90 DEGREES	11259	1.050	B2-U0-G2	134	804	Cree Inc.	ARE-EDG-4M-DA-06-E-UL-BZ-700
	1	A4B	SINGLE	9549	1.050	B1-U0-G2	134	134	CREE, INC.	ARE-EDG-4MB-DA-06-E-UL-BZ-700
	28	C	SINGLE	13251	1.040	B3-U0-G1	134	3752	CREE, INC.	CAN-304-SL-RS-06-E-UL-WH-700
	8	SE	SINGLE	3902	1.050	B2-U0-G0	34	272	CREE, INC.	SFT-228-PS-RM-03-E-UL-BZ-350-IC
	12	W	SINGLE	8739	1.050	B2-U0-G2	100	1200	CREE, INC.	SEC-EDG-3M-WM-06-E-UL-BZ-525

REV.	BY	DATE	DESCRIPTION
R1	BJM	3/09/18	REVISED LAYOUT PER NEW SITE PLAN
R2	BJM	6/11/18	REVISED LAYOUT PER NEW SITE PLAN
R3	BJM	7/09/18	REVISED LAYOUT PER NEW SITE PLAN
R4	BJM	7/23/18	REVISED PER CITY COMMENTS

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ILLUMINATION RESULTS SHOWN ON THIS LIGHTING APPLICATION ARE BASED ON PROJECT PARAMETERS PROVIDED BY THE MANUFACTURER LISTED, USED IN CONJUNCTION WITH LUMINAIRE TEST PROCEDURES CONDUCTED UNDER LABORATORY CONDITIONS. ACTUAL PROJECT CONDITIONS DIFFERING FROM THESE PARAMETERS MAY AFFECT FIELD RESULTS. THE CUSTOMER IS RESPONSIBLE FOR VERIFYING COMPLIANCE WITH ANY APPLICABLE ELECTRICAL, LIGHTING, OR ENERGY CODE.

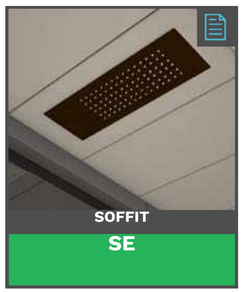
SCALE: 1" = 30'
LAYOUT BY: BJM
DWG SIZE: D
DATE: 12/27/17

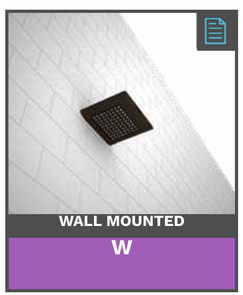
PROJECT NAME:
CASEY'S
LISBON, WI
DRAWING NUMBER:
RL-5118-S1-R4

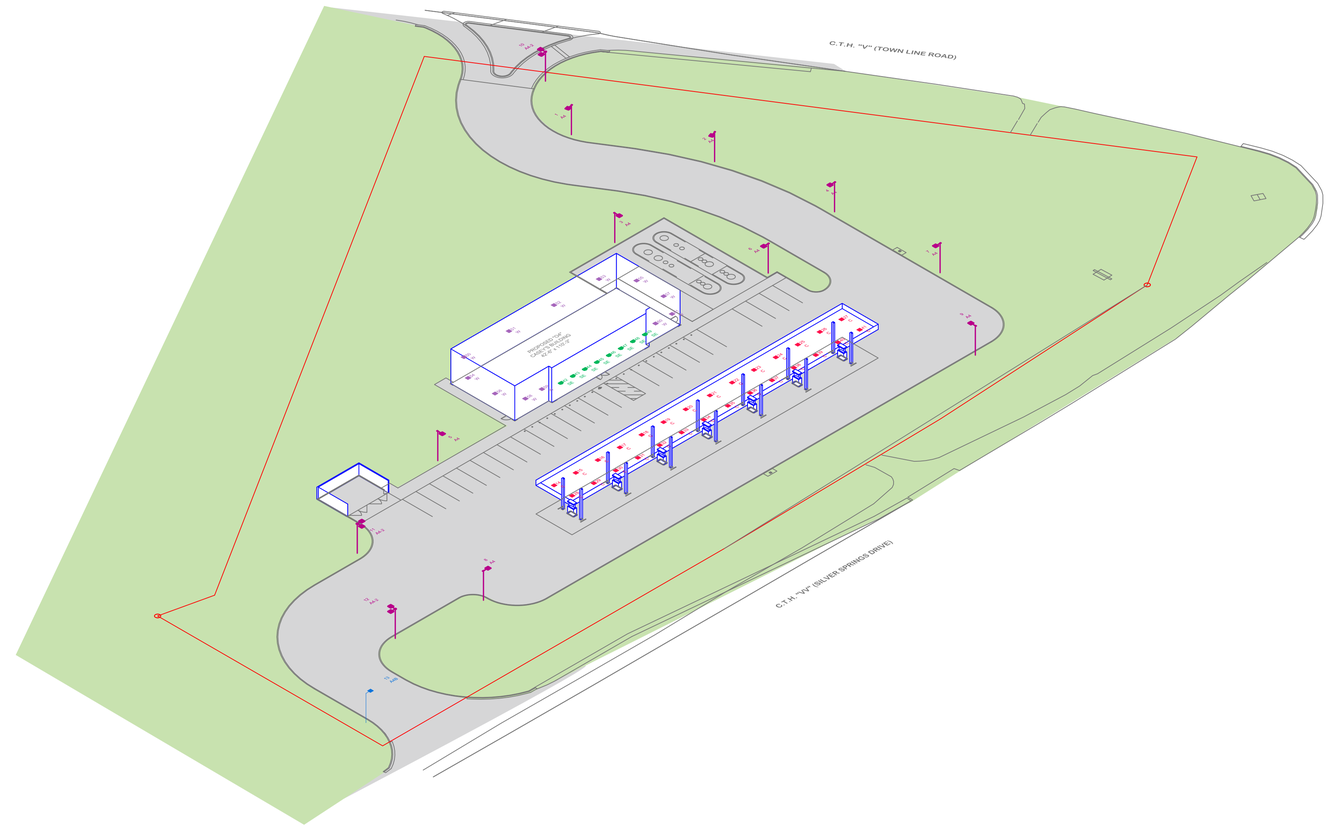
rla

PRODUCT DETAIL & PLACEMENT

COLOR CODED LABELS, PRODUCT INFORMATION, 3D INTERACTIVE MODEL







LUMINAIRE SCHEDULE										
SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS	LLF	BUG RATING	WATTS/LUMINAIRE	TOTAL WATTS	MANUFACTURER	DESCRIPTION
	9	A4	SINGLE	11259	1.050	B2-U0-G2	134	1206	Cree Inc.	ARE-EDG-4M-DA-06-E-UL-BZ-700
	3	A4-2	2 @ 90 DEGREES	11259	1.050	B2-U0-G2	134	804	Cree Inc.	ARE-EDG-4M-DA-06-E-UL-BZ-700
	1	A4B	SINGLE	9549	1.050	B1-U0-G2	134	134	CREE, INC.	ARE-EDG-4MB-DA-06-E-UL-BZ-700
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	12	W	SINGLE	8739	1.050	B2-U0-G2	100	1200	CREE, INC.	SEC-EDG-3M-WM-06-E-UL-BZ-525

CREE TRUEWHITE® TECHNOLOGY

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WHY CREE LED?
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EMERGENCY LIGHTING

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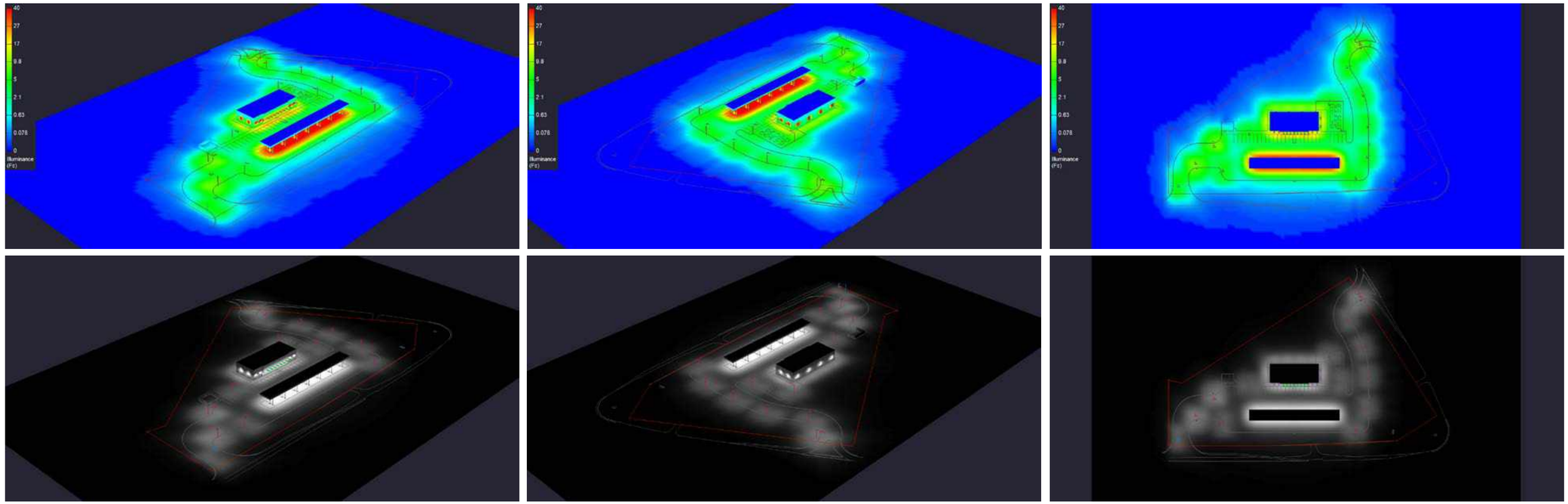
ILLUMINATION MAPPING

PSEUDO COLOR LIGHTING STUDY AND SLIDESHOW



UNDERSTAND YOUR LIGHTING SOLUTION

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PHOTOMETRIC COMPARISON TOOL
LIGHTING DISTRIBUTION TOOL
IP RATINGS EXPLAINED

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CANOPY

PRODUCT INFORMATION

SYMBOL:	QTY:	LABEL:
	28	C

CAN-304-SL-RS-06-E-UL-WH-700

AREA

PRODUCT INFORMATION

SYMBOL:	QTY:	LABEL:
	9	A4
	3	A4-2

ARE-EDG-4M-DA-06-E-UL-BZ-700

SYMBOL:	QTY:	LABEL:
	1	A4B

ARE-EDG-4MB-DA-06-E-UL-BZ-700

SOFFIT

PRODUCT INFORMATION

SYMBOL:	QTY:	LABEL:
	8	SE

SFT-228-PS-RM-03-E-UL-BZ-350-IC

WALL MOUNTED

PRODUCT INFORMATION

SYMBOL:	QTY:	LABEL:
	12	W

SEC-EDG-3M-WM-06-E-UL-BZ-525

304 Series™

LED Recessed Canopy Luminaire

Product Description

Luminaire housing is constructed from rugged die cast aluminum components (RS Mount) or die cast and extruded aluminum components (RD Mount). LED driver is mounted in a sealed weathertight center chamber that allows for access from below the fixture. Luminaire mounts directly to the canopy deck and is secured in place with die cast aluminum trim frame. Luminaire housing is provided with factory applied foam gasket that provides a watertight seal between luminaire housing and canopy deck. Suitable for use in single or double skin canopies with 16" (406 mm) wide panels. Designed for canopies of 19-22 gauge (maximum 0.040" [1 mm] thickness).
Applications: Petroleum stations, convenience stores, drive-thru banks and restaurants, retail and grocery

Performance Summary

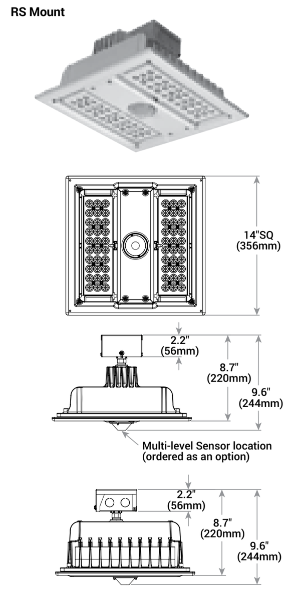
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI
- **CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See www.cree.com/lighting/products/warranty for warranty terms

Accessories

Field-Installed
Hand-Held Remote XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required

RS Mount



Weight
22.0 lbs. (9.9kg)

Ordering Information

Example: CAN-304-5M-RS-04-E-UL-SV-350

Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
CAN-304				E				
CAN-304	**5M** Type V Medium **5S** Type V Short **PS** Petroleum Symmetric **SL** Sparkle Petroleum	**RS** Recessed Single Skin **RD** Recessed Double Skin	04 06	E	**UL** Universal 120-277V **UH** Universal 347-480V	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**350** 350mA **525** 525mA **700*** 700mA	**DIM** 0-10V Dimming - Control by others - Refer to Dimming spec sheet for details - Can't exceed specified drive current **F** Fuse - When code dictates fusing use time delay fuse - Refer to ML spec sheet for availability with ML options **ML** Multi-Level - Refer to ML spec sheet for details **PML** Programmable Multi-Level - Refer to PML spec sheet for details **40K** 4000K Color Temperature - Minimum 70 CRI - Color temperature per luminaire

* 60 LED luminaire requires marked spacing: 48" x 24" x 6" (1,219mm x 610mm x 152mm); 48" (1,219mm) center-to-center of adjacent luminaires, 24" (610mm) luminaire center to side building member, 6" (152mm) top of luminaire to overhead building member

Rev. Date: V1 07/27/2015

CREE

US: www.cree.com/lighting T (800) 236-6800 F (262) 504-5415
Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

304 Series™

LED Recessed Canopy Luminaire

Product Description

Luminaire housing is constructed from rugged die cast aluminum components (RS Mount) or die cast and extruded aluminum components (RD Mount). LED driver is mounted in a sealed weathertight center chamber that allows for access from below the fixture. Luminaire mounts directly to the canopy deck and is secured in place with die cast aluminum trim frame. Luminaire housing is provided with factory applied foam gasket that provides a watertight seal between luminaire housing and canopy deck. Suitable for use in single or double skin canopies with 16" (406 mm) wide panels. Designed for canopies of 19-22 gauge (maximum 0.040" [1 mm] thickness).
Applications: Petroleum stations, convenience stores, drive-thru banks and restaurants, retail and grocery

Performance Summary

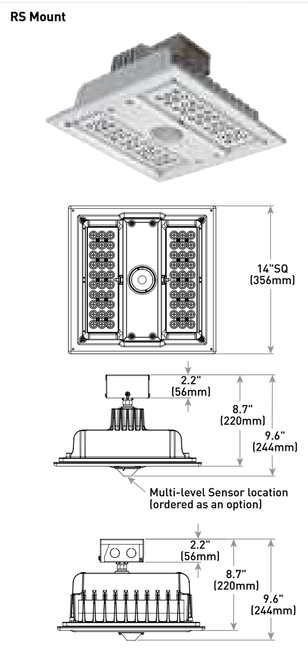
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI
- **CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed
Hand-Held Remote XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required

RS Mount



Weight
22.0 lbs. (9.9kg)

Ordering Information

Example: CAN-304-5M-RS-04-E-UL-SV-350

Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
CAN-304				E				
CAN-304	**5M** Type V Medium **5S** Type V Short **PS** Petroleum Symmetric **SL** Sparkle Petroleum	**RS** Recessed Single Skin **RD** Recessed Double Skin	04 06	E	**UL** Universal 120-277V **UH** Universal 347-480V	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**350** 350mA **525** 525mA **700*** 700mA	**DIM** 0-10V Dimming - Control by others - Refer to Dimming spec sheet for details - Can't exceed specified drive current **F** Fuse - When code dictates fusing use time delay fuse - Refer to ML spec sheet for availability with ML options **ML** Multi-Level - Refer to ML spec sheet for details **PML** Programmable Multi-Level - Refer to PML spec sheet for details **40K** 4000K Color Temperature - Minimum 70 CRI - Color temperature per luminaire

* 60 LED luminaire requires marked spacing: 48" x 24" x 6" (1,219mm x 610mm x 152mm); 48" (1,219mm) center-to-center of adjacent luminaires, 24" (610mm) luminaire center to side building member, 6" (152mm) top of luminaire to overhead building member

Rev. Date: V1 07/28/2016

CREE

Cree Edge™ Series

LED Area/Flood Luminaire

Product Description

The Cree Edge™ Series has a slim, low profile design. Its rugged cast aluminum housing minimizes wind load requirements and features an integral, weathertight LED driver compartment and high performance aluminum heat sinks. Various mounting choices: Adjustable Arm, Direct Arm, Direct Arm Long, or Side Arm (details on page 2). Includes a leaf/debris guard.
Applications: Parking lots, walkways, campuses, car dealerships, office complexes, and internal roadways

Performance Summary

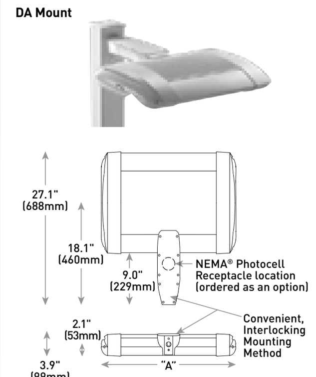
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI
- **CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed	
Bird Spikes XA-BRDSPK **Hand-Held Remote** XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required	**Backlight Control Shields** XA-20BLS-4 - Four-pack - Unpainted stainless steel

DA Mount



LED Count (x10)	Dim. "A"	Weight
02	12.1" (306mm)	21 lbs. (10kg)
04	12.1" (306mm)	24 lbs. (11kg)
06	14.1" (357mm)	27 lbs. (12kg)
08	16.1" (408mm)	28 lbs. (13kg)
10	18.1" (459mm)	32 lbs. (15kg)
12	20.1" (510mm)	34 lbs. (15kg)
14	22.1" (560mm)	37 lbs. (17kg)
16	24.1" (611mm)	41 lbs. (19kg)

AA/DL/SA Mount - see page 22 for weight & dimensions

Ordering Information

Example: ARE-EDG-2M-AA-12-E-UL-SV-350

Product	Optic	Mounting*	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
				E				
ARE-EDG	**2M** Type II Medium **2MB** Type II Medium w/BLS **2MP** Type II Medium w/Partial BLS **3M** Type III Medium **3MB** Type III Medium w/BLS **3MP** Type III Medium w/Partial BLS **4M** Type IV Medium **4MB** Type IV Medium w/BLS **4MP** Type IV Medium w/Partial BLS **5M** Type V Medium **5S** Type V Short	**AA** Adjustable Arm **DA** Direct Arm **DL** Direct Long Arm	02 04 06 08 10 12 14 16	E	**UL** Universal 120-277V **UH** Universal 347-480V	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**350** 350mA **525** 525mA **700** 700mA - Available with 20-60 LEDs	**DIM** 0-10V Dimming - Control by others - Refer to Dimming spec sheet for details - Can't exceed specified drive current **F** Fuse - Refer to ML spec sheet for availability with ML options - Available with UL voltage only - Available for U.S. applications only - When code dictates fusing, use time delay fuse **HL** Hi/Low (Dual Circuit Input) - Refer to HL spec sheet for details - Sensor not included **ML** Multi-Level - Refer to ML spec sheet for details - Intended for downlight applications at 0° tilt **P** Photocell - Refer to ML spec sheet for availability with ML options - Available with UL voltage only **PML** Programmable Multi-Level, 20-40' Mounting Height - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **PML2** Programmable Multi-Level, 10-30' Mounting Height - Refer to PML spec sheet for details - Intended for downlight applications at 0° tilt **R** NEMA® Photocell Receptacle - Intended for downlight applications with maximum 45° tilt - Photocell by others - Refer to ML spec sheet for availability with ML options **40K** 4000K Color Temperature - Minimum 70 CRI - Color temperature per luminaire
FLD-EDG	**25** 25° Flood **40** 40° Flood **70** 70° Flood **SN** Sign **N6** NEMA® 6	**AA** Adjustable Arm **SA** Side Arm - Available with 20-60 LEDs						

* Reference EPA and pole configuration suitability data beginning on page 19
NOTE: Price adder may apply depending on configuration

Rev. Date: V6 12/07/2017

CREE

US: lighting.cree.com T (800) 236-6800 F (262) 504-5415
Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

Cree Edge™ LED Area/Flood Luminaire

Product Specifications

CONSTRUCTION & MATERIALS

- Slim, low profile, minimizing wind load requirements
- Luminaire sides are rugged die cast aluminum with integral, weathertight LED driver compartment and high performance heat sinks
- DA and DL mount utilizes convenient interlocking mounting method. Mounting is rugged die cast aluminum, mounts to 3-6" (76-152mm) square or round pole and secures to pole with 5/16-18 UNC bolts spaced on 2" (51mm) centers
- AA and SA mounts are rugged die cast aluminum and mount to 2" (51mm) IP, 2.375" (60mm) O.D. tenons
- Includes leaf/debris guard
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Black, bronze, silver, and white are available
- **Weight:** See Dimensions and Weight Charts on pages 1 and 22

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- DA and DL mounts designed with integral weathertight electrical box with terminal strips (12Ga–20Ga) for easy power hookup
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- **Maximum 10V Source Current:** 20 LED (350mA): 10mA; 20 LED (525 & 700mA) and 40-80 LED: 0.15mA; 100-160 LED: 0.30mA

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Enclosure rated IP66 per IEC 60529 when ordered without P or R options
- Consult factory for CE Certified products
- Certified to ANSI C136.31-2001, 3G bridge and overpass vibration standards when ordered with AA, DA and DL mounts
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- DLC qualified with select SKUs. Refer to https://www.designlights.org/search/ for most current information
- Meets Buy American requirements within ARRA

Electrical Data*

LED Count (x10)	System Watts 120-480V	Total Current (A) 120V	208V	240V	277V	347V	480V
350mA							
02	25	0.21	0.13	0.11	0.10	0.08	0.07
04	46	0.36	0.23	0.21	0.20	0.15	0.12
06	66	0.52	0.31	0.28	0.26	0.20	0.15
08	90	0.75	0.44	0.38	0.34	0.26	0.20
10	110	0.92	0.53	0.47	0.41	0.32	0.24
12	130	1.10	0.63	0.55	0.48	0.38	0.28
14	158	1.32	0.77	0.68	0.62	0.47	0.35
16	179	1.49	0.87	0.77	0.68	0.53	0.39
525mA							
02	37	0.30	0.19	0.17	0.16	0.12	0.10
04	70	0.58	0.34	0.31	0.28	0.21	0.16
06	101	0.84	0.49	0.43	0.38	0.30	0.22
08	133	1.13	0.66	0.58	0.51	0.39	0.28
10	171	1.43	0.83	0.74	0.66	0.50	0.38
12	202	1.69	0.98	0.86	0.77	0.59	0.44
14	232	1.94	1.12	0.98	0.87	0.68	0.50
16	263	2.21	1.27	1.11	0.97	0.77	0.56
700mA							
02	50	0.41	0.25	0.22	0.20	0.15	0.12
04	93	0.78	0.46	0.40	0.36	0.27	0.20
06	134	1.14	0.65	0.57	0.50	0.39	0.29

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-480V +/- 10%

Recommended Cree Edge™ Series Lumen Maintenance Factors (LMF)[1]

Ambient	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Calculated[3] LMF	100K hr Calculated[3] LMF
5˚C (41˚F)	1.04	1.01	0.99	0.98	0.96
10˚C (50˚F)	1.03	1.00	0.98	0.97	0.95
15˚C (59˚F)	1.02	0.99	0.97	0.96	0.94
20˚C (68˚F)	1.01	0.98	0.96	0.95	0.93
25˚C (77˚F)	1.00	0.97	0.95	0.94	0.92

[1] Lumen maintenance values at 25˚C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)

CREE

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Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

228 Series™

LED Soffit Luminaire – IC Rated

Product Description

High performance energy-efficient LED down light designed for use in new construction or remodel applications where there is direct contact with insulation. The recessed mount is for use in drywall, plywood or hard lid ceilings with 16" (406mm) to 24" (610mm) on center building construction. Heavy gauge steel recessed mounting frame features 1.5" (38mm) deep aperture throat to accommodate most standard ceiling thicknesses, and a universal mounting bracket that accepts 0.5" (13mm) EMT conduit, C-channel mounting bars or flat bar hangers with 5" (127mm) vertical adjustment from either above or below the ceiling. An oversized junction box is listed for eight #12 AWG feed through wires. The recessed remodel mount is entirely supported by the ceiling material and is designed to accept ceiling thickness from 0.375" (10mm) to 2.25" (57mm) and is an ideal replacement for recessed 12" (305mm) square HID luminaires.
Applications: Petroleum canopies, soffits, indoor retail or industrial spaces

Performance Summary

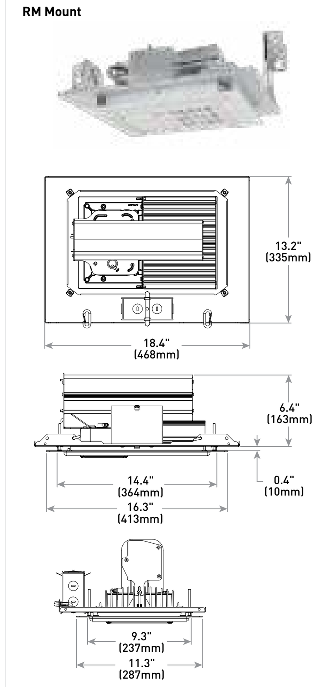
- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI
- **CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See http://lighting.cree.com/warranty for warranty terms

Accessories

Field-Installed	
RM Mount Accessories **Mounting C-Channel** XA-MC14 - Pair of 14" (356mm) rigid 3/4" x 1/2" (19mm x 13mm) galvanized C-Channel bars XA-MC22 - Pair of 22" (559mm) rigid 3/4" x 1/2" (19mm x 13mm) galvanized C-Channel bars XA-MC30 - Pair of 30" (762mm) rigid 3/4" x 1/2" (19mm x 13mm) galvanized C-Channel bars	**Hanger Bar** **Mounting Brackets** XA-MB4 - Kit contains 4

RM Mount



LED Count (x10)	Weight
03	28.7 lbs. (13.0kg)

RR Mount - see page 3 for weight & dimensions

Ordering Information

Example: SFT-228-SL-RM-03-E-UL-WH-350

Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
SFT-228			03	E			350	IC
SFT-228	**SL** Sparkle Petroleum **PS** Petroleum Symmetric	**RM** Recessed **RR** Recessed Remodel	03	E	**UL** Universal 120-277V **UH** Universal 347-480V	**BK** Black **BZ** Bronze **WH** White	**350** 350mA	**IC** IC Rated **40K** 4000K Color Temperature - Color temperature per luminaire - Minimum 70 CRI

Rev. Date: V2 02/13/2018

CREE

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Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

228 Series™ LED Soffit Luminaire – IC Rated

Product Specifications

CONSTRUCTION & MATERIALS

- Luminaire sides are rugged die cast aluminum with high performance extruded aluminum heat sinks specifically designed for high power LEDs, factory assembled to the trim and wired to the driver
- Driver compartment is constructed of anodized extruded aluminum for exceptional thermal performance
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultra-durable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Black, bronze and white are available
- **Weight:** See Weight Chart on pages 1 and 3

RM

- High performance energy-efficient LED down light, designed for use in new construction applications with drywall, plywood or hard lid ceilings and 16" (406mm) to 24" (610mm) on center building construction
- Heavy gauge steel recessed mounting frame features 1.5" (38mm) deep aperture throat to accommodate most standard ceiling thicknesses, and a universal mounting bracket that accepts 0.5" (13mm) EMT conduit, C-channel mounting bars or flat bar hangers with 5" (127mm) vertical adjustment from either above or below the ceiling includes an oversized junction box is listed for eight #12 AWG feed through wires

RR

- High performance energy-efficient LED down light, designed for remodel application
- Entirely supported by the ceiling material and is designed to fit through 12" (305mm) x 12" (305mm) opening
- Accepts ceiling thicknesses from 0.375" (10mm) to 2.25" (57mm)
- An ideal replacement for 12" (305mm) x 12" (305mm) recessed HID luminaires

ELECTRICAL SYSTEM

- **Input Voltage:** 120-277V or 347-480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral 10kV surge suppression protection standard
- To address inrush current, slow blow fuse or type C/D breaker should be used

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations under covered ceilings
- Meets FCC Part 15 standards for conducted and radiated emissions
- Consult factory for CE Certified products
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- Type IC in accordance with Article 410 of the NEC and UL 1598, suitable for direct contact with insulation
- RM mount listed for eight #12 AWG, 75˚C rated through branch circuit wires
- Meets Buy American requirements within ARRA

Electrical Data*

LED Count (x10)	System Watts 120-480V	Total Current 120V	208V	240V	277V	347V	480V
350mA							
03	34	0.30	0.19	0.18	0.20	0.11	0.09

* Electrical data at 25˚C (77˚F)

Recommended 228 Series™ Luminaire Lumen Maintenance Factors (LMF)[1]

Ambient	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Calculated[3] LMF	100K hr Calculated[3] LMF
5˚C (41˚F)	1.04	0.99	0.97	0.95	0.93
10˚C (50˚F)	1.03	0.98	0.96	0.94	0.92
15˚C (59˚F)	1.02	0.97	0.95	0.93	0.91
20˚C (68˚F)	1.01	0.96	0.94	0.92	0.90
25˚C (77˚F)	1.00	0.95	0.93	0.91	0.89

[1] Lumen maintenance values at 25˚C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)

CREE

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Cree Edge™ Series

LED Security Wall Pack Luminaire

Product Description

The Cree Edge™ wall mount luminaire has a slim, low profile design. The luminaire end caps are made from rugged die cast aluminum with integral, weathertight LED driver compartments and high performance aluminum heat sinks specifically designed for LED applications. Housing is rugged aluminum. Includes a lightweight mounting box for installation over standard and mud ring single gang J-Boxes. Secures to wall with four 3/16" (5mm) screws (by others). Conduit entry from top, bottom, sides and rear. Allows mounting for uplight or downlight. Designed and approved for easy through-wiring. Includes leaf/debris guard.
Applications: General area and security lighting

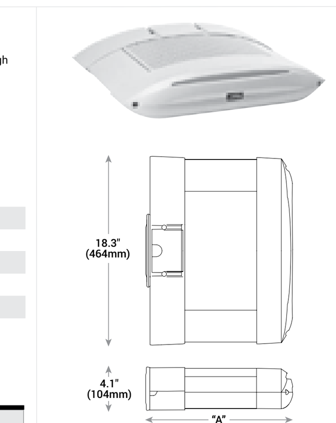
Performance Summary

- Patented NanoOptic® Product Technology
- Made in the U.S.A. of U.S. and imported parts
- **CRI:** Minimum 70 CRI
- **CCT:** 4000K (+/- 300K), 5700K (+/- 500K) standard
- **Limited Warranty†:** 10 years on luminaire/10 years on Colorfast DeltaGuard® finish

† See www.cree.com/lighting/products/warranty for warranty terms

Accessories

Field-Installed	
Bird Spikes XA-BRDSPK	**Hand-Held Remote** XA-SENSREM - For successful implementation of the programmable multi-level option, a minimum of one hand-held remote is required



LED Count (x10)	Dim. "A"	Weight
02	9.9" (251mm)	20 lbs. (9.1kg)
04	11.9" (303mm)	22 lbs. (10.0kg)
06	13.9" (353mm)	25 lbs. (11.3kg)
08	15.9" (404mm)	27 lbs. (12.2kg)
10	17.9" (455mm)	31 lbs. (14.1kg)
12	19.9" (505mm)	32 lbs. (14.5kg)

Ordering Information

Example: SEC-EDG-2M-WM-06-E-UL-SV-700

Product	Optic	Mounting	LED Count (x10)	Series	Voltage	Color Options	Drive Current	Options
SEC-EDG		WM		E				
SEC-EDG	**2M** Type II Medium **2MB** Type II Medium w/BLS **2S** Type II Short **2SB** Type II Short w/BLS **3M** Type III Medium **3MB** Type III Medium w/BLS **4M** Type IV Medium **4MB** Type IV Medium w/BLS	**WM** Wall Mount	02 04 06 08 10 12	E	**UL** Universal 120-277V **UH** Universal 347-480V **34** 347V	**BK** Black **BZ** Bronze **SV** Silver **WH** White	**350** 350mA **525** 525mA -Available with 20-80 LEDs **700** 700mA -Available with 20-60 LEDs	**DIM** 0-10V Dimming - Control by others - Refer to Dimming spec sheet for details - Can't exceed specified drive current **F** Fuse - Refer to ML spec sheet for availability with ML options - Available with UL voltage only - When code dictates fusing, use time delay fuse **ML** Multi-Level - Refer to ML spec sheet for details - Intended for downlight applications of 0° tilt **P** Photocell - Refer to ML spec sheet for availability with ML options - Must specify UL or 34 voltage **PML** Programmable Multi-Level - Refer to PML spec sheet for details - Intended for downlight applications of 0° tilt **40K** 4000K Color Temperature - Minimum 70 CRI - Color temperature per luminaire

Rev. Date: V2 07/21/2015

CREE

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Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

Cree Edge™ LED Security Wall Pack Luminaire

Product Specifications

CONSTRUCTION & MATERIALS

- Slim, low profile design
- Luminaire sides are rugged die cast aluminum with integral, weathertight LED driver compartment and high performance aluminum heat sinks specifically designed for LED applications
- Housing is rugged aluminum
- Furnished with low copper, light weight mounting box designed for installation over standard and mud ring single gang J-Boxes
- Luminaire can also be direct mounted to a wall and surface wired
- Secures to wall with four 3/16" (5mm) screws (by others)
- Conduit entry from top, bottom, sides, and rear
- Allows mounting for uplight or downlight
- Designed and approved for easy through-wiring
- Includes leaf/debris guard
- Exclusive Colorfast DeltaGuard® finish features an E-Coat epoxy primer with an ultradurable powder topcoat, providing excellent resistance to corrosion, ultraviolet degradation and abrasion. Black, bronze, silver and white are available
- **Weight:** See Dimensions and Weight Chart on page 1

ELECTRICAL SYSTEM

- **Input Voltage:** 120–277V or 347–480V, 50/60Hz, Class 1 drivers
- **Power Factor:** > 0.9 at full load
- **Total Harmonic Distortion:** < 20% at full load
- Integral weathertight J-Box with leads (wire nuts) for easy power hook up
- Integral 10kV surge suppression protection standard
- When code dictates fusing, a slow blow fuse or type C/D breaker should be used to address inrush current
- **Maximum 10V Source Current:** 20 LED (350mA): 10mA; 20LED (525 & 700 mA) and 40-120 LED: 0.15mA

REGULATORY & VOLUNTARY QUALIFICATIONS

- cULus Listed
- Suitable for wet locations
- Meets FCC Part 15, Subpart B, Class A standards for conducted and radiated emissions
- Enclosure rated IP66 per IEC 60529 when ordered without P, PML or ML options
- 10kV surge suppression protection tested in accordance with IEEE/ANSI C62.41.2
- Luminaire and finish endurance tested to withstand 5,000 hours of elevated ambient salt fog conditions as defined in ASTM Standard B 117
- DLC qualified with select SKUs. Refer to https://www.designlights.org/search/ for most current information
- Meets Buy American requirements within ARRA

Electrical Data*

LED Count (x10)	System Watts 120-480V	Total Current (A) 120V	208V	240V	277V	347V	480V
350mA							
02	25	0.21	0.13	0.11	0.10	0.08	0.07
04	46	0.36	0.23	0.21	0.20	0.15	0.12
06	66	0.52	0.31	0.28	0.26	0.20	0.15
08	90	0.75	0.44	0.38	0.34	0.26	0.20
10	110	0.92	0.53	0.47	0.41	0.32	0.24
12	130	1.10	0.63	0.55	0.48	0.38	0.28
525mA							
02	37	0.30	0.19	0.17	0.16	0.12	0.10
04	70	0.58	0.34	0.31	0.28	0.21	0.16
06	101	0.84	0.49	0.43	0.38	0.30	0.22
08	133	1.13	0.66	0.58	0.51	0.39	0.28
700mA							
02	50	0.41	0.25	0.22	0.20	0.15	0.12
04	93	0.78	0.46	0.40	0.36	0.27	0.20
06	134	1.14	0.65	0.57	0.50	0.39	0.29

* Electrical data at 25˚C (77˚F). Actual wattage may differ by +/- 10% when operating between 120-480V +/- 10%

Recommended Cree Edge™ Series Lumen Maintenance Factors (LMF)[1]

Ambient	Initial LMF	25K hr Projected[2] LMF	50K hr Projected[2] LMF	75K hr Calculated[3] LMF	100K hr Calculated[3] LMF
5˚C (41˚F)	1.04	1.01	0.99	0.98	0.96
10˚C (50˚F)	1.03	1.00	0.98	0.97	0.95
15˚C (59˚F)	1.02	0.99	0.97	0.96	0.94
20˚C (68˚F)	1.01	0.98	0.96	0.95	0.93
25˚C (77˚F)	1.00	0.97	0.95	0.94	0.92

[1] Lumen maintenance values at 25˚C are calculated per TM-21 based on LM-80 data and in-situ luminaire testing
[2] In accordance with IESNA TM-21-11, Projected Values represent interpolated value based on time durations that are within six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)
[3] In accordance with IESNA TM-21-11, Calculated Values represent time durations that exceed six times (6X) the IESNA LM-80-08 total test duration (in hours) for the device under testing ((DUT) i.e. the packaged LED chip)

CREE

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Canada: www.cree.com/canada T (800) 473-1234 F (800) 890-7507

DLC REBATES
CREE WARRANTY INFO
ADDITIONAL PRODUCTS

rla

For informational and illustration purposes only. All product, service and corporate names are the property of their respective owners. Product specifications and quantities may vary.
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SIGN PACKET

JACOB CLARK | SIGNAGE PROJECT BUYER
3305 SE Delaware Ave | Ankeny, IA 50021
P: 515-963-3831 | F: 515-965-6287 | E: jacob.clark@caseys.com

Lisbon, WI

O4 Flat Roof

- 5' Building Signage
- 4' Canopy Signage
- 4 Product Brick & Stone Monument @ 10' OAH

07-11-18

Building & Wall Signs (O4 Flat Roof)

Sign #	Sign	Type	Location	Illumination	Dimensions				
					Bottom	Top	Width	Height	Area Ft²
1	"CASEY'S"	Surface	Building Front	Internal	12' 8"	17' 8"	21' 3-15/16"	5' 0"	44.15
2	House Logo	Surface	Building Front	Internal	12' 8"	17' 8"	7' 2-1/8"	5' 0"	26.74
3	Snap Frame	Advertising	Building Front	N/A	3' 4"	6' 8-1/2"	8' 0"	3' 0"	24
4	Snap Frame	Advertising	Building Front	N/A	2' 10"	6' 10-1/2"	2' 4"	3' 8"	8.56
								Total	103.45

Canopy

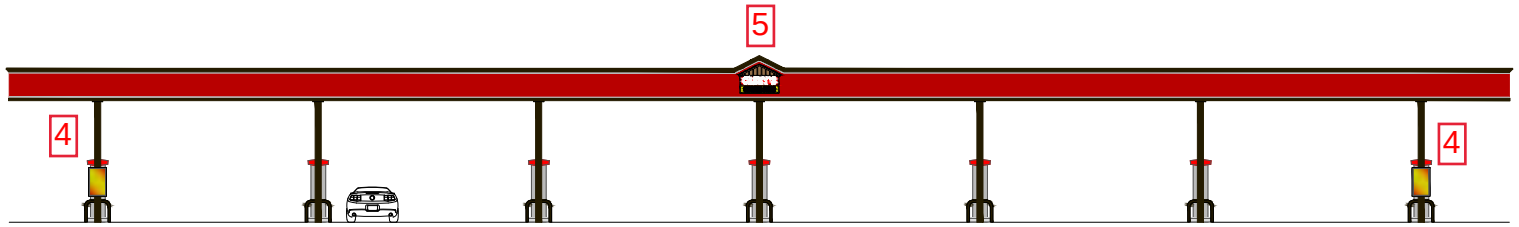
Sign #	Sign	Type	Location	Illumination	Dimensions				
					Bottom	Top	Width	Height	Area Ft²
5	House Logo	Surface	Canopy Side	Internal	17' 3-1/2"	21' 3-1/2"	5' 8-7/8"	4' 0"	17.49
5	House Logo	Surface	Canopy Side	Internal	17' 3-1/2"	21' 3-1/2"	5' 8-7/8"	4' 0"	17.49
5	House Logo	Surface	Canopy Front	Internal	17' 3-1/2"	21' 3-1/2"	5' 8-7/8"	4' 0"	17.49
4	Snap Frame	Advertising	Canopy Column	N/A	3' 0"	7' 0-1/2"	2' 4"	3' 8"	8.56
4	Snap Frame	Advertising	Canopy Column	N/A	3' 0"	7' 0-1/2"	2' 4"	3' 8"	8.56
4	Snap Frame	Advertising	Canopy Column	N/A	3' 0"	7' 0-1/2"	2' 4"	3' 8"	8.56
4	Snap Frame	Advertising	Canopy Column	N/A	3' 0"	7' 0-1/2"	2' 4"	3' 8"	8.56
								Total	86.71

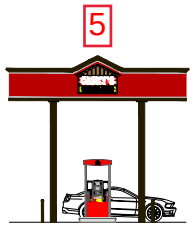
Brick Monument Sign (4 Product Monument at 10' OAH)

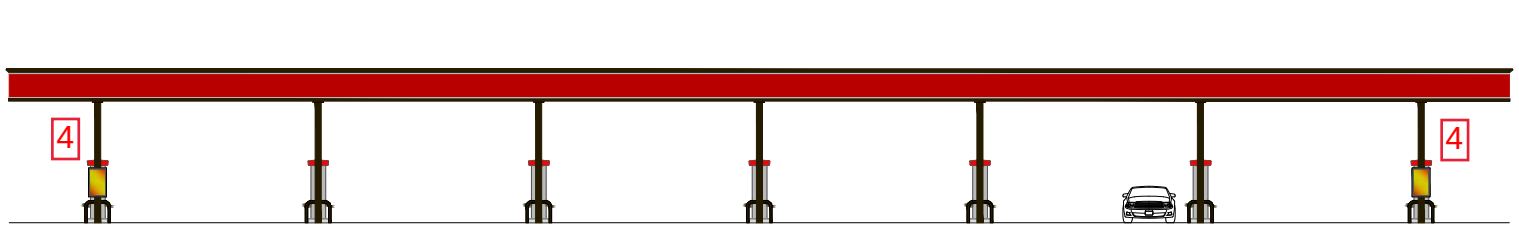
Sign #	Sign	Type	Location	Illumination	Dimensions				
					Bottom	Top	Width	Height	Area Ft²
6	Price Sign	Freestanding	Street	Internal	4' 8"	9' 3"	10' 2"	4' 7"	46.6
								Total	46.6

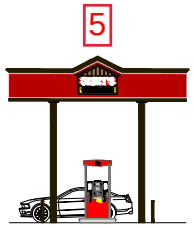
SIGNS 1, 2, 3, 4

SIGNS 4, 5









7 IN-A-ROW

HEAD-IN

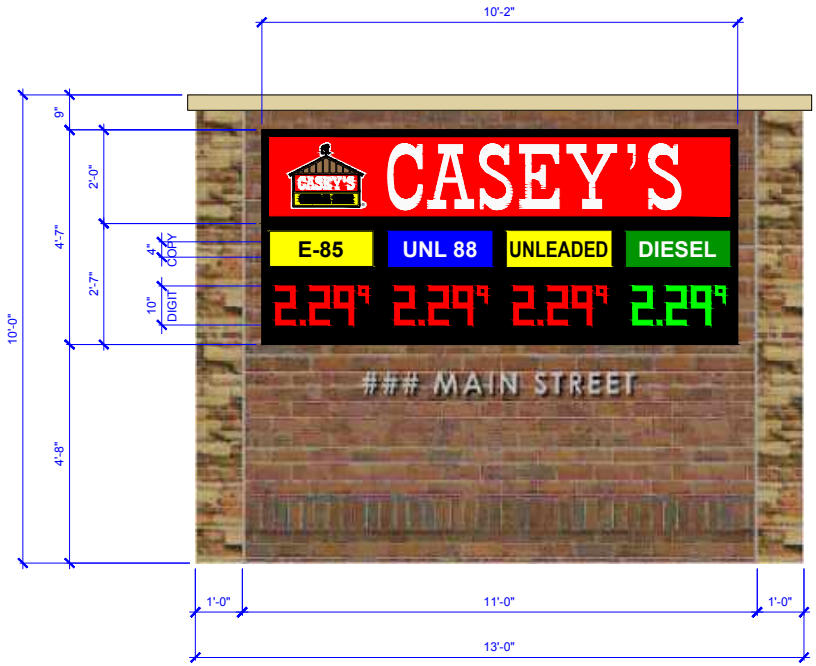
DRAWN BY:
J. CLARK

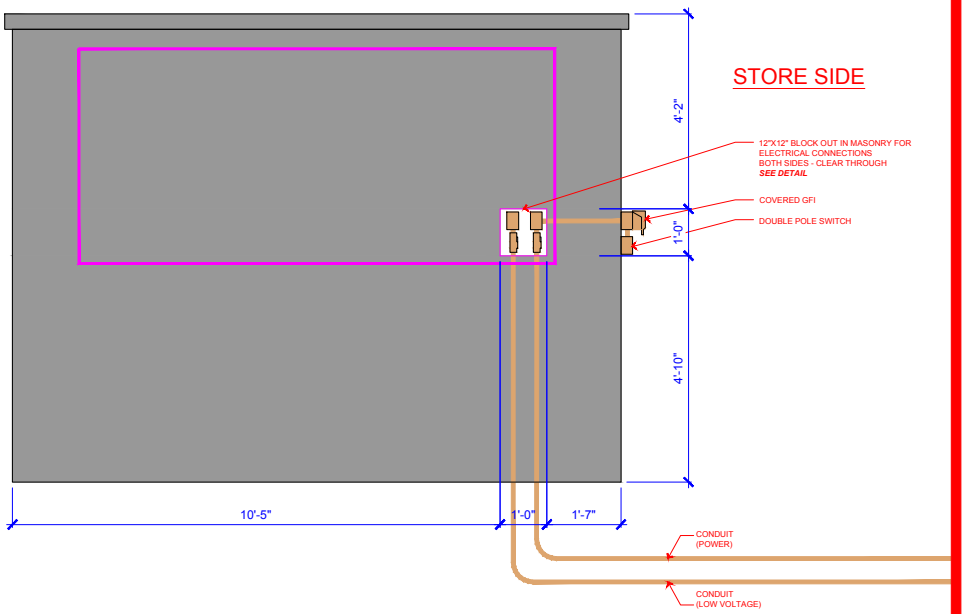
DATE:
06-01-17

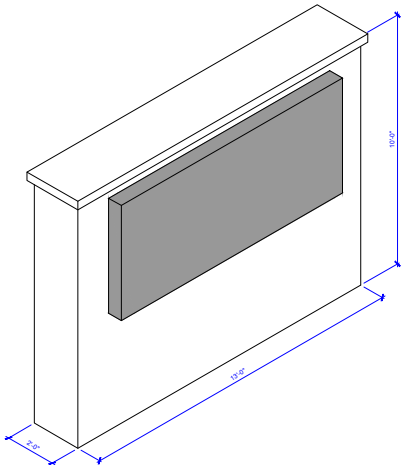
SIGN 6

Brick Monument Sign (4 Product Monument at 10' OAH)									
					Dimensions				
Sign #	Sign	Type	Location	Illumination	Bottom	Top	Width	Height	Area Ft²
6	Price Sign	Freestanding	Street	Internal	4' 8"	9' 3"	10' 2"	4' 7"	46.6
								Total	46.6

VERIFY ADDRESS ONCE ISSUED BY CITY







PRICER NOTES:

- 10" RED AND GREEN LED DIGITS
- STATIC LABELS, NON-INTERCHANGEABLE
- DIESEL ON THE RIGHT, BOTH SIDES

OTHER NOTES

- CABINET IS BLACK IN COLOR
- 300' WIRELESS KEYPAD RANGE

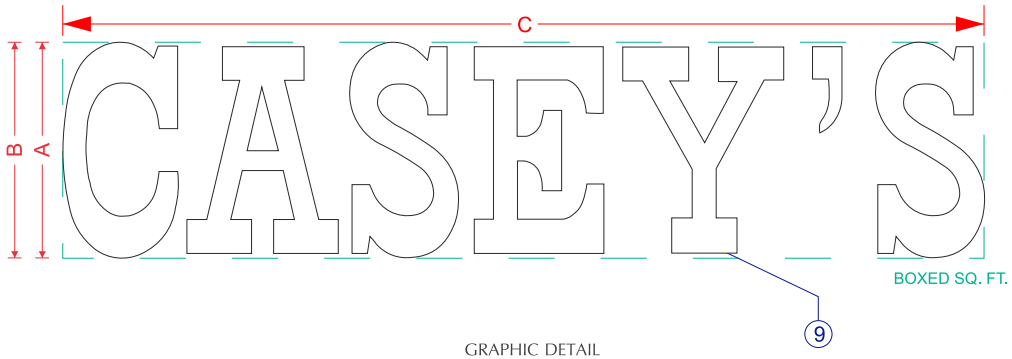
LISBON, WI

4 PRODUCT SIGN W/ STONE

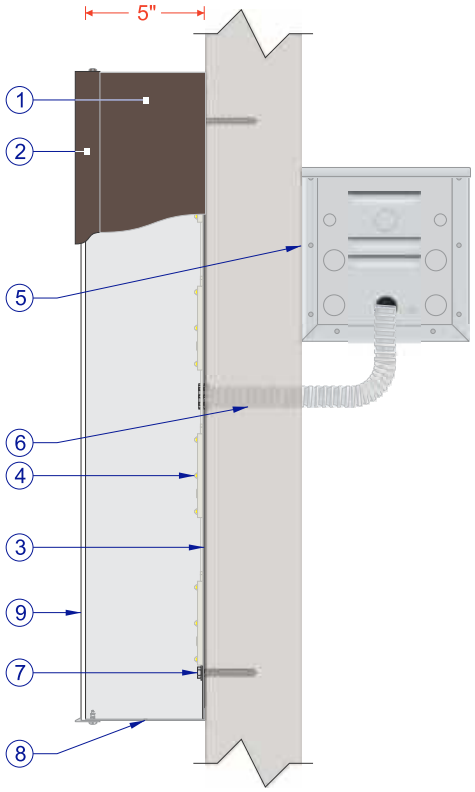
DRAWN BY: J. CLARK

DATE: 07-11-18

SIGN 1



GRAPHIC DETAIL
NOT TO SCALE



LETTER PROFILE
NOT TO SCALE

CASEY'S REMOTE CHANNEL LETTER SPECIFICATIONS	
NO.	PART/DESCRIPTION
1	.040" x 5" PREFINISHED BRONZE ALUMINUM RETURNS
2	1" BRONZE TRIM CAP
3	.063" ALUMINUM BACK
4	WHITE LED'S AS REQUIRED
5	REMOTE POWER SUPPLIES AS REQUIRED
6	ELECTRICAL OUT PROVISION: THROUGH BACK, CENTER
7	MOUNTING HARDWARE AS DETERMINED BY SITE CONDITIONS
8	DRAIN HOLES AS REQUIRED
9	1/8" 7328 WHITE ACRYLIC FACE

NOTES:

- CHANNEL LETTER INTERIORS TO BE PAINTED REFLECTIVE WHITE
- CHANNEL LETTERS TO USE 120 VOLT STANDARD POWER
- U.L. LISTED

CASEY'S REMOTE CHANNEL LETTERS						
LETTER HEIGHT "C"	OVERALL HEIGHT	OVERALL LENGTH	AMP LOAD	LUMEN OUTPUT	BOXED SQUARE FOOTAGE	ACTUAL SQUARE FOOTAGE
A	B	C				
60"	5'-0"	21'-3 15/16"	TBD	TBD	106.65	44.15

Customer: CASEY'S GENERAL STORES	Date: 12/16/16	Prepared By: RM	Note: Color output may not be exact when viewing or printing this drawing. All colors used are PMS or the closest CMYK equivalent. If these colors are incorrect, please provide the correct PMS match and a revision to this drawing will be made.
Item Number: TBD	File Name: CASEY'S REMOTE CHANNEL LETTERS		Revision: 3

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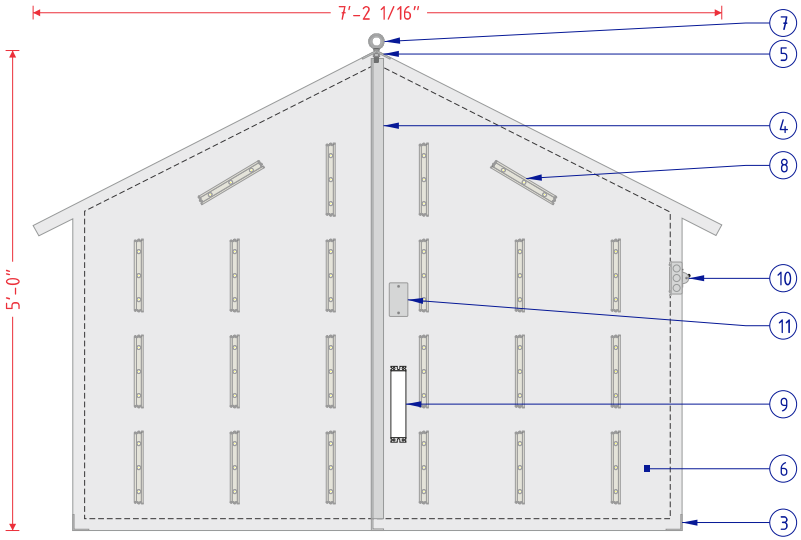
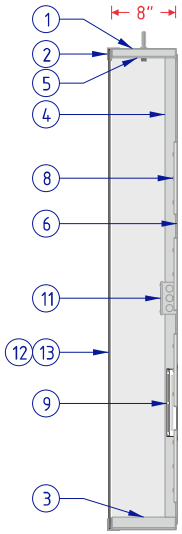
SIGN 2



FRAME & LAMP DETAIL
SCALE: 1/2" = 1'-0"



CROSS SECTION A-A
SCALE: 1/2" = 1'-0"

CASEY'S 5 X 7 SINGLE FACE LED SIGN SPECIFICATIONS	
NO.	PART/DESCRIPTION
1	8" X 1 1/2" X .080" ALUMINUM SPACER FRAME
2	1 1/2" FLAT ALUMINUM RETAINER
3	2" X 2" X 3/16" ALUMINUM ANGLE
4	1 1/2" X 1 1/2" X 3/16" ALUMINUM ANGLE
5	2" X 3/16" ALUMINUM STRAP
6	.063" ALUMINUM BACK
7	1/2" EYEBOLT
8	GE 7100K WHITE LED'S AS REQUIRED
9	LED POWER SUPPLIES AS REQUIRED
10	DISCONNECT SWITCH
11	ELECTRICAL OUT: THRU BACK, CENTER OF CABINET
12	.150" CLEAR SOLAR GRADE POLYCARBONATE FACE
13	SCREENED DECORATION (2ND SURFACE)

NOTES:

- DESIGN FACTOR: TO BE DETERMINED
- 8" X 1 1/2" X .080" ALUMINUM SPACER FRAME
- 1 1/2" FLAT ALUMINUM RETAINER
- EXTERIOR FINISH: PAINT BRONZE
- INTERIOR FINISH: PAINT REFLECTIVE WHITE
- RETAINERS REMOVABLE FOR SERVICE ACCESS
- U.L. LISTED
- ELECTRICAL: 1.10 AMPS/120 VOLTS
- SQUARE FOOTAGE
  BOXED: 35.86
  ACTUAL: 26.74

GRAPHIC DETAIL
SCALE: 1/2" = 1'-0"

Customer: CASEY'S GENERAL STORES	Date: 01/30/18	Prepared By: JW/AP/RA	Note: Color output may not be exact when viewing or printing this drawing. All colors used are PMS or the closest CMYK equivalent. If these colors are incorrect, please provide the correct PMS match and a revision to this drawing will be made.
Item Number: CAS-5X7SFRSIGN-S	File Name: CAS 5 X 7 SINGLE FACE LED SIGN		Revision: 3

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SIGN 3

INSTALLATION INSTRUCTIONS

PLEASE READ COMPLETELY BEFORE ASSEMBLY

SNAPFRAME WALL SIGN

IMPORTANT NOTE

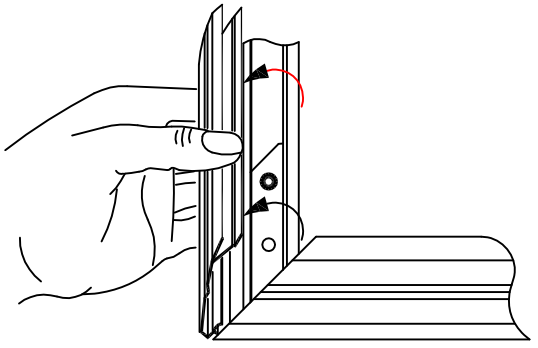
* This sign is designed for repeated changing of inserts and must be securely fastened to the wall in order to open and close the spring loaded frame members.
* USE CAUTION WHEN CLOSING SNAP FRAME MEMBERS! Hold frame by outer edge and keep finger tips away from poster grip edge.

TOOLS NEEDED

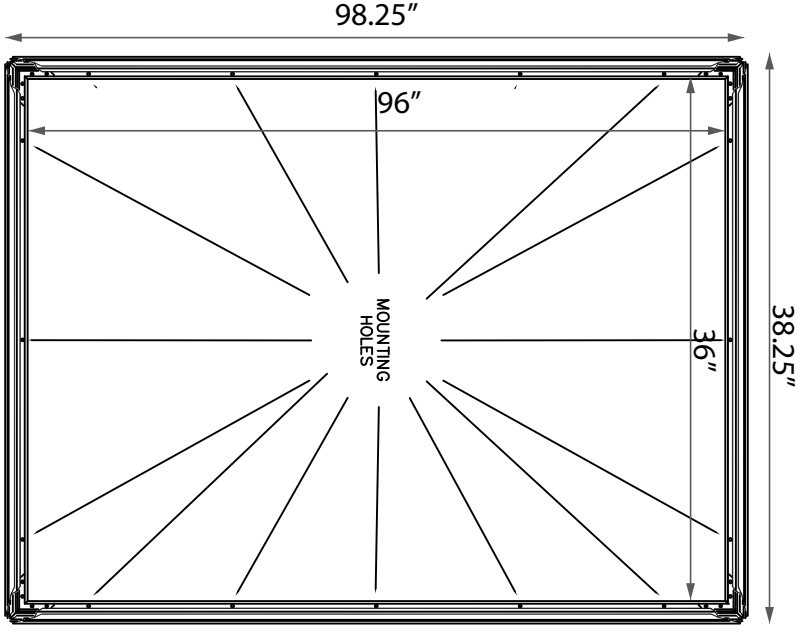
* Bubble type level (or string line) for sign positioning.
* Pencil for hole location marking.
* Drill with 5/16" masonry bit for masonry application only.
* 7/32" Metal drill bit for hole in frame
* Phillips screwdriver.

PARTS LIST

[A] Snap frame with metal backer



– FIGURE 1 –
OPENING FRAME MEMBERS



26.1 SQ FT TOTAL

inside dimensions = (96"x36")
outside dimensions = (98.25"x38.25")

STEP-BY-STEP INSTALLATION PROCEEDURE

1. Open all four sides of the snap frame by pulling the inside edge of the frame up and out (see figure 1).
2. Mark hole locations on the inside of the Extrusion at the locations shown to the left. Holes should be drilled in the location indicated in Figure 2. Use a 7/32" drill bit to drill the holes for a #10 screw.
3. Hold sign against the wall in desired position and mark hole locations on the wall through holes in the frame. SIGN MUST BE SECURED TO THE WALL WITH ALL (16) HOLES.
4. Set sign aside and drill or punch starting holes into wall. On masonry walls, drill 5/16" holes into mortar (where possible) approx. 2" deep and insert lead expansion anchor until end is flush with the wall.
5. Hold sign against wall, align all holes and secure with screws. If you are going into wood or metal, you can still use a No.10 screw. But make sure to use the appropriate one for the material you fasten to.

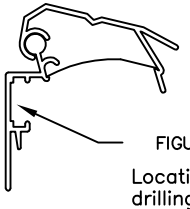
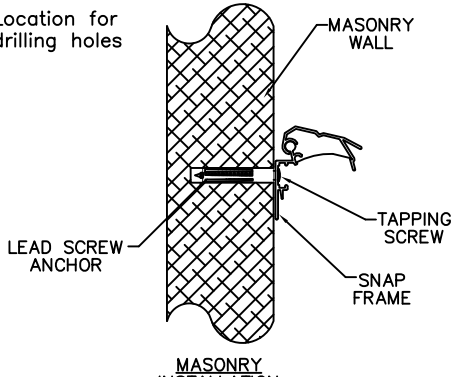


FIGURE 2 –
Location for drilling holes



MASONRY INSTALLATION

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ICZ01081

SIGNS 4

INSTALLATION INSTRUCTIONS

PLEASE READ COMPLETELY BEFORE ASSEMBLY

SNAPFRAME WALL SIGN

IMPORTANT NOTE

* This sign is designed for repeated changing of inserts and must be securely fastened to the wall in order to open and close the spring loaded frame members.
* USE CAUTION WHEN CLOSING SNAP FRAME MEMBERS! Hold frame by outer edge and keep finger tips away from poster grip edge.

TOOLS NEEDED

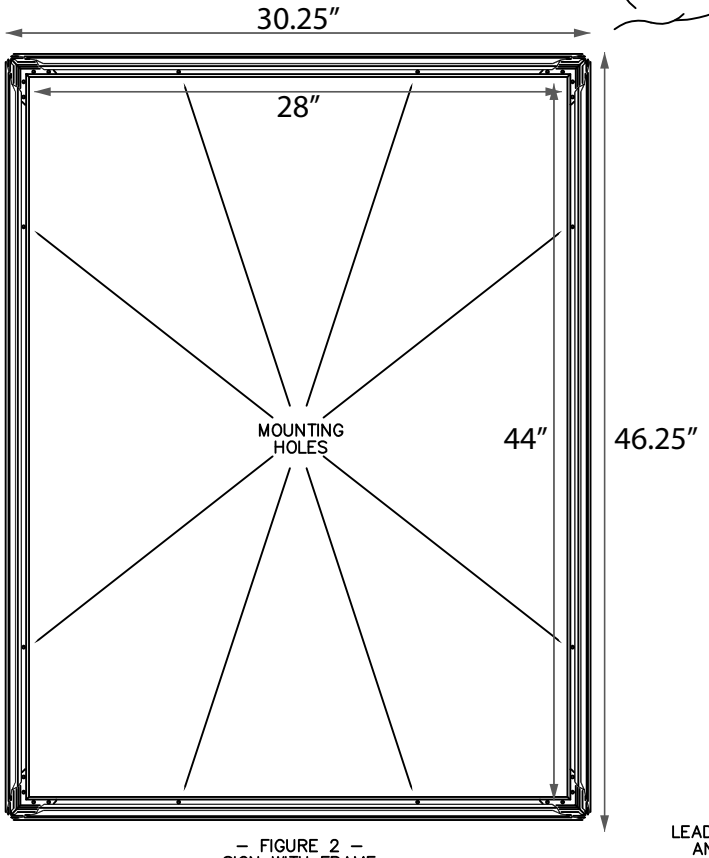
* Bubble type level (or string line) for sign positioning.
* Pencil for hole location marking.
* Drill with 5/16" masonry bit for masonry application only.
* Phillips screwdriver.

PARTS LIST

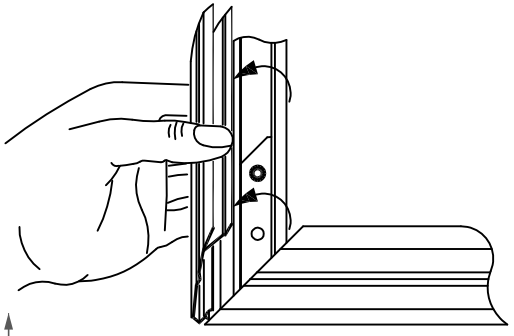
[A] Sign face with snap frame

[B] #10 x 1-3/4" tapping screws (8)

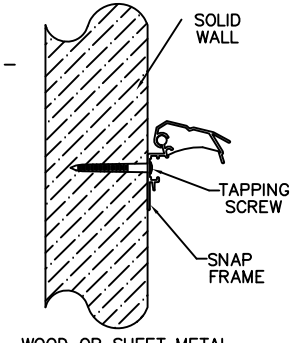
[C] #10-12 x 1" lead anchors (8)



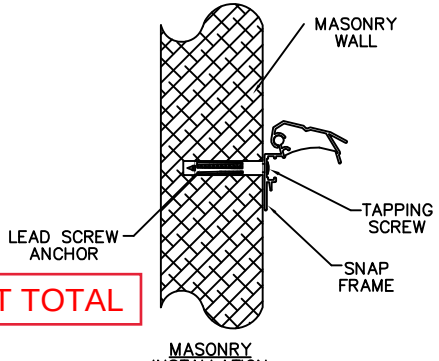
– FIGURE 2 –
SIGN WITH FRAME IN OPEN POSITION



– FIGURE 1 –
OPENING FRAME MEMBERS



WOOD OR SHEET METAL INSTALLATION



MASONRY INSTALLATION

9.72 SQ FT TOTAL

inside dimensions = (28"x44")

outside dimensions = (30.25"x46.25")

STEP-BY-STEP INSTALLATION PROCEEDURE

1. Open all four sides of the snap frame by pulling the inside edge of the frame up and out (see figure 1).
2. Hold sign against the wall in desired position and mark hole locations on the wall through holes in the frame.
3. Set sign aside and drill or punch starting holes into wall: On wood or sheet metal walls, use 1-3/4" tapping screws only.

   On masonry walls, drill 5/16" holes into mortar (where possible) approx. 2" deep and insert lead expansion anchor until end is flush with the wall.
4. Hold sign against wall, align all holes and secure with screws.

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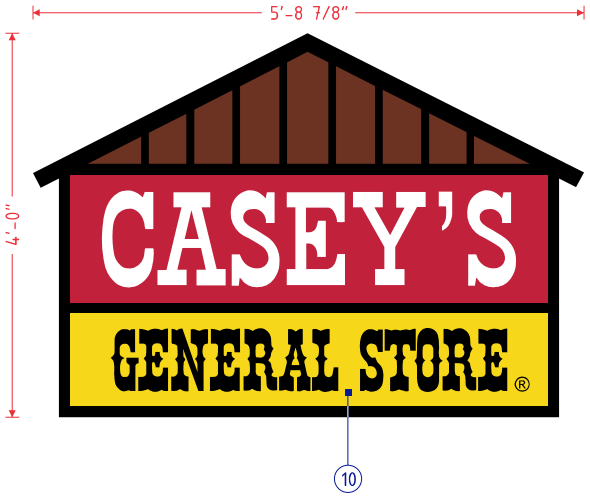
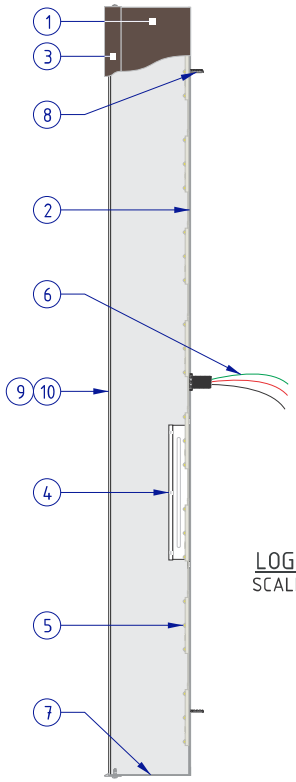
SIGN 5



GRAPHIC DETAIL
SCALE: 1/2" = 1'-0"



LOGO PROFILE
SCALE: 1" = 1'-0"

CASEY'S 4 X 5 CHANNEL LETTER LOGO SPECIFICATIONS	
NO.	PART/DESCRIPTION
1	.040" x 5" PREFINISHED BRONZE ALUMINUM RETURNS
2	.063" ALUMINUM BACK
3	1" BRONZE TRIM CAP
4	LED POWER SUPPLY AS REQUIRED
5	GE 7100K WHITE LED'S AS REQUIRED
6	ELECTRICAL OUT PROVISION: THRU BACK, CENTER
7	DRAIN HOLES AS REQUIRED
8	MOUNTING HARDWARE AS DETERMINED BY SITE CONDITIONS
9	.118" CLEAR SOLAR GRADE POLYCARBONATE FACE
10	SCREENED DECORATION (2ND SURFACE)

NOTES:

- EXTERIOR FINISH: PAINTED TO MATCH PMS 313 BRONZE
- INTERIOR FINISH: PAINTED REFLECTIVE WHITE
- FACE REMOVABLE FOR SERVICE ACCESS
- U.L. LISTED
- ELECTRICAL: .65 AMPS/120 VOLTS
- SQUARE FOOTAGE:
  BOXED = 22.96
  ACTUAL = 17.49

Customer: CASEY'S GENERAL STORES	Date: 01-18-18	Prepared By: RS/RA/AP/RA	Note: Color output may not be exact when viewing or printing this drawing. All colors used are PMS or the closest CMYK equivalent. If these colors are incorrect, please provide the correct PMS match and a revision to this drawing will be made.
Item Number: CAS-48CLLEDITLOGOF-S	File Name: CAS 4 X 5 SINGLE FACE LED CHANNEL LETTER LOGO		Revision: 4

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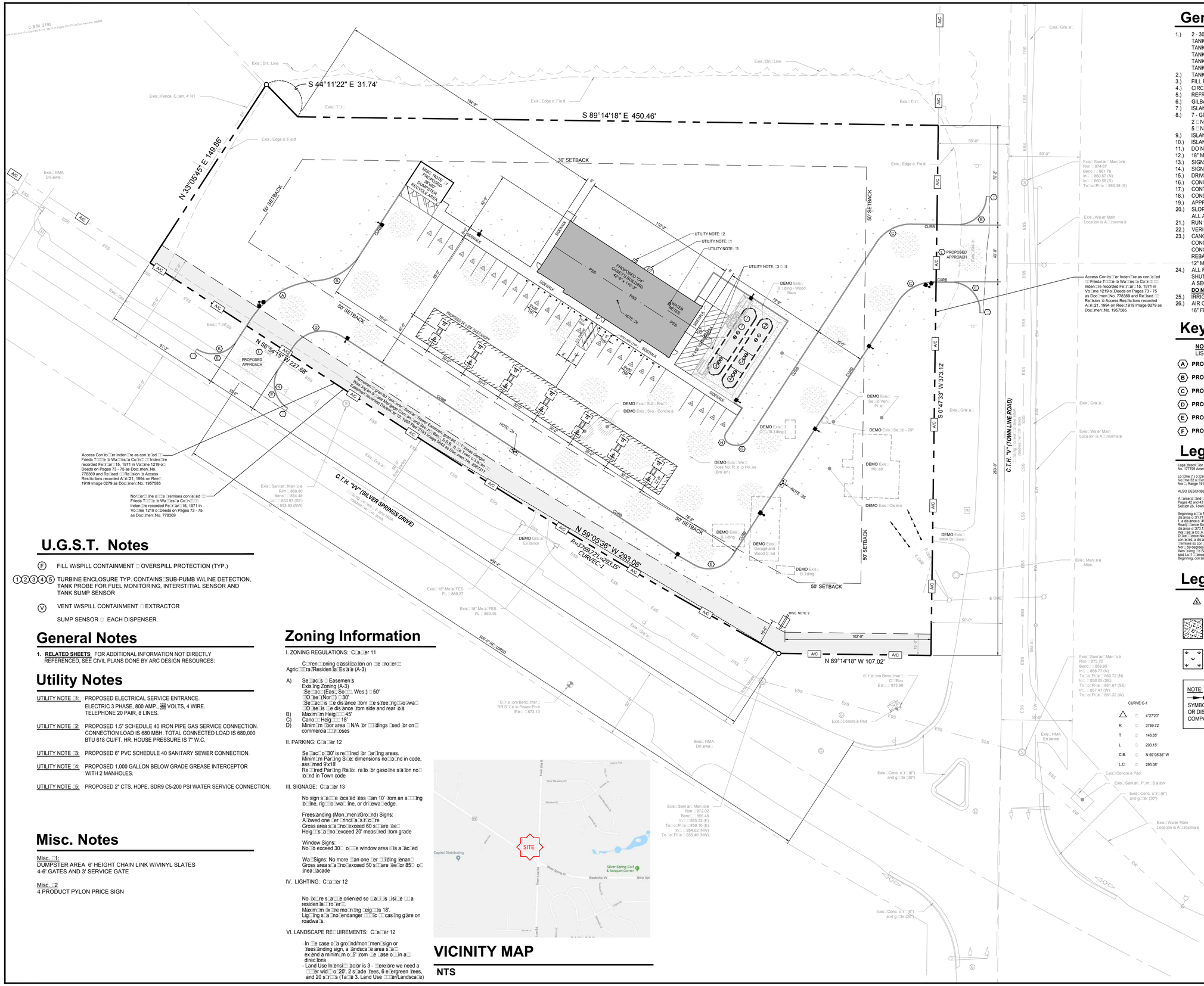

S 44°11'22" E 31.74'
S 89°14'18" E 450.46'
N 33°05'45" E 149.86'
30' SETBACK
50' SETBACK
N 56°54'15" W 227.68'
S 0°47'33" W 373.12'
N 59°05'36" W 293.08'
R=769.71'L=293.15'
CURVE-C1
N 89°14'18" W 107.02'
PROPOSED "O4" CASEY'S BUILDING 4'-6" X 110'-3"
PSS
WATER METER
UTILITY NOTE: 2
UTILITY NOTE: 1
UTILITY NOTE: 5
UTILITY NOTE: 3
UTILITY NOTE: 4
MISC. NOTE: 2
NOTE: 24
NOTE: 26
PROPOSED APPROACH
PROPOSED 4 UNIT GAS CANOPY
PROPOSED 10' RADIUS
PROPOSED 5' RADIUS
TIE INTO AND MATCH EXISTING PAVEMENT AND FLOW LINE.
TAPER CURB AT EXISTING EDGE OF GRAVEL.
2% MAX. CROSS-SLOPE IN SIDEWALK AREA.
DETECTABLE SIDEWALK MAT. VERIFY WITH CITY.
C.T.H. "V" (TOWN LINE ROAD)
C.T.H. "VV" (SILVER SPRINGS DRIVE)
C.S.M. 2195
SITE
Capitol Distributing
Silver Spring Golf & Banquet Center
Waukesha VV
Silver Spring Dr
Town Line Rd
Lisbon Rd
Lepple Trail
Silver Meadows Dr
Marlboro Dr
Hillcrest Dr
Hillside Dr
Lisbon Ln
Lisbon Ln
Lisbon Ln

W234N8676 WOODSIDE RD. • LISBON, WI 53089-1545 • TEL: (262) 246-6100 • FAX: (262) 820-2023
E-mail: townhall@townoflisbonwi.com • Website: www.townoflisbonwi.com

SITE PLAN AND PLAN OF OPERATION

Please fill out the entire application all questions need a response. If something does not apply please put N/A. Incomplete applications will not be processed or put on the agenda. The completion of this application form must be accompanied by one copy of an up to date and detailed Site Plan drawn to scale and including, but shall not be limited to, all existing buildings, signage, lighting, landscaping, parking, loading, storage, dumpsters, septic and well, etc; an interior layout (plans) of all buildings and the existing and proposed uses of the interior spaces (i.e., office, retail, restaurant, etc); and any other supporting materials. The above shall be submitted to the Town Hall, and upon review of the information, additional items may be required. The plans shall be drawn to scale and shall be no larger than 11" x 17", and shall also be emailed as a PDF. Future revisions to the approved Site Plan/Plan of Operation will require new approvals.

☐ **New business in existing building or on existing site** ■ **New Owner** ☐ **Temporary Use**

☐ **Change in Operations (summarize below what is changing; days/hours, etc)**

N/A

☐ **Change in Use (summarize below prior and new use below)**

N/A

BUSINESS / PROPERTY OWNER & PROPERTY INFORMATION

Tax Key Number LSBT0244999003 **Acres** 3.33 **Zoning** A-3

Business Name & Contact Person: Casey's Marketing Company, Heather Hennick

Full Address (include City & Zip): One Convenience Blvd, Ankeny, IA 50021

Phone Number & Email: 515-965-6123 heather.hennick@caseys.com

Signature & Date: _____

*****

Property Owner Name: Thomas Gengler

Full Address (include City & Zip): W220N5701 Town Line Rd, Lisbon, WI 53089

Phone Number & Email: 262-246-9025

Signature & Date: _____

1. **Is this business replacing another business?** ☐ **Yes** ☒ **No**
   a. **If yes, what is the prior business' name:** _____
2. **Is this an expansion of an existing Town approved/based operation?** ☐ **Yes** ☒ **No**
   a. **If yes, please explain:** _____

HOURS OF OPERATION & OPERATING SPECIFICS

3. **Describe in detail below the specific type of business operation (Retail, Restaurant, Manufacturing, Office, etc.), including temporary, accessory, and outdoor uses (storage, etc). Provide a separate list of all items sold or produced on the property. If items are produced, please provide a separate explanation of the production process.**

   Casey's Marketing Company is proposing the construction of a new convenience store and fuel station with canopy. The convenience store is approximately 4,670 square feet and will provide general goods including convenience items, beverages, and fresh made-to-order food products including pizza, sandwiches, and donuts. For fuel sales the development will include seven (7) multi-product fuel dispensers (14 fueling positions) which will be housed under a canopy which runs parallel to County Highway VV.

4. **Days & Times of Operation:**
   a. **Days & Times:** 7 days/week, hours of operation are determined closer to opening, op 24 hours is requsted
5. **Employees (if self-employed please count yourself)**
   a. **Full-Time** 10-15
   b. **Part-Time** 10-15

FOOD / BEVERAGE / LIQUOR

6. **Is there any food & beverage / liquor service?** ☒ **Yes** ☐ **No**
   a. **If yes, please explain:** Food made to order and beer/wine/liquor sales for off-site consumption only.

7. **Table Seating Capacity**
   a. **Outside:** 0
   b. **Inside:** 8
   c. **Bar:** N/A

8. **Food / Soda Vending Machines** ☐ **Yes** ■ **No**
   a. **If yes, quantity of each:** _____

OUTDOOR USES

9. **Is there any outdoor storage?** ■ **Yes** ☐ **No**
   a. **If yes, please explain:** Propane and Ice

10. **Will there be any outdoor events?** ☐ **Yes** ■ **No**
    a. **If yes, please describe the types of events, parking accommodations, sanitary facilities and delineate the locations of the events on the Site Plan submitted. Attach a separate sheet if necessary.**

    _____
    _____
    _____
    _____

11. **Will there be any customer dockage?** ☐ **Yes** ■ **No**
    a. **If yes, please indicate on the Site Plan length and number of piers.**

12. **Parking Lot**
    a. **Dimensions** 196' x 20' & 36' x 20'
    b. **Total number of spaces** 25
    c. **Number of spaces allotted for employees** 3

MUSIC / ENTERTAINMENT

13. Are any problems such as odor, smoke or noise resulting from this operation? ☐ **Yes** ■ **No**

a. If yes, describe what types (live, amplified, recorded, jukebox, etc), indoors and/or outdoors, and the days and hours music will be provided? Attach a separate sheet if necessary.

Odor resulting from fueling is not anticipated to be an issue, fuel stations are highly regulated. Casey's has state of the art systems and complies with regulations.

14. Game Machines ☐ **Yes** ■ **No**

a. Quantity: N/A

b. Location: N/A

BUILDINGS

15. Building A

a. Dimensions & Levels: 42.5' x 110.25', 1 level

b. Use: Convenience store

16. Building B

a. Dimensions & Levels: 24' x 204'

b. Use: Canopy over fuel dispensers

17. Building C

a. Dimensions & Levels: N/A

b. Use: N/A

LIGHTING (Submit Cut-Sheets)

18. Outdoor Lighting

a. Type(s): LED cut off downward facing light pols, building mounted and under canopy LED lighing

b. Locations(s): Lighting plan is being revised. Revised lighting on driveway is anticipated to be similar to what was previously submitted.

SIGNAGE (Also submit the Town's Signage Application & appropriate fees)

19. Describe below the type of signage that exists and what signage is proposed on the site (attached, free standing, ground, mobile, projecting, window, electronic message, banners, flags, sandwich boards, etc.) and if the signs are illuminated, single/double faced, along with the number, size, and height of all signs.

See sign packet for proposed signing. Per Village of Sussex requirements the freestanding sign is required to be a monument sign.

CHEMICALS/HAZARDOUS MATERIALS

20. Are there any Chemicals, Hazardous Waste of Solvents stored on the site? ■ **Yes** ☐ **No**

a. If yes, please list those items and how they are disposed of or attach a separate sheet if necessary.

See MSDS data sheets submitted.

21. Does this Operation involve the Storage/Sale of gasoline or any other Petroleum Products? ■ **Yes** ☐ **No**

a. If yes, please list those items and how they are disposed of or attach a separate sheet if necessary.

Gasoline is stored on-site in underground storage tanks. Storage and disposal follows state and federal requirements.

STORM WATER RETENTION, FLOW OF SURFACE WATER, AND AMOUNT OF IMPERVIOUS SURFACES

22. Are there surface water drainage facilities? ■ **Yes** ☐ **No**

a. If yes, please explain: On-site storm water drains to inlets and through storm sewer to an on-site wet wet detention basin. The detention basin controls the release rate of the site to CTH VV right of way.

REFUSE DISPOSAL

23. Are there dumpsters/waste containers on the site? ☐ **Yes** ☐ **No**

a. If yes, show on the Site Plan submitted the location of dumpsters and any screening.

PERMIT APPROVAL / ISSUANCE DATES

24. Is Highway Access Permit Needed? ☐ **Yes** ☐ **No**

a. Date Issued: We are working with the county on access permits.

25. DNR Well Approval (For New Constructions Only)

a. Date Approved: Yes, we are working with a well provider on this.

26. Septic System Approval (For New Constructions Only)

a. Date Approved: N/A connect to sewer

27. Fire Department Inspection ☐ **Yes** ☐ **No**

a. Date Inspected: To be completed

28. Did the Wisconsin Department of Safety & Professional Services approve building plans? ☐ **Yes** ☐ **No**

a. Date Approved: Plans need to be revised for revised building materials

29. Is security fencing necessary? ☐ **Yes** ☐ **No**

HORSE BOARDING

30. Does this Operation involve the Boarding of Horses? ☐ **Yes** ☐ **No**

a. Maximum number of horses boarded: N/A

b. Maximum number of horses owned: N/A

31. Has a Conservation Plan been prepared by the Land Conservation Committee? ☐ **Yes** ☐ **No**

a. **Date Prepared:** _____

Town Approval Date(s): _____

County Approval Date(s): _____

PLAN OF OPERATION

To be used for a business with new construction.

Is this request to be considered for a Conditional Use? Yes If yes, is this a new CU? Yes

OR an amendment to an existing CU? _____

(Conditional Use Permits require a Public Hearing)

Address location of new construction W220N5701 Town Line Rd, Lisbon, WI 53089

Tax Key # LSBT0244999003 Zoning: B-3

1. Name of Business:
Casey's Marketing Company
Business

One Convenience Blvd | Ankeny, IA 50021
Address | City, State, Zip | Phone #

Fax # | Email address

2. Business owner contact information:

Contact

One Convenience Blvd | Ankeny, IA 50021 | 515-965-6223
Address | City, State, Zip | Phone #

Fax # | Email address

3. Building/Land owner contact information:
Thomas Gengler
Contact

W220N5701 Town Line Rd | Lisbon, WI 53089
Address | City, State, Zip | Phone #

Fax # | Email address

4. Number of Employees/Shifts: 20-30 Employees Total (Employees) dependent upon hours of operation (Shifts)

5. Days of Operation:

Put an X in box that applies:	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
	X	X	X	X	X	X	X
Hours Open for business	Hours to be determined	Hours to be determined	Hours to be determined	Hours to be determined	Hours to be determined	Hours to be determined	Hours to be determined

6. Is this an extension of an existing operation? No

7. On a separate sheet of paper explain your business use and/or the change to your business. Attach a list of all items to be sold, produced or stored on the premises.

8. Is a liquor license or any other special license to be obtained from the Village Board or State Licensing Agencies? Yes Do you need an Outdoor Establishment Permit? No
Arcade permit? No
If yes, explain: _____
If yes, please obtain and complete form.

9. If your proposed operation will utilize a liquor license, what types of entertainment are you proposing? Beer, wine, and liquor for off site consumption only

10. Do you feel there will be any problems such as odor, smoke or noise resulting from this operation? No

If yes, explain: _____

11. Dimensions and levels of all buildings:

	Dimensions	Levels	Square footage
Building 1	42.5' x 110.25'	1	4,686
Building 2 (canopy)	24' x 204'	N/A	4,896 (Roof)
Building 3			

Is the building(s) to be used for multi-tenant purpose? No

12.

Lot size	Depth	Width	Area
			3.33 acres

Above to be included on survey

13 Parking: Dimensions of parking lot see attached
Parking lot construction concrete
Type of screening: Fence _____ or Plantings see attached
Number of spaces needed per code 28 total # of spaces for employees 3
Above to be included on site plan

Please provide the following information:
Total square footage of building, new and existing New = 4,686 SF / Existing = 3,988 SF
Total square footage of parking lot, new and existing New = 5,113 SF / Existing = N/A residence

14. Signs: Type: Free standing Yes Attached to building Yes
Lighted Yes (internal) Single or double faced Double
Size See sign packet for all sizes Location See sign packet for locations
Above to be included on sign plan

15. What security lighting are you proposing? (Please include on lighting plan)
All lights to be on when store is open.

16. Is there a need for outside storage? No If yes, explain:

17. Is a Highway access permit needed from the state or County Highway Departments? Yes

If yes, please attach a copy of the secured permit.
What conditions has the State or County imposed upon your permit?
Coordinating with county for accesses

18. Is there a need for any special type of security fencing? No
If yes, what type? _____

19. What provisions are you making for fire protection? N/A

What provisions are your making for a sprinkler system? N/A

Storage system? N/A

Hydrant stand pipes? N/A

Is there a fire lane shown on your site plan? N/A

Explain: Fire trucks are capable of circulating drives

20. Surface water drainage facilities and impervious areas, describe and/or include on site plan.

21. Did Wisconsin State Department of Industry Labor and Human Relations approve building plans?
No If yes, explain: _____

22. Please give a timetable for items to be completed:

Building construction	within 1 year dependent on permitting
Paving	within 1 year dependent on permitting
Landscaping	within 1 year dependent on permitting
Occupancy	within 1 year dependent on permitting

I have reviewed a copy of the Zoning Ordinance in the Village of Sussex and hereby agree to abide by the same, as well as any and all terms and conditions of any permit issued pursuant to this application.

I do swear to or affirm that all statements contained herein are true and correct to the best of our knowledge.

Marni Bee
Name

6/7/18
Date

Supervisor of Store Development
Title or Position

Information on Flood Plain Occupancy:

1. What is the flood plain elevation at the site? N/A

2. Is the flood plain construction elevated or flood proofed? Elevated N/A Flood proofed N/A

3. What is the elevation of the lowest floor of the structure? 874.00

4. What is the elevation of the land fill surrounding the structure? 873.50

5. Does the fill extend beyond the structure? N/A
   How far beyond the structure? _____ feet

6. Is dry land access provided? Yes

7. If the structure is flood proofed, what flood proofing measures are used?
   N/A

8. Certification of elevation or flood proofing must be provided by a licensed surveyor or registered Engineer.
   N/A - site is outside flood plain

Clear Form

CIVIL ENGINEERING
LAND SURVEYING
5291 Zenith Parkway
Loves Park, IL 61111
815-484-4300 p
815-484-4303 f

STORMWATER MANAGEMENT REPORT

Casey's General Store
Lisbon, WI 53089
Arc Project Number: 17176

Prepared By:
Arc Design Resources, Inc.
5291 Zenith Parkway
Loves Park, IL 61111

Phone: (815) 484-4300
Fax: (815) 484-4303
Prepared By: Bailey LaMere
Review Engineer: Ryan Swanson, P.E.

Prepared For:
Casey's General Stores

Project Overview

The proposed site is located at the NW corner of CTH VV (Silver Spring Drive) and CTH V (Townline Road) in Lisbon, WI. The existing site consists of cropland and maintained grass with several trees surrounding a house and six other structures. The site is bordered by CTH VV to the southwest, and CTH V to the east. Neighboring properties include single family residential to the west, institutional zoned property to the east, highway business zoned property to the south and agricultural zoned property to the north. The proposed development will consist of new construction of a Casey's General Store, 7 fueling pumps (14 positions) with canopy, parking lot and other related amenities. The existing site contains one watershed as all water from the site flows to CTH VV R.O.W. There is also one offsite watershed tributary to the site. The TR-55 method is utilized in HydroCAD to calculate the runoff and discharge rates. WinSLAMM is utilized to calculate the TSS removal of the site's stormwater management system. The proposed stormwater management plan has been designed to meet the requirements of the Town, County, and WDNR.

Existing Conditions

The existing property contains 3.33 acres, with an additional 0.37 acres of offsite area tributary to the site. The site is zoned agricultural/residential estate and consists of cropland and maintained grass with several trees. The existing site has approximately 10' of elevation relief with ground elevations ranging from approximately 870' to 880'. Lowest elevations occur along the southwest property line and the highest elevation is near the center of the site.

Storm water from the site ultimately drains to CTH VV R.O.W. where culverts covey stormwater northwest along the road. The existing site contains two watersheds with a total area of 3.70 acres. Existing Watershed 1 is 3.33 onsite acres consisting of 3.15 acres of pervious area and 0.18 acres of impervious area. Existing Watershed 2 is 0.37 acres of offsite area tributary to the site, consisting of 0.21 acres of pervious area and 0.16 acres of impervious area. See the table below for existing watershed information.

Table 1 – Existing Watershed Areas

	Pervious Area (ac)	Impervious Area (ac)	Total Area (ac)
Watershed 1	3.15	0.18	3.33
Watershed 2	0.21	0.16	0.37

HydroCAD was used to model and analyze the existing watersheds peak release rates. The Town of Lisbon and Waukesha County require that the post development release rates for the 1, 2, 10, and 100-year, 24-hour storms be less than pre-development release rates for the 1, 2, 10, and 100-year, 24-hour storms, respectively. For the existing outfall, the 1-year peak discharge was found to be 1.00 cfs, the 2-year peak discharge was found to be 1.54 cfs, the 10-year peak discharge was found to be 4.07 cfs, and the 100-year peak discharge was found to be 10.93 cfs. See the table below for existing Peak Discharge rates.

Table 2 – Existing Peak Discharge Rates

	1-Year Peak Discharge (cfs)	2-Year Peak Discharge (cfs)	10-Year Peak Discharge (cfs)	100-Year Peak Discharge (cfs)
Existing Site	1.00	1.54	4.07	10.93

Please refer to the Existing Drainage Plan (EDP) and attached HydroCAD calculations for further information such as the watershed areas, times of concentrations, and runoff curve numbers.

Proposed Conditions

The proposed site will include the construction of a Casey's General Store, 7 fuel pumps (14 positions), with a canopy, parking lot, and other related amenities. The proposed site contains 1.88 acres of pervious area and 1.45 acres of impervious area (roofs and pavement), with an additional 0.37 acres of offsite area tributary to the site.

The proposed site ultimately drains to the southwest of the property as in the existing condition. Proposed Watershed 1 is onsite area that will drain to the onsite through swales and the wet detention basin. Proposed Watershed 2 is onsite area that will flow south to CTH VV R.O.W. undetained. Proposed Watershed 3 is offsite area flowing onsite, to Proposed Watershed 1. Proposed Watershed 3 contains a minimal amount of onsite area. See the table below for more information regarding the proposed watersheds.

Table 3 – Proposed Areas

	Pervious Area (ac)	Impervious Area (ac)	Total Area (ac)
Watershed 1	1.50	1.42	2.92
Watershed 2	0.38	0.02	0.40
Watershed 3	0.15	0.23	0.38

The allowable release rates for the proposed site must be less than the existing peak discharge from the site. The proposed site is designed to meet the Town of Lisbon and Waukesha County requirements for release rates. HydroCAD was used to model and determine the proposed release rates.

A wet detention basin with a culvert is utilized to control the release rates from the proposed development to meet the existing conditions. See the table below for proposed site release rates. Please see the table below comparing the proposed release rates to the existing site release rates.

Table 4 – Proposed Peak Discharge Rates

Site	1-Year Storm	2-Year Storm	10-Year Storm	100-Year Storm
Existing Release Rate (cfs)	1.00	1.54	4.07	10.93
Proposed Release Rate (cfs)	0.52	0.77	1.95	3.85

Proposed site release rates are acceptable as the proposed 1, 2, 10, and 100-year, 24-hour storm release rates are less than the existing 1, 2, 10, and 100-year, 24-hour storm release rates respectively. For further information, please refer to the Proposed Drainage Plan and HydroCAD calculations.

Detention

Stormwater detention is provided by a wet detention basin with a normal water level elevation of 868.50. For the 1-year, 24-hour storm the basin provides 3,841 cf of storage with a high-water level of 869.00. For the 2-year, 24-hour storm the basin provides 4,805 cf of storage with a high-water level of 869.11. For the 10-year, 24-hour storm the basin provides 8,763 cf of storage with a high-water level of 869.56. The basin provides sufficient storage for the 100-year 24-hour storm with a volume of 19,190 cf at a high-water elevation of 870.56.

A 12-inch culvert serves as the outlet to the wet basin and is sufficient in regulating flows to the allowable release rate.

TSS Removal / Water Quality Considerations

WinSLAMM analysis has been completed for the site to determine the percent reduction of TSS. State and Waukesha County code requires 80% TSS reduction for undeveloped sites and 40% TSS reduction for previously developed sites. The existing site has 0.18 acres of developed area (roofs and driveway) and 3.15 acres undeveloped area (mowed lawn and farm field). This results in a weighted removal requirement of 78% TSS reduction for the site. Water quality features on the site have been maximized to best meet the requirements. The proposed site utilizes filter strips, a grass swale, and a wet detention basin to achieve the TSS removal. Please see the image below of the WinSLAMM results from the site.

Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	123544		0.31	123.2	950.0	
Outfall Total with Controls	119345	3.40 %	0.30	27.48	204.7	78.45 %
Current File Output: Annualized Total After Outfall Controls	121003	Years in Model Run:	0.99		207.6	

Based on the above information, a TSS removal rate of 78.45% has been achieved for the proposed site. For more information see attached WinSLAMM calculations and Drainage Plans.

Sumps and snouts are utilized on four catch basins to control petroleum runoff form the site. The snouts act similar to a grease trap, preventing any floatables (oil/debris) from entering the storm sewer. The snouts are paced in series to act as secondary protection against any petroleum that may have passed the upstream snout.

In accordance with state code, infiltration from fueling and maintenance areas is prohibited. Furthermore, due to site restrictions and limited elevation for drainage, infiltration is not feasible.

Storm Sewer

All pipes upstream of the detention system have been evaluated for the 100-year 24-hour storm.

Conclusion

Based on the included analysis and calculations, runoff generated from the proposed development is controlled by the on-site detention facility; therefore, no adverse impacts are anticipated from this development.

HydroCAD Report & Drainage Exhibits

LEGEND

- PROPERTY LINE
- LOT LINE
- EXISTING CONCRETE CURB AND GUTTER TO REMAIN
- IMPERVIOUS AREA (ROAD/PARKING LOT)
- IMPERVIOUS (ROOF)
- GRAVEL AREA
- PERVIOUS AREA

AREAS TOTAL AREA = 3.70 ACRES

WATERSHED 1 = 3.33 ACRES
PERVIOUS AREA = 3.15 ACRES
IMPERVIOUS AREA = 0.18 ACRES
WATERSHED 2 = 0.37 ACRES
PERVIOUS AREA = 0.21 ACRES
IMPERVIOUS AREA = 0.16 ACRES

Tc

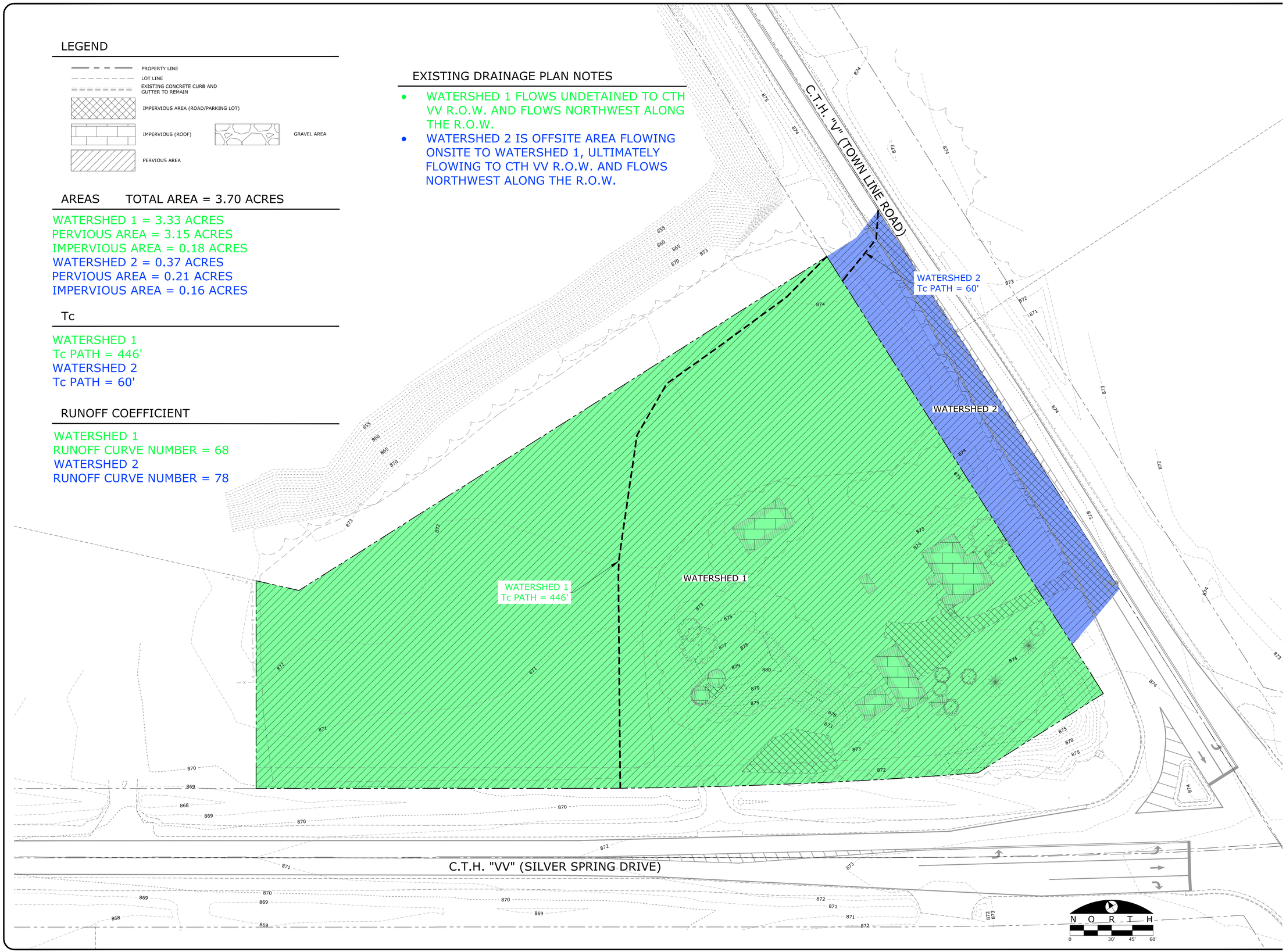
WATERSHED 1
Tc PATH = 446'
WATERSHED 2
Tc PATH = 60'

RUNOFF COEFFICIENT

WATERSHED 1
RUNOFF CURVE NUMBER = 68
WATERSHED 2
RUNOFF CURVE NUMBER = 78

EXISTING DRAINAGE PLAN NOTES

- WATERSHED 1 FLOWS UNDETAINED TO CTH VV R.O.W. AND FLOWS NORTHWEST ALONG THE R.O.W.
- WATERSHED 2 IS OFFSITE AREA FLOWING ONSITE TO WATERSHED 1, ULTIMATELY FLOWING TO CTH VV R.O.W. AND FLOWS NORTHWEST ALONG THE R.O.W.



ARC DESIGN RESOURCES INC.
5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V (TOWN LINE ROAD) AND CTH VV (SILVER SPRINGS DRIVE)
LISBON, WI 53089

CONSULTANTS

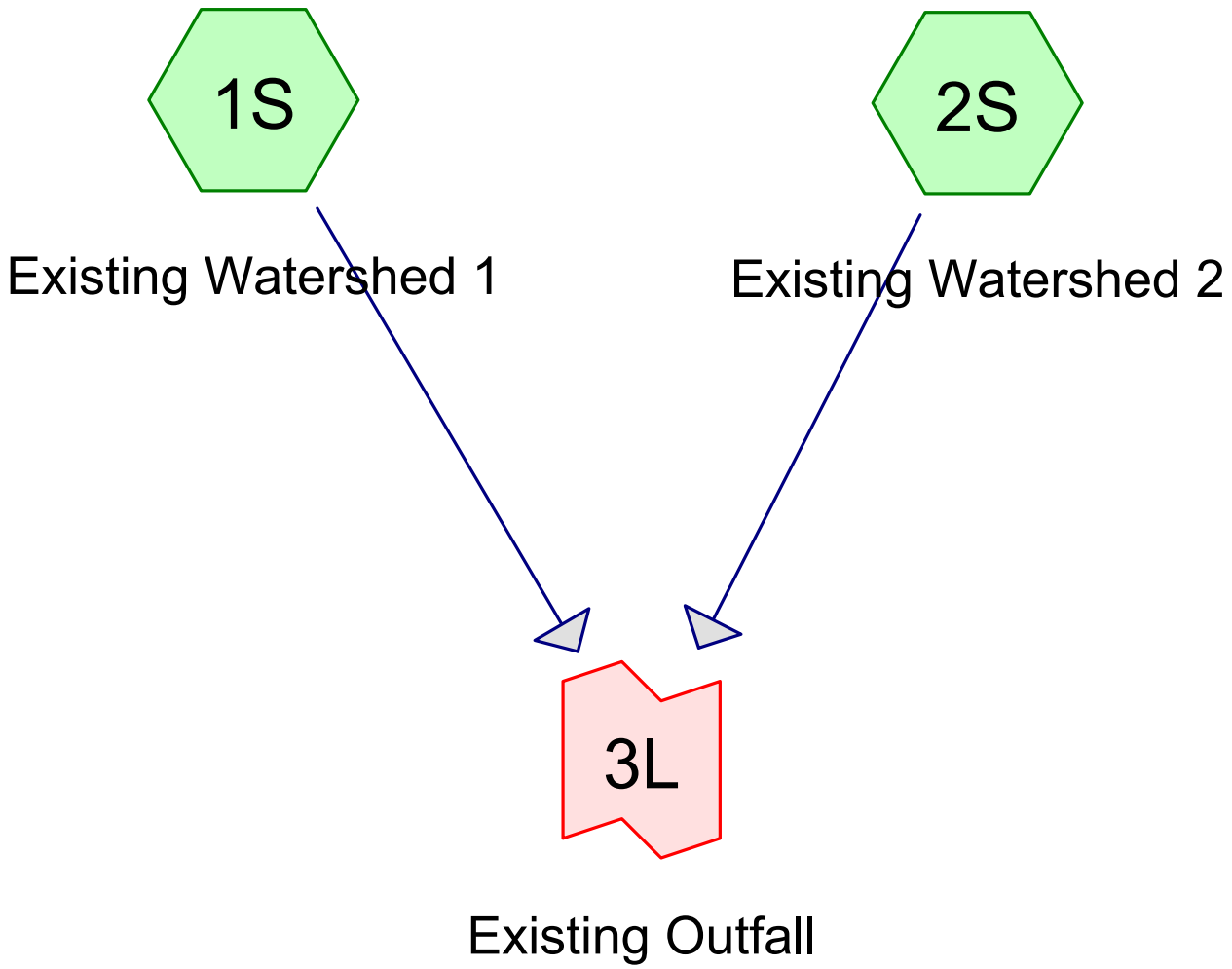
ISSUED FOR | DATE

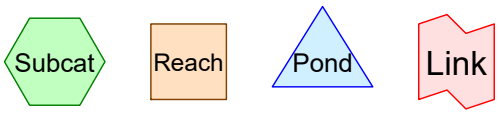
REVISIONS
ITEM | DATE

SHEET TITLE
EXISTING DRAINAGE PLAN

DRAWN BJL
CHECKED
PM RCS

PROJECT NUMBER
SHEET NUMBER
17176
EX 1





Routing Diagram for Existing Watershed
Prepared by Arc Design Resources, Inc., Printed 5/25/2018
HydroCAD® 10.00-21 s/n M04189 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.940	69	Cropland (1S, 2S)
1.420	61	Grassland/meadow (1S, 2S)
0.340	98	Impervious Area (1S, 2S)
3.700	**69**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Watershed 1 Runoff Area=3.330 ac 5.41% Impervious Runoff Depth>0.29"
Flow Length=446' Tc=20.9 min CN=68 Runoff=0.83 cfs 0.082 af

Subcatchment 2S: Existing Watershed 2 Runoff Area=0.370 ac 43.24% Impervious Runoff Depth>0.65"
Flow Length=60' Tc=10.1 min CN=78 Runoff=0.39 cfs 0.020 af

Link 3L: Existing Outfall Inflow=1.00 cfs 0.102 af
Primary=1.00 cfs 0.102 af

Total Runoff Area = 3.700 ac Runoff Volume = 0.102 af Average Runoff Depth = 0.33"
90.81% Pervious = 3.360 ac 9.19% Impervious = 0.340 ac

Summary for Subcatchment 1S: Existing Watershed 1

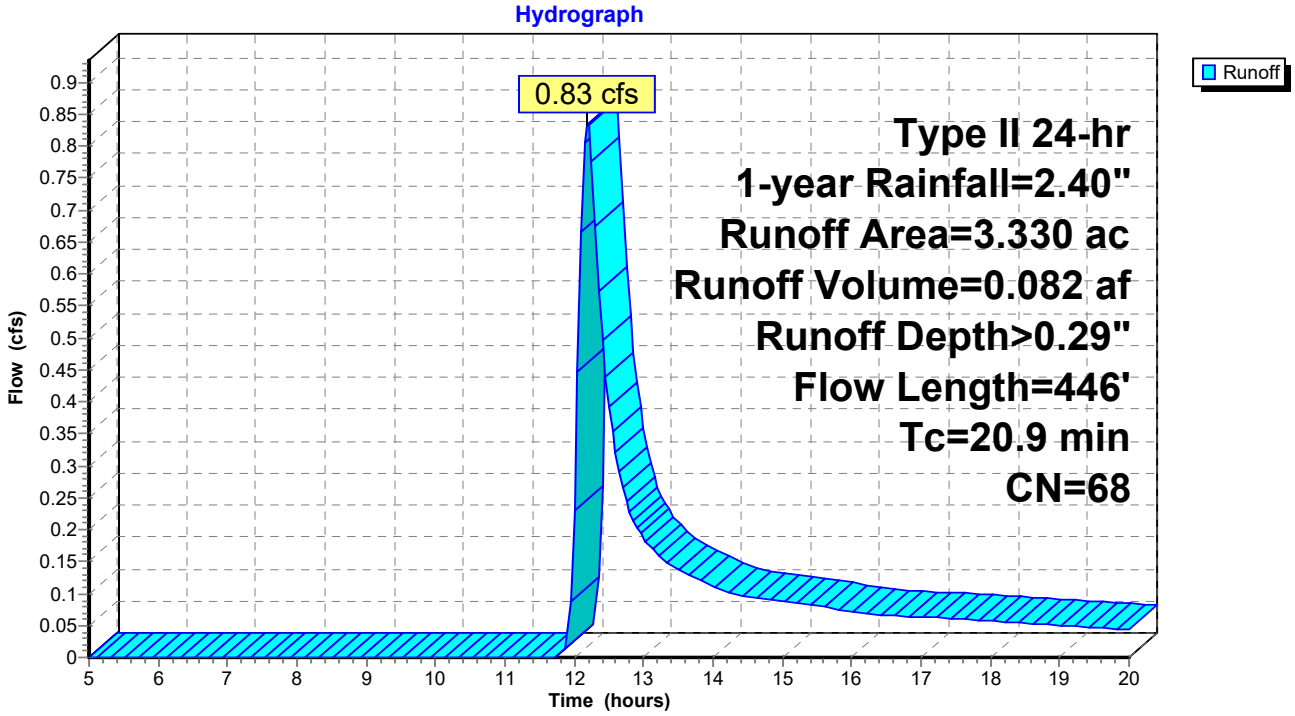
Runoff = 0.83 cfs @ 12.19 hrs, Volume= 0.082 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-year Rainfall=2.40"

	Area (ac)	CN	Description
*	1.900	69	Cropland
*	1.250	61	Grassland/meadow
*	0.180	98	Impervious Area
	3.330	68	Weighted Average
	3.150		94.59% Pervious Area
	0.180		5.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.8	346	0.0090	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.9	446	Total			

Subcatchment 1S: Existing Watershed 1



Summary for Subcatchment 2S: Existing Watershed 2

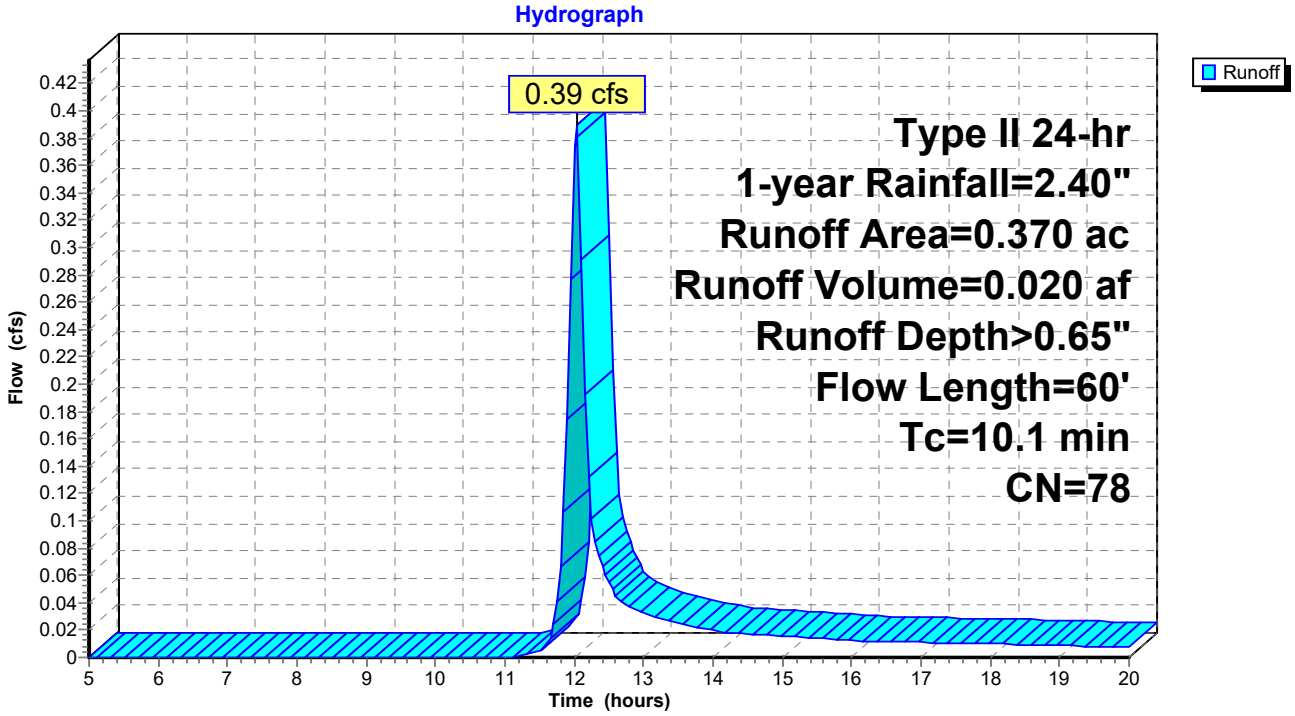
Runoff = 0.39 cfs @ 12.03 hrs, Volume= 0.020 af, Depth> 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-year Rainfall=2.40"

	Area (ac)	CN	Description
*	0.040	69	Cropland
*	0.170	61	Grassland/meadow
*	0.160	98	Impervious Area
	0.370	78	Weighted Average
	0.210		56.76% Pervious Area
	0.160		43.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
9.8	45	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
10.1	60	Total			

Subcatchment 2S: Existing Watershed 2

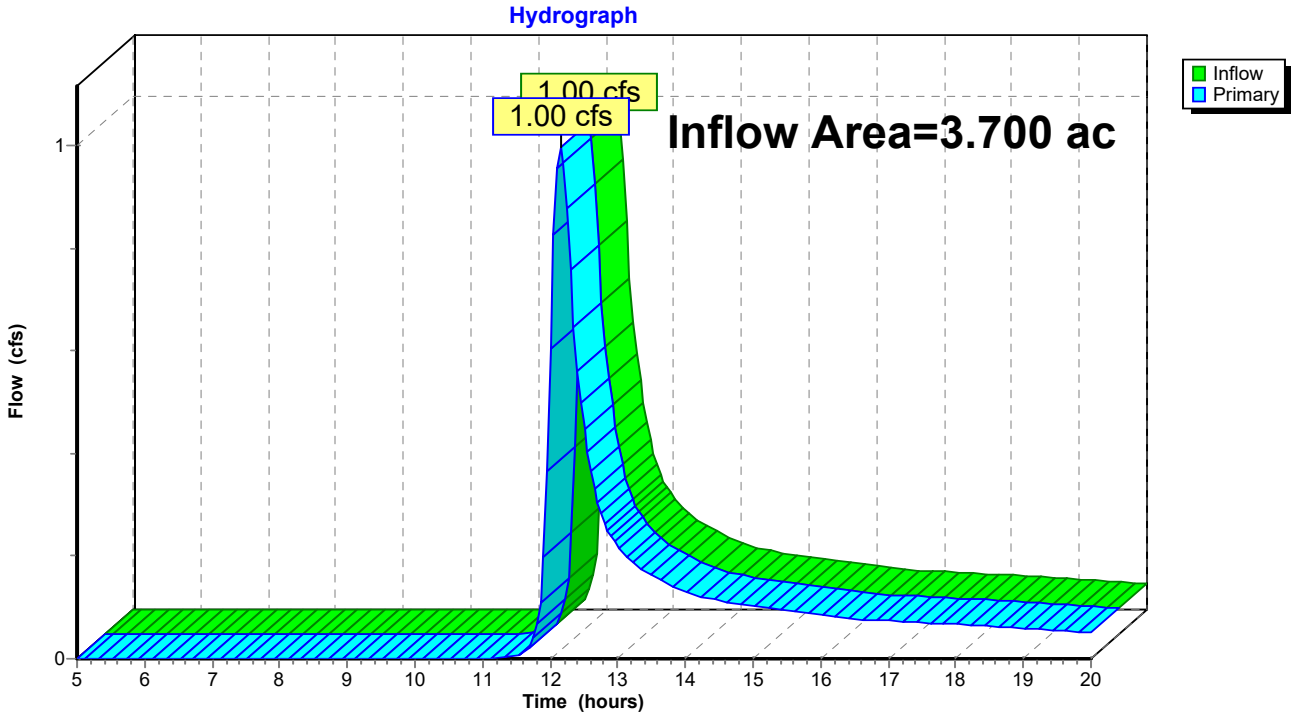


Summary for Link 3L: Existing Outfall

Inflow Area = 3.700 ac, 9.19% Impervious, Inflow Depth > 0.33" for 1-year event
Inflow = 1.00 cfs @ 12.15 hrs, Volume= 0.102 af
Primary = 1.00 cfs @ 12.15 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Existing Outfall



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Watershed 1 Runoff Area=3.330 ac 5.41% Impervious Runoff Depth>0.41"
Flow Length=446' Tc=20.9 min CN=68 Runoff=1.31 cfs 0.115 af

Subcatchment 2S: Existing Watershed 2 Runoff Area=0.370 ac 43.24% Impervious Runoff Depth>0.83"
Flow Length=60' Tc=10.1 min CN=78 Runoff=0.50 cfs 0.026 af

Link 3L: Existing Outfall Inflow=1.54 cfs 0.141 af
Primary=1.54 cfs 0.141 af

Total Runoff Area = 3.700 ac Runoff Volume = 0.141 af Average Runoff Depth = 0.46"
90.81% Pervious = 3.360 ac 9.19% Impervious = 0.340 ac

Summary for Subcatchment 1S: Existing Watershed 1

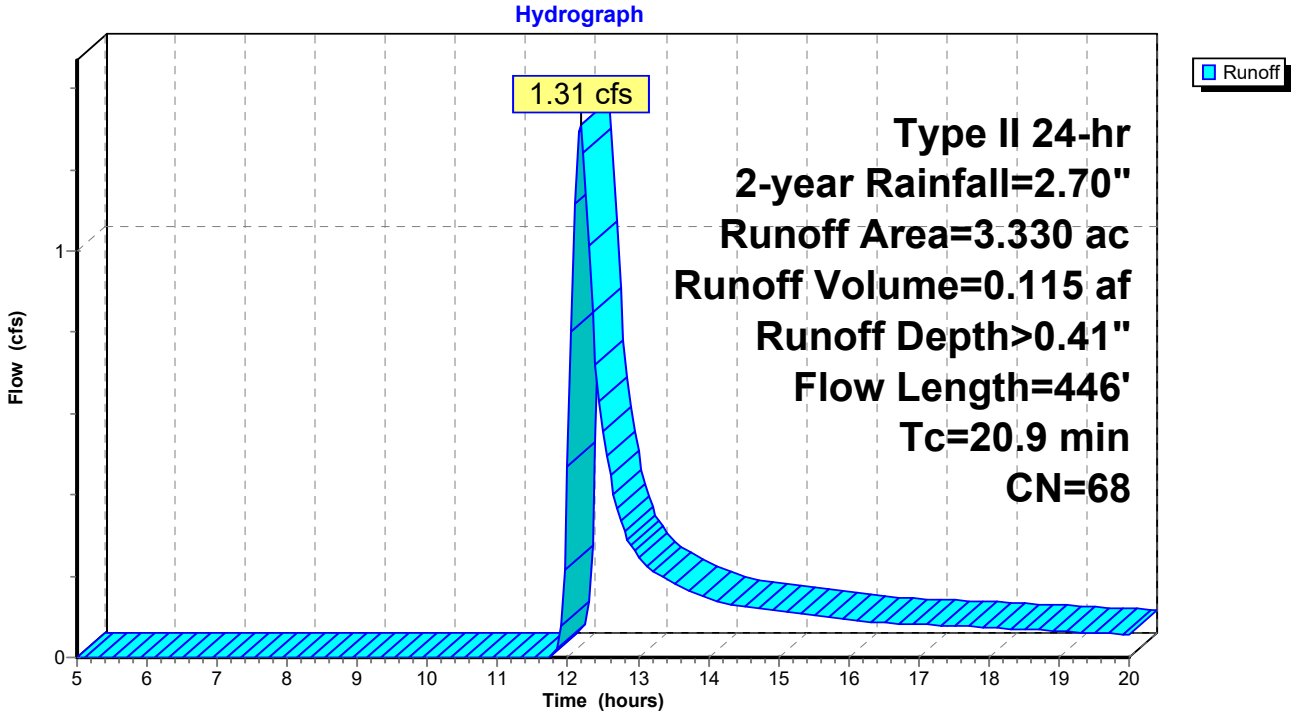
Runoff = 1.31 cfs @ 12.18 hrs, Volume= 0.115 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-year Rainfall=2.70"

	Area (ac)	CN	Description
*	1.900	69	Cropland
*	1.250	61	Grassland/meadow
*	0.180	98	Impervious Area
	3.330	68	Weighted Average
	3.150		94.59% Pervious Area
	0.180		5.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.8	346	0.0090	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.9	446	Total			

Subcatchment 1S: Existing Watershed 1



Summary for Subcatchment 2S: Existing Watershed 2

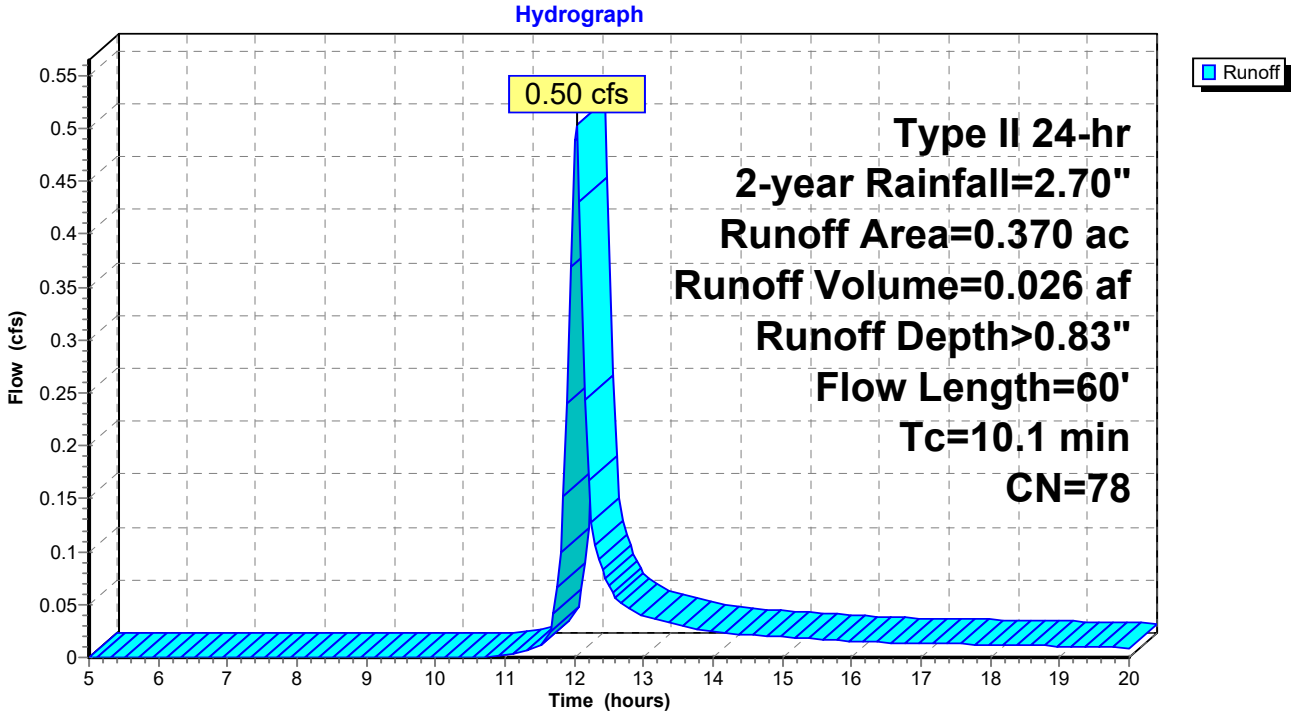
Runoff = 0.50 cfs @ 12.03 hrs, Volume= 0.026 af, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-year Rainfall=2.70"

	Area (ac)	CN	Description
*	0.040	69	Cropland
*	0.170	61	Grassland/meadow
*	0.160	98	Impervious Area
	0.370	78	Weighted Average
	0.210		56.76% Pervious Area
	0.160		43.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
9.8	45	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
10.1	60	Total			

Subcatchment 2S: Existing Watershed 2

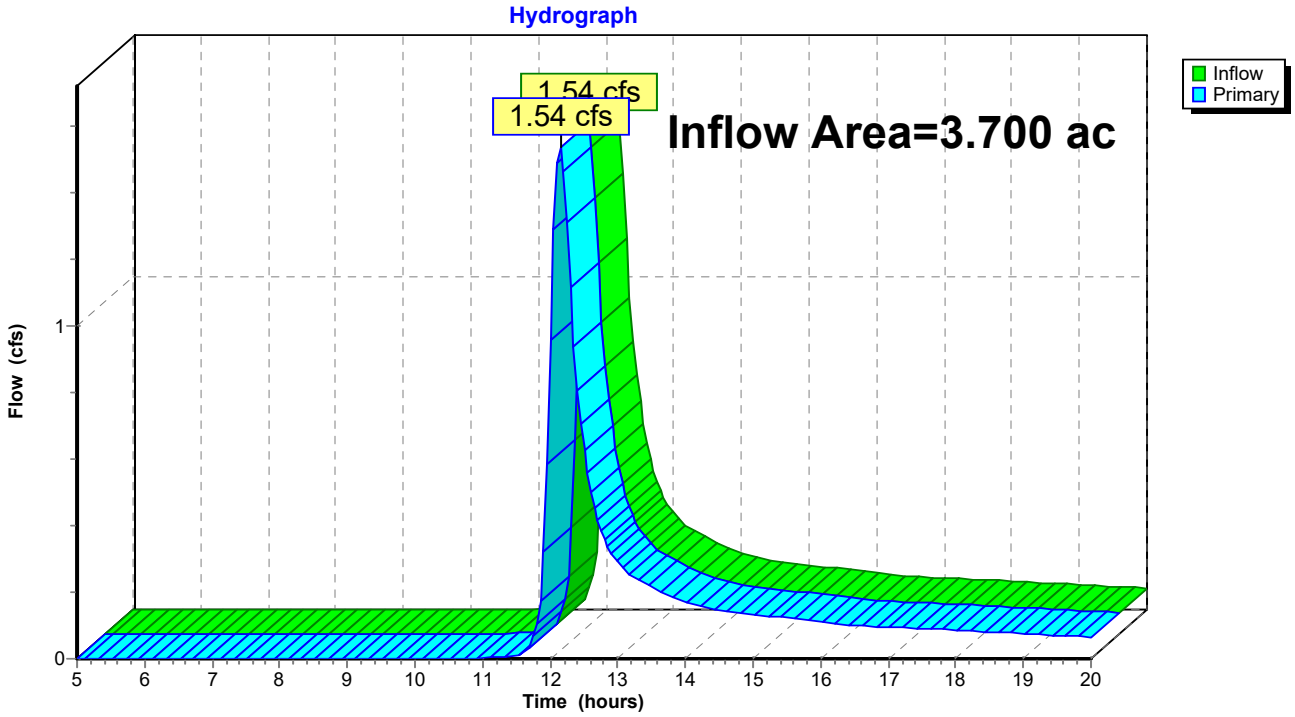


Summary for Link 3L: Existing Outfall

Inflow Area = 3.700 ac, 9.19% Impervious, Inflow Depth > 0.46" for 2-year event
Inflow = 1.54 cfs @ 12.15 hrs, Volume= 0.141 af
Primary = 1.54 cfs @ 12.15 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Existing Outfall



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Watershed 1 Runoff Area=3.330 ac 5.41% Impervious Runoff Depth>0.97"
Flow Length=446' Tc=20.9 min CN=68 Runoff=3.59 cfs 0.268 af

Subcatchment 2S: Existing Watershed 2 Runoff Area=0.370 ac 43.24% Impervious Runoff Depth>1.59"
Flow Length=60' Tc=10.1 min CN=78 Runoff=0.97 cfs 0.049 af

Link 3L: Existing Outfall Inflow=4.07 cfs 0.317 af
Primary=4.07 cfs 0.317 af

Total Runoff Area = 3.700 ac Runoff Volume = 0.317 af Average Runoff Depth = 1.03"
90.81% Pervious = 3.360 ac 9.19% Impervious = 0.340 ac

Summary for Subcatchment 1S: Existing Watershed 1

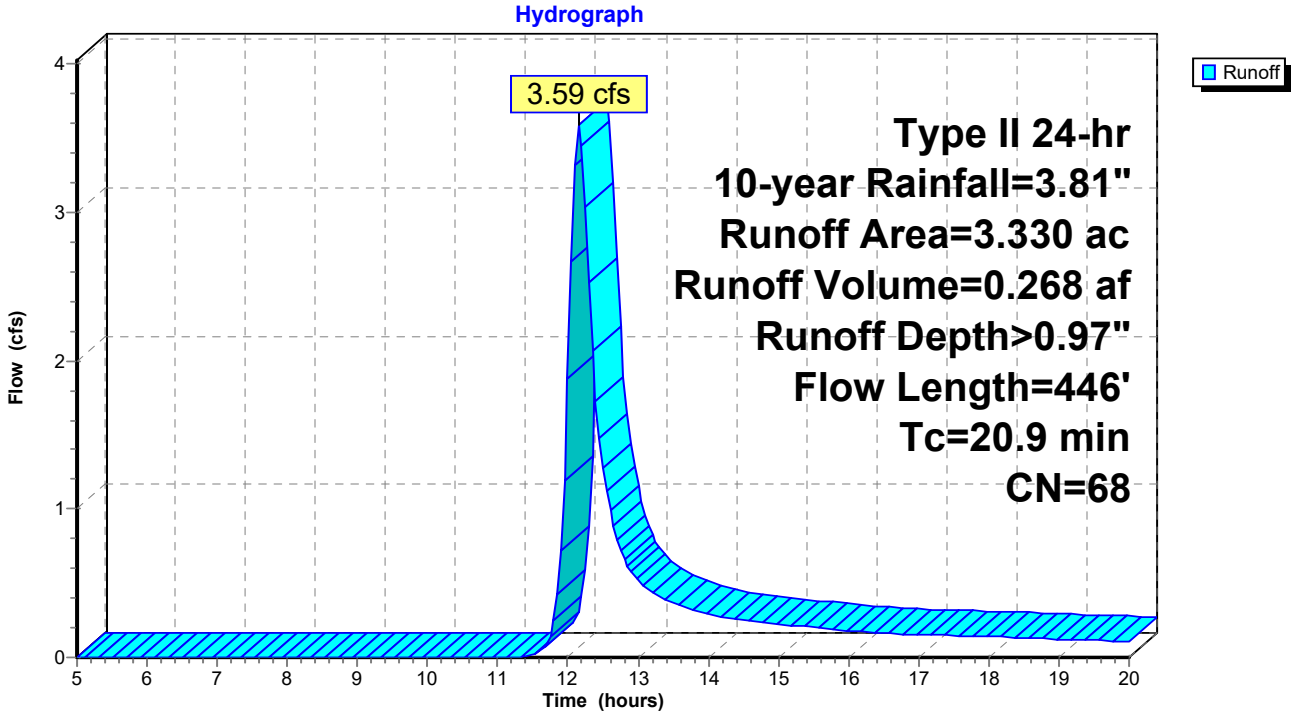
Runoff = 3.59 cfs @ 12.16 hrs, Volume= 0.268 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-year Rainfall=3.81"

	Area (ac)	CN	Description
*	1.900	69	Cropland
*	1.250	61	Grassland/meadow
*	0.180	98	Impervious Area
	3.330	68	Weighted Average
	3.150		94.59% Pervious Area
	0.180		5.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.8	346	0.0090	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.9	446	Total			

Subcatchment 1S: Existing Watershed 1



Summary for Subcatchment 2S: Existing Watershed 2

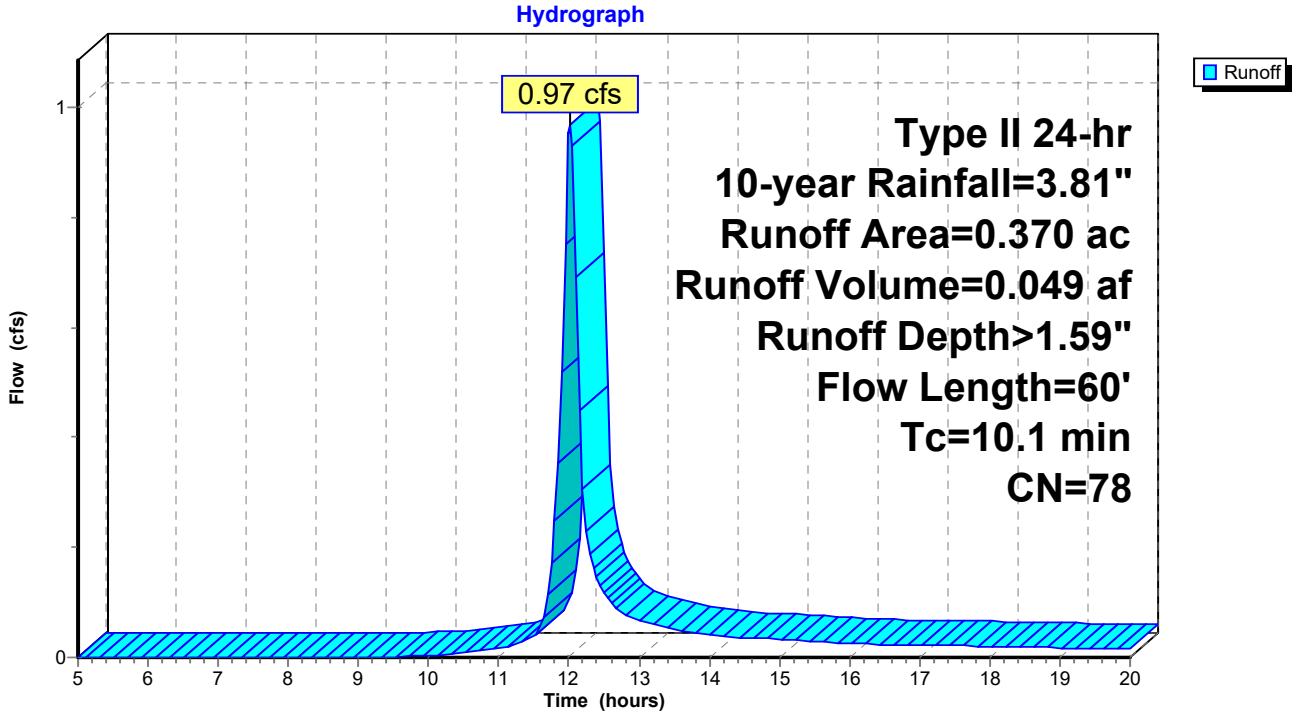
Runoff = 0.97 cfs @ 12.02 hrs, Volume= 0.049 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-year Rainfall=3.81"

	Area (ac)	CN	Description
*	0.040	69	Cropland
*	0.170	61	Grassland/meadow
*	0.160	98	Impervious Area
	0.370	78	Weighted Average
	0.210		56.76% Pervious Area
	0.160		43.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
9.8	45	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
10.1	60	Total			

Subcatchment 2S: Existing Watershed 2

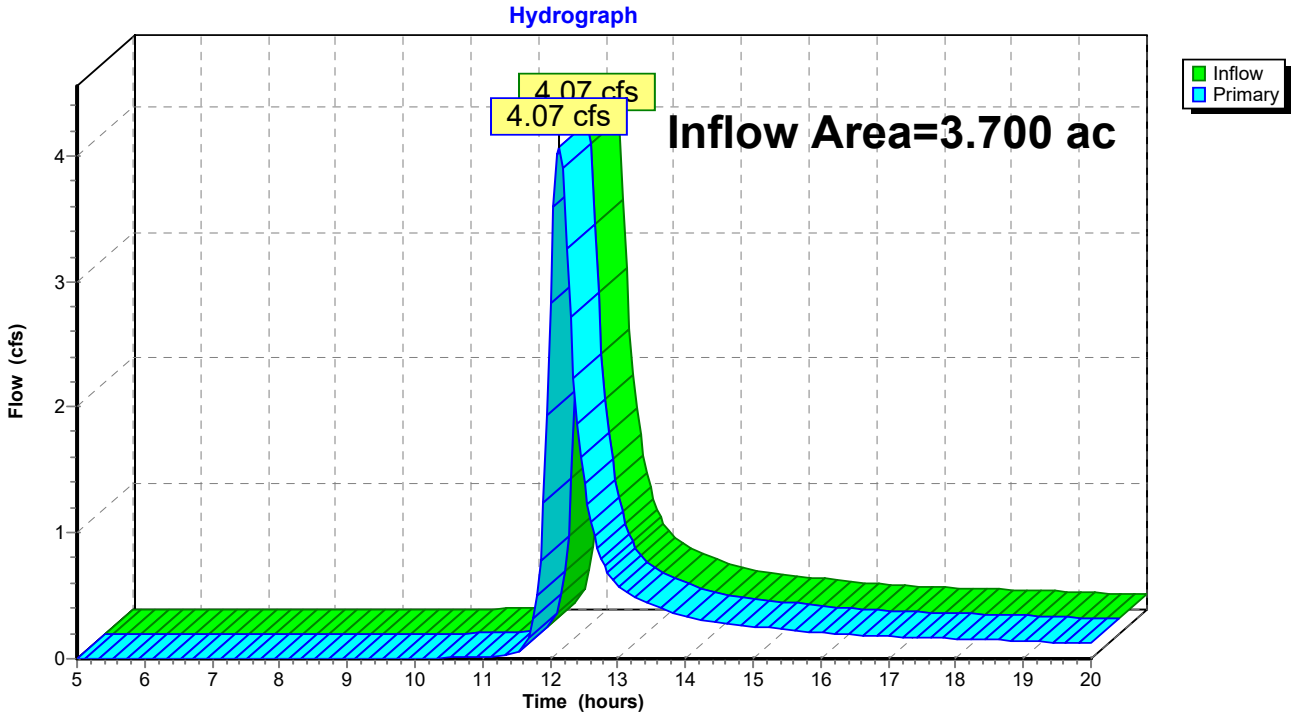


Summary for Link 3L: Existing Outfall

Inflow Area = 3.700 ac, 9.19% Impervious, Inflow Depth > 1.03" for 10-year event
Inflow = 4.07 cfs @ 12.13 hrs, Volume= 0.317 af
Primary = 4.07 cfs @ 12.13 hrs, Volume= 0.317 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Existing Outfall



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing Watershed 1 Runoff Area=3.330 ac 5.41% Impervious Runoff Depth>2.51"
Flow Length=446' Tc=20.9 min CN=68 Runoff=9.82 cfs 0.697 af

Subcatchment 2S: Existing Watershed 2 Runoff Area=0.370 ac 43.24% Impervious Runoff Depth>3.47"
Flow Length=60' Tc=10.1 min CN=78 Runoff=2.07 cfs 0.107 af

Link 3L: Existing Outfall Inflow=10.93 cfs 0.804 af
Primary=10.93 cfs 0.804 af

Total Runoff Area = 3.700 ac Runoff Volume = 0.804 af Average Runoff Depth = 2.61"
90.81% Pervious = 3.360 ac 9.19% Impervious = 0.340 ac

Summary for Subcatchment 1S: Existing Watershed 1

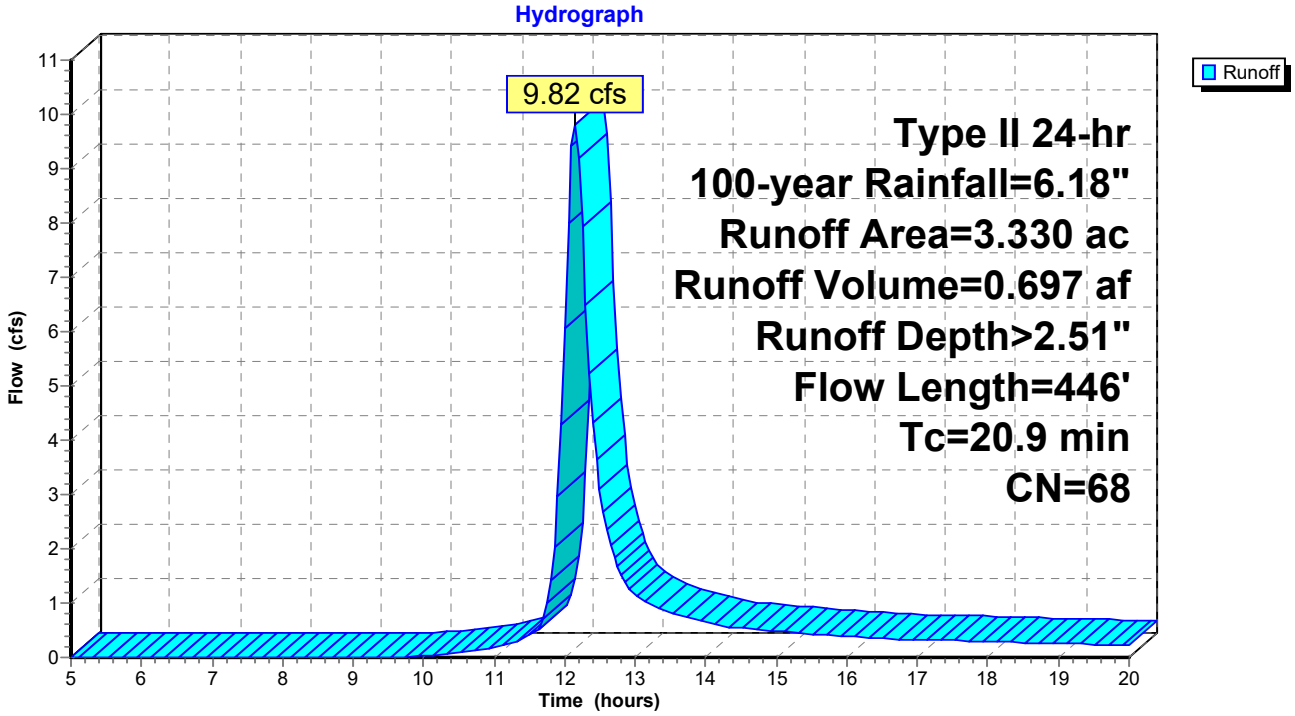
Runoff = 9.82 cfs @ 12.14 hrs, Volume= 0.697 af, Depth> 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-year Rainfall=6.18"

	Area (ac)	CN	Description
*	1.900	69	Cropland
*	1.250	61	Grassland/meadow
*	0.180	98	Impervious Area
	3.330	68	Weighted Average
	3.150		94.59% Pervious Area
	0.180		5.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	100	0.0100	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
6.8	346	0.0090	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
20.9	446	Total			

Subcatchment 1S: Existing Watershed 1



Summary for Subcatchment 2S: Existing Watershed 2

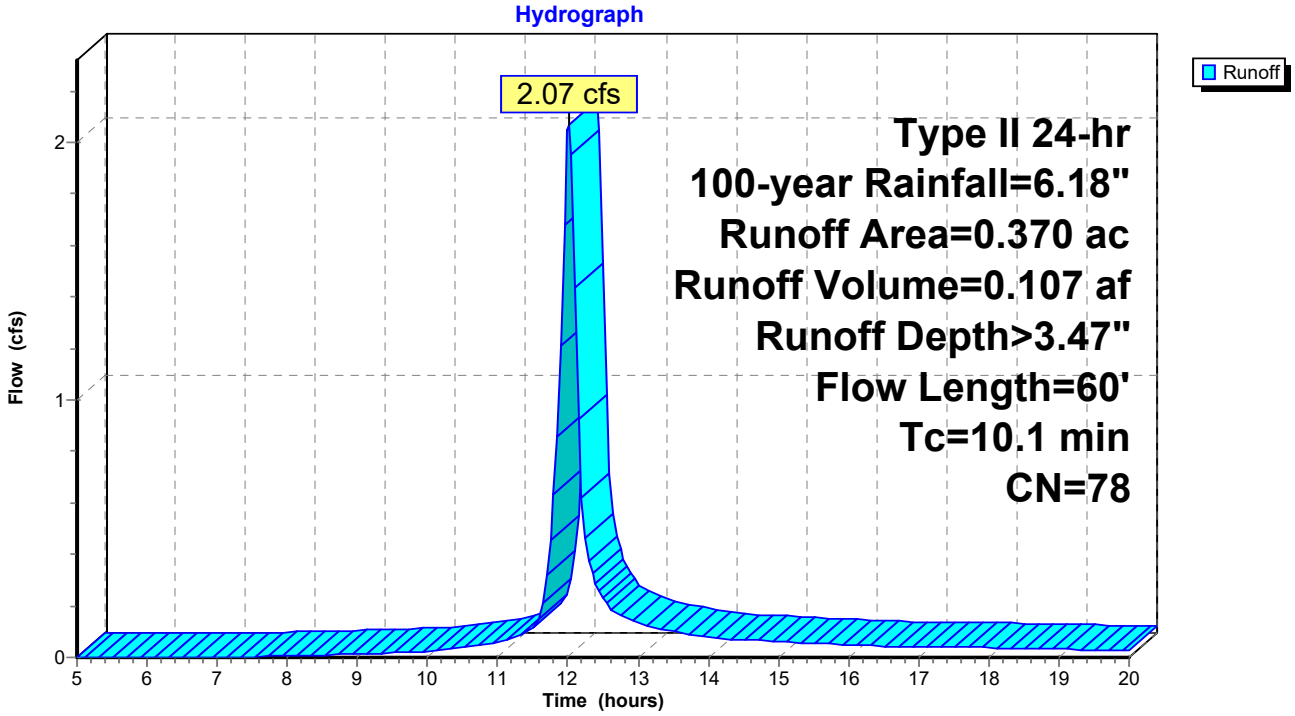
Runoff = 2.07 cfs @ 12.01 hrs, Volume= 0.107 af, Depth> 3.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-year Rainfall=6.18"

	Area (ac)	CN	Description
*	0.040	69	Cropland
*	0.170	61	Grassland/meadow
*	0.160	98	Impervious Area
	0.370	78	Weighted Average
	0.210		56.76% Pervious Area
	0.160		43.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.86		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
9.8	45	0.0050	0.08		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
10.1	60	Total			

Subcatchment 2S: Existing Watershed 2

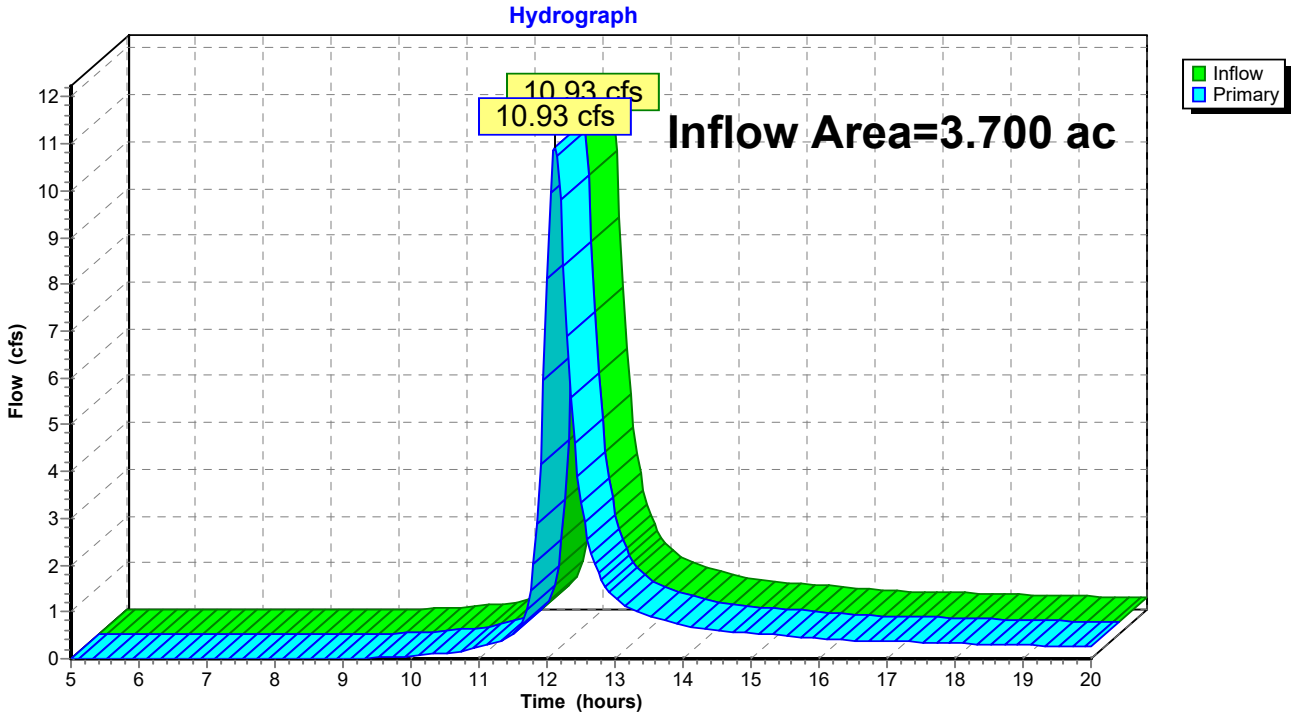


Summary for Link 3L: Existing Outfall

Inflow Area = 3.700 ac, 9.19% Impervious, Inflow Depth > 2.61" for 100-year event
Inflow = 10.93 cfs @ 12.12 hrs, Volume= 0.804 af
Primary = 10.93 cfs @ 12.12 hrs, Volume= 0.804 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link 3L: Existing Outfall



LEGEND

- PROPERTY LINE
- LOT LINE
- EXISTING CONCRETE CURB AND GUTTER TO REMAIN
- IMPERVIOUS AREA (ROAD/PARKING LOT)
- IMPERVIOUS (ROOF)
- GRAVEL AREA
- PERVIOUS AREA

AREAS TOTAL AREA = 3.70 ACRES

WATERSHED 1 = 2.92 ACRES
PERVIOUS AREA = 1.50 ACRES
IMPERVIOUS AREA = 1.42 ACRES
WATERSHED 2 = 0.40 ACRES
PERVIOUS AREA = 0.38 ACRES
IMPERVIOUS AREA = 0.02 ACRES
WATERSHED 3 = 0.38 ACRES
PERVIOUS AREA = 0.15 ACRES
IMPERVIOUS AREA = 0.23 ACRES

Tc

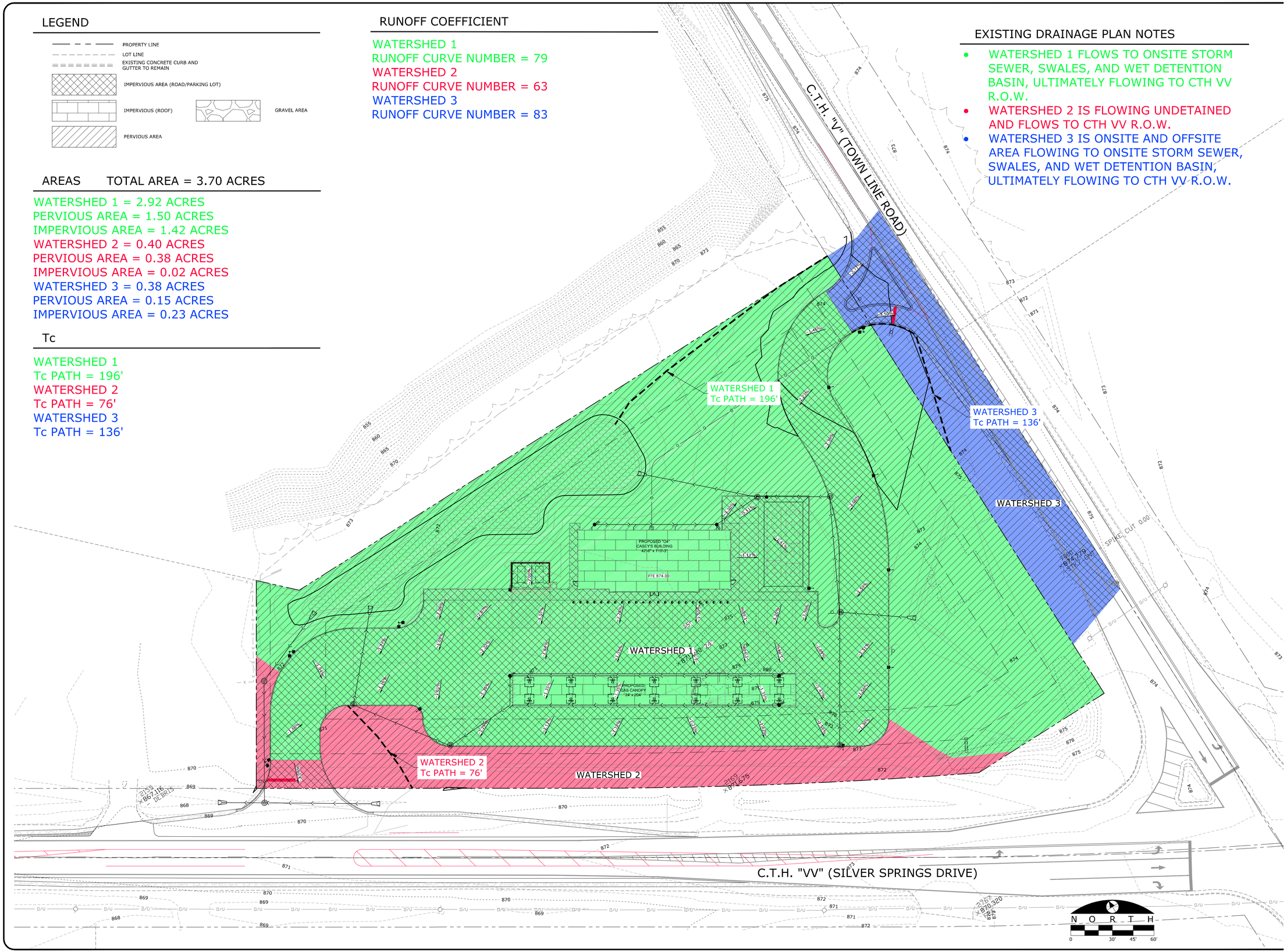
WATERSHED 1
Tc PATH = 196'
WATERSHED 2
Tc PATH = 76'
WATERSHED 3
Tc PATH = 136'

RUNOFF COEFFICIENT

WATERSHED 1
RUNOFF CURVE NUMBER = 79
WATERSHED 2
RUNOFF CURVE NUMBER = 63
WATERSHED 3
RUNOFF CURVE NUMBER = 83

EXISTING DRAINAGE PLAN NOTES

- WATERSHED 1 FLOWS TO ONSITE STORM SEWER, SWALES, AND WET DETENTION BASIN, ULTIMATELY FLOWING TO CTH VV R.O.W.
- WATERSHED 2 IS FLOWING UNDETAINED AND FLOWS TO CTH VV R.O.W.
- WATERSHED 3 IS ONSITE AND OFFSITE AREA FLOWING TO ONSITE STORM SEWER, SWALES, AND WET DETENTION BASIN, ULTIMATELY FLOWING TO CTH VV R.O.W.



ARC DESIGN RESOURCES INC.
5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE
NW CORNER OF CTH V (TOWN LINE ROAD) AND CTH VV (SILVER SPRINGS DRIVE)
LISBON, WI 53089

CONSULTANTS

ISSUED FOR

	DATE

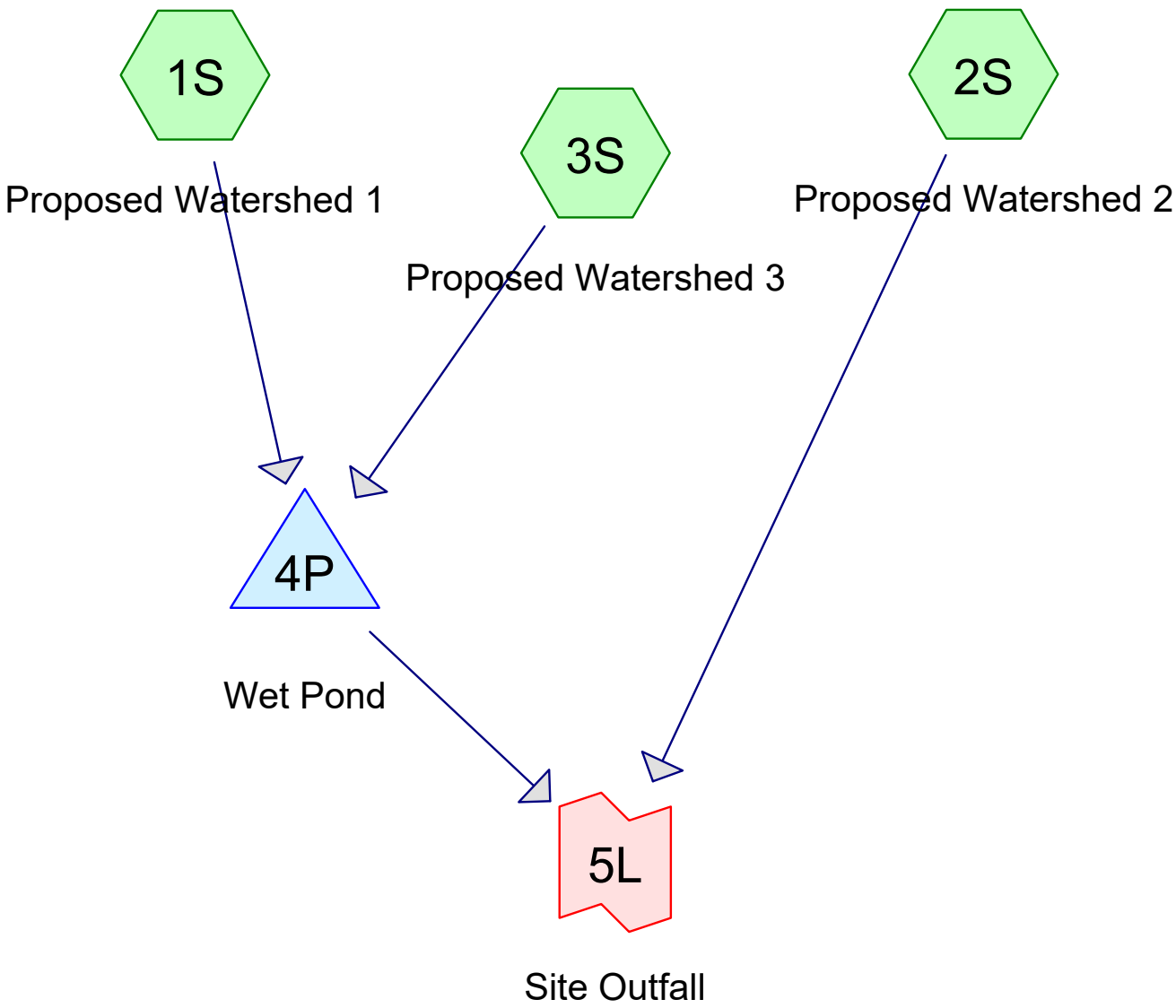
REVISIONS

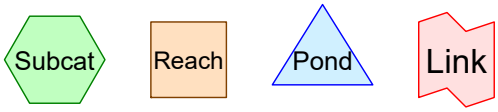
ITEM	DATE

SHEET TITLE
PROPOSED DRAINAGE PLAN

DRAWN	BJL
CHECKED	
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
EX 2





Routing Diagram for Proposed Watershed
Prepared by Arc Design Resources, Inc., Printed 7/19/2018
HydroCAD® 10.00-21 s/n M04189 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.030	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S)
1.450	98	Paved parking, HSG B (1S, 2S, 3S)
0.220	98	Roofs, HSG B (1S)
3.700	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.700	HSG B	1S, 2S, 3S
0.000	HSG C	
0.000	HSG D	
0.000	Other	
3.700		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	2.030	0.000	0.000	0.000	2.030	>75% Grass cover, Good	1S, 2S, 3S
0.000	1.450	0.000	0.000	0.000	1.450	Paved parking	1S, 2S, 3S
0.000	0.220	0.000	0.000	0.000	0.220	Roofs	1S
0.000	**3.700**	**0.000**	**0.000**	**0.000**	**3.700**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	4P	868.50	868.40	62.0	0.0016	0.013	12.0	0.0	0.0

Summary for Subcatchment 1S: Proposed Watershed 1

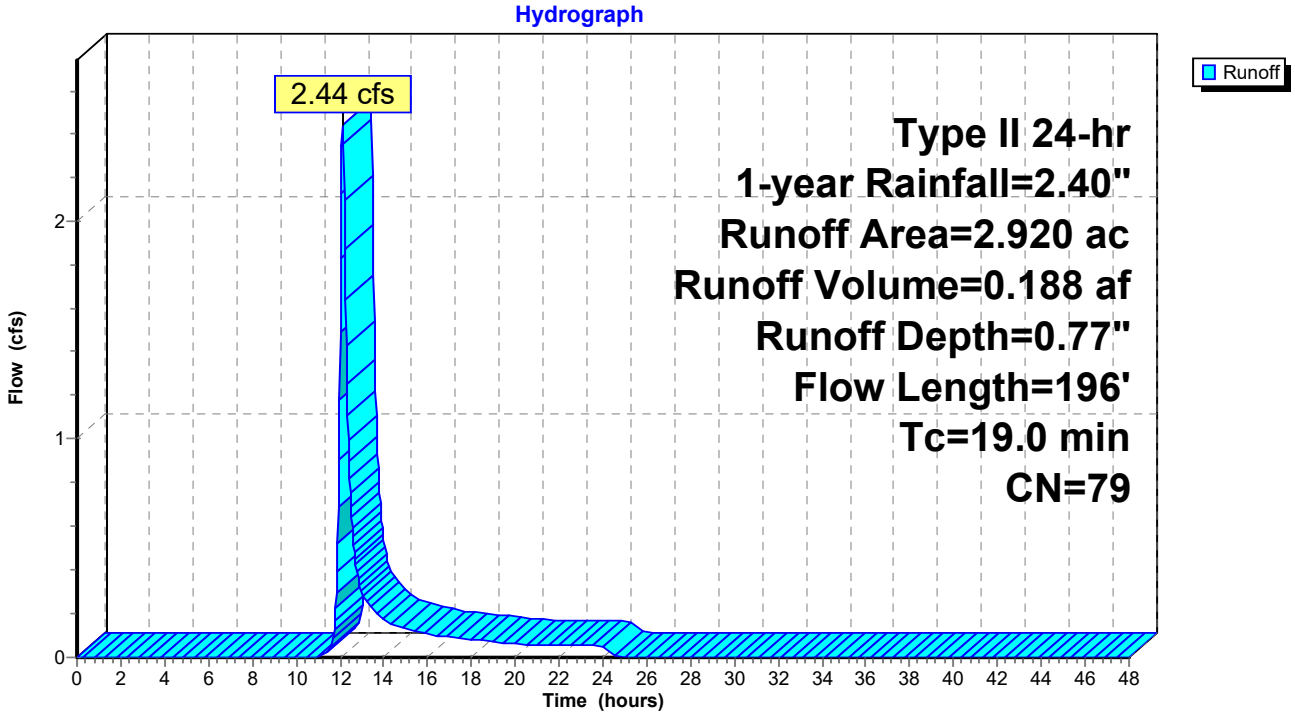
Runoff = 2.44 cfs @ 12.13 hrs, Volume= 0.188 af, Depth= 0.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-year Rainfall=2.40"

Area (ac)	CN	Description
1.500	61	>75% Grass cover, Good, HSG B
1.200	98	Paved parking, HSG B
0.220	98	Roofs, HSG B
2.920	79	Weighted Average
1.500		51.37% Pervious Area
1.420		48.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	96	0.0520	3.67		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
19.0	196	Total			

Subcatchment 1S: Proposed Watershed 1



Summary for Subcatchment 2S: Proposed Watershed 2

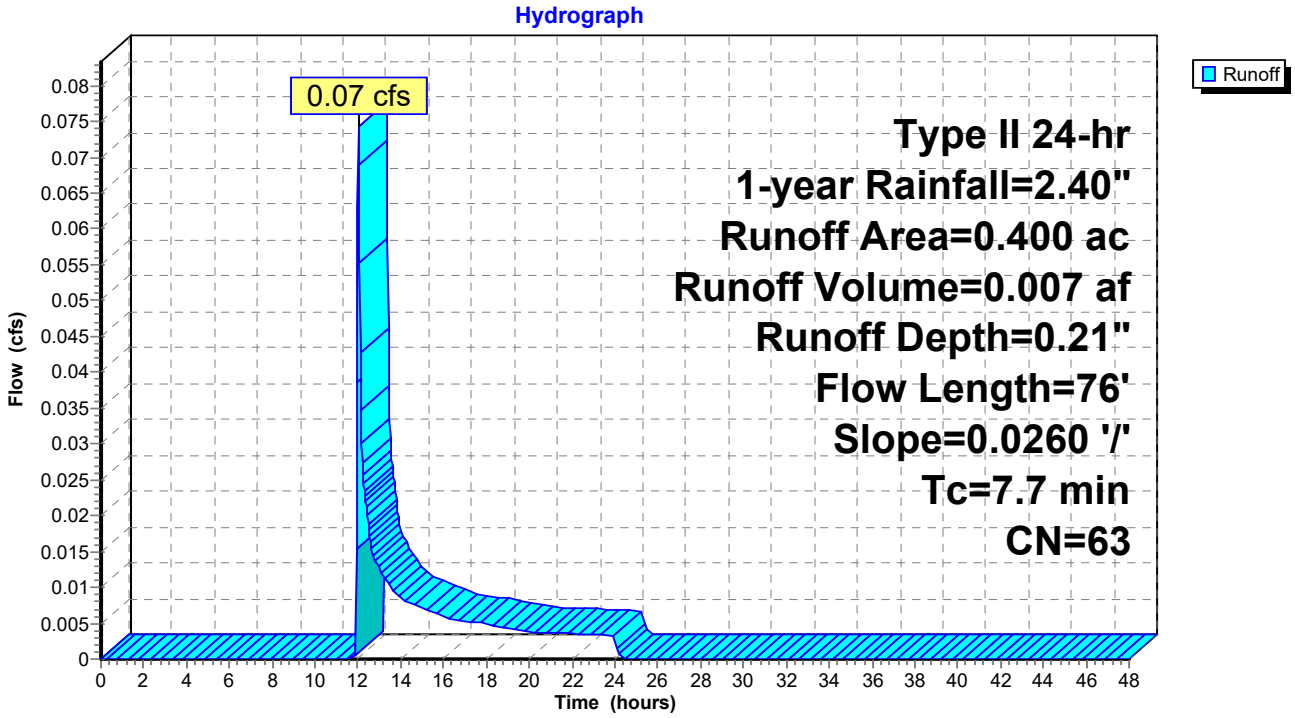
Runoff = 0.07 cfs @ 12.04 hrs, Volume= 0.007 af, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-year Rainfall=2.40"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.020	98	Paved parking, HSG B
0.400	63	Weighted Average
0.380		95.00% Pervious Area
0.020		5.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	76	0.0260	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 2S: Proposed Watershed 2



Summary for Subcatchment 3S: Proposed Watershed 3

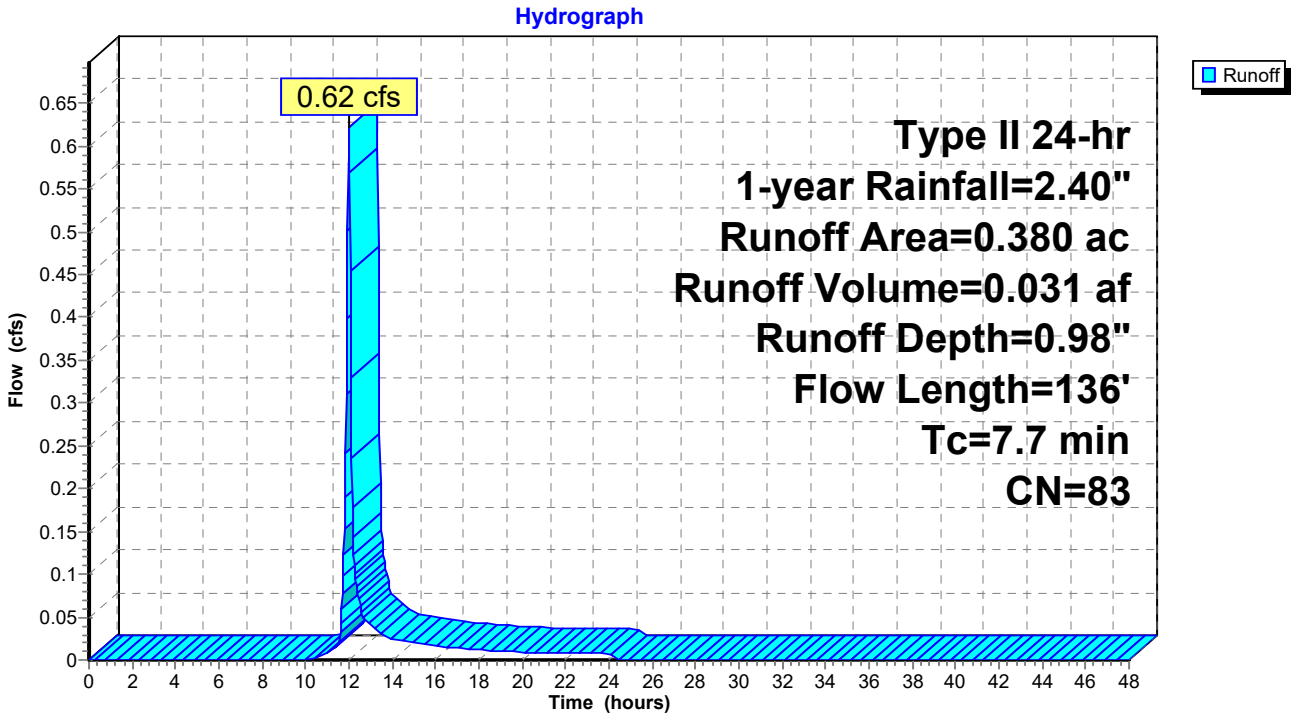
Runoff = 0.62 cfs @ 12.00 hrs, Volume= 0.031 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 1-year Rainfall=2.40"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG B
0.150	61	>75% Grass cover, Good, HSG B
0.380	83	Weighted Average
0.150		39.47% Pervious Area
0.230		60.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	51	0.0350	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
6.8	49	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	36	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	136	Total			

Subcatchment 3S: Proposed Watershed 3



Summary for Pond 4P: Wet Pond

Inflow Area = 3.300 ac, 50.00% Impervious, Inflow Depth = 0.80" for 1-year event
Inflow = 2.68 cfs @ 12.11 hrs, Volume= 0.219 af
Outflow = 0.50 cfs @ 12.69 hrs, Volume= 0.212 af, Atten= 81%, Lag= 35.3 min
Primary = 0.50 cfs @ 12.69 hrs, Volume= 0.212 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 869.00' @ 12.69 hrs Surf.Area= 8,215 sf Storage= 3,841 cf

Plug-Flow detention time= 216.2 min calculated for 0.212 af (97% of inflow)
Center-of-Mass det. time= 199.8 min (1,067.5 - 867.7)

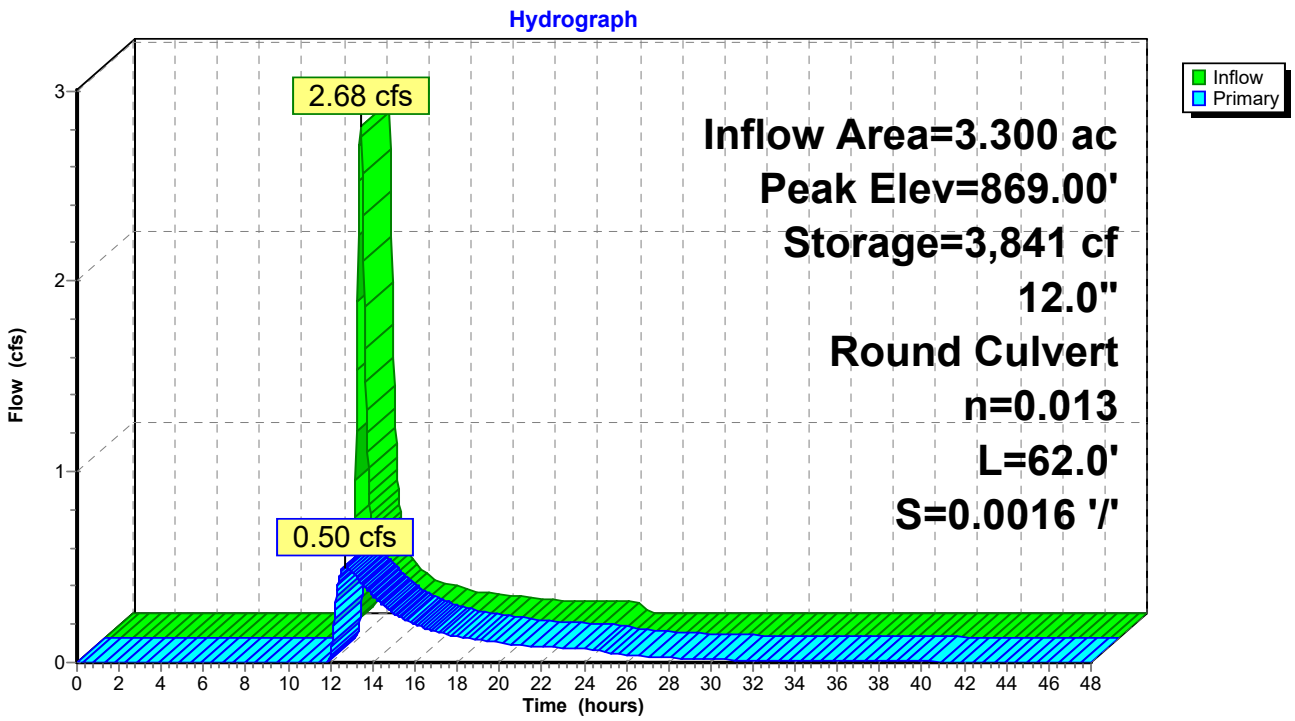
Volume	Invert	Avail.Storage	Storage Description
#1	868.50'	30,897 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
868.50	7,295	589.0	0	0	7,295
869.50	9,208	623.0	8,233	8,233	10,630
870.50	11,306	662.0	10,239	18,472	14,669
871.50	13,578	698.0	12,425	30,897	18,624

Device	Routing	Invert	Outlet Devices
#1	Primary	868.50'	**12.0" Round RCP_Round 12"** L= 62.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 868.50' / 868.40' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.50 cfs @ 12.69 hrs HW=869.00' (Free Discharge)
└─**1=RCP_Round 12"** (Barrel Controls 0.50 cfs @ 1.88 fps)

Pond 4P: Wet Pond

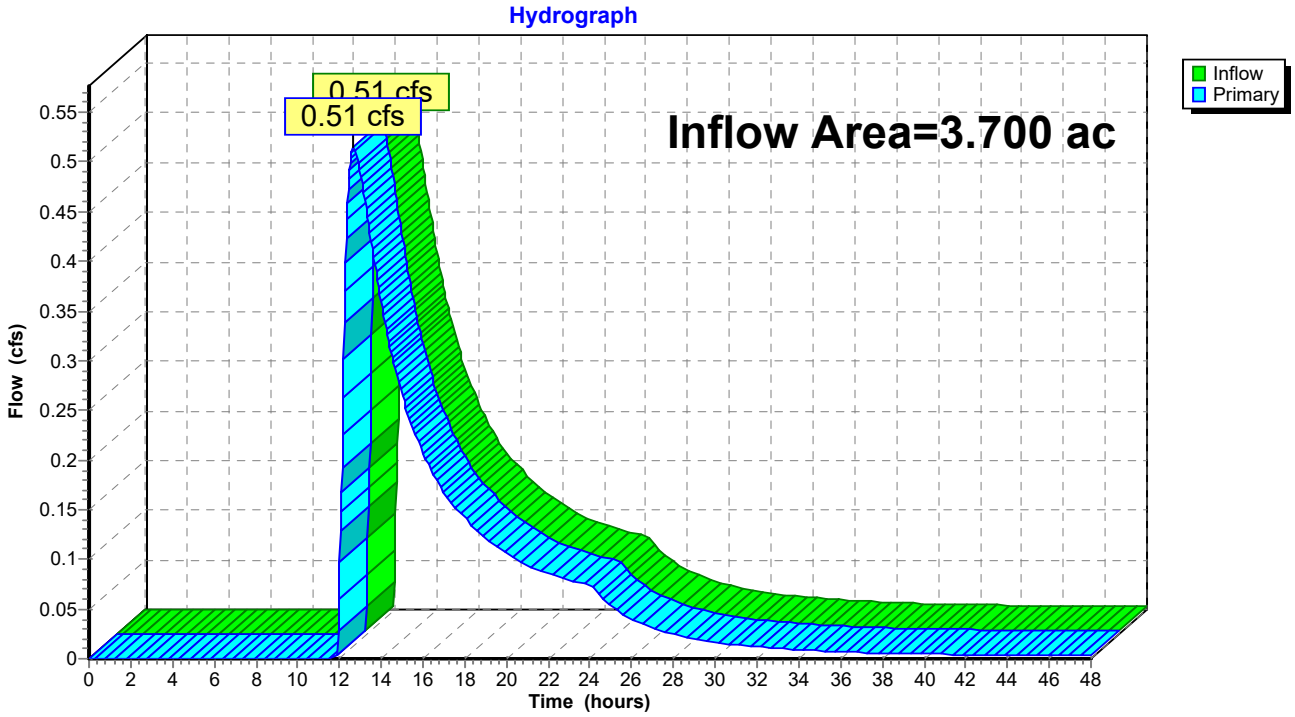


Summary for Link 5L: Site Outfall

Inflow Area = 3.700 ac, 45.14% Impervious, Inflow Depth > 0.71" for 1-year event
Inflow = 0.51 cfs @ 12.68 hrs, Volume= 0.219 af
Primary = 0.51 cfs @ 12.68 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link 5L: Site Outfall



Summary for Subcatchment 1S: Proposed Watershed 1

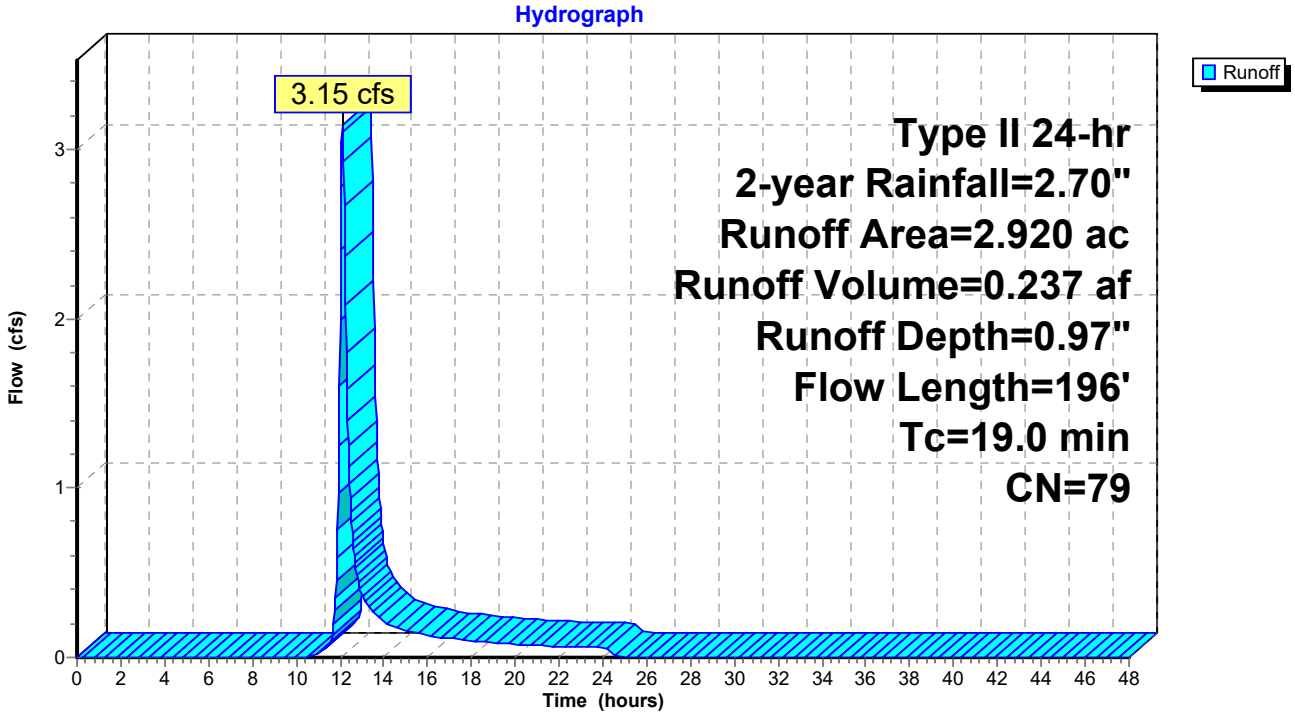
Runoff = 3.15 cfs @ 12.13 hrs, Volume= 0.237 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.70"

Area (ac)	CN	Description
1.500	61	>75% Grass cover, Good, HSG B
1.200	98	Paved parking, HSG B
0.220	98	Roofs, HSG B
2.920	79	Weighted Average
1.500		51.37% Pervious Area
1.420		48.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	96	0.0520	3.67		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
19.0	196	Total			

Subcatchment 1S: Proposed Watershed 1



Summary for Subcatchment 2S: Proposed Watershed 2

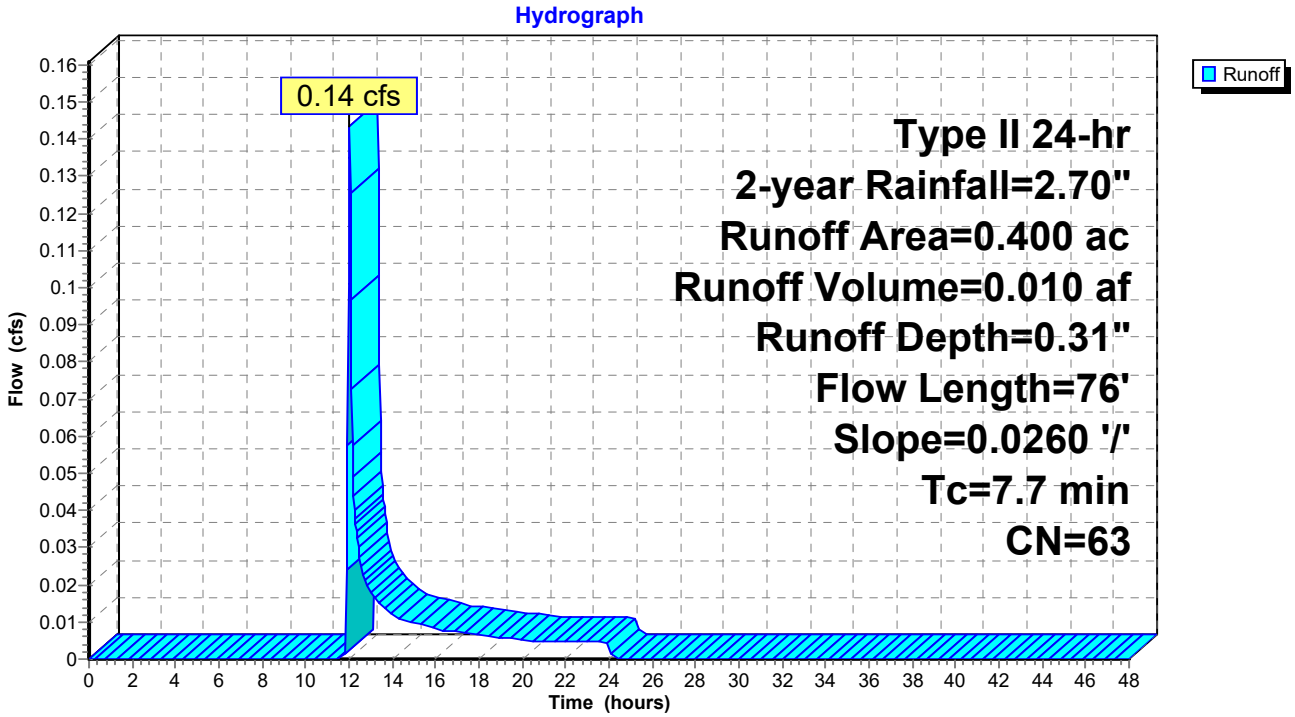
Runoff = 0.14 cfs @ 12.02 hrs, Volume= 0.010 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.70"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.020	98	Paved parking, HSG B
0.400	63	Weighted Average
0.380		95.00% Pervious Area
0.020		5.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	76	0.0260	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 2S: Proposed Watershed 2



Summary for Subcatchment 3S: Proposed Watershed 3

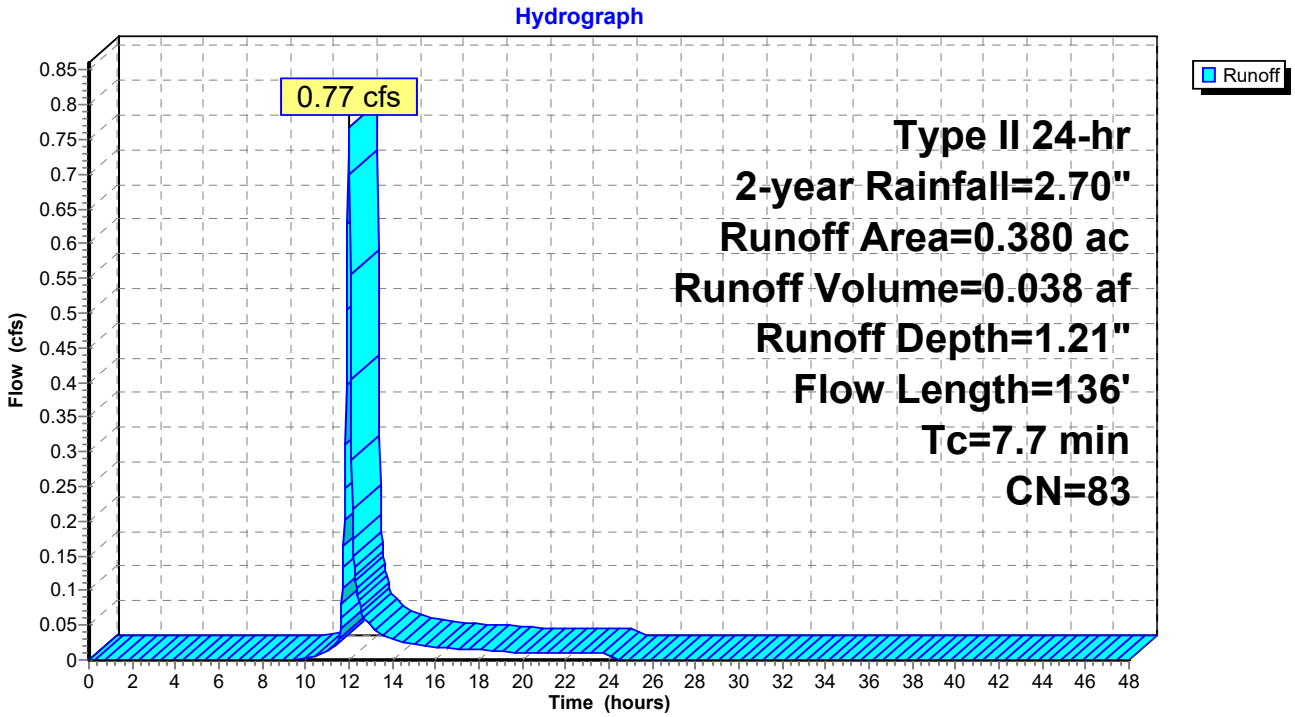
Runoff = 0.77 cfs @ 11.99 hrs, Volume= 0.038 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 2-year Rainfall=2.70"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG B
0.150	61	>75% Grass cover, Good, HSG B
0.380	83	Weighted Average
0.150		39.47% Pervious Area
0.230		60.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	51	0.0350	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
6.8	49	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	36	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	136	Total			

Subcatchment 3S: Proposed Watershed 3



Summary for Pond 4P: Wet Pond

Inflow Area = 3.300 ac, 50.00% Impervious, Inflow Depth = 1.00" for 2-year event
Inflow = 3.45 cfs @ 12.10 hrs, Volume= 0.275 af
Outflow = 0.75 cfs @ 12.60 hrs, Volume= 0.269 af, Atten= 78%, Lag= 30.0 min
Primary = 0.75 cfs @ 12.60 hrs, Volume= 0.269 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 869.11' @ 12.60 hrs Surf.Area= 8,438 sf Storage= 4,805 cf

Plug-Flow detention time= 190.7 min calculated for 0.268 af (97% of inflow)
Center-of-Mass det. time= 177.4 min (1,038.1 - 860.7)

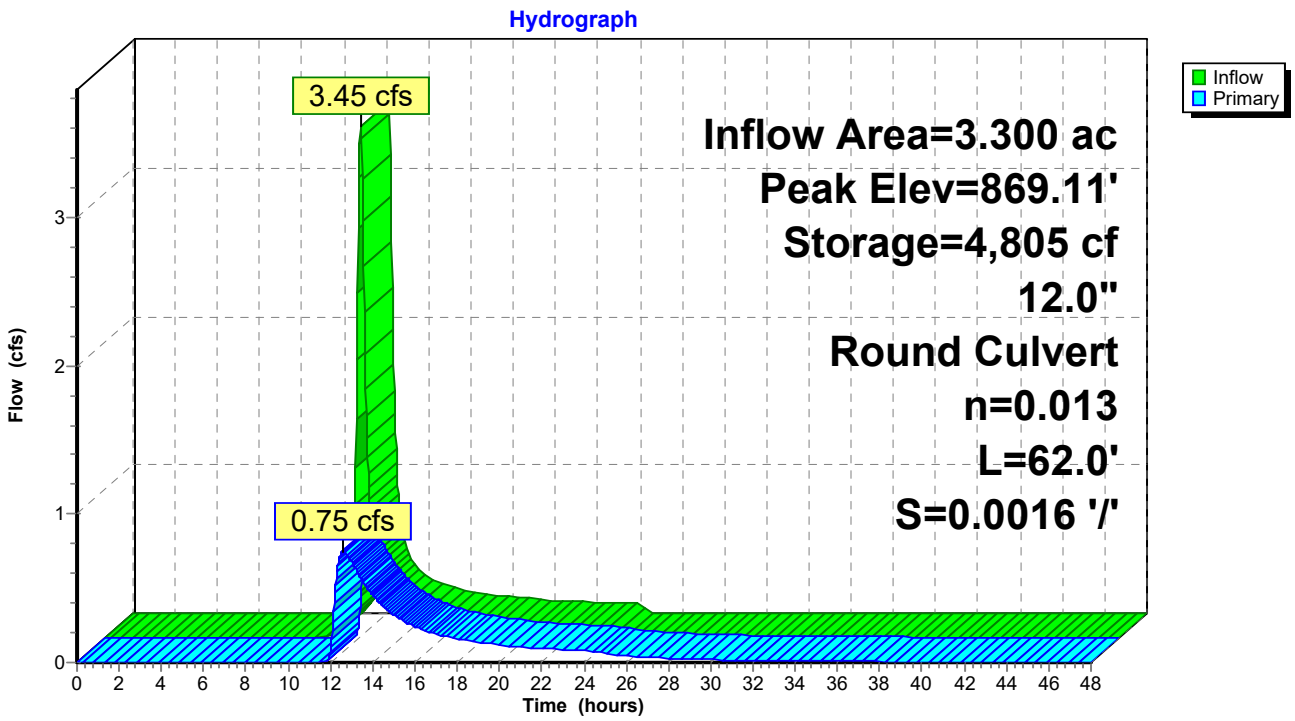
Volume	Invert	Avail.Storage	Storage Description
#1	868.50'	30,897 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
868.50	7,295	589.0	0	0	7,295
869.50	9,208	623.0	8,233	8,233	10,630
870.50	11,306	662.0	10,239	18,472	14,669
871.50	13,578	698.0	12,425	30,897	18,624

Device	Routing	Invert	Outlet Devices
#1	Primary	868.50'	**12.0" Round RCP_Round 12"** L= 62.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 868.50' / 868.40' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 12.60 hrs HW=869.11' (Free Discharge)
└**1=RCP_Round 12"** (Barrel Controls 0.75 cfs @ 2.13 fps)

Pond 4P: Wet Pond

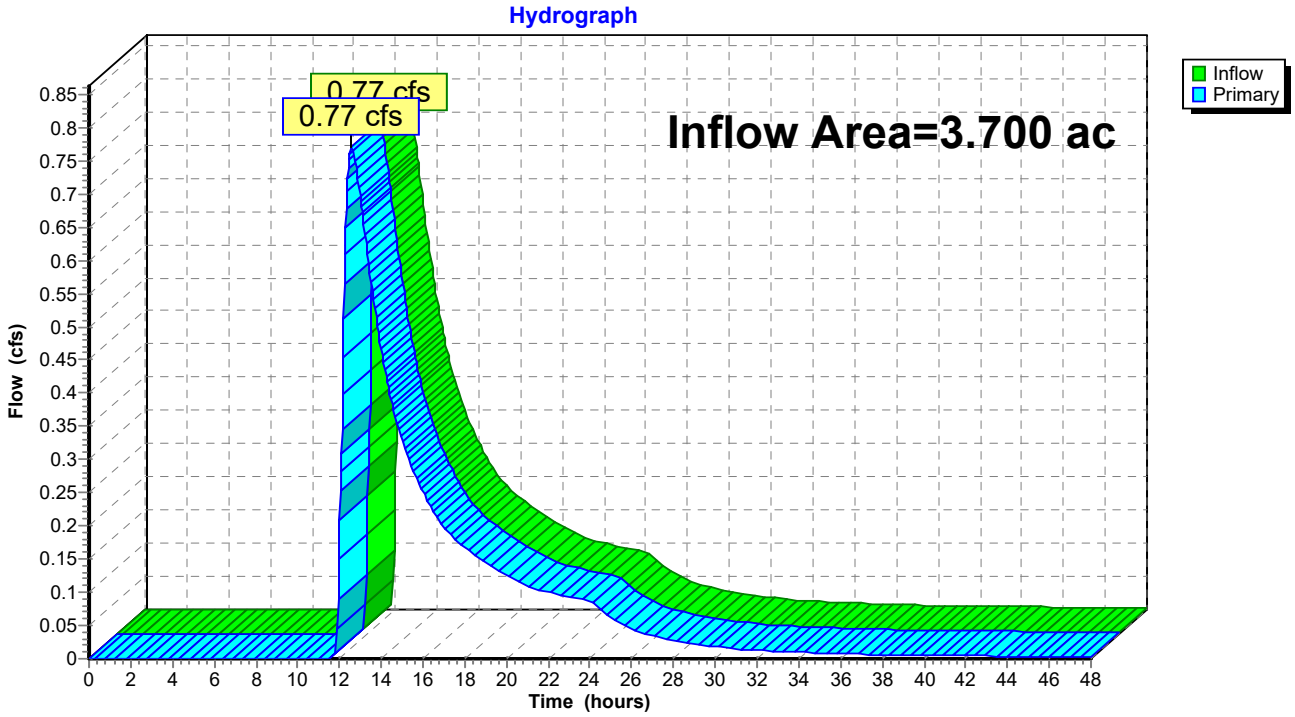


Summary for Link 5L: Site Outfall

Inflow Area = 3.700 ac, 45.14% Impervious, Inflow Depth > 0.91" for 2-year event
Inflow = 0.77 cfs @ 12.58 hrs, Volume= 0.279 af
Primary = 0.77 cfs @ 12.58 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link 5L: Site Outfall



Summary for Subcatchment 1S: Proposed Watershed 1

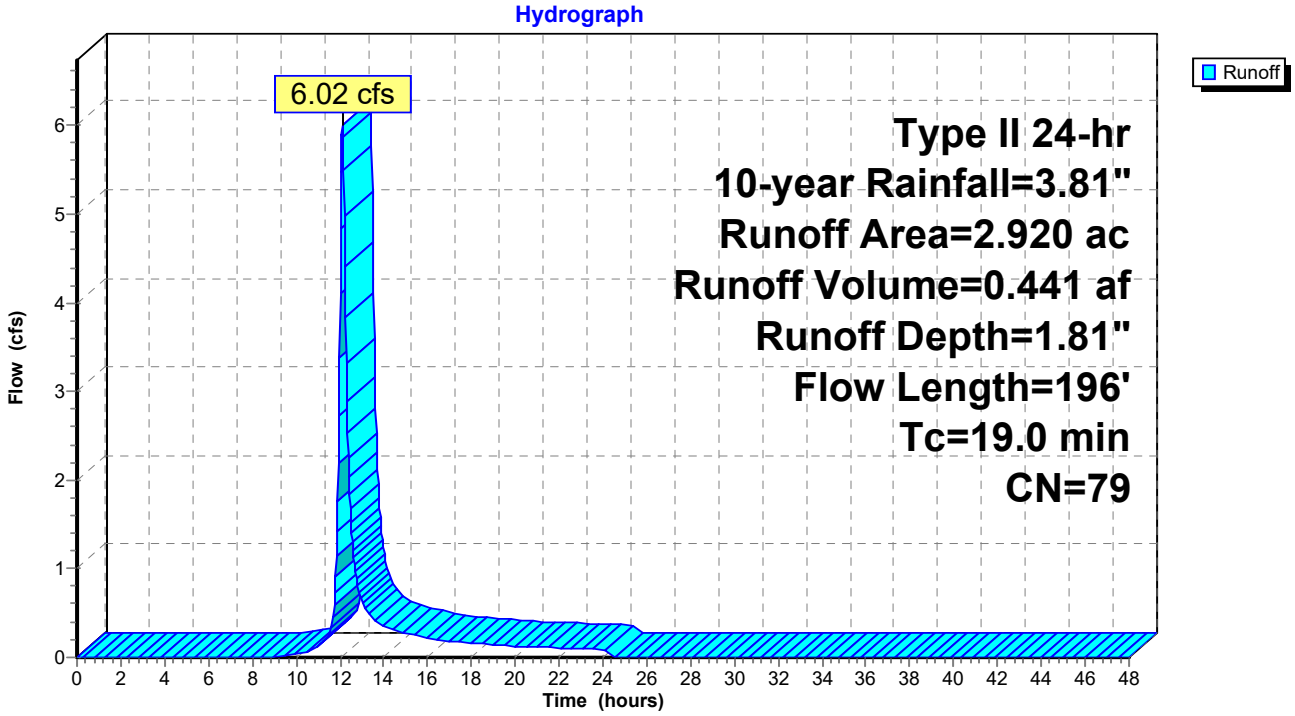
Runoff = 6.02 cfs @ 12.12 hrs, Volume= 0.441 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.81"

Area (ac)	CN	Description
1.500	61	>75% Grass cover, Good, HSG B
1.200	98	Paved parking, HSG B
0.220	98	Roofs, HSG B
2.920	79	Weighted Average
1.500		51.37% Pervious Area
1.420		48.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	96	0.0520	3.67		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
19.0	196	Total			

Subcatchment 1S: Proposed Watershed 1



Summary for Subcatchment 2S: Proposed Watershed 2

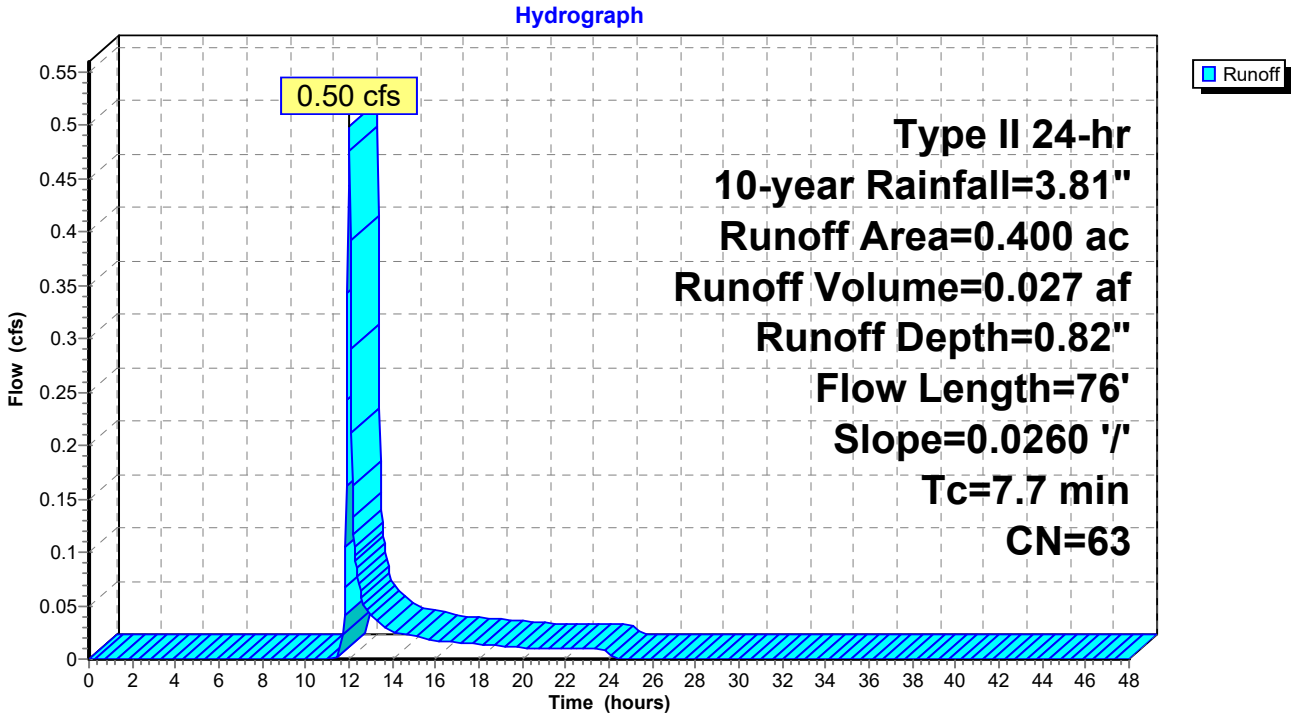
Runoff = 0.50 cfs @ 12.01 hrs, Volume= 0.027 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.81"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.020	98	Paved parking, HSG B
0.400	63	Weighted Average
0.380		95.00% Pervious Area
0.020		5.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	76	0.0260	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 2S: Proposed Watershed 2



Summary for Subcatchment 3S: Proposed Watershed 3

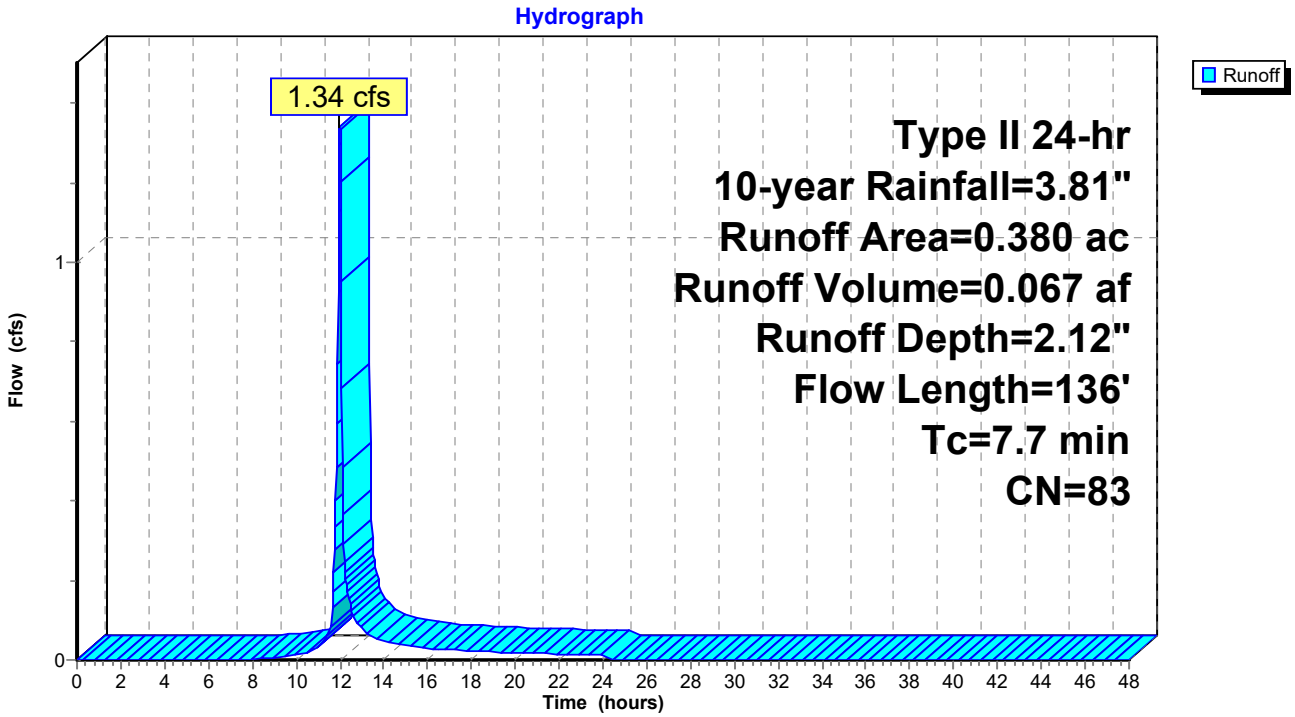
Runoff = 1.34 cfs @ 11.99 hrs, Volume= 0.067 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 10-year Rainfall=3.81"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG B
0.150	61	>75% Grass cover, Good, HSG B
0.380	83	Weighted Average
0.150		39.47% Pervious Area
0.230		60.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	51	0.0350	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
6.8	49	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	36	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	136	Total			

Subcatchment 3S: Proposed Watershed 3



Summary for Pond 4P: Wet Pond

Inflow Area = 3.300 ac, 50.00% Impervious, Inflow Depth = 1.85" for 10-year event
Inflow = 6.58 cfs @ 12.10 hrs, Volume= 0.508 af
Outflow = 1.87 cfs @ 12.47 hrs, Volume= 0.501 af, Atten= 72%, Lag= 22.5 min
Primary = 1.87 cfs @ 12.47 hrs, Volume= 0.501 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 869.56' @ 12.47 hrs Surf.Area= 9,322 sf Storage= 8,763 cf

Plug-Flow detention time= 140.1 min calculated for 0.500 af (99% of inflow)
Center-of-Mass det. time= 132.7 min (975.6 - 842.9)

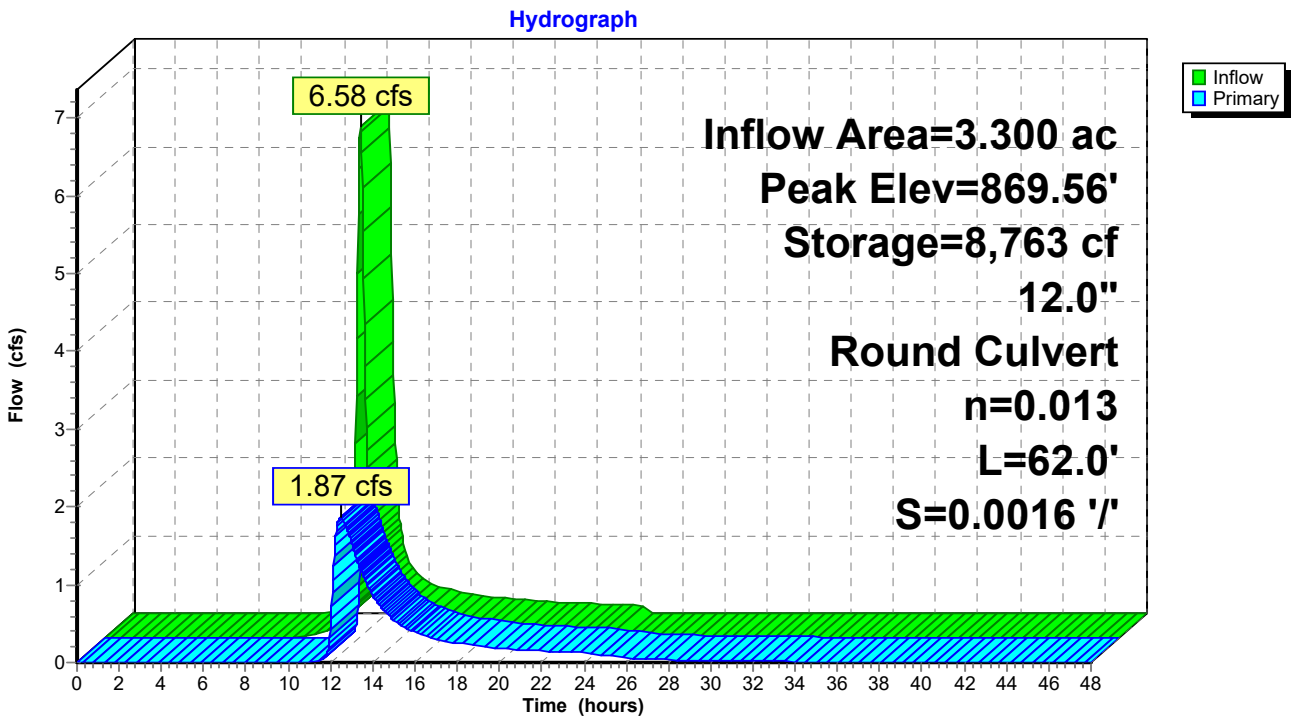
Volume	Invert	Avail.Storage	Storage Description
#1	868.50'	30,897 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
868.50	7,295	589.0	0	0	7,295
869.50	9,208	623.0	8,233	8,233	10,630
870.50	11,306	662.0	10,239	18,472	14,669
871.50	13,578	698.0	12,425	30,897	18,624

Device	Routing	Invert	Outlet Devices
#1	Primary	868.50'	**12.0" Round RCP_Round 12"** L= 62.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 868.50' / 868.40' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.87 cfs @ 12.47 hrs HW=869.56' (Free Discharge)
└**1=RCP_Round 12"** (Barrel Controls 1.87 cfs @ 2.80 fps)

Pond 4P: Wet Pond

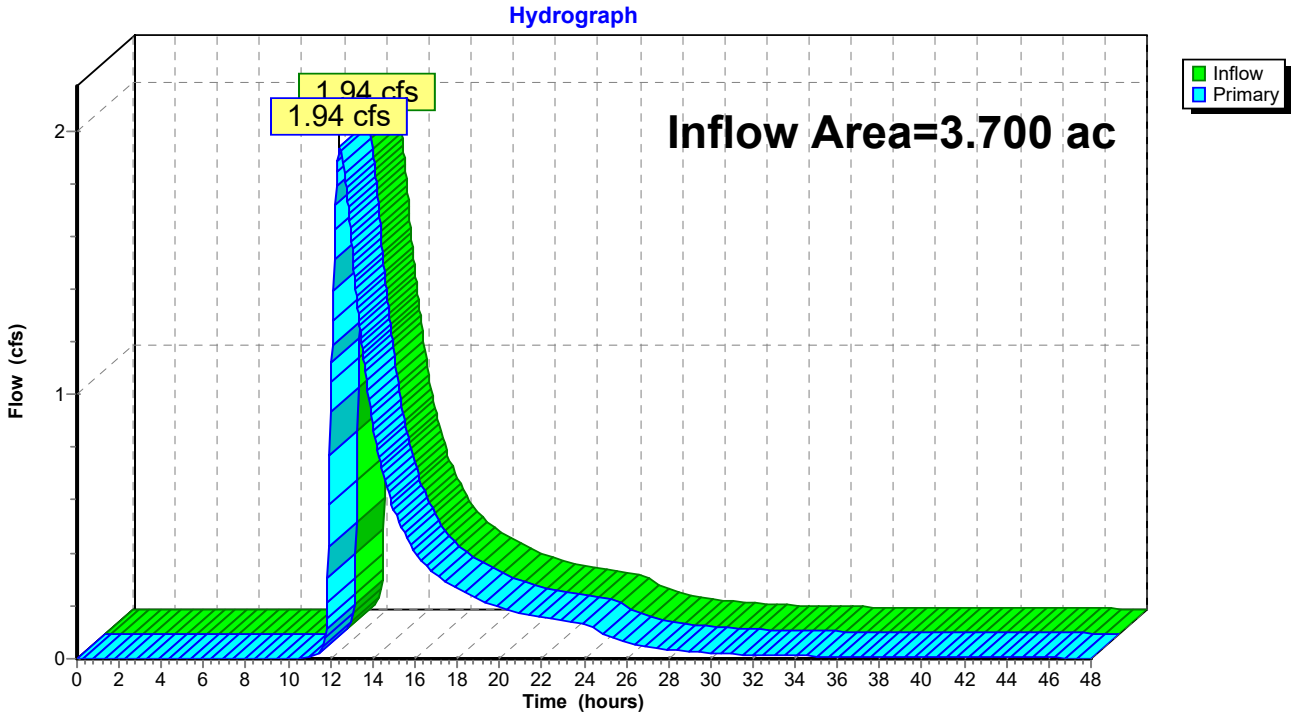


Summary for Link 5L: Site Outfall

Inflow Area = 3.700 ac, 45.14% Impervious, Inflow Depth > 1.71" for 10-year event
Inflow = 1.94 cfs @ 12.45 hrs, Volume= 0.528 af
Primary = 1.94 cfs @ 12.45 hrs, Volume= 0.528 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link 5L: Site Outfall



Summary for Subcatchment 1S: Proposed Watershed 1

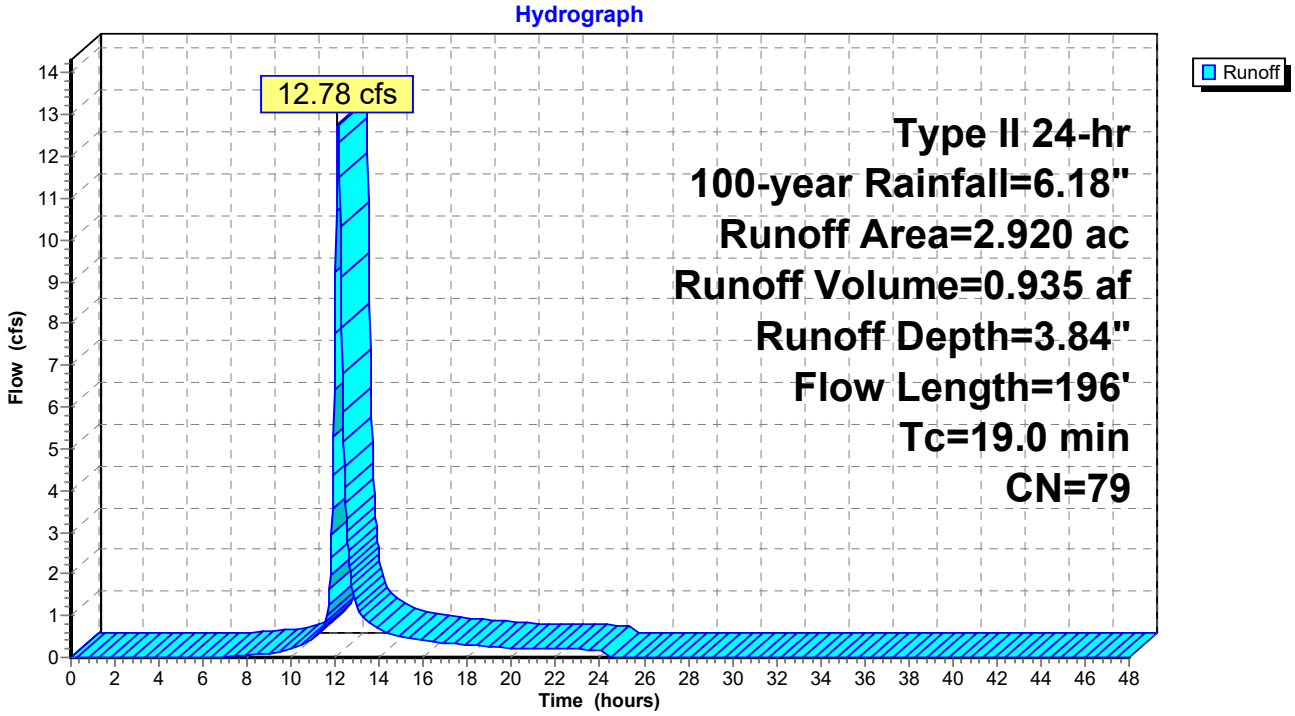
Runoff = 12.78 cfs @ 12.11 hrs, Volume= 0.935 af, Depth= 3.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.18"

Area (ac)	CN	Description
1.500	61	>75% Grass cover, Good, HSG B
1.200	98	Paved parking, HSG B
0.220	98	Roofs, HSG B
2.920	79	Weighted Average
1.500		51.37% Pervious Area
1.420		48.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	100	0.0050	0.09		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.4	96	0.0520	3.67		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
19.0	196	Total			

Subcatchment 1S: Proposed Watershed 1



Summary for Subcatchment 2S: Proposed Watershed 2

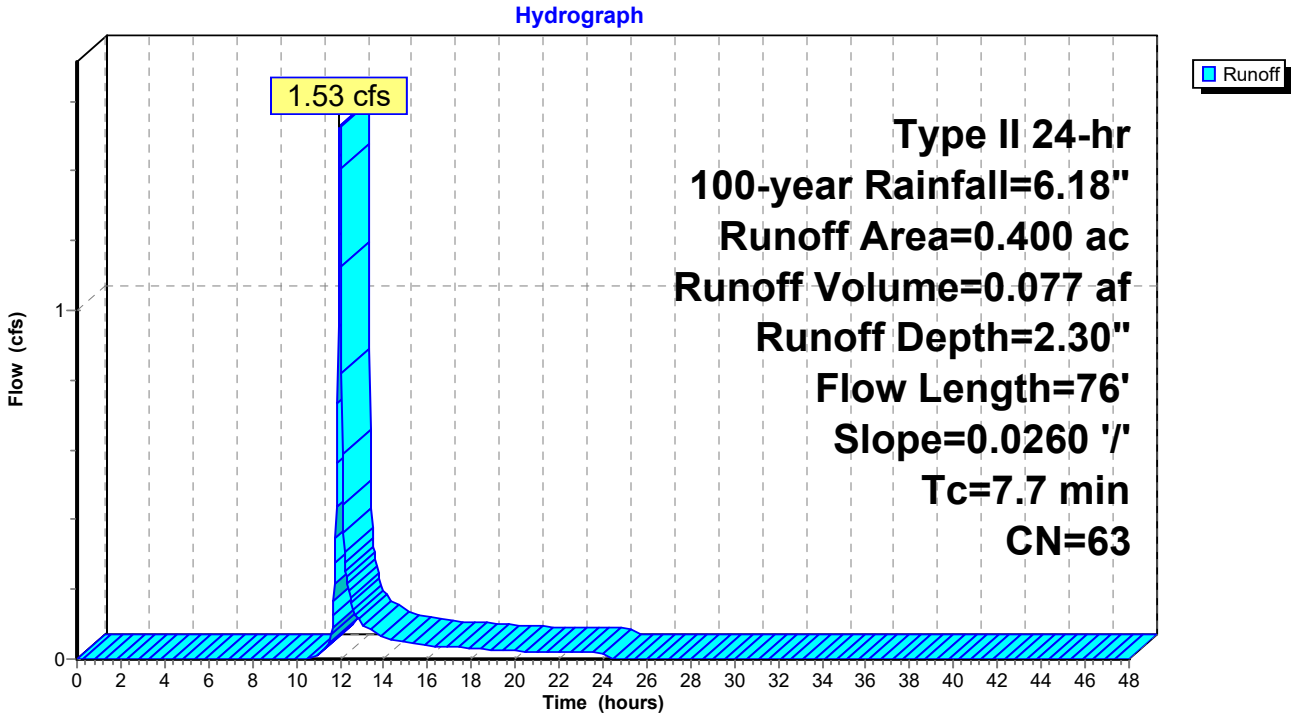
Runoff = 1.53 cfs @ 12.00 hrs, Volume= 0.077 af, Depth= 2.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.18"

Area (ac)	CN	Description
0.380	61	>75% Grass cover, Good, HSG B
0.020	98	Paved parking, HSG B
0.400	63	Weighted Average
0.380		95.00% Pervious Area
0.020		5.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	76	0.0260	0.16		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"

Subcatchment 2S: Proposed Watershed 2



Summary for Subcatchment 3S: Proposed Watershed 3

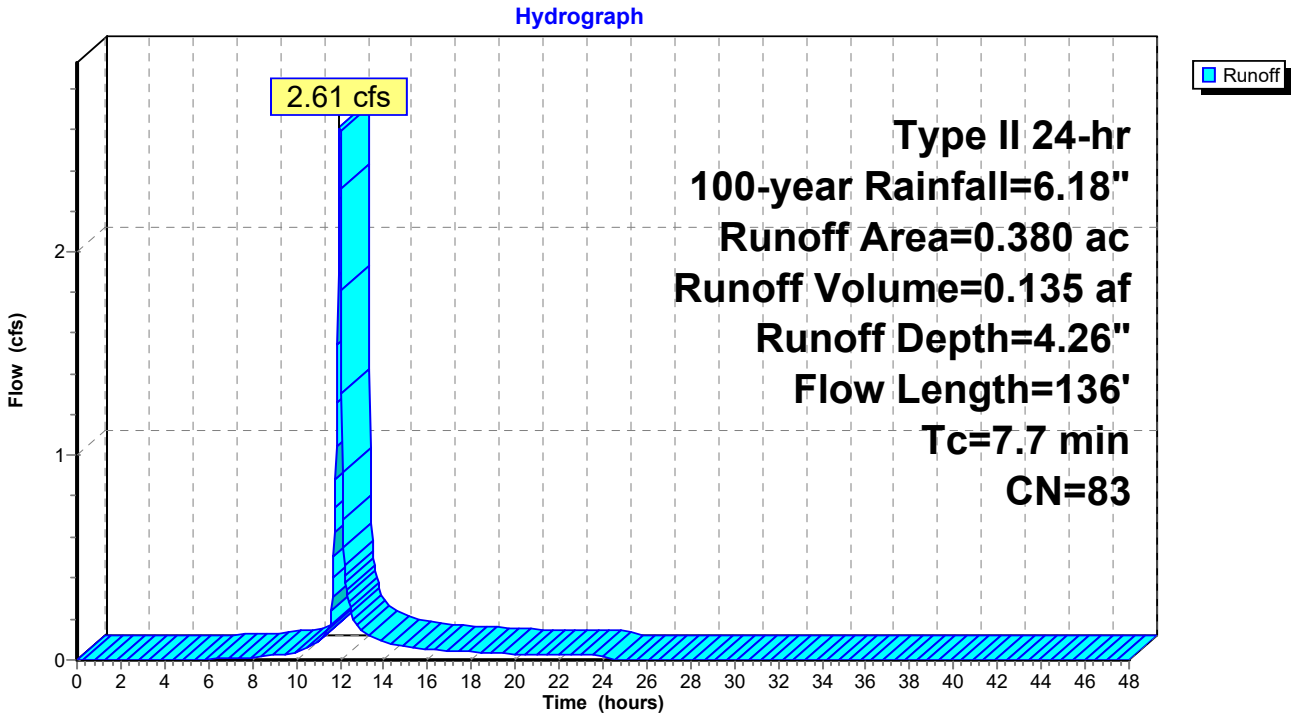
Runoff = 2.61 cfs @ 11.99 hrs, Volume= 0.135 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Type II 24-hr 100-year Rainfall=6.18"

Area (ac)	CN	Description
0.230	98	Paved parking, HSG B
0.150	61	>75% Grass cover, Good, HSG B
0.380	83	Weighted Average
0.150		39.47% Pervious Area
0.230		60.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	51	0.0350	1.38		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.70"
6.8	49	0.0150	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.70"
0.3	36	0.0150	1.97		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.7	136	Total			

Subcatchment 3S: Proposed Watershed 3



Summary for Pond 4P: Wet Pond

Inflow Area = 3.300 ac, 50.00% Impervious, Inflow Depth = 3.89" for 100-year event
Inflow = 13.92 cfs @ 12.09 hrs, Volume= 1.069 af
Outflow = 3.66 cfs @ 12.47 hrs, Volume= 1.062 af, Atten= 74%, Lag= 23.1 min
Primary = 3.66 cfs @ 12.47 hrs, Volume= 1.062 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs
Peak Elev= 870.56' @ 12.47 hrs Surf.Area= 11,443 sf Storage= 19,190 cf

Plug-Flow detention time= 112.2 min calculated for 1.062 af (99% of inflow)
Center-of-Mass det. time= 108.0 min (929.8 - 821.8)

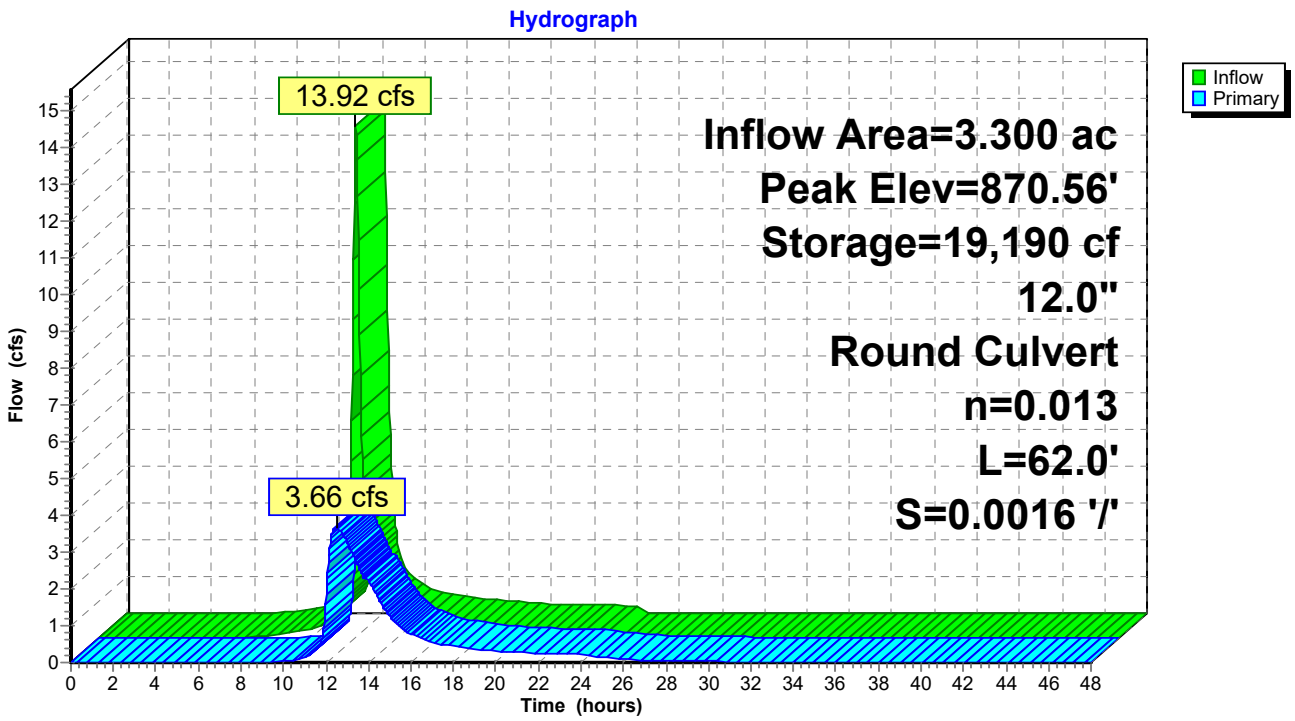
Volume	Invert	Avail.Storage	Storage Description
#1	868.50'	30,897 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
868.50	7,295	589.0	0	0	7,295
869.50	9,208	623.0	8,233	8,233	10,630
870.50	11,306	662.0	10,239	18,472	14,669
871.50	13,578	698.0	12,425	30,897	18,624

Device	Routing	Invert	Outlet Devices
#1	Primary	868.50'	**12.0" Round RCP_Round 12"** L= 62.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 868.50' / 868.40' S= 0.0016 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=3.66 cfs @ 12.47 hrs HW=870.56' (Free Discharge)
└─**1=RCP_Round 12"** (Barrel Controls 3.66 cfs @ 4.66 fps)

Pond 4P: Wet Pond

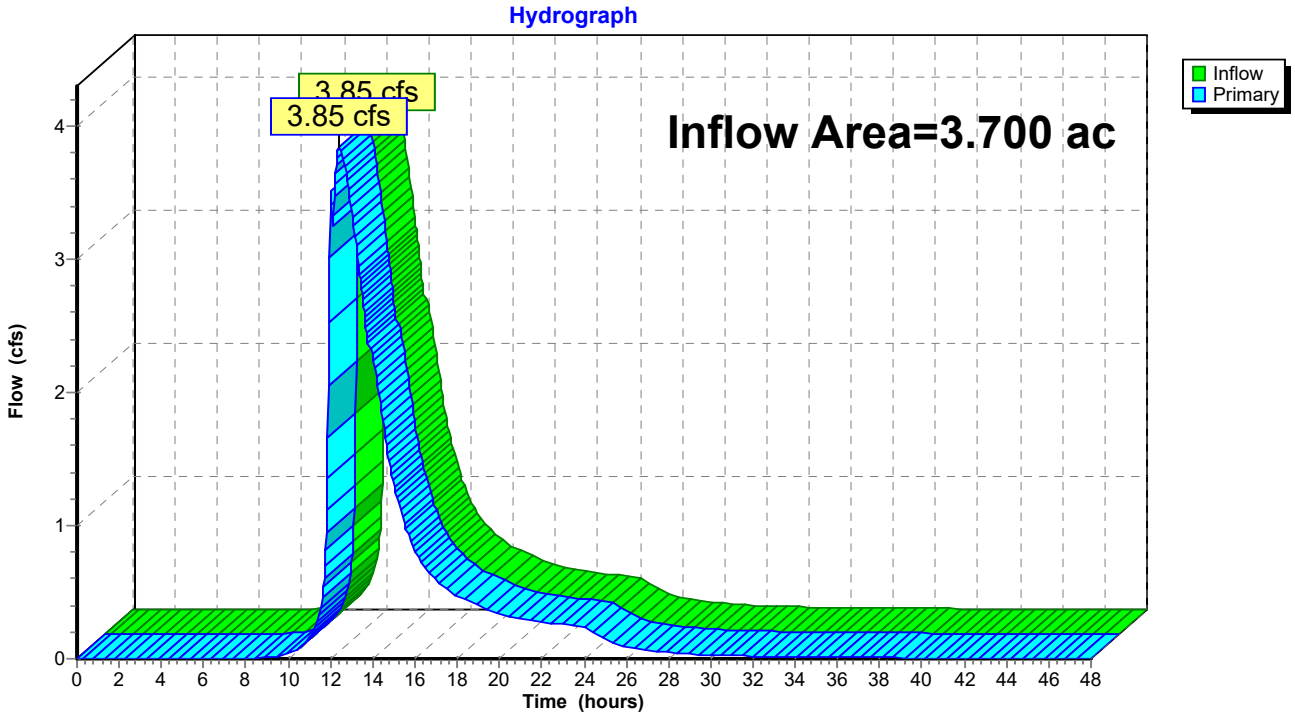


Summary for Link 5L: Site Outfall

Inflow Area = 3.700 ac, 45.14% Impervious, Inflow Depth > 3.69" for 100-year event
Inflow = 3.85 cfs @ 12.43 hrs, Volume= 1.139 af
Primary = 3.85 cfs @ 12.43 hrs, Volume= 1.139 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.03 hrs

Link 5L: Site Outfall



WinSLAMM v 10.3.0 Data

Input Data

Data file name: G:\Projects\17176 Caseys Lisbon WI\Design\Drainage & Storm\Data\WinSLAMM\Lisbon WinSLAMM File 2018 07-18.mdb
WinSLAMM Version 10.3.4
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 07-19-2018 Time: 14:19:05
Site information:

LU# 1 - Commercial: Area to Swale Total area (ac): 0.568
45 - Large Landscaped Areas 1: 0.568 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Commercial: Area to Wet Pond Total area (ac): 2.350
1 - Roofs 1: 0.223 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 1.199 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.928 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Commercial: Area Not to WP Total area (ac): 0.414
13 - Paved Parking 1: 0.033 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 0.381 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Grass Swale CP# 1 (DS) - DS Grass Swale
Total drainage area (acres)= 0.568
Fraction of drainage area served by swales (ac) = 1.00
Swale density (ft/ac) = 0.00
Total swale length (ft) = 177
Average swale length to outlet (ft)= 88
Typical bottom width (ft) = 5.0

Typical swale side slope (_H:1V) = 50.0
Typical longitudinal slope (ft.H/ft.V) = 0.020
Swale retardance factor: B
Typical grass height (in) = 6.0
Swale dynamic infiltration rate (in/hr)= 0.150
Typical swale depth (ft) for cost analysis (optional) = 0.0
Particle size distribution file name: Not needed - calculated by program
Use total swale length instead of swale density for infiltration calculations: True

Control Practice 2: Filter Strip CP# 1 (DS) - DS Filter Strips # 1
Total drainage area (acres)= 0.414
Fraction of drainage area served by filter strips (ac) = 0.90
Total filter strip width (ft) = 466.0
Effective flow length (ft) = 30
Infiltration rate (in/hr)= 0.150
Typical longitudinal slope (ft.H/ft.V) = 0.100
Typical grass height (in) = 6.0
Swale retardance factor = B
Use stochastic analysis to determine infiltration rate: False
Infiltration rate coeficient of variation (COV) = 0.00
Particle size distribution file name: Not needed - calculated by program
Surface Clogging Load (lbs/sf) = 3.50

Control Practice 3: Wet Detention Pond CP# 1 (DS) - Wet Pond # 1
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 1
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 16
2. Weir crest width (ft): 2
3. Height from datum to bottom of weir opening: 7.49
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	0.0154	0.00	0.00
2	1.00	0.0207	0.00	0.00
3	2.00	0.0271	0.00	0.00
4	3.00	0.0342	0.00	0.00
5	4.00	0.0422	0.00	0.00
6	5.00	0.1675	0.00	0.00
7	6.00	0.2114	0.00	0.00
8	7.00	0.2596	0.00	0.00
9	8.00	0.3117	0.00	0.00

Control Practice 4: Catchbasin Cleaning CP# 1 (DS) - DS Catchbasins # 1

1. Fraction of area served by catchbasins = 1.00
2. Number of catchbasins = 2
3. Average sump depth below catchbasin outlet invert (feet) = 3
4. Depth of sediment in catchbasin sump at beginning of study period (ft) = 0
5. Typical outlet pipe diameter (ft) = 1
6. Typical outlet pipe Mannings n = 0.013
7. Typical outlet pipe slope (ft/ft) = 0.002
8. Typical catchbasin sump surface area (square feet) = 12.6
9. Total catchbasin depth (feet) = 6
10. Inflow hydrograph peak to average flow ratio = 3.8
11. Leakage rate through sump bottom (in/hr) = 0
12. Catchbasin Critical Particle Size File Name: Not needed - calculated by program
13. Catchbasin cleaning frequency: Once every five years

Output Summary

SLAMM for Windows Version 10.3.4
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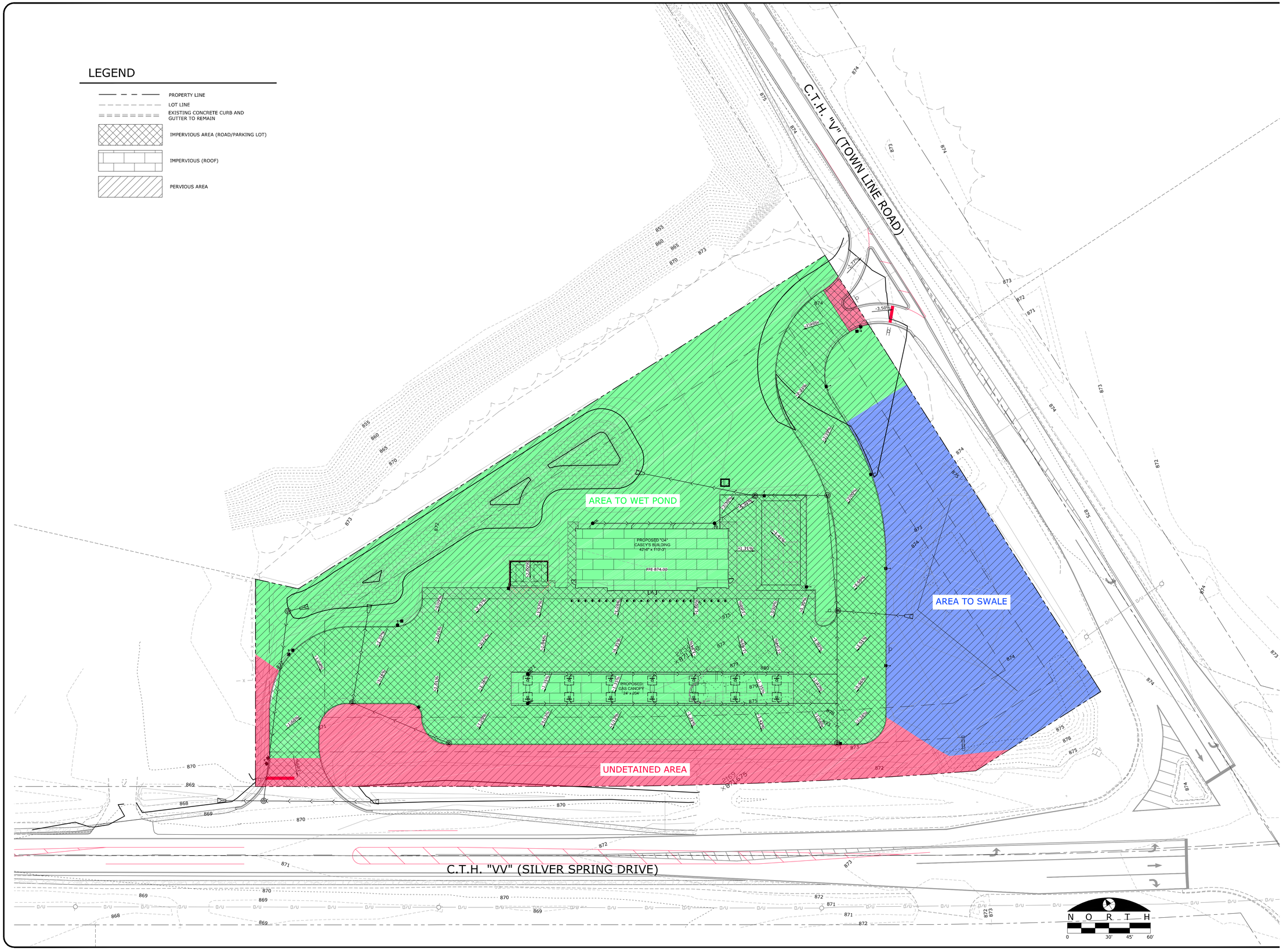
Data file name: G:\Projects\17176 Caseys Lisbon WI\Design\Drainage & Storm\Data\WinSLAMM\Lisbon WinSLAMM File 2018 07-18.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.RAN
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 12/02 End of Winter Season: 03/12
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 07-19-2018 Time of run: 14:19:53
Total Area Modeled (acres): 3.332
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	123544	-	123.2	950.0	-
Outfall Total with Controls:	119345	3.40%	27.48	204.7	78.45%
Annualized Total After Outfall Controls:	121003			207.6	

LEGEND

- PROPERTY LINE
- LOT LINE
- EXISTING CONCRETE CURB AND GUTTER TO REMAIN
- IMPERVIOUS AREA (ROAD/PARKING LOT)
- IMPERVIOUS (ROOF)
- PERVIOUS AREA



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PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE

NW CORNER OF CTH V (TOWN LINE ROAD) AND CTH VV (SILVER SPRINGS DRIVE) LISBON, WI 53089

CONSULTANTS

ISSUED FOR | DATE

REVISIONS

ITEM	DATE

SHEET TITLE

WinSLAMM AREAS

DRAWN	BJL
CHECKED	
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

EX 3

Storm Sewer Evaluation

Upstream of Detention System																
Pipe Number	Upstream Structure	Downstream Structure	Contributing Area			Roof (GPM)	Paved (GPM)	Grass (GPM)	Area GPM	Cumulative GPM	Slope (dec.)	Pipe Length (FT)	Pipe Size (IN)	n value	Max Discharge (CFS)	Max Discharge (GPM)
			Roof (S.F.)	Paved (S.F.)	Grass (S.F.)											
Canopy PVC (x7)	-	P-15	350	0	0	0.88	0.00	0.00	0.88	6.17	0.010	2	6	0.010	0.73	327.28
P-15	Cleanout	P-13	0	0	0	0.00	0.00	0.00	0.00	6.17	0.005	224	6	0.010	0.52	231.42
Canopy PVC (x7)	-	P-14	350	0	0	0.88	0.00	0.00	0.88	6.17	0.010	2	6	0.010	0.73	327.28
P-14	Cleanout	P-13	0	0	0	0.00	0.00	0.00	0.00	6.17	0.0050	224	6	0.010	0.52	231.42
P-13	D-09	D-10	0	15445	0	0.00	38.93	0.00	38.93	51.27	0.004	96	12	0.010	2.82	1264.05
P-12	D-11	D-10	0	0	26611	0.00	0.00	17.65	17.65	17.65	0.052	49	12	0.013	8.13	3648.70
P-11	D-10	D-12	0	3276	1724	0.00	8.26	1.14	9.40	78.32	0.0018	84	18	0.010	5.79	2599.42
P-10	D-12	D-13	0	5788	0	0.00	14.59	0.00	14.59	92.91	0.001	52	18	0.010	4.32	1937.49
Roof Drain (x4)	-	P-08	1204	0	0	3.04	0.00	0.00	3.04	12.14	0.010	2	6	0.010	0.73	327.28
P-08	Cleanout	Cleanout	0	0	0	0.00	0.00	0.00	0.00	12.14	0.010	88	6	0.010	0.73	327.28
P-09	Cleanout	D-13	0	0	0	0.00	0.00	0.00	0.00	12.14	0.010	36	6	0.010	0.72	323.99
P-07	D-13	D-14	0	4074	0	0.00	10.27	0.00	10.27	115.32	0.003	87	24	0.013	12.18	5465.94
P-06	D-08	D-07	0	16918	0	0.00	42.64	0.00	42.64	42.64	0.002	76	12	0.010	1.91	856.82
P-05	D-07	D-06	0	6990	0	0.00	17.62	0.00	17.62	60.26	0.001	72	15	0.013	2.42	1084.45
Wet Detention Pond (No Pipe)	-	D-05	0	0	36520	0.00	0.00	24.22	24.22	199.81	-	-	-	-	-	-
Downstream of Detention System																
P-04	D-05	D-04	0	0	0	0.00	0.00	0.00	0.00	199.81	0.002	56	12	0.013	1.59	714.88
P-03	D-04	D-02	0	0	0	0.00	0.00	0.00	0.00	199.81	0.006	88	12	0.013	2.83	1268.79
P-02	D-03	D-02	0	0	0	0.00	0.00	0.00	0.00	199.81	0.003	77	18	0.013	5.35	2403.16
P-01	D-02	D-01	0	0	0	0.00	0.00	0.00	0.00	199.81	0.006	27	18	0.013	7.79	3495.24

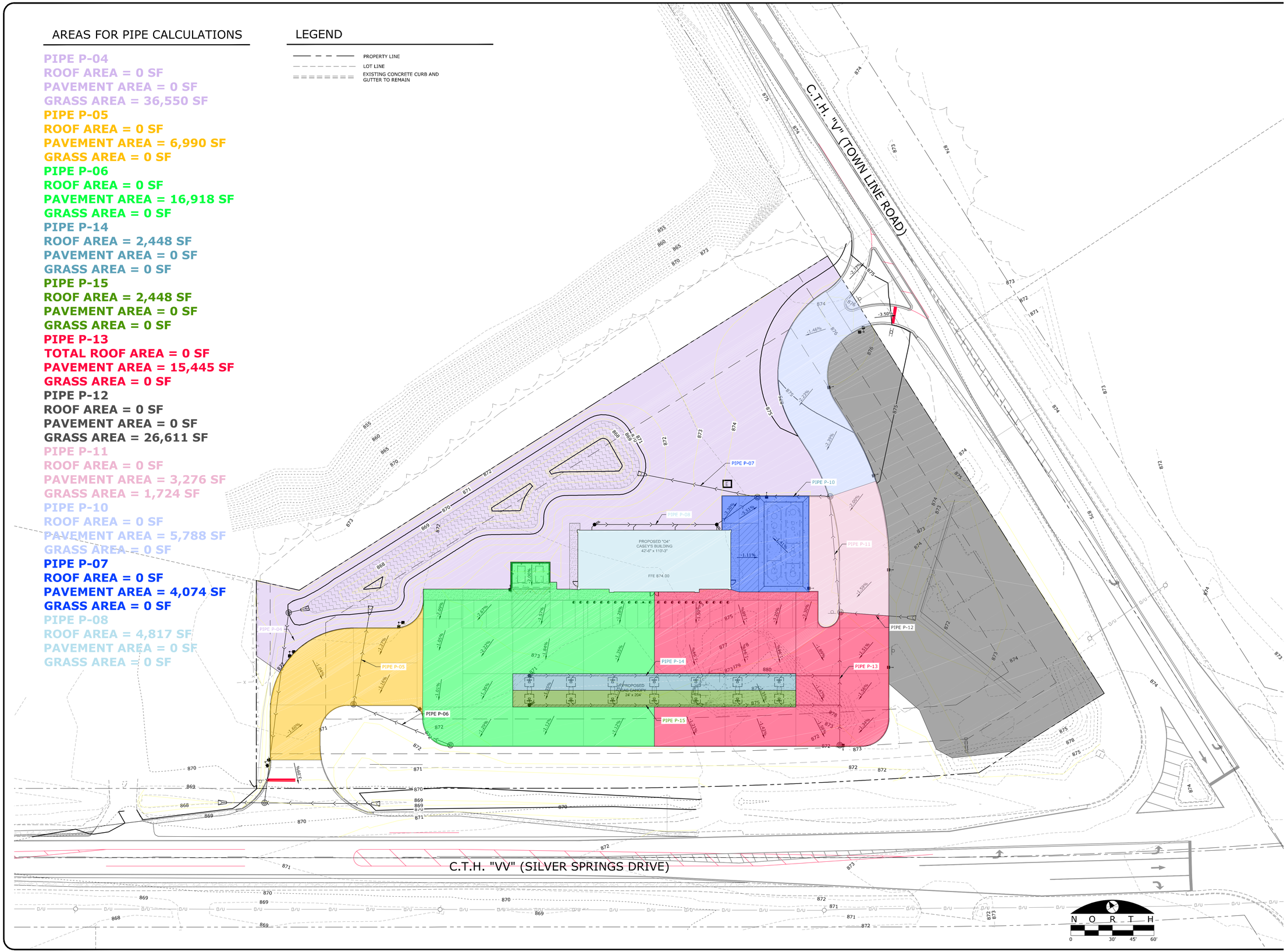
	Input Values		
	100-year, 24-hour (inches)		100-year, 24-hour (inches/hr)
Storm Intensity	6.18		0.258
	Roof	Pavement	Grass
Runoff Coefficients	0.95	0.95	0.25

AREAS FOR PIPE CALCULATIONS

PIPE P-04
ROOF AREA = 0 SF
PAVEMENT AREA = 0 SF
GRASS AREA = 36,550 SF
PIPE P-05
ROOF AREA = 0 SF
PAVEMENT AREA = 6,990 SF
GRASS AREA = 0 SF
PIPE P-06
ROOF AREA = 0 SF
PAVEMENT AREA = 16,918 SF
GRASS AREA = 0 SF
PIPE P-14
ROOF AREA = 2,448 SF
PAVEMENT AREA = 0 SF
GRASS AREA = 0 SF
PIPE P-15
ROOF AREA = 2,448 SF
PAVEMENT AREA = 0 SF
GRASS AREA = 0 SF
PIPE P-13
TOTAL ROOF AREA = 0 SF
PAVEMENT AREA = 15,445 SF
GRASS AREA = 0 SF
PIPE P-12
ROOF AREA = 0 SF
PAVEMENT AREA = 0 SF
GRASS AREA = 26,611 SF
PIPE P-11
ROOF AREA = 0 SF
PAVEMENT AREA = 3,276 SF
GRASS AREA = 1,724 SF
PIPE P-10
ROOF AREA = 0 SF
PAVEMENT AREA = 5,788 SF
GRASS AREA = 0 SF
PIPE P-07
ROOF AREA = 0 SF
PAVEMENT AREA = 4,074 SF
GRASS AREA = 0 SF
PIPE P-08
ROOF AREA = 4,817 SF
PAVEMENT AREA = 0 SF
GRASS AREA = 0 SF

LEGEND

PROPERTY LINE
LOT LINE
EXISTING CONCRETE CURB AND GUTTER TO REMAIN



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CASEY'S GENERAL STORE
NW CORNER OF CTH V (TOWN LINE ROAD) AND CTH VV (SILVER SPRINGS DRIVE)
LISBON, WI 53089

CONSULTANTS

ISSUED FOR

	DATE

REVISIONS

ITEM	DATE

SHEET TITLE
PLUMBING AREAS

DRAWN	CSC
CHECKED	
PM	RCS

PROJECT NUMBER
SHEET NUMBER
17176
EX 4

Soil Information

88° 11' 16" W
88° 11' 4" W
43° 7' 19" N
43° 7' 13" N
403370
403390
403410
403430
403450
403470
403490
403510
403530
403550
403570
403590
403610
403630
4775030
4775010
4774990
4774970
4774950
4774930
4774910
4774890
4774870
GP
CeB
CeC2
FsA
VsA
Town Line Rd
W
Ramp
Soil Map may not be valid at this scale.
Map Scale: 1:1,260 if printed on A landscape (11" x 8.5") sheet.
Meters
0
15
30
60
90
Feet
0
50
100
200
300
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

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 1:15,800.

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: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

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
CeB	Casco loam, 2 to 6 percent slopes	0.4	8.0%
CeC2	Casco loam, 6 to 12 percent slopes, eroded	0.3	6.4%
FsA	Fox silt loam, 0 to 2 percent slopes	3.5	79.3%
GP	Gravel pit	0.1	1.5%
VsA	Virgil silt loam, gravelly substratum, 0 to 3 percent slopes	0.2	4.8%
Totals for Area of Interest		**4.4**	**100.0%**

Milwaukee and Waukesha Counties, Wisconsin

CeB—Casco loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 2tjw7
Elevation: 800 to 1,140 feet
Mean annual precipitation: 29 to 35 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 134 to 192 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Casco and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Casco

Setting

Landform: Outwash plains
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy alluvium over calcareous, stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 8 inches: loam
Bt - 8 to 17 inches: clay loam
2C - 17 to 79 inches: stratified sand to gravel

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: 11 to 20 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat excessively 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: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: B
Forage suitability group: Low AWC, adequately drained (G095BY002WI)
Hydric soil rating: No

Minor Components

Fox

Percent of map unit: 8 percent
Landform: Outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Boyer

Percent of map unit: 7 percent
Landform: Outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Data Source Information

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Milwaukee and Waukesha Counties, Wisconsin

CeC2—Casco loam, 6 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2tjwb
Elevation: 620 to 1,180 feet
Mean annual precipitation: 29 to 37 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 134 to 193 days
Farmland classification: Not prime farmland

Map Unit Composition

Casco, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Casco, Eroded

Setting

Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Loamy alluvium over calcareous, stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 5 inches: loam
Bt - 5 to 17 inches: clay loam
2C - 17 to 79 inches: stratified sand to gravel

Properties and qualities

Slope: 6 to 12 percent
Depth to restrictive feature: 11 to 20 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat excessively 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 in profile: 25 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Forage suitability group: Low AWC, adequately drained (G095BY002WI)
Hydric soil rating: No

Minor Components

Fox

Percent of map unit: 8 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Rodman

Percent of map unit: 7 percent
Landform: Moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Data Source Information

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Milwaukee and Waukesha Counties, Wisconsin

FsA—Fox silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tjyk
Elevation: 640 to 1,180 feet
Mean annual precipitation: 31 to 38 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 124 to 194 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Fox and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fox

Setting

Landform: Outwash plains
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess over loamy glaciofluvial deposits over sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: silt loam
Bt1 - 9 to 21 inches: silty clay loam
2Bt2 - 21 to 31 inches: sandy clay loam
3C - 31 to 79 inches: stratified sand to gravel

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 30 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 45 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Forage suitability group: Mod AWC, adequately drained (G095BY005WI)
Hydric soil rating: No

Minor Components

Kane
Percent of map unit: 5 percent
Landform: Outwash plains
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

St. charles, gravelly substratum
Percent of map unit: 5 percent
Landform: Outwash plains
Hydric soil rating: No

Data Source Information

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Milwaukee and Waukesha Counties, Wisconsin

GP—Gravel pit

Map Unit Setting

National map unit symbol: sjky
Elevation: 660 to 980 feet
Mean annual precipitation: 30 to 38 inches
Mean annual air temperature: 43 to 48 degrees F
Frost-free period: 150 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, gravel: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Gravel

Setting

Parent material: Gravelly outwash

Typical profile

H1 - 0 to 10 inches: stratified extremely gravelly coarse sand to very gravelly sand

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Other vegetative classification: Not Assigned (other map units) (Noth)
Hydric soil rating: Unranked

Minor Components

Aquents

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Dip
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

Milwaukee and Waukesha Counties, Wisconsin

VsA—Virgil silt loam, gravelly substratum, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2wsqx
Elevation: 750 to 1,150 feet
Mean annual precipitation: 31 to 35 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 171 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Virgil, gravelly substratum, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Virgil, Gravelly Substratum

Setting

Landform: Outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loess over calcareous, stratified sandy and gravelly outwash

Typical profile

Ap - 0 to 9 inches: silt loam
E - 9 to 13 inches: silt loam
Bt - 13 to 44 inches: silty clay loam
2BC - 44 to 49 inches: sandy loam
2C - 49 to 79 inches: stratified gravel to sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
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: About 0 to 24 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum in profile: 20 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Forage suitability group: High AWC, high water table (G095BY007WI)
Hydric soil rating: No

Minor Components

Sebewa
Percent of map unit: 4 percent
Landform: Outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Drummer, drained
Percent of map unit: 4 percent
Landform: Outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Sable
Percent of map unit: 2 percent
Landform: Outwash plains
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Milwaukee and Waukesha Counties, Wisconsin
Survey Area Data: Version 13, Oct 6, 2017

ARC DESIGN
RESOURCES INC.

CIVIL ENGINEERING
LAND SURVEYING
5291 Zenith Parkway
Loves Park, IL 61111
PHONE: 815.484.4300
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www.arcdesign.com

August 15, 2018
Gina Gresch
W234N8676 Woodside Rd
Lisbon, WI 53089

Re: Town of Lisbon –
Casey's General Store

Dear Ms. Gresch,

Enclosed please find revised plans and supplemental documents addressing Mr. Dean Hefter's concerns per comments to Ms. Gina Gresch (Town of Lisbon) dated July 27th. The comments in the letter are addressed in bold italics below.

1. Provide a copy of the DNR stormwater discharge general permit approval.

   See attached SWPPP Binder for general discharge general permit.

2. Provide an erosion control plan with track out pad locations, silt fence, straw bales, riprap, inlet protection, project schedule, site stabilization information, ect.

   See Civil Plans sheet C03 for SWPPP Map.

3. Provide the erosion control and stormwater plan construction specifications.

   See attached SWPPP Binder for erosion control and stormwater plan construction specifications.

4. Provide soil information and location of soil evaluations.

   See revised Stormwater Report for soil information. No borings were performed on this site.

5. Provide the soil loss calculations.

   See attached USLE Model and Soil Loss Schematic for soil loss calculations.

6. Provide spill prevention and response procedures.

   Please see the attached Casey's fuel spill procedure documents.

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7. Provide infiltration performance calculations, unless site meets an exemption. If site meets an exemption, please state which exemption.

   Infiltration from fueling and maintenance areas is prohibited by WDNR Administrative Code NR 151.124 (3) (a) 3. Furthermore, due to site restrictions and limited elevation for drainage, infiltration is not feasible.

8. Provide information on how the site will control petroleum runoff.

   Civil Plans and stormwater report have been revised. Petroleum runoff is controlled by catch basins with attached snouts in series. The snouts act similar to a grease trap, containing floatables (oil/debris) and allowing heavy particles to settle. This method has been found acceptable by multiple municipalities as well as the DNR.

9. Provide a Maintenance Agreement.

   We are awaiting the Maintenance Agreement draft from Gina at the Town.

10. According to the report, the code requires an 80% TSS reduction, but the calculations state a 78.45% site performance. Please adjust the site to meet the 80% TSS reduction requirement.

    The TSS Removal section in the Stormwater Report has been updated to account for site area that has been previously developed. The resulting weighted TSS removal is 78%. (Re-development required TSS removal = 40%, New development required TSS removal = 80%)

11. Provide a cost estimate and financial assurance.

    Per conversation with Gina cost estimates relating to offsite improvements and onsite stormwater management have been provided.

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If you have any questions or concerns, please do not hesitate to call me at (815) 484-4300 Ext. 237 or email me at blamere@arcdesign.com. Thank you in advance for your assistance.

Sincerely,

Bailey LaMere
Project Engineer

CC: Dean Hefter

STORMWATER POLLUTION PREVENTION PLAN

FOR

CONSTRUCTION ACTIVITIES

AT

Casey's General Store
Lisbon, WI

Prepared for:

Casey's Marketing Company
One Convenience Blvd.
Ankeny, IA 50021
515-965-6223

Prepared by:

Arc Design Resources, Inc.
5291 Zenith Parkway
Loves Park, IL
(815) 484-4300 ph
(815) 484-4303 fax

Dated 08-02-2018

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I. SUMMARY OF PERMIT AND PROGRAM REQUIREMENTS

The Stormwater Pollution Prevention Plan (SWPPP) includes, but is not limited to, this document with appendices, the Erosion and Sedimentation Control included in the Construction Drawings with the Detail Sheet, the Notice of Intent, Permit Authorization, General Permit, Notice of Termination, all records of inspections and activities which are created during the course of the project, and other documents as may be included by reference to this SWPPP. Changes, modifications, revisions, additions, or deletions shall become part of this SWPPP as they occur.

The General Contractor and all subcontractors involved with a construction activity that disturbs site soil or who implement a pollutant control measure identified in the SWPPP must comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit ("General Permit") and any local governing agency having jurisdiction concerning NPDES, storm water, erosion and sedimentation control:

A. General Permit Information

State of Wisconsin Department of Natural Resources (WDNR) Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit for construction activities requires that a complete Notice of Intent (NOI) be submitted at least 14 working days before construction activities begin. **For this project, and NOI has already been submitted.** The Notice of Intent is located in the Appendix. A copy of the General Permit is also located in the Appendix. The contractor acknowledges that the award of the contract will designate him as a co-permittee under the terms as stated in the WPDES General Permit WI-S067831-4. This permit is not transferable to any person except after notice to the WDNR.

1. **Co-permittee information:** Upon award of the contract, the contractor is a co-permittee with the owner. Prior to commencing work on the project, the General Contractor must sign a copy of the Contractor Acceptance statement included with the storm water pollution prevention plan. The Contractor may, at his option, require additional signatures from his sub-contractors.

2. **Permit transfer information:** This permit is not transferable to any person except after notice to the WDNR.

3. **Waiting Period:** Ground-disturbing activities cannot begin until 14 working days after submittal of a complete NOI Package to the WDNR, or until such time as the WDNR has reviewed the NOI and issued a WPDES permit number to the project, whichever comes first.

4. **Permit Expiration:** All active WPDES permits are valid for period of 3-years per NOI. Therefore, permit coverage terminates unless for the original project including application fee is submitted to retain coverage under the WPDES Permit No. WI S067831-4, unless terminated by an official Notice of Termination form (NOT) and acceptance of the completed project by WDNR or their duly assigned local representative. The Contractor is required to maintain current and regular project inspection reports and erosion control maintenance until such date as the NOT is accepted by the WDNR. Therefore, it is in the Contractor's best interest to establish permanent erosion control measures as soon as possible.

5. **Permit modification:** A permit modification is required prior to land disturbing activity in non-permitted areas. The General Contractor must contact Casey's Marketing Company or the Engineer as soon as a need to work in non-permitted areas is identified. Work in non-permitted areas may not proceed until an update to the NOI is filed with the WDNR.

   In case a permit modification is required, the contractor shall provide a permit modification letter, summarizing needed permit changes. Casey's Marketing Company or their Engineer will process the appropriate paperwork with the WDNR.

6. **Permitted Project Area:** For purposes of this SWPPP and associated storm water permit, 'permitted project area' is defined as any and all areas within the project limits of disturbance, as shown on the SWPPP site maps and identified in the Notice of Intent to the agency. ALL ground-disturbing and construction-related activities (material storage, dumpsters, parking areas, project office trailer, etc.) must be included within the permitted project area (limits of disturbance).

7. **Governing Agency:** The following agency or agencies have governing authority for storm water-related regulations and permits at Casey's Lisbon and may appear at the site from time to time during construction:

WDNR
Southeast Region
2300 N. Martin Luther King Drive
Milwaukee, WI 53212

Waukesha County Dept. of Parks and Land Use
Land Resources Division
515 W. Moreland Boulevard
Waukesha, WI 53188

Town of Lisbon
W234N8676 Woodside Road
Lisbon, WI 53089

B. Public Posting (Including SWPPP Information Sign)

Install the SWPPP Information Sign per specification and provide Site Maps and Details Sheets to the jobsite trailer wall before beginning BMP installation. The following information must be posted near the construction exit or in a prominent place for public viewing until termination of permit coverage has been obtained by filing the Notice of Termination (NOT): 1) Notice of Intent; 2) Permit Authorization; 3) Construction Site Notice; and 4) The location of the SWPPP on site. Reference the Entrance Sign (SWPPP Information Sign) detail for proper posting of documents.

C. Retention of Records

A complete copy of the SWPPP, including copies of all inspection reports, plan revisions, etc., must be retained at the project site at all times during the duration of the project (until NOT is accepted) and kept in the permanent project records of the General Contractor for at least five years following submission of the Notice of Termination (NOT). The Contractor will also provide one complete copy of all documents to the owner prior to project acceptance.

D. Contractor/Sub-Contractor List

The General Contractor must provide names and addresses of all subcontractors working on this project who will be involved with the major construction activities that disturb site soil or otherwise affect BMP implementation. This information must be kept in the SWPPP Binder.

E. Inspections

Regular inspections by the General Contractor Superintendent or designated erosion and sediment control manager must be made to determine the effectiveness of the SWPPP. A sample inspection form is included in the Appendix.

The SWPPP, including the best management practices implemented on the jobsite, shall be modified as needed to reduce or prevent pollutants from discharging from the site.

The inspector must be a person familiar with the site, the nature of the major construction activities, and qualified to evaluate both overall system performance and individual component performance. The inspector must either be someone empowered to implement BMPs in order to increase effectiveness to an acceptable level or someone with the authority to cause such things to happen.

F. SWPPP Updates and Amendments

The General Contractor must update the SWPPP and Site Maps weekly to reflect the progress of construction activities and general changes to the project site. SWPPP contact and contractor information and the record of site stabilization activities log must be maintained by the General Contractor throughout the project. Amending the SWPPP does not mean that it has to be reprinted. It is acceptable to add addenda, sketches, new sections, details, and/or revised drawings that are initialed and dated.

G. Discharge of Petroleum Products or Hazardous Substances

Discharge of petroleum products or other hazardous substances into stormwater or the stormwater (storm sewer) system is subject to reporting and clean up requirements in accordance with the US EPA Clean Water Act.

I. Notice of Termination

Once the site reaches final stabilization with all permanent erosion and sedimentation controls installed, all temporary erosion and sedimentation controls removed, and construction complete, the Contractor shall contact Casey's Marketing Company and to obtain approval to file the NOT. If a formal inspection by the WDNR is performed after the NOT is issued, the Contractor shall be responsible to address any remedial measure identified by the WDNR final inspection.

Note to General Contractor: Stabilization requirements include all areas covered by applicable permits, including staging areas or other areas outside the immediate work zone (stockpile locations for example).

J. General Contractors Responsibility

This SWPPP intends to control water-borne, air-borne and liquid pollutant discharges by some combination of interception, sedimentation, filtration, and containment. The General Contractor and subcontractors implementing this SWPPP must remain alert to the need to periodically refine the update the SWPPP in order to accomplish the intended goals. The General Contractor is ultimately responsible for all site conditions and permit compliance.

In the event that a fine or legal action arises as the result of the Contractor's failure to perform on the SWPPP, Casey's Marketing Company will assign any and all fines, attorney fees, or other consultant fees incurred resulting from defense of legal action by the WDNR or Wisconsin

Attorney General office to the General Contractor and will deduct those fines from any final payment due the Contractor.

K. Agency Stormwater Inspections

If any of the regulatory agencies appears on site to make a routine site inspection, a project Superintendent or other representative of the Contractor must walk the site with the regulatory inspector and document any deficiencies noted during the inspection. Deficiencies of any type, field or documentation-related, identified during the regulatory inspection must be noted on the Daily report as a deficiency and resolved within 48-hours. A supplemental inspection report shall be completed by the contractor as a result of the visit. If the agency inspection occurs on a day that a report has previously been filed, then a second report must be completed for that day if any deficiencies are noted during the inspection.

Documentation of all known inspections by State, or local storm water or other environmental agencies shall be kept in the General Contractor SWPPP Binder. The log form can be found in the Appendix and must include the date and time of the visit and whether a report was issued or will be issued as a result of the inspection. Notify Casey's Marketing Company of any site inspection visits that result in documented deficiencies.

II. GENERAL INFORMATION

This SWPPP has been prepared for major activities associated with the construction of:

Casey's Lisbon, WI

This SWPPP, including the applicable General Permit, includes the elements necessary to comply with the General Permit for construction activities administered by the Wisconsin Department of Natural Resources (WDNR) under the National Pollutant Discharge Elimination System (NPDES) program and Wisconsin Pollutant Discharge Elimination System (WPDES) and all local governing agency requirements. This SWPPP must be implemented at the start of construction.

Construction phase pollutant sources anticipated at the site are disturbed (bare) soil, vehicle fuels and lubricants, chemicals and coatings associated with site or building construction and pavement installation, construction-generated litter and debris, and building materials. Without adequate control there is a potential for each type of pollutant to be transported by stormwater.

Project construction will consist primarily of site clearing and grubbing, demolition of existing site amenities, site grading, paving, storm drainage, water supply, sewage collection, road work, sidewalks, utilities, site lighting, etc. located within the permitted project area.

A. Purpose

A major goal of pollution prevention efforts during project construction is to control soil and pollutants that originate on the site and prevent them from flowing to surface waters. The purpose of this SWPPP is to provide guidelines for achieving that goal. A successful pollution prevention program also relies upon careful inspection and adjustments during the construction process in order to enhance its effectiveness.

B. Scope

This SWPPP must be implemented before construction begins on the site. It primarily addresses the impact of storm rainfall and runoff on areas of the ground surface disturbed during the construction process. In addition, there are recommendations for controlling other sources of pollution that could accompany the major construction activities. Applicability of this SWPPP will terminate when disturbed areas are stabilized, permanent erosion and sedimentation controls are installed, temporary erosion and sedimentation controls are removed, construction activities

covered herein have ceased, and a completed Notice of Termination (NOT) is transmitted to the governing agency.

Forms which are necessary for implementing the SWPPP are included herein.

The General Permit for Stormwater Discharges Associated with Construction Activities permits only stormwater discharges as associated with land disturbing construction activity as defined in ch. NR 216 Wis. Adm Code or stormwater and or groundwater from excavations and or pit dewatering. Other direct and indirect waste discharge to waters of the state is prohibited unless covered by another WPDES permit.

Best Management Practices (BMPs) must be implemented for the above allowable discharges for the duration of the permit. Each non-stormwater discharge should be noted in the SWPPP and have proper erosion and sedimentation controls in place with the possible exception of discharges from firefighting activities.

The recommendations described in this SWPPP focus on providing control of pollutant discharges with practical approaches that utilize readily available expertise, material, and equipment.

The Owner referred to in this SWPPP is Casey's Marketing Company. The General Contractor shall construct the site development improvements while working under contract with the Owner.

III. PROJECT DESCRIPTION

Casey's Marketing Company intends to enlist a General Contractor for the construction of the following:

Casey's Lisbon, WI

Described below are the major construction activities that are the subject of this SWPPP. Also included are recommended BMP installation activities that must take place prior to construction activities. **NOTE: Down slope protective measures must always be in place before soil is disturbed.** In general, the Contractor has control over the specific order of operations to complete his work in a timely and efficient manner. The following major construction items constitute the general project description and suggested work order of site work improvements:

1. PLACE SWPPP BOARD.
2. PREPARE TEMPORARY PARKING AND STORAGE AREA. UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAY DOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, MASONS AREA, FUEL AND MATERIAL STORAGE CONTAINERS, ETC., DENOTE THEM ON THE SITE MAPS IMMEDIATELY AND NOTE ANY CHANGES IN THE LOCATIONS AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.
3. CONSTRUCT THE SILT FENCES ON THE SITE. INSTALL INLET PROTECTION DEVICES IN EXISTING STRUCTURES.
4. DEMOLISH BUILDINGS.
5. TEMPORARILY SEED, THROUGHOUT CONSTRUCTION, DENUDED AREAS THAT WILL BE INACTIVE FOR 14 DAYS OR MORE.
6. CONSTRUCT TEMPORARY SEDIMENT TRAP AND INSTALL OUTLET CONTROL PROTECTION AND LEVEL SPREADER
7. INSTALL UTILITIES, UNDERDRAINS, AND STORM SEWERS. INSTALL INLET PROTECTION CONCURRENTLY.
8. PERMANENTLY STABILIZE AREAS TO BE VEGETATED AS THEY ARE BROUGHT TO FINAL GRADE.
9. PREPARE AREA OF SITE FOR PAVING FOR PARKING AREAS.

10. PAVE AREA OF SITE.
11. COMPLETE GRADING AND INSTALLATION OF PERMANENT STABILIZATION OVER ALL AREAS.
12. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES (ONLY IF SITE IS STABILIZED.)

The actual schedule for implementing pollutant control measures will be determined by project construction progress.

IV. SITE DESCRIPTION

Included as parts of this SWPPP are the project Construction Drawings for this project. Refer to the Construction Drawings for detailed site information.

A. Site Location

- Address: Northwest corner of CTH V and CTH VV, Lisbon, WI 53089
- Latitude: 43.121321 degrees North
- Longitude: -88.185892 degrees West
- Adjacent surrounding properties: the site is bordered by wooded property to the north, CTH V to the east, CTH VV the south and residential property to the west.

B. Site Topography

- The existing site has an elevation change of approximately 10 feet, with the site being generally flat. The highest elevation occurs near the center of the site as a mound around existing silos, and the lowest elevations occur near the southwest corner of the property.
- Vegetation: Existing vegetation consists of grass areas, several trees and bushes, and farmed land.

C. Rainfall Information

- The total average annual rainfall for the project area is approximately 34 inches.

E. Total Site Area

- The immediate project site contains: 3.33 acres, disturbed area is 4.88 acres.

F. Receiving Surface Waters

- Receiving waters: Discharge will be conveyed via proposed storm sewer and overland flow to CTH VV right-of-way at the southwest corner of the site. Site discharge is ultimately conveyed to an unnamed tributary of the Fox River located approximately 0.25 miles to the northeast of the site.
- 100-year floodplain: This project is not located within the 100-year floodplain.

G. Erosion and Sedimentation Control Plan

- See the Construction Drawings for minimum erosion and sediment control measures to be implemented.

H. Environmental Permits – Other than NPDES, Stormwater and/or Erosion & Sediment Control

- Wetlands: NONE

V.STORMWATER POLLUTION PREVENTION MEASURES AND CONTROLS

A variety of stormwater pollutant controls are recommended for this project. Some controls are intended to function temporarily and will be used as needed for pollutant control during the construction period. These include temporary sediment barriers and permanent infiltration/detention basin (which can also function as temporary sediment basins). Permanent stabilization will be accomplished in all disturbed areas by covering the soil with pavement, building foundation, vegetation, or other forms of soil stabilization. A listing of controls that might be used on the site is provided below.

A. Erosion and Sediment Controls

1. Minimization of Disturbed Areas

Note to General Contractor: Casey's Marketing Company has authority to limit surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct General Contractor to provide immediate permanent or temporary pollution control measures

2. Soil Stabilization

The purpose of soil stabilization is to prevent soil from eroding and leaving the site. In the natural condition, soil is stabilized by native vegetation. The primary technique to be used at this project for permanently stabilizing site soils will be to provide a protective cover of grass, pavement, or building structure.

a.) **Temporary Seeding or Stabilization –** All denuded areas that will be inactive for 14 days or more, must be stabilized temporarily with the use of fast-germinating annual grass/grain varieties appropriate for site soil and climate conditions, straw/hay mulch, wood cellulose fibers, tackifiers, netting and/or blankets. Stockpiles and diversion ditches/berms must be stabilized to prevent erosion and dust issues.

Note to General Contractor: Temporary stabilization is not achieved simply through seeding. In order for an area or stockpile to be sufficiently stabilized via temporary vegetation, seed must germinate, grow and provide adequate vegetative density.

b.) **Permanent Seeding, Sod or Mulching –** All areas at final grade must be seeded or covered with sod within 14 days after completion of work in that area. Seed immediately after final grade is achieved and soils are prepared to take advantage of soil moisture and seed germination. At the completion of ground-disturbing activities the entire site must have permanent vegetative cover, meeting vegetative density requirements, or mulch per landscape plan, in all areas not covered by hardscape (pavement, buildings, etc.).

Seeded areas shall be protected with straw mulch, hydraulic mulch or a rolled erosion control product. Straw mulch must be tackified or crimped by disc or other machinery and rolled erosion control products must be installed per manufacturer recommendations.

All areas to be seeded must meet topsoil depth, pH and organic content requirements as specified in the Landscaping Plans.

Consideration is given to climate conditions, soil type and native vegetation when designing the final landscaping plan.

To minimize the potential for erosion and maximize seed germination & growth, the General Contractor must evaluate the short and long-term local forecast prior to applying permanent seed or sod.

Final site stabilization is achieved when perennial vegetative cover provides permanent stabilization with a density greater than **70 percent** over the entire area to be stabilized by vegetative cover. This area is exclusive of areas that are covered with landscape mulch, paved or have a building or other permanent structure on them.

3. Structural Controls

Site structural controls used during construction may include any or all of the following Best Management Practices (BMP's).

a) **Sediment Basins –**Temporary sediment basins are depressions constructed down slope of construction activity and located such that stormwater runoff from upland areas of less than 100 acres are diverted through the basin. Sediment basins shall be constructed as directed by the SWPPP and shall be constructed as part of the initial Phase I BMPs whenever practical. An overflow pipe is typically incorporated at the outlet to discharge flow from the basin.

b) **Sediment Traps –**Temporary sediment traps are depressions constructed down slope of construction activity and located such that stormwater runoff from upland areas of less than 5 acres are diverted through the trap. Sediment traps shall be constructed as indicated by the SWPPP and shall be constructed as part of the initial BMPs whenever practical. An overflow weir is incorporated at the outlet to discharge flow from the trap. Sediment traps shall be phased with the earthwork activity where practical.

c) **Silt Fence –** Silt fence is a synthetic permeable woven or non-woven geotextile fabric incorporating metal support stakes at intervals sufficient to support the fence (5-feet maximum distance between posts), water, and sediment retained by the fence. The fence is designed to retain sediment-laden stormwater and allow settlement of suspended soils before the stormwater flows through the fabric and discharges from the site. Silt fence shall be located on the contour to capture overland, low-velocity sheet flows and must be properly installed in the ground to prevent water from simply passing under the fence. Once a silt fence has been filled to ½ its height by sediment it is no longer effective. Contractor shall routinely clean sediment buildup from functioning silt fence or abandon it and install a new silt fence down slope as the new BMP protective measure.

d) **Construction Exit –** All access points from the public street into the construction site shall include a construction exit composed of course stone to the dimensions shown on the Construction Drawings detail sheet. The rough texture of the stone helps to remove clumps of soil adhering to the construction vehicle tires through the action of vibration and jarring over the rough surface and the friction of the stone matrix against soils attached to vehicle tires.

All site access must be confined to the construction exit(s). Barricade to prevent use, any locations other than the construction exit(s) where vehicles or

equipment may access the site. Use construction fencing/drums, etc. near construction exit(s) if necessary to prevent traffic by-pass or short circuiting.

e) **Storm Sewer Inlet Protection –** Curb and grated inlets are protected from the intrusion of sediment through a variety of measures as shown on the details included in the Construction drawings. The primary mechanism is to place controls in the path of flow sufficient to slow the sediment-laden water to allow settlement of suspended soils before discharging into the storm sewer. It is possible that as construction progresses from storm sewer installation through to paving that the inlet protection devices will change.

Note to General Contractor: Inlet protection devices create ponding of stormwater that could result in flooding or by-pass conditions.

f) **Check Dams –**Defined channels subject to concentrated flows in larger quantities and higher velocities may be protected with rock or other manufactured device (Geo-ridge for example) that can be used as a check dam. The dams impound sediment-laden water and allow for settlement of suspended soil before the stormwater flows over and through the device. Dams shall be placed along the water course at linear intervals in which the elevation of the bottom of the upper most check dam is at the same elevation as the top of the check dam immediately below it. This will allow the most ponding capacity and will not increase the velocity of the water flowing along the channel. Location and spacing of check dams are shown on the Site Maps. Check dams are composed of crushed stone or rip rap or of other manufactured devices. See the detail sheet within the Construction Drawings for the types of dams to be used on this site.

g) **Diversion Ditch/Berm –**Diversion ditches (swales) and berms (dikes) are constructed as shown on the Site Maps at locations within the construction site to intercept overland flow and direct or divert flow to a sediment basin or other point where discharge can be controlled. Ditches are excavated in the surface soils with the spoils from the excavation typically placed along the downstream edge of the ditch to provide additional capacity. Berms are built up on the surface soils and compacted to create a stable diversion.

B. Other Pollutant Controls

This section includes the controls of pollutants other than sediment and additional requirements of the General Permit.

1. Dust Control

Construction traffic must enter and exit the site at the stabilized construction exit. The purpose is to trap dust and mud that would otherwise be carried beyond the permitted project area by construction traffic. Large areas of soil that are denuded of vegetation and have no protection from particles being picked up and carried by wind should be protected with a temporary cover or kept under control with water or other soil adhering products to limit wind transported particles exiting the site perimeter.

Water trucks or other dust control agents will be used as needed during construction to minimize dust generated on the site. Tackifiers may be used to hold soil in place and prevent dust. Manufacturer recommendations for application locations and rates must be used for dust control applications. Dust control must be provided by the General

Contractor to a degree that is in compliance with applicable local and state dust control regulations.

2. Dewatering

Discharges from dewatering operations must be directed through an appropriate pollution prevention/treatment measure, such as a pump discharge filter bag, sediment trap or sediment basin prior to being discharged from the site or into a water body of the State. Under no circumstances are discharges from dewatering operations to be discharged directly into streams, rivers, lakes or other areas beyond the permitted project area. Likewise, discharges into storm sewer systems that do not drain to a suitable on-site treatment facility, such as a basin, are also prohibited. Discharges from dewatering operations must also be conducted in a manner sufficient to prevent erosion from the discharge runoff.

Use best management practices when dewatering. Place intake hose on a flotation or similar device and do not pump directly from the bottom of the basin, trench, etc. Always pump through a sediment control BMP and dewater within the permitted limits of disturbance to ensure discharge criteria are achieved. Do not discharge on a slope greater than three percent or within 20' of a surface water body.

3. Solid Waste Disposal

No solid materials, including building materials, are allowed to be discharged from the site with stormwater. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers will be emptied when 95% full, or as necessary, by a certified trash disposal service and hauled away from the site. Covers for the containers will be provided as necessary to meet state and local requirements. Construct covers as practicable, or required, to prevent stormwater contact and pollutant discharges from solid waste receptacles. Solid waste disposal may also require additional conformance to meet LEED specifications. See additional LEED specifications if applicable to this project.

4. Sanitary Facilities

All personnel involved with construction activities must comply with state and local sanitary or septic system regulations. Temporary sanitary facilities will be provided at the site throughout the construction phase. They must be utilized by all construction personnel and will be serviced by a commercial operator. Portable toilets must be securely anchored and are not allowed within 30' of inlets or permitted limit of disturbance or within 50' of a water of the State.

5. Non-Stormwater Discharges

Non-stormwater components of site discharges must be clean water. Water used for construction which discharges from the site must originate from a public water supply or private well approved by the State Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the site. It can be retained in the ponds until it infiltrates and evaporates. Other non-stormwater discharges would include ground water. Only uncontaminated ground water can be discharged from the site, as allowed by and in accordance with applicable local ground water dewatering permits/regulations. When non-stormwater is discharged from the site, it must be done in a manner such that it does not cause erosion of the soil during discharge.

6. Concrete Waste from Concrete Ready-Mix Trucks

Discharge of excess or waste concrete and/or wash water from concrete trucks will be allowed on the construction site, but only in approved aboveground portable concrete washout containers (preferred) or in specifically designated lined and diked areas prepared to prevent contact between the concrete and/or wash water and stormwater that will be discharged from the site. The General Contractor shall eliminate or minimize the number of seams in the liner.

Alternatively, waste concrete can be placed into forms to make rip rap or other useful concrete products. The cured residue from the concrete washout diked areas shall be disposed in accordance with applicable state and federal regulations. Contractor shall collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in a trash container. This jobsite superintendent is responsible for assuring that these procedures are followed. The location of concrete washout areas shall be shown on the Plans. Follow all applicable environmental regulations for concrete wash out pits

7. Masons' Area

Contractor shall identify masons' area on the site and indicate location on the Site Map. To the extent practical, all masonry tools, material, including sand and sacked cement or mortar materials, and equipment shall be located within the area identified. Runoff control, such as berms or diversion ditches, silt fence, straw wattles, or other means of containment shall be provided to prevent the migration of storm water pollutants in runoff from the masons' area. Receptacles for debris and trash disposal shall also be provided.

8. Fuel Tanks

Temporary on-site fuel tanks for construction vehicles shall meet all state and federal regulations, including any spill prevention or containment measures.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the site. As an example, special care must be exercised during equipment fueling and servicing operations. If a spill occurs, it must be contained and disposed of so that it will not flow from the site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

9. Hazardous Material Management and Spill Reporting Plan

Any hazardous or potentially hazardous material that is brought onto the construction site will be handled properly in order to reduce the potential for stormwater pollution. All materials used on this construction site will be properly stored, handled, dispensed and disposed of following all applicable label directions. Flammable and combustible liquids will be stored and handled according to 29 CFR 1926.152. Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.

In the event of an accidental spill, immediate action will be undertaken by the General Contractor to contain and remove the spilled material. All hazardous materials, including contaminated soil and liquid concrete waste, will be disposed of by the Contractor in the manner specified by federal, state and local regulations and by the manufacturer of such products. As soon as possible, the spill will be reported to the appropriate agencies. As required under the provisions of the Clean Water Act, any spill or discharge entering waters of the United States will be properly reported. The

General Contractor will prepare a written record of any spill and associated clean-up activities of petroleum products or hazardous materials in excess of 1 gallon or reportable quantities, which ever is less. The General Contractor will provide notice to the District immediately upon identification of a reportable spill.

VI. LOCAL PLANS

In addition to this SWPPP, construction activities associated with this project must comply with any guidelines set forth by local regulatory agencies.

VII. INSPECTIONS AND SYSTEM MAINTENANCE

Between the time this SWPPP is implemented and final Notice of Termination has been submitted, all disturbed areas and pollutant controls must be inspected in accordance with the General Permit. The purpose of site inspections is to assess performance of pollutant controls.

Inspections are to occur at least once every 7 calendar days and after a rainfall of 0.5 inches or a snowfall of 6.0 inches, as measured and reported at the rain gage at the Burlington Municipal Airport in Burlington, WI, or an on-site gauge station established by the contractor.

The inspections will be conducted by the General Contractor's Site Superintendent or other person that is qualified to assess the principals and practices of erosion and sediment control measures. Based on these inspections, the General Contractor will decide whether it is necessary to modify this SWPPP, add or relocate controls, or revise or implement additional Best Management Practices in order to prevent pollutants from leaving the site via stormwater runoff. The General Contractor has the duty to cause pollutant control measures to be repaired, modified, supplemented, or take additional steps as necessary in order to achieve effective pollutant control. Note: If a BMP is covered by snow, mark the BMP as not applicable and document the reason the BMP can not be inspected on the daily report.

Examples of specific items to evaluate during site inspections are listed below. This list is not intended to be comprehensive. During each inspection, the inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

A. Construction Exit and Track Out

Locations where vehicles enter and exit the site must be inspected for evidence of sediment tracking beyond the permitted project area. A stabilized construction exit shall be constructed where vehicles enter and exit. Exits shall be maintained or supplemented with additional rock as necessary to prevent the release of sediment from vehicles leaving the site. Any sediment deposited on the roadway shall be swept as necessary throughout the day or at the end of every day and disposed of in an appropriate manner. Sediment shall **NOT** be washed into storm sewer systems.

B. Erosion Control Devices

Rolled erosion control products (nets, blankets, turf reinforcement mats) and marginally vegetated areas (areas not meeting required vegetative densities for final stabilization) must be inspected weekly. Rilling, rutting and other signs of erosion indicate the erosion control device is not functioning properly and additional erosion control devices are warranted.

C. Sediment Control Devices

Sediment barriers, traps and basins must be inspected and they must be cleaned out at such time as their original capacity has been reduced by 50 percent. All material excavated from behind sediment barriers or in traps and basins shall be incorporated into on-site soils or spread out on an upland portion of the site and stabilized. To minimize the potential for sediment releases from the project site perimeter control devices shall be inspected with consideration given to changing up-gradient conditions.

D. Material Storage Areas

Material storage areas should be located to minimize exposure to weather. Inspections shall evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system or discharging from the site. If necessary, the materials must be covered or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas. All state and local regulations pertaining to material storage areas will be adhered to.

E. Vegetation

Consideration must be given to anticipated climate and seasonal conditions when specifying and planting seed. Seed shall be free of weedy species and appropriate for site soils and regional climate. Seed and mulch per the construction drawings and planting specifications immediately after topsoil is applied and final grade is reached. Grassed areas shall be inspected to confirm that a healthy stand of grass is maintained. The site has achieved final stabilization once all areas are covered with building foundation or pavement, or have a stand of grass with a minimum of 70 percent density or greater of natural background cover over the entire vegetated area in accordance with the General Permit requirements. Vegetated areas must be watered, fertilized, and reseeded as needed to achieve this requirement. The vegetative density must be maintained through project completion to be considered stabilized. Areas protected by erosion control blankets are not permanently stabilized until the applicable General Permit requirement for final vegetative density is achieved.

Rip-rap, mulch, gravel, decomposed granite or other equivalent permanent stabilization measures may be employed in lieu of vegetation based on site-specific conditions.

F. Discharge Points

All discharge points must be inspected to determine whether erosion and sediment control measures are effective in preventing discharge of sediment from the site or impacts to receiving waters.

Inspection reports must be retained by the General Contractor as an integral part of this SWPPP for at least three years from the date of submission of the Notice of Termination of permit coverage.

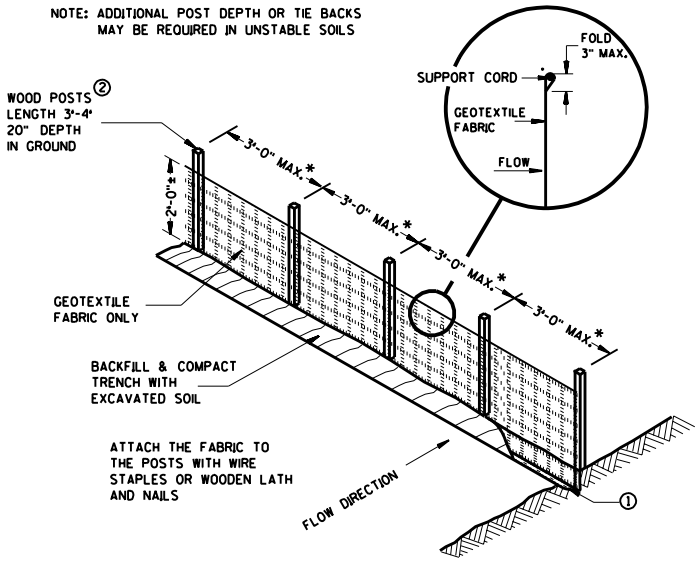
Ultimately, it is the responsibility of the General Contractor to assure the adequacy of site pollutant discharge controls. Actual physical site conditions or contractor practices could make it necessary to install more structural controls than are shown on the plans. For example, localized concentrations of runoff could make it necessary to install additional sediment barriers. Assessing the need for additional controls and implementing them or adjusting existing controls will be a continuing aspect of this SWPPP until the site achieves final stabilization.

VIII. Details

See Civil Plan set for SWPPP plan sheet, layout, removal and grading plans.

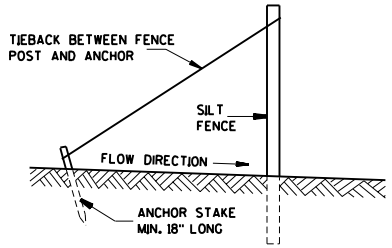
GENERAL NOTES

1. TRENCH SHALL BE A MINIMUM OF 4" WIDE & 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL & COMPACT TRENCH WITH EXCAVATED SOIL.
2. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1 1/8" X 1 1/8" OF OAK OR HICKORY.
3. CONSTRUCT SILT FENCE FROM A CONTINUOUS ROLL IF POSSIBLE BY CUTTING LENGTHS TO AVOID JOINTS. IF A JOINT IS NECESSARY USE ONE OF THE FOLLOWING TWO METHODS: A) TWIST METHOD -- OVERLAP THE END POSTS AND TWIST, OR ROTATE, AT LEAST 180 DEGREES. B) HOOK METHOD -- HOOK THE END OF EACH SILT FENCE LENGTH.

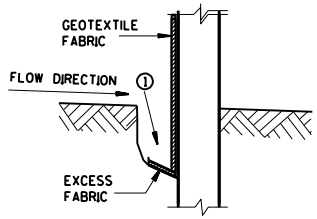


*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

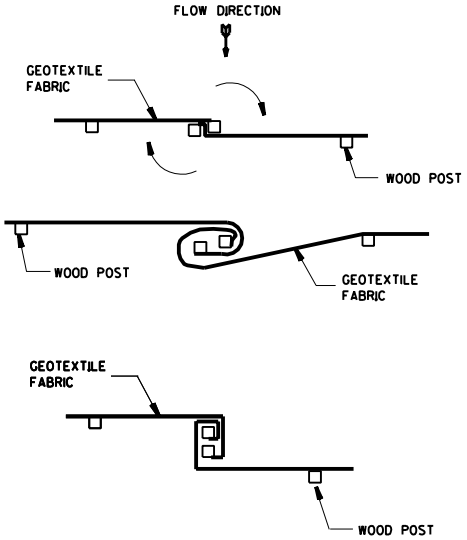
SILT FENCE



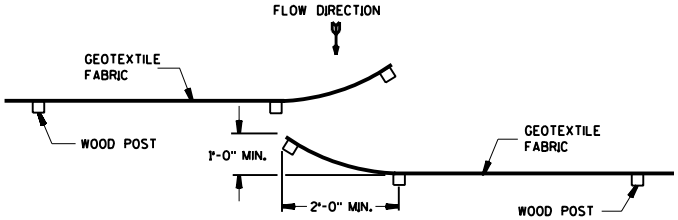
SILT FENCE TIE BACK
(WHEN ADDITIONAL SUPPORT REQUIRED)



TRENCH DETAIL



TWIST METHOD



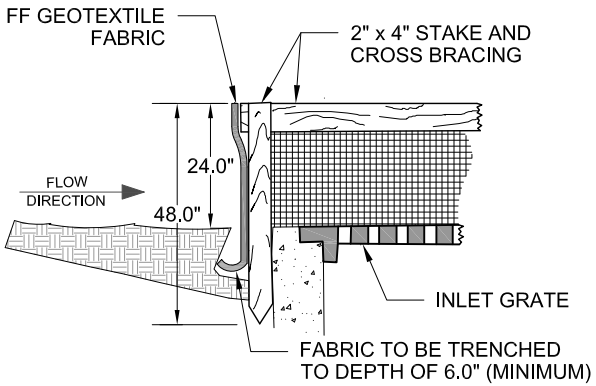
HOOK METHOD

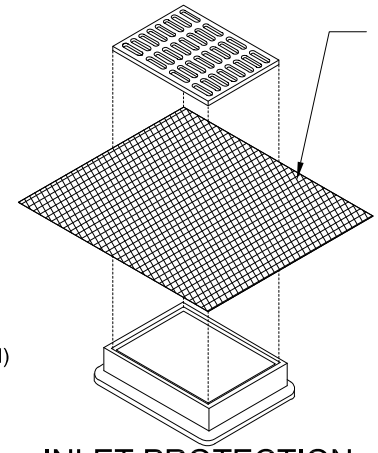
JOINING TWO LENGTHS OF SILT FENCE ④

This drawing based on Wisconsin Department of Transportation Standard Detail Drawing 8 E 9-6.

SILT FENCE

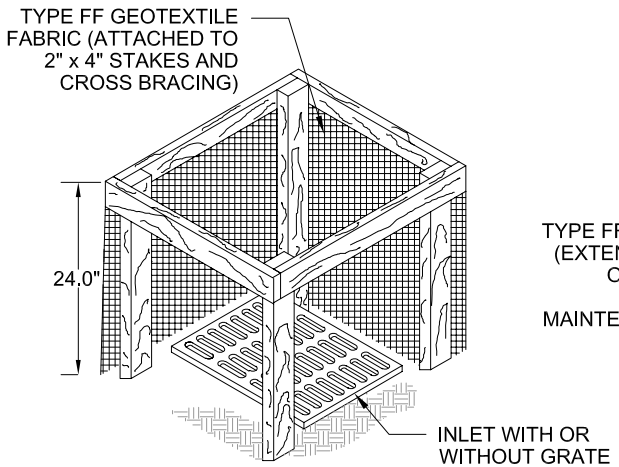
FIGURE 1. INLET PROTECTION TYPES A, B, C AND D



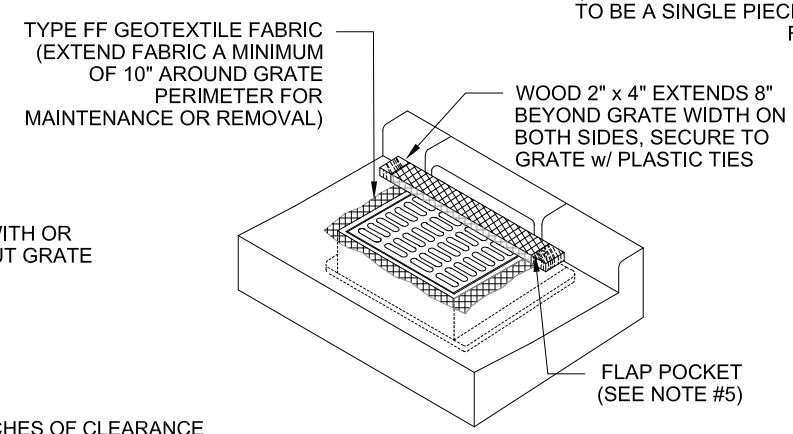


INLET PROTECTION TYPE B

WITHOUT CURB BOX

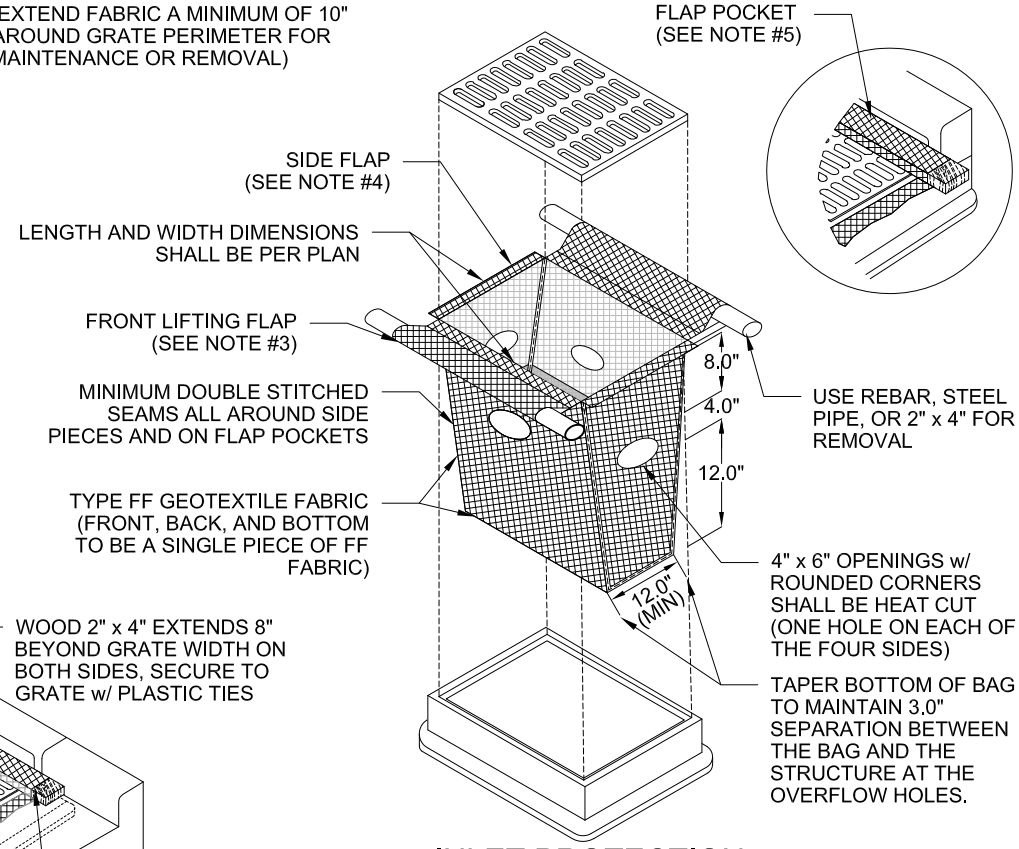


INLET PROTECTION TYPE A



INLET PROTECTION TYPE C

WITH CURB BOX



INLET PROTECTION TYPE D

CAN BE INSTALLED IN INLETS WITH OR WITHOUT CURB BOXES

NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG. FRONT, BACK, AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

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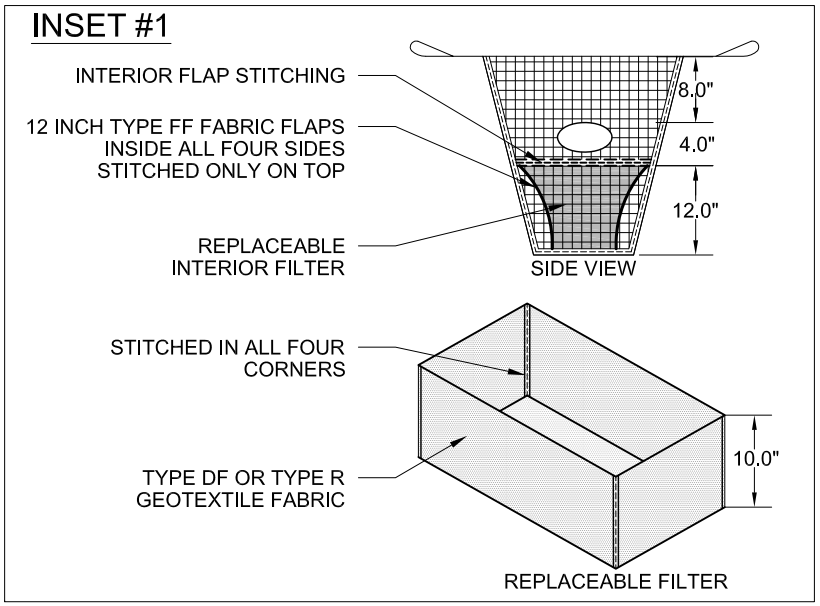
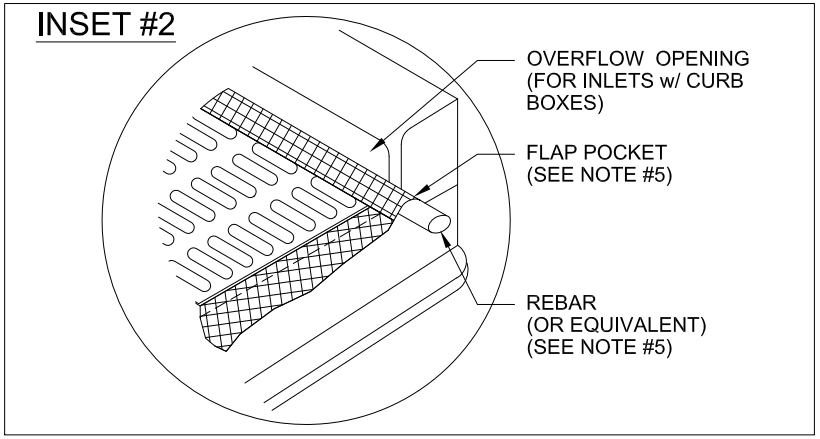
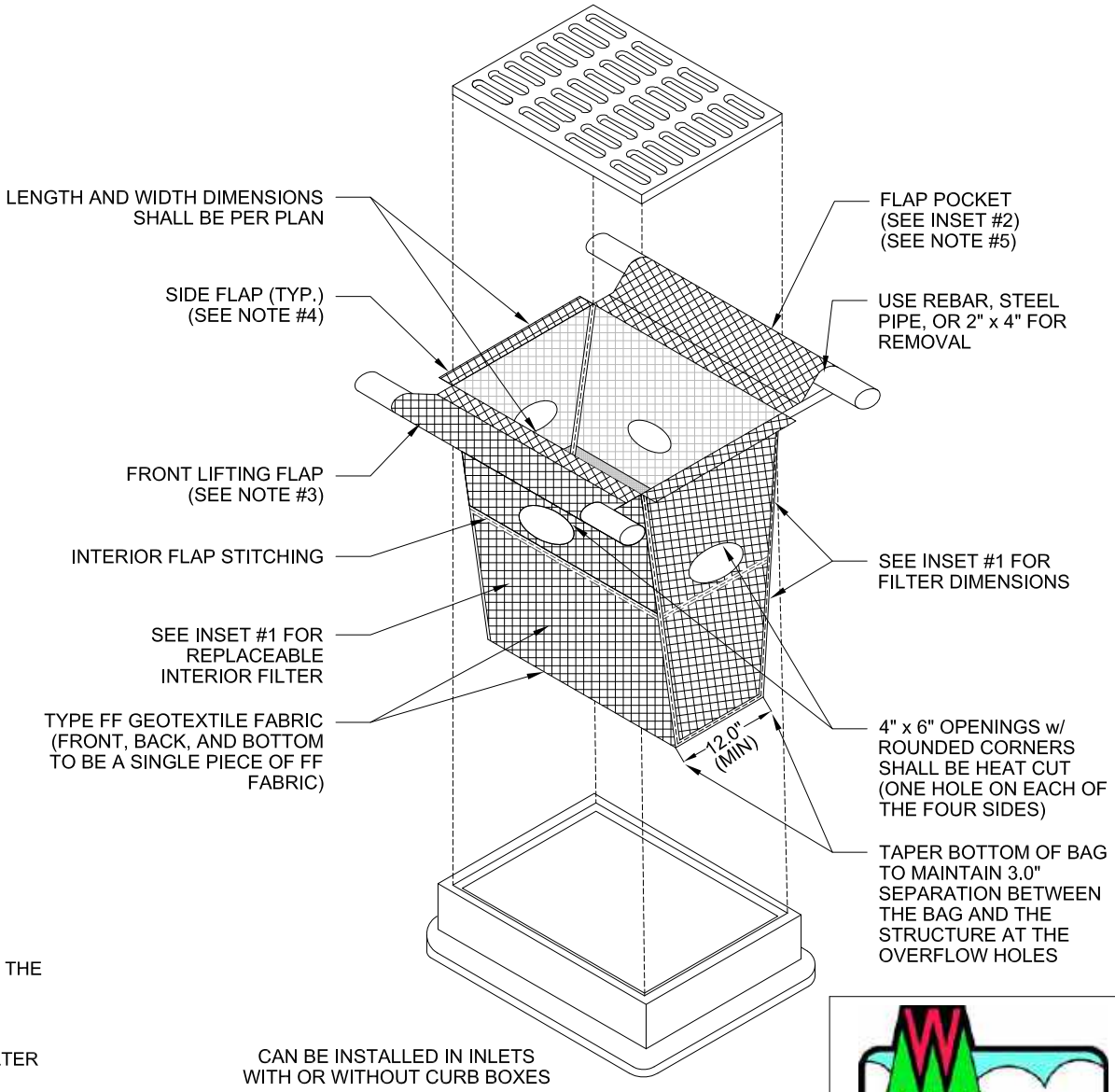
FIGURE 2. INLET PROTECTION TYPE D-M







NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC TYPE FF FOR FLAPS, TOP AND BOTTOM OF OUTSIDE OF FILTER BAG. FRONT, BACK, AND BOTTOM OF FILTER BAG BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 4". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

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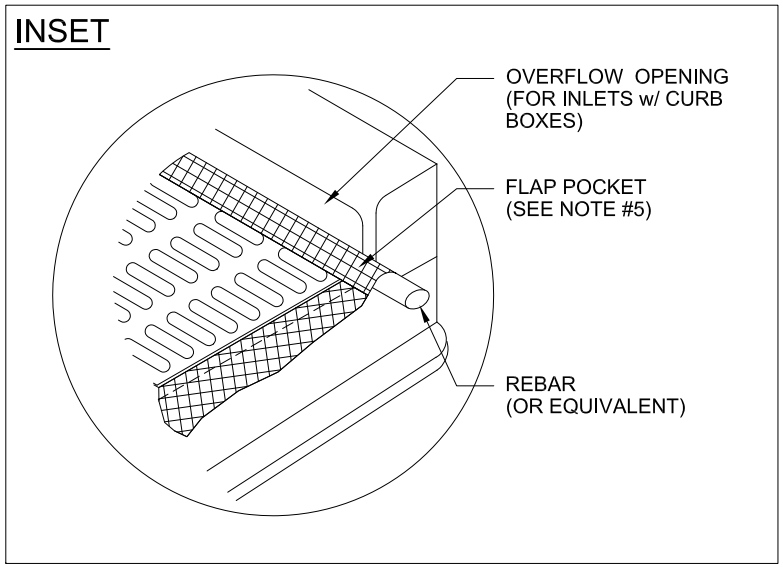
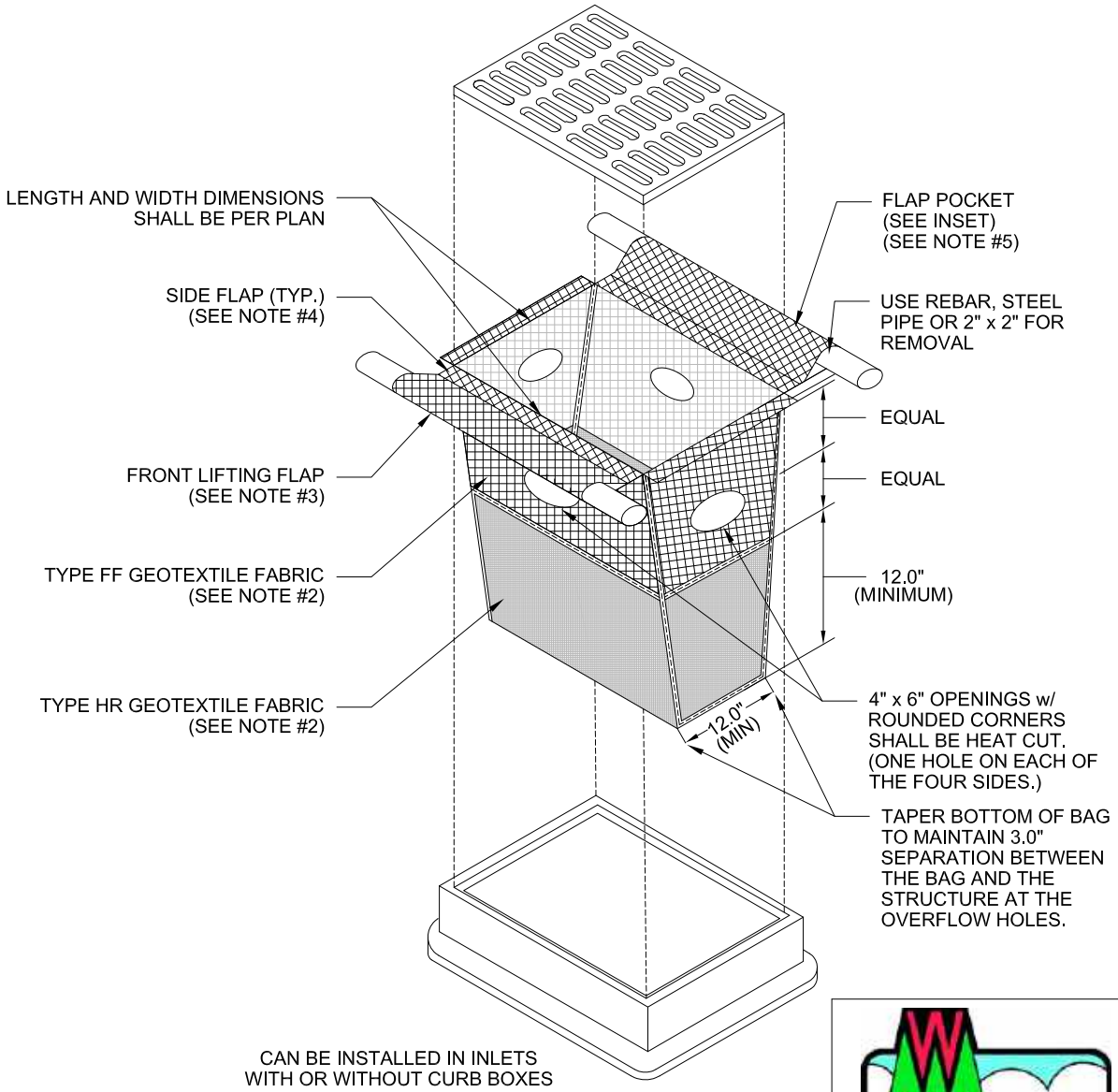
FIGURE 3. INLET PROTECTION TYPE D-HR





NOTES:

1. TAPER BOTTOM OF BAG TO MAINTAIN THREE INCHES OF CLEARANCE BETWEEN THE BAG AND THE STRUCTURE, MEASURED FROM THE BOTTOM OF THE OVERFLOW OPENINGS TO THE STRUCTURE WALL.
2. GEOTEXTILE FABRIC, TYPE FF FOR FLAPS AND TOP HALF OF FILTER BAG. GEOTEXTILE FABRIC, TYPE HR FOR BOTTOM HALF OF FILTER BAG WITH FRONT, BACK, AND BOTTOM BEING ONE PIECE.
3. FRONT LIFTING FLAP IS TO BE USED WHEN REMOVING AND MAINTAINING FILTER BAG.
4. SIDE FLAPS SHALL BE A MAXIMUM OF TWO INCHES LONG. FOLD THE FABRIC OVER AND REINFORCE WITH MULTIPLE STITCHES.
5. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2" x 2". THE REBAR, STEEL PIPE, OR WOOD SHALL BE INSTALLED IN THE REAR FLAP AND SHALL NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING.

MAINTENANCE NOTES:

1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.

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Construction Site Diversion
(1066)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A *temporary*[1] berm or channel constructed across a slope to collect and divert runoff.

II. Purpose

To intercept, divert, and safely convey runoff at construction sites in order to divert clean water away from disturbed areas, or redirect sediment laden waters to an appropriate sediment control facility.

III. Conditions Where Practice Applies

A. This practice is applicable to construction sites where temporary surface water runoff control or management is needed. Locations and conditions include:

1. Above disturbed areas, to limit runoff onto the site.
2. Across slopes to reduce slope length.
3. Below slopes to divert excess runoff to stabilized outlets.
4. To divert sediment-laden water to sediment control facilities.
5. At or near the perimeter of the construction area to keep sediment from leaving the site.

B. This standard does not pertain to permanent diversions. Refer to appropriate design criteria and local regulations when designing permanent diversions.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of this practice. This standard does not contain the text of federal, state, or local laws.

V. Criteria

A. The diversion shall have stable side slopes and shall not be overtopped during a 2-year frequency, 24-hour duration storm. The minimum berm cross section shall be as follows:

1. Side slopes of 2:1 (horizontal:vertical) or flatter.
2. Top width of two feet.
3. Berm height of 1.5 feet.

B. Sediment-laden runoff from disturbed areas shall be diverted into a sediment control practice. For typical sediment control practices see WDNR Conservation Practice Standards Sediment Trap (1063) or Sediment Basin (1065) for design criteria.

C. When diverting clean water the diversion channel and its outfall shall be immediately *stabilized* for the 2-year frequency, 24-hour duration storm. Build and stabilize clean water diversions before initiating down slope land-disturbing activities.

D. Diversions shall be protected from damage by construction activities. At all points where diversion berms or channels will be crossed by construction equipment, the diversion shall be stabilized or shaped appropriately. Temporary culverts of adequate capacity may be used.

E. For diversions that are to serve longer than 30 days, the side slopes including the ridge, and down slope side the diversion shall be stabilized as soon as they are constructed. The diversion channel should be stabilized (i.e. erosion mat) or a larger sediment control practice shall be needed. For diversions serving less than 30 days, the

[1] Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text. Definitions apply to concepts found in this document and may not apply in other situations.

down slope side of the diversion shall be stabilized as soon as constructed.

VI. Considerations

A. The channel cross section may be parabolic, v-shaped or trapezoidal. The use of "V" channels is generally discouraged due to potential erosion problems.

B. Ditch checks may be used to enhance sediment removal. Ditch checks shall be designed in accordance with WDNR Conservation Practice Standard Ditch Check (1062).

C. For diversion berms consider designing an emergency overflow section or bypass area to limit damage from storms that exceed the 2-year frequency 24-hour duration storm. The overflow section may be designed as a stabilized weir with riprap protection.

VII. Plans and Specifications

A. Plans and specifications for installing diversions shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Diversion location.
2. Channel grade or elevations.
3. Typical cross section.
4. Channel stabilization if required.

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Diversions shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. Maintenance shall be completed as soon as possible with consideration to site conditions.

C. Accumulated sediment shall be removed when it reaches one half the height of the diversion berm. Properly dispose of any sediment removed from the diversion.

D. Diversions shall be removed and the area stabilized according to construction plans.

IX. Definitions

Temporary (I): an erosion control measure that is utilized during construction and grading operations prior to final stabilization.

Stabilized (V.C): means protecting exposed soil from erosion.

DEWATERING

Code No.
(1061)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A compartmented container, settling basin, filter, or other appropriate best management practice through which sediment-laden water is conveyed to trap and retain the sediment.

II. Purposes

The purpose of this standard is to determine appropriate methods and means to remove sediment from water generated during dewatering activities prior to discharging off-site or to waters of the state. Practices identified in this standard shall be deemed to meet the de-watering performance standard to prevent the discharge of sediment to the maximum extent practicable (MEP) as defined in NR 151.11(6)(c).

III. Conditions where Practice Applies

This practice applies where sediment laden water needs to be removed for construction or maintenance activities. Dewatering practices shall be in keeping with the effective operating and applicability criteria listed on Figure 2, Dewatering Practice Selection Matrix.

This practice does not apply to:

- Water being discharged directly to groundwater or *karst features*[1]. Refer to NR140.
- Well dewatering systems. Refer to NR 812.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of this practice. This may include activities performed under NR 216 and Chapter 30 permits, for water bodies with *targeted performance standards* per NR 151.004, 303d waterbodies or others. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum allowable limits for design parameters, installation and performance requirements.

Dewatering practices shall be selected based on the predominant soil texture encountered at the dewatering site with consideration given to pumping or flow rates, volumes and device effectiveness. Refer to Figure 1 USDA Soil textural triangle to assist with soil classifications at the site. Figure 2, Dewatering Practice Selection Matrix illustrates acceptable dewatering options and their effective ranges. Practices selected that are not on the matrix must provide an equivalent level of control, with justification provided to the reviewing authority.

A. Site Assessment - A site assessment shall be conducted and documented to determine the physical site characteristics that will affect the placement, design, construction and maintenance of dewatering activities. The site assessment shall identify characteristics such as ground slopes, soil types, soil conditions, bedrock, sinkholes, drainage patterns, runoff constituents, proximity to regulated structures, natural resources, and specific land uses. The site assessment shall include the following:

- Sanitary and storm sewer locations
- Potential contamination - Odor or discoloration other than sediment, or an oily sheen on the surface of the sediment laden water. If contamination is present, notify DNR Spills Reporting
- Soil textural class for areas where dewatering will occur. Soil investigation shall extend below grading and trenching activities
- Depth to the seasonally highest water table.
- Discharge outfall locations
- Distance and conveyance method to receiving waters

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

B. General Criteria applicable to all dewatering activities

1. Contact the WDNR when the discharge from a dewatering practice will enter a WDNR listed *Exceptional Resource Water (ERW), Outstanding Resource Water (ORW),* or a wetland in an area of special natural resource interest as identified in NR 103.

2. Contact the owner or operator of the municipal separate stormwater system if the discharge is to a municipal storm water conveyance system. The allowable discharge rate shall be limited by the capacity of the system or requirements of the system owner.

3. When practical, dewatering effluent shall be collected in a pump truck for transport to a *treatment facility* or discharged directly to a treatment facility.

4. For surface dewatering, utilize a floating suction hose, or other method, to minimize sediment being sucked off the bottom.

5. For discharges that will be directed to locations on-site verify that the anticipated volume of water can be fully contained.

6. The topography and condition of the ground cover between the pump discharge point and potential receiving waters shall be evaluated for potential erosion. Appropriate stabilization measures shall be incorporated to prevent erosion.

7. When discharge to a karst feature or other direct groundwater connection can not be avoided, the dewatering system must be designed and operated to maintain compliance with the groundwater quality standards contained in applicable regulations, including ch. NR 140 Wis. Adm. Code.

8. If the discharge directly or indirectly enters a stream, the discharge flow rate shall not exceed 50 percent of the peak flow rate of the 2-year 24-hour storm event.

C. Geotextile Bags

1. Geotextile bags shall meet the criteria listed in Table 1.

Table 1: Properties for Geotextile Bags

Property	Test Method	Type I Value	Type II Value
Maximum Apparent Opening Sizes	ASTM D-4751	0.212 mm	0.212 mm
Grab Tensile Strength	ASTM D-4632	200 lbs.	300 lbs.
Mullen Burst	ASTM D-3786	350 psi	580 psi
Permeability	ASTM D-4491	0.28 cm/sec	0.2 cm/sec
Fabric	Nominal Representative Weight	8 oz	12 oz

2. Geotextile bags shall be sized according to the particle size being trapped, expected flow or pumping rate (gallons per minute) per square foot of fabric and a 50% clogging factor. The footprint of the bag shall be no smaller than 100 square feet.

3. Geotextile bags shall be securely attached to the discharge pipe.

4. Polymers can be used to enhance the efficiency of geotextile bags. If polymer is used, the polymer shall be approved by the WDNR and meet the criteria stipulated in WDNR Conservation Practice Standard 1051, Sediment Control Water Application of Polymers. The polymer supplier or applicator shall provide certifications showing that products have met the performance requirements of Standard 1051. If the manufacturer has not completed the required testing, the project may be used to gain that certification provided it meets the site requirements of Standard 1051. Any such testing will be monitored by DNR or WisDOT, with testing done by a qualified third party.

D. Gravity Based Settling Systems

Gravity based systems rely on settling of particles as the primary means of treatment. To effectively accomplish this, quiescent conditions should exist with sufficient detention time. Practices include portable sediment tanks, sediment traps, sediment basins and wet detention basins.

If polymer is used to enhance settling, the polymer shall be approved by the WDNR and meet the criteria stipulated in WDNR Conservation Practice Standard 1051, Sediment Control Water Application of Polymers. The polymer supplier or applicator shall provide certifications showing that products have met the performance requirements of Standard 1051. If the manufacturer has not completed the required testing, the project may be used to gain that certification provided it meets the site requirements of Standard 1051. Any such testing will be monitored by DNR or WisDOT, with testing done by a qualified third party.

1. Portable Sediment Tank: These tanks are intended to settle only sands, loamy sands, and sandy loams. If polymer is added, these tanks will also be appropriate for settling loams, silt loams and silts. Portable sediment tanks shall have a minimum of two baffled compartments, and be a minimum of three feet deep. The inlet and outlet pipe shall be a minimum diameter of three inches. Use one of the following methods to size a tank:

    a. Settling: Account for settling of the suspended sediments with the following equation:

        $Sa = 1.83 * Q;$

        where

        Sa = Tank surface area (sq ft)
        Q = Pumping rate (gallons per minute)

        Note: 1.83 is a factor that includes the conversion from gpm to cfs (1 gpm = 0.0022 cfs) and the particle settling velocity for Soil Class 1 (0.0012 ft/sec) from WDNR Conservation Practice Standard 1064 Sediment Basin.

    b. Filtration: Build the first chamber as large as possible to aid in settling. Flow capacity shall be determined by the end area of the filter media (fabric) and the flow rate (gallons per minute) per square foot of the finest filter media and a 50% clogging factor.

2. Sediment Trap or Sediment Basin: This device is a temporary sediment control device. The design, installation, and operation of the sediment trap or basin shall meet the requirements stipulated in WDNR Conservation Practice Standard 1063 Sediment Trap or Standard 1064 Sediment Basin

3. Wet Detention Basin: This device is generally a permanent structure designed to address post-construction pollutant reduction requirements. The design, installation, and operation of the wet detention basin shall meet the requirements stipulated in WDNR Conservation Practice Standard 1001 Wet Detention Basin.

E. Passive Filtration Systems

Passive filtration systems rely on filtration as the primary method of removing particles. Sediment removal efficiency will be related to the particle size distribution in the stormwater. Practices include manufactured filters, filter tanks, filter basins, vegetative filters, grass swales, and filtration fabric.

Filter fabric sediment removal efficiency shall be based on the properties specified in Table 1.

1. Manufactured Filters: Filters shall be sequenced from the largest to the smallest pore opening. Sand media filters are available with automatic backwashing features that can filter to 50 µm particle size. Screen or bag filters can filter down to 5 µm. Fiber wound filters can remove particles down to 0.5 µm.

2. Filter Tank (portable): Install, operate and maintain according to manufacturer recommendations.

3. Filter Basin: Install, operate and maintain according to Wisconsin Department of Transportation technical guidance.

4. Vegetative Filter: Refer to WDNR Conservation Practice Standard 1054 Vegetated Buffer for Construction Sites.

F. Pressurize Filtration Systems

Pressurized filtration systems differ from passive systems in that the water flowing through the media is pressurized and the filter media is designed to handle higher flow rates. Practices include portable sand filters, wound cartridge units, membranes and micro-filtration units.

Pressurized filters typically have automatic backwash systems that are triggered by a pre-set pressure drop across the filter. If the backwash water volume is small or substantially more turbid than the stormwater stored in the holding pond or tank, returning backwash water to the pond or tank may be appropriate. However, land application or another means of treatment and disposal may be necessary.

Screen, bag, and fiber filters must be cleaned and/or replaced when they become clogged.

1. Portable Sand Filter: Install, operate and maintain according to manufacturer recommendations.

2. Wound Cartridge Units: Secondary filtration of sediments using high efficiency filter cartridges may be necessary to remove fine particles such as clays. Install, operate and maintain according to manufacturer recommendations.

3. Membranes and Micro-filtration: Install, operate and maintain according to manufacturer recommendations.

4. If polymer is used to enhance settling, the polymer shall be approved by the WDNR and meet the criteria stipulated in WDNR Conservation Practice Standard 1051, Sediment Control Water Application of Polymers. The polymer supplier or applicator shall provide certifications showing that products have met the performance requirements of Standard 1051. If the manufacturer has not completed the required testing, the project may be used to gain that certification provided it meets the site requirements of Standard 1051. Any such testing will be monitored by DNR or WisDOT, with testing done by a qualified third party.

VI. Considerations

A. It may be necessary to clean the municipal storm drainage system prior to and after discharging to the system to prevent scouring solids from the drainage system.

B. Geotextile bags are generally not appropriate when discharging to ORW, ERW, waterbodies supporting cold water communities, trout streams, or to *highly susceptible* and *less susceptible wetlands*.

C. Pressurized filtration systems are the most efficient for removing fine sediments.

D. Portable sediment tanks may be appropriate when other sediment trapping practices cannot be installed due to lack of space or other reasons.

E. Filtration is not an efficient treatment of water with heavy sediment loads. Use a settling tank or sand filter as pretreatment when possible.

F. It may be necessary to use a combination of dewatering practices to achieve the intended results.

VII. Plans and Specifications

All plans, standard detail drawings, or specifications shall include the schedule for installation, inspection, and maintenance and shall be kept on-site with the erosion control plan.

VIII. Operation and Maintenance

A. Sediment shall be removed from devices to maintain effectiveness. All sediment collected in dewatering devices shall be properly disposed of to prevent discharge to waters of the state.

B. The following monitoring shall be conducted. Test results shall be recorded on a daily log kept on site:

1. Discharge duration and specified pumping rate
2. Observed water table at time of dewatering.
3. If used, type and amount of chemical used for pH adjustment
4. If used, type and amount of polymer used for treatment
5. Maintenance activities

IX. References

The American Association of State Highway Officials (AASHTO) Soil Classification System

X. Definitions

Exceptional Resource Waters (ERW) (V.B.1): are waters listed in s. NR 102.11.

Highly susceptible wetland (VI.B): include the following types: fens, sedge meadows, bogs, low prairies, conifer swamps, shrub swamps, other forested wetlands, fresh wet meadows, shallow marshes, deep marshes and seasonally flooded basins.

Karst feature (III): are an area or geologic feature subject to bedrock dissolution so that it is likely to provide a conduit to groundwater, and may include caves, enlarged fractures, mine features, exposed bedrock surfaces, sinkholes, springs, seeps or swallets.

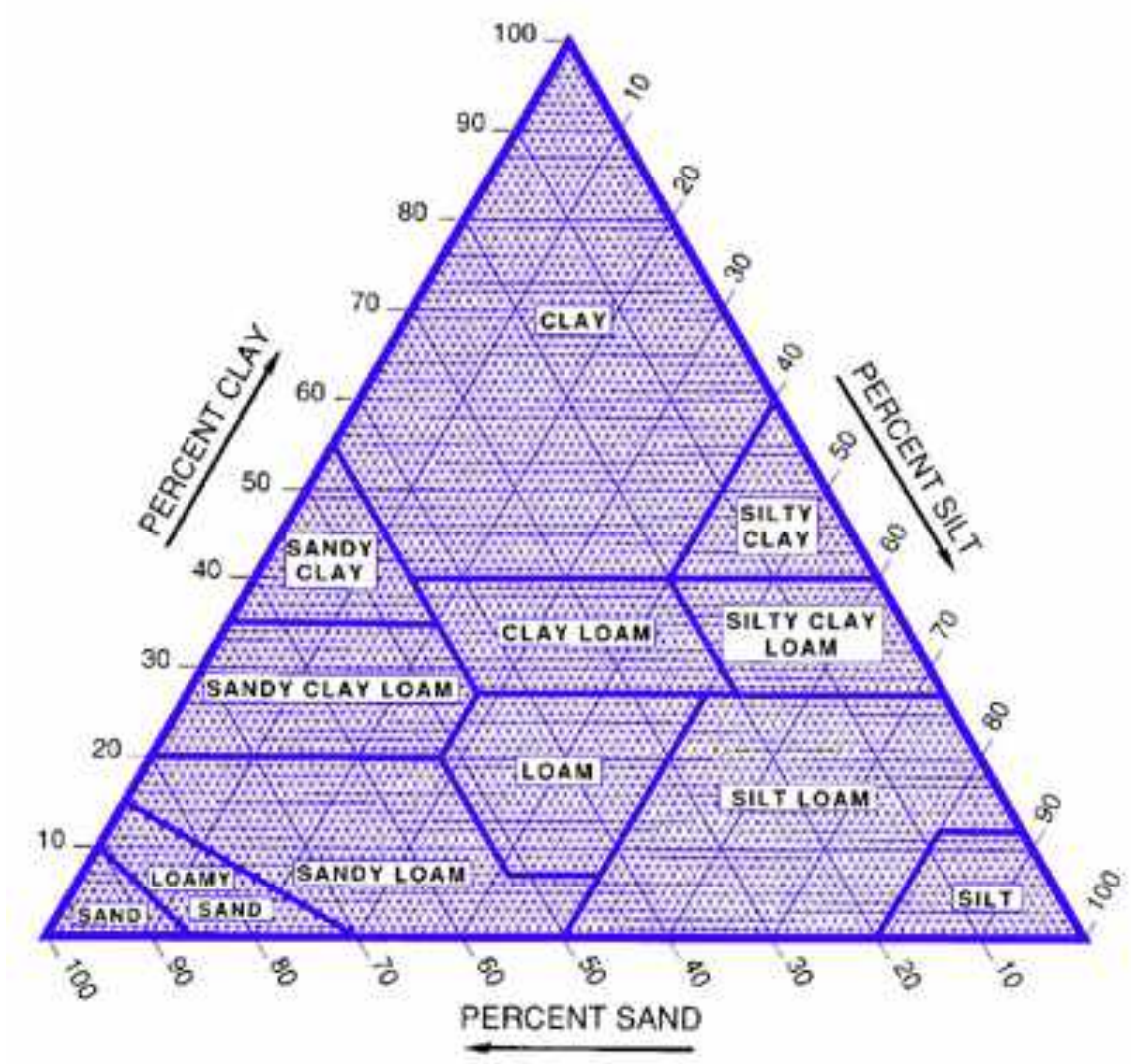
Less susceptible wetland (VI.B)*:* include degraded wetlands dominated by invasive species such as reed canary grass.

Outstanding Resource Waters (ORW) (V.B.1): are waters listed in s. NR 102.10

Targeted performance standard (IV): means a performance standard that will apply in a specific area, where additional practices beyond those contained in NR 151 are necessary to meet water quality standards.

Treatment facility (V.B.3): includes wastewater treatment plants or wet detention basins constructed in accordance with WDNR Conservation Practice Standard 1001 Wet Detention Basin or other approved land application sites.

Figure 1: USDA Soil Textural Triangle



[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Figure 2: Dewatering Practice Selection Matrix

Type of Dewatering Practice	Soil and Particle Size Classification			Notes
	Coarse to Medium Particles	Medium to Fine Particles	Fine to Very Fine Particles	
	Sand, Loamy Sands, and Sandy Loams	*Loams, Silt Loams, and Silts*	*Clay Loams, Silty Clays and Clay*	
Geotextile Bags				
Type I	━━━	● ● ● ● ● ● ● ● ● ● ●		
Type II	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	━━━	● ● ● ● ● ● ● ● ● ● ● ●	
Gravity Based Settling				
Sediment Tank (Portable)	━━━	● ● ● ● ● ● ● ● ● ● ● ●		
Sediment Trap (Temporary)	━━━	● ● ● ● ● ● ● ● ● ● ● ●		Use Standard 1063 Sediment Trap
Sediment Basin (Temporary)	━━━	━━━	● ● ● ● ● ● ● ● ● ● ● ●	Use Standard 1064 Sediment Basin
Wet Detention Basin (Perm)	━━━	━━━	━━━	Use Standard 1001 Wet Detention Basin
Passive Filtration				
Filter Tank (Portable)	━━━	━━━	● ● ● ● ● ● ● ● ● ● ● ●	Use according to manufacturer's recommendations
Filter Basin	━━━	━━━	● ● ● ● ● ● ● ● ● ● ● ● ●	See WisDOT Standard Specifications
Vegetative Filter	━━━	━━━	━━━	Effectiveness depends upon the width of the filter and the runoff rate of flow. See Standard 1054 for design guidelines.
Pressurized Filtration				The contractor shall provide a certification sheet from the manufacturer specifiying performance of the device based on soil type and pumping rate.
Portable Sand Filter	━━━	● ● ● ● ● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ● ● ● ● ●	
Wound Cartridge Units	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	━━━	━━━	
Membranes & Micro-filtration	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■	Very effective but high maintenance requirements
Other Practices				
Sanitary Sewer Discharge	━━━	━━━	━━━	
Pump Truck	━━━	━━━	━━━	Transported to treatment facility
Alternative Method				Discuss with regulatory authority

Key:

Effective range of device: ━━━

Device applicable but may not be cost effective: ■ ■ ■ ■

Effective range with addition of polymer: ● ● ● ● ● ● ●

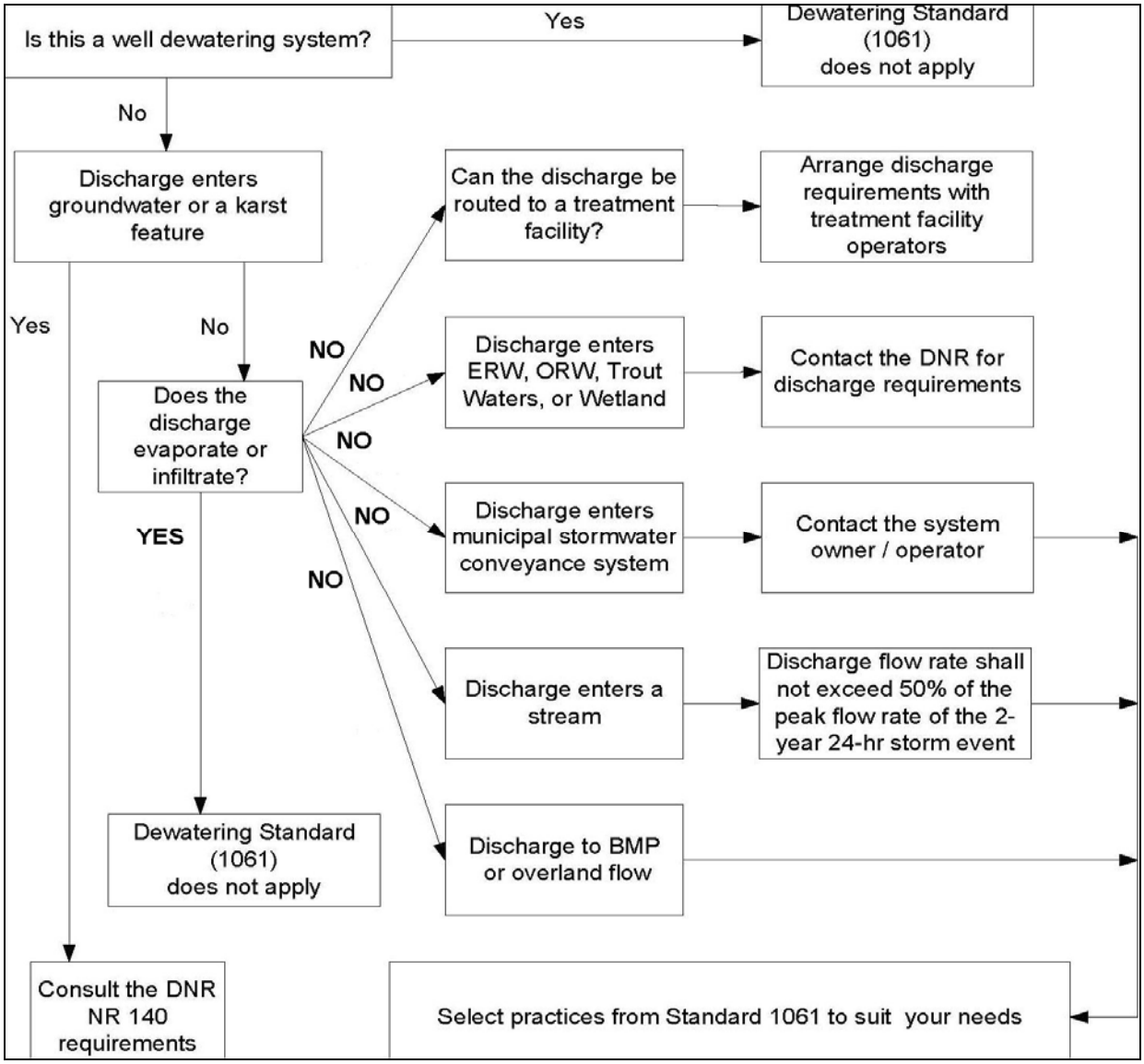
Notes:

(1) The effectiveness of many practices can be enhanced through the use of polymer mixture.

(2) Soil classification shall be done in accordance to an accepted method (i.e. USDA, AASHTO)

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Figure 3: Factors Influencing The Selection of Dewatering Practices



If the dewatering effluent is discolored, has an order, an oily sheen, or other toxins are present notify the DNR immediately

24 Hours Spills Reporting Hotline 1-800-943-0003

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Land Application of Additives for Erosion Control

(1050)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

The land application of products containing water-soluble and non-soluble *additives*[1] (products that are added to soil to create soil particle bonding) to temporarily reduce erosion. Products include *polyacrylamide (PAM)* and other *polymers.*

II. Purpose

The purpose of this practice is to reduce erosion deposition from wind and water on construction sites and agricultural lands until vegetation is established.

III. Conditions Where Practice Applies

This practice is intended for direct soil surface application to sites where the timely establishment of vegetation may not be feasible or where vegetative cover is absent or inadequate. Such areas may include agricultural lands where plant residues are inadequate to protect the soil surface and construction sites where land disturbing activities or winter shutdown prevent establishment or maintenance of a cover crop.

This practice is intended for land application of additives (with an established *allowable usage rate*) when runoff could enter *surface waters of the state* as defined by the Wisconsin Department of Natural Resources (WDNR) ch. NR 102, Wis. Adm. Code. Additives shall not be directly applied to *surface waters of the state*.

IV. Federal, State and Local Laws

Additive application shall comply with all federal, state, and local laws, rules or regulations governing additives. The operator is responsible for securing required permits. This standard does not contain the text of the federal, state, or local laws governing additives.

V. Criteria

A. Toxicity Criteria

Where additives could discharge to surface waters of the state, the WDNR reviews toxicity data for the *additive mixture* based on the guidance titled "Water Quality Review Procedures for Additives".

This technical standard outlines the toxicological analysis of land applied additive mixtures to arrive at an allowable usage rate (in mg/l or ppm) that is environmentally benign, harmless to fish, aquatic organisms, wildlife, and plants. This guidance lists the toxicity test results, parameters, and physical information needed to enable the WDNR to calculate the allowable usage rate for the specific product.

When additives could discharge to groundwater, polyacrylamide additives shall have < 0.05% free acrylamide monomer by weight as established by the Food and Drug Administration (FDA) and the Environmental Protection Agency (EPA).

B. Application Criteria

1. Application rates shall not exceed manufacturer's written application rate recommendations or the WDNR *allowable application rate* (expressed in lbs/acre).
2. The allowable application rate (lbs/acre) is determined by multiplying the allowable usage rate (mg/l) by (lbs/acre)/1.4 mg/l.
3. The application method shall provide uniform coverage to the target area and avoid drift to non-target areas.
4. The manufacturer or supplier shall provide written instructions (including the *Material Safety Data Sheet or the Safety Data Sheet)* to ensure proper safety, storage, and mixing of their product. The manufacturer shall provide general written application methods based on site conditions (such as slope and soil type) and the product degradation rate and rainfalls before the need for re-application.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

5. The additive shall be used in conjunction with other Best Management Practices (BMPs).

6. When used on bare soil, without seed or mulch, additives shall be used on slopes 3:1 or flatter.

7. Additives shall not be applied to channel bottoms.

8. Unused additive mixtures shall be minimized. Excess material shall not be applied at a rate greater than the allowable application rate. Disposal shall not occur in storm water conveyance systems (i.e., storm sewer manholes, storm sewer inlets, ditches, or culverts).

9. At the time of application, the applicator of the additive mixture shall document the following:

   - Name of applicator
   - Application rate in lbs/acre
   - Date applied
   - Product type
   - Weather conditions during application
   - Method of application

   Copies of this documentation shall be entered into the contractor's monitoring log or a project diary and made available upon request.

10. The manufacturer or distributor shall provide the following for the applicator:

    - Labels affixed to the additive mixture containers that indicate the recommended application rate and the allowable application rate based on the allowable usage rate.
    - A product expiration date for the additive mixture based on product expiration dates of the polymer.
    - General written application methods.
    - Written instructions to provide proper safety, storage, and mixing of the product.

C. Product Review Criteria

1. Toxicity test results for the additive mixtures shall be submitted to: Runoff Management Section-Additive Review, WDNR, 101 South Webster St., P.O. Box 7921, Madison, WI 53707, as a pre-qualification for field use.

   The WDNR will review the toxicity test (water flea minimum) results and will provide a written product allowable usage and application rate.

2. The additive mixture shall be resubmitted for toxicity testing if any portion of the mixture is altered subsequent to its receiving an allowable application rate. Such alterations may include:

   - The amendment of base additive and/or any other additives.
   - The ratios of individual components.

3. Additives reviewed with regard to toxicity may still be subject to additional performance evaluation by end users.

4. Land applied additives intended for use on WisDOT sponsored projects shall be reviewed through the WisDOT pre-approval process for erosion control materials. Information can be found at the WisDOT product acceptability list (PAL).

   Questions may be sent to:
   New Products Engineer, WisDOT, Technology Advancement, 3502 Kinsman Blvd., Madison, WI 53704.

VI. Considerations

The following are additional recommendations, which may enhance the use of or avoid problems with the practice.

A. Additive mixtures may be tested for erosion control performance under ASTM D6459, as modified in the American Association of State Highway and Transportation Officials (AASHTO) National Transportation Product Evaluation Program (NTPEP) work plan for erosion control products and sediment retention devices. Information about this program may be obtained at: http://www.ntpep.org/Pages/default.aspx.

B. Adding seed to the additive provides additional erosion protection beyond the life of the additive.

C. Anionic (negative charge) additives are recommended and are less toxic than cationic (positive charge) additives, which are highly toxic to fish.

   Note: The WisDOT will not approve the use of cationic polyacrylamide.

D. Additives not containing a mulch component do not enhance vegetation establishment and need to be combined with another practice for that purpose.

E. Using a minimum 30 foot setback when applying an anionic polyacrylamide mixture near waters of the state is recommended.

F. Applying an additive mixture to soil may provide benefits of improved water quality, infiltration, soil fertility, and visibility by reducing wind and water erosion.

G. For erosion control, the additive may be applied upgradient of lands planted in food crops.

H. Application of additives may be particularly effective in the following situations:

- During rough grading operations
- Phased construction projects
- Stockpiles
- After final grading and before paving or final seeding and planting
- Sites having a winter shutdown
- Agricultural lands where plant residues are inadequate
- Sites receiving final landscaping, but where adequate vegetation cannot be established prior to winter.

I. Application of additives may be ineffective in the following situations:

- When the soil surface is pure sand or gravel with no fines.
- When applied over snow cover.

J. Visible tracer or colorant to visually track application is recommended.

K. Additive mixtures may be applied in liquid and granular forms.

L. Application rates of additive mixtures may need to be adjusted based on soil type, slope, and type of erosion targeted (i.e., wind or water). Based on manufacturer's recommendations, higher application rates may be necessary when applied in granular form, but cannot exceed the allowable application rate.

M. Additive mixtures combined with water are very slippery and can be a safety hazard. Care must be taken to prevent spills of additive mixtures onto paved surfaces. During an application of additive mixture, prevent over-spray from reaching pavement as pavement will become slippery.

N. Care should be taken when applying additive mixtures in liquid form on saturated slopes due to the possibility of slope structural failure. Additive mixtures may be applied to steeper slopes when used with other erosion control BMPs such as seed and mulch or erosion mat.

VII. Specifications

Erosion control and storm water management plans specifying additive mixtures for erosion control shall be consistent with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

VIII. Operation and Maintenance

Maintenance will consist of reapplying additive mixtures to disturbed areas, including high use traffic areas, which interfere in the performance of this practice. Additive mixtures may lose effectiveness in as little as two months due to weather conditions. Additive mixtures should be reapplied in areas where wind or rill erosion is apparent and whenever an area has been graded, driven upon, or otherwise disturbed since the additive mixture was last applied. Representative additive locations shall be inspected at least once per week to evaluate effectiveness.

IX. References

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Wisconsin Department of Natural Resources. 2014. *Whole Effluent Toxicity Program Guidance Document, Revision #9*. (http://dnr.wi.gov/topic/wastewater/WETguidance.html)

X. Definitions

Additive (I): Substance, typically a commercial product including cellulose, starch, and glucosamides; vegetable-based gums (e.g., guar, plantago) or rubber (e.g., natural latex) materials used as mulch tackfiers; and pre-mixed products containing natural or synthetic binding agents combined with a fibrous or mulch component (e.g., bonded-fiber matrix), that has the potential to be directly discharged to a *surface water of the state* and may cause toxicity to fish and aquatic organisms.

Additive Mixture (V.A): Any reference to additive mixtures refers to the whole manufactured product, including the polymer and any additives.

Allowable Application Rate (V.B.1) is expressed in lbs/acre and is based on the product allowable usage rate.

Allowable Usage Rate (III): Identifies the concentration (expressed in mg/l) as calculated using the procedures described in the "Water Quality Review Procedures for Additives" guidance, below which a product is not expected to cause acute toxicity in the aquatic environment.

Material Safety Data Sheet or Safety Data Sheet (V.B.4): Provide basic information on a material or chemical product intended to help someone work safely with the material. This includes a brief synopsis of the hazards associated with using a material, how to use it safely, and what to do if there is an emergency. The retail distributor and/or manufacturer as per OSHA's Hazard Communication Standard, 29 CFR 1910.1200, must provide MSDS, with the purchase of potentially hazardous products.

Polyacrylamide (I): A generic term for polymers made up of many repeating units of the monomer acrylamide (a simple organic compound).

Polymer (I): Polymers are materials that are either natural or synthetic and that have a chain of carbon-based molecules that are identical, repeating units. Polymers can be positively charged (cationic), negatively charged (anionic) or have no charge (non-ionic).

Surface Waters of the State (III): "Surface" refers to the sub portion of the waters of the state that discharge at the surface. "Waters of the State", as defined by s. 283.01(20), Wis. Stats, means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water courses, drainage systems and other surface water or groundwater, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and retained completely upon the property of the person.

Dust Control On Construction Sites
(1068)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Dust control includes practices used to reduce or prevent the surface and air transport of dust during construction.

Dust control measures for construction activities include minimization of soil disturbance, applying mulch and establishing vegetation, water spraying, surface roughening, applying polymers, spray-on tackifiers, chlorides, and barriers.

II. Purpose

This practice may be used to:

- Reduce wind erosion and dust.
- Minimize deposition of dust and wind transported soils into water bodies through runoff or wind action.
- Reduce respiratory problems.
- Minimize low visibility conditions caused by airborne dust.

III. Conditions Where Practice Applies

Dust control measures may be applied at any construction site, but is particularly important for sites with dry exposed soils which may be exposed to wind or vehicular traffic.

IV. Federal, State, and Local Laws

Users of this standard shall comply with applicable federal, state and local laws, rules, regulations or permit requirements governing this practice. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. The implementation of dust control shall limit the area exposed for dust generation.

B. Asphalt and petroleum based products cannot be used for dust control.

C. Mulch and Vegetation - Mulch or seed and mulch may be applied to protect exposed soil from both wind and water erosion. Refer to WDNR Conservation Practice Standards Mulching for Construction Sites (1058) and Seeding for Construction Site Erosion Control (1059) for criteria.

D. Water - Water until the surface is wet and repeat as needed. Water shall be applied at rates so that runoff does not occur. Treated soil surfaces that receive vehicle traffic require a stone tracking pad or tire washing at all point of access. Refer to WDNR Conservation Practice Standard Stone Tracking Pad and Tire Washing (1057) for criteria.

E. Tillage - A control measure performed with chisel type plows on exposed soils. Tillage shall begin on the windward side of the site. Tillage is only applicable to flat areas.

F. Polymers - Polymers can be an effective practice for areas that do not receive vehicle traffic. Dry applied polymers must be initially watered for activation to be effective for dust control. Refer to WDNR Conservation Practice Standard Erosion Control Land Application of Polymers (1050) for application criteria.

G. Tackifiers and Soil Stabilizers Type A - Products must be selected from and installed at rates conforming to the WisDOT Erosion Control PAL. See Section IX for reference. Example products include Latex-based and

Guar Gum.

H. Chlorides - Chlorides shall be applied according to the most recent version of the WisDOT Standard Specifications for Highway and Bridge Construction.

I. Barriers - Barriers shall be placed at right angles to prevailing wind currents at intervals of about 15 times the barrier height. Solid board fences, snow fences, burlap fences, crate walls, bales of hay and similar material can be used to control air currents and blown soil.

VI. Considerations

Some sites may require an approach that utilizes a combination of measures for dust control.

VII. Plans and Specifications

Plans and specifications for dust control practices shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

VIII. Operation and Maintenance

Areas that have dust control practices shall at a minimum be inspected daily.

IX. References

WisDOT's Erosion Control Product Acceptability List (PAL) can be found on the WisDOT web site: http://www.dot.wisconsin.gov/business/engrserv/pal.htm Printed copies are no longer being distributed.

Mulching For Construction Sites
(1058)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Mulching is the application of organic material to the soil surface to protect it from raindrop impact and overland flow. Mulch covers the soil and absorbs the erosive impact of rainfall and reduces the flow velocity of runoff.

II. Purpose

This practice may be used to:

- Reduce soil erosion
- Aid in seed germination and establishment of plant cover
- Conserve soil moisture

III. Conditions Where Practice Applies

This practice may be applied on exposed soils as a temporary control where soil grading or landscaping has taken place or in conjunction with temporary or permanent seeding. Mulching is generally not appropriate in areas of concentrated flow.

IV. Federal, State, and Local Laws

Users of this standard shall comply with applicable federal, state and local laws, rules, regulations or permit requirements governing mulching. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Site Preparation:

Soil surface shall be prepared prior to the application of mulch in order to achieve the desired purpose and to ensure optimum contact between soil and mulch. All areas to be mulched shall be reasonably free of rills and gullies.

B. Materials:

Mulch shall consist of natural biodegradable material such as plant residue (including but not limited to straw, hay, wood chips, bark and wood cellulose fiber), or other equivalent materials of sufficient dimension (depth or thickness) and durability to achieve the intended effect for the required time period.

Mulch shall be environmentally harmless to wildlife and plants. Materials such as gravel, plastic, fabric, sawdust, municipal solid waste, *solid waste byproducts*[1], shredded paper, and non-biodegradable products shall not be used.

Mulch shall be free of diseased plant residue (i.e. oak wilt), *noxious weed* seeds, harmful chemical residues, heavy metals, hydrocarbons and other known environmental toxicants.

Marsh hay shall not be used as mulch in lowland areas but may be used on upland sites to prevent the spread of invasive, non-native species (i.e. reed canary grass) commonly found in marsh hay.

Straw and hay mulch that will be crimped shall have a minimum fiber length of 6 inches.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Wood chips or wood bark shall only be used for sites that are not seeded.

C. Application Rate:

1. Mulch shall cover a minimum of 80% of the soil surface for unseeded areas. For seeded areas, mulch shall be placed loose and open enough to allow some sunlight to penetrate and air to circulate but still cover a minimum of 70% of the soil surface.

2. Mulch shall be applied at a uniform rate of 1½ to 2 tons per acre for sites that are seeded, and 2 to 3 tons per acre for sites that are not seeded. This application results in a layer of ½ to 1½ inches thick for seeded sites, and 1½ to 3 inches thick for sites not seeded.

3. Wood chips or wood bark shall be applied at a rate of 6 to 9 tons per acre to achieve a minimum of 80% ground cover. This application should result in a layer of wood chips or wood bark ½ to 1½ inches thick.

D. Mulch Anchoring Methods

Anchoring of mulch shall be based on the type of mulch applied, site conditions, and accomplished by one of the following techniques:

1. Crimping

   Immediately after spreading, the mulch shall be anchored by a mulch crimper or equivalent device consisting of a series of dull flat discs with notched edges spaced approximately 8 inches apart. The mulch shall be impressed in the soil to a depth of 1 to 3 inches.

2. Polypropylene Plastic, or Biodegradable Netting

   Apply plastic netting over mulch application and staple according to manufacturer's recommendations.

3. Tackifier

   Tackifier shall be sprayed in conjunction with mulch or immediately after the mulch has been placed. Tackifiers must be selected from those that meet the WisDOT Erosion Control Product Acceptability List (PAL). Asphalt based products shall not be applied.

   The tackifiers shall be applied at the following minimum application rates per acre:

   a. Latex-Base: mix 15 gallons of adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as a tracer with 375 gallons of water.

   b. Guar Gum: mix 50 pounds of dry adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as tracer with 1,300 gallons of water.

   ~~c.~~ Other Tackifiers: (Hydrophilic Polymers) mix 100 pounds of dry adhesive (or the manufacturer's recommended rate which ever is greater) and a minimum of 250 pounds of recycled newsprint (pulp) as a tracer with 1,300 gallons of water.

VI. Considerations

A. Wood products typically absorb available soil nitrogen as they degrade, thus making it unavailable for seed.

B. The use of mulch behind curb and gutter may not be desirable unless anchored by netting, because air turbulence from nearby traffic can displace the mulch. Consider the use of erosion mat or sod as an alternative.

C. In areas where lawn type turf will be established, the use of tackifiers is the preferred anchoring method. Crimping will tend to leave an uneven surface and plastic netting can become displaced and entangled in mowing equipment.

D. A heavier application of mulch may be desired to prevent seedlings from being damaged by frost.

E. It may be beneficial to apply polyacrylimide in addition to mulch. Refer to WDNR Conservation Practice Standard (1050) Erosion Control Land Application of Anionic Polyacrylamide for information about the advantages and proper use of polymers.

F. Concentrated flows above the site where mulch is applied should be diverted.

G. Mulch should be placed within 24 hours of seeding.

H. Mulching operations should not be performed during periods of excessively high winds that would preclude the proper placement of mulch.

I. Materials such as gravel may be effective for erosion control but are not considered mulches.

VII. Plans and Specifications

A. Plans and specifications for mulching shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

   1. Type of mulch used

   2. Application rate

   3. Timing of application

   4. Method of anchoring

B. All plans, standard detail drawings, or specifications shall include schedules for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

Mulch shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.

Mulch that is displaced shall be reapplied and properly anchored. Maintenance shall be completed as soon as possible with consideration to site conditions.

IX. References

WisDOT's Erosion Control Product Acceptability List (PAL) can be found on the WisDOT web site: http://www.dot.wisconsin.gov/business/engrserv/pal.htm Printed copies are no longer being distributed.

X. Definitions

Noxious weed (V.B): Any weed a governing body declares to be noxious within its respective boundaries. The State of Wisconsin list of noxious weeds can be found in Statute 66.0407.

Solid Waste Byproducts (V.B): Includes industrial, commercial, residential, and agricultural wastes that have been processed, incinerated, or composted and still contain inorganic wastes such as glass and metals and organic wastes including plastics, textiles, rubber, leather, and other miscellaneous organic wastes which may be toxic or hazardous in nature.

Silt Fence
(1056)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Silt fence is a temporary sediment barrier of entrenched permeable geotextile fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff from small areas of disturbed soil.

II. Purpose

The purpose of this practice is to reduce slope length of the disturbed area and to intercept and retain transported sediment from disturbed areas.

III. Conditions Where Practice Applies

A. This standard applies to the following applications:

1. Erosion occurs in the form of *sheet and rill erosion*[1]. There is no concentration of water flowing to the barrier (*channel erosion*).

2. Where adjacent areas need protection from sediment-laden runoff.

3. Where effectiveness is required for one year or less.

4. Where conditions allow for silt fence to be properly entrenched and staked as outlined in the Criteria Section V.

B. Under no circumstance shall silt fence be used in the following applications:

1. Below the ordinary high watermark or placed perpendicular to flow in streams, swales, ditches or any place where flow is concentrated.

2. Where the maximum gradient upslope of the fence is greater than 50% (2:1).

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of silt fence. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Placement

1. When installed as a stand-alone practice on a slope, silt fence shall be placed on the contour. The parallel spacing shall not exceed the maximum slope lengths for the appropriate slope as specified in Table 1.

Table 1.

Slope	Fence Spacing
< 2%	100 feet
2 to 5%	75 feet
5 to 10%	50 feet
10 to 33%	25 feet
> 33%	20 feet

2. Silt fences shall not be placed perpendicular to the contour.

3. The ends of the fence shall be extended upslope to prevent water from flowing around the ends of the fence.

B. Height – Installed silt fences shall be a minimum 14 inches high and shall not exceed 28 inches in height measured from the installed ground elevation.

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

C. Support – Silt fences shall be supported by either steel or wood supports as specified below:

1. Wood supports

   a. The full height of the silt fence shall be supported by 1 1/8 inches by 1 1/8 inches air or kiln dried posts of hickory or oak.

   b. The silt fence fabric shall be stapled, using at least 0.5-inch staples, to the upslope side of the posts in at least 3 places.

   c. The posts shall be a minimum of 3 feet long for 24-inch silt fence and a minimum of 4 feet for 36-inch silt fence fabric.

2. Steel supports

   a. The full height of the silt fence shall be supported by steel posts at least 5 feet long with a strength of 1.33 pounds per foot and have projections for the attachment of fasteners.

   b. The silt fence fabric shall be attached in at least three places on the upslope side with 50 pound plastic tie straps or wire fasteners. To prevent damage to the fabric from fastener, the protruding ends shall be pointed away from the fabric.

3. The maximum spacing of posts for non-woven silt fence shall be 3 feet and for woven fabric 8 feet.

4. Silt fence shall have a support cord.

5. Where joints are necessary, each end of the fabric shall be securely fastened to a post. The posts shall then be wrapped around each other to produce a stable, secure joint or shall be overlapped the distance between two posts.

6. A minimum of 20 inches of the post shall extend into the ground after installation.

D. Anchoring – Silt fence shall be anchored by spreading at least 8 inches of the fabric in a 4 inch wide by 6 inch deep trench, or 6 inch deep V-trench on the upslope side of the fence. The trench shall be backfilled and compacted. Trenches shall not be excavated wider and deeper than necessary for proper installation.

On the terminal ends of silt fence the fabric shall be wrapped around the post such that the staples are not visible.

E. Geotextile Fabric Specifications – The geotextile fabric consists of either woven or non-woven polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Non-woven fabric may be needle punched, heat bonded, resin bonded, or combinations thereof. All fabric shall meet the following requirements as specified in Table 2.

Table 2.

Test Requirement	Method	Value[1]
Minimum grab tensile strength in the machine direction	ASTM D 4632	120 lbs. (550 N)
Minimum grab tensile strength in the cross machine direction	ASTM D 4632	100 lbs. (450 N)
Maximum apparent opening size equivalent standard sieve	ASTM D 4751	No. 30 (600 μm)
Minimum permittivity	ASTM D 4491	0.05 scc^{-1}
Minimum ultraviolet stability percent of strength retained after 500 hours of exposure	ASTM D 4355	70%

(WisDOT Standard Specifications for Road and Bridge Construction, 2001)

[1] All numerical values represent minimum / maximum average roll values. (For example, the average minimum test results on any roll in a lot should meet or exceed the minimum specified values.)

Silt fence shall have a maximum flow rate of 10-gallons/minute/square foot at 50mm constant head as determined by multiplying permittivity in 1/second as determined by ASTM D-4491 by a conversion factor of 74.

F. Removal – Silt fences shall be removed once the disturbed area is permanently stabilized and no longer susceptible to erosion.

VI. Considerations

A. Improper placement as well as improper installation and maintenance of silt fences will significantly decrease the effectiveness of this practice.

Silt fences should be considered for trapping sediment where sheet and rill erosion may be expected to occur in small drainage areas. Silt fences should not be placed in areas of concentrated flow.

B. Silt fences should be installed prior to disturbing the upslope area.

C. Silt fences should not be used to define the boundaries of the entire project. Silt fence should be placed only in areas where it is applicable due to its cost and the fact that it is not biodegradable. For example, silt fence should not be placed in locations where the natural overland flow is from an undisturbed area into disturbed areas of the project. It should also not be used as a diversion.

D. Silt fence should not be used in areas where the silt fence is at a higher elevation than the disturbed area.

E. When placing silt fence near trees, care should be taken to minimize damage to the root system. Avoid compaction and root cutting within 1.5 feet multiplied by the inch diameter of the tree (for example: for 10-inch trees keep out a 15-foot radius from the trunk). Refer to UWEX publication Preserving Trees During Construction for more information.

F. To protect silt fence from damage in areas of active construction or heavy traffic, silt fence should be flagged, marked, or highlighted to improve visibility.

G. Silt fence effectiveness is generally increased when used in conjunction with other upslope erosion control practices. To further strengthen the silt fence, straw / hay bales can be placed on the down slope side.

H. To help ensure effectiveness, silt fence should be inspected and repaired as necessary prior to forecasted rain events.

I. Where installation with wood posts is difficult, such as when hard or frozen ground is encountered, the use of steel post is recommended.

J. Silt fence can be mechanically installed with a plow type device provided that the silt fence is trenched in a manner such that equivalent performance is achieved to that specified in Section V.D.

VII. Plans and Specifications

A. Plans and specifications for installing silt fence shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Location of silt fence
2. Contributory drainage area
3. Schedules
4. Material specification conforming to standard
5. Standard drawings and installation details
6. Restoration after removal

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Silt fences shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24 hour period.

B. Damaged or decomposed fences, undercutting, or flow channels around the end of barriers shall be repaired or corrected.

C. Sediment shall be properly disposed of once the deposits reach ½ the height of the fence.

IX. References

UWEX Publication A0327 “Preserving Trees During Construction”

X. Definitions

Channel Erosion (III.A.1): The deepening and widening of a channel due to soil loss caused by flowing water. As rills become larger and flows begin to concentrate, soil detachment occurs primarily as a result of shear.

Sheet and Rill Erosion (III.A.1): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper forming gullies.

Stone Tracking Pad and Tire Washing
(1057)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A stabilized pad of stone aggregate or tire washing station located at any point where traffic will egress a construction site.

II. Purpose

The purpose of this standard is to reduce off-site sedimentation by eliminating the tracking of sediment from construction sites.

III. Conditions Where Practice Applies

Either a stone tracking pad or tire washing station shall be used at all points of construction egress. This standard applies where construction traffic is likely to transport sediment off site.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of this practice. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.

A. Tracking Pad:

1. The tracking pad shall be installed prior to any traffic leaving the site

2. The aggregate for tracking pads shall be 3 to 6 inch clear or washed stone. All material to be retained on a 3-inch sieve.

3. The aggregate shall be placed in a layer at least 12 inches thick. On sites with a high water table, or where saturated conditions are expected during the life of the practice, stone tracking pads shall be underlain with a WisDOT Type R geotextile fabric to prevent migration of underlying soil into the stone.

4. The tracking pad shall be the full width of the egress point. The tracking pad shall be at a minimum 50 feet long.

5. Surface water must be prevented from passing through the tracking pad. Flows shall be diverted away from tracking pads or conveyed under and around them by using a variety of practices, such as culverts, *water bars*[1], or other similar practices.

B. Tire washing: If conditions on the site are such that the sediment is not removed from vehicle tires by the tracking pad, then tires shall be washed utilizing pressurized water before entering a public road.

1. The washing station shall be located on-site in an area that is stabilized and drains into suitable sediment trapping or settling device.

2. The wash rack shall consist of a heavy grating over a lowered area. The rack shall be strong enough to support the vehicles that will cross it.

C. Rocks lodged between the tires of dual wheel vehicles shall be removed prior to leaving the construction site.

[1] Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text.

VI. Considerations

A. Vehicles traveling across the tracking pad should maintain a slow constant speed.

B. The best approach to preventing off-site tracking is to restrict vehicles to stabilized areas.

C. It is always preferable to prevent sediment from being deposited upon the road than cleaning the road later. Sediment on a road can create a safety hazard as well as a pollution problem.

D. Any sediment tracked onto a public or private road should be removed by street cleaning, not flushing, before the end of each working day.

VII. Plans and Specifications

A. Plans and specifications for installing tracking pads shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

1. Location of all points of egress with tracking pad locations shown
2. Material specifications conforming to standard
3. Schedule for installation and removal
4. Standard drawings and installation details
5. Stabilization after removal

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Tracking pads and tire washing stations shall, at a minimum, be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. The tracking pad performance shall be maintained by scraping or top-dressing with additional aggregate.

C. A minimum 12-inch thick pad shall be maintained.

IX. Definitions

Water bar (V.A.5): A shallow trench or diversion dam that diverts surface water runoff into a dispersion area.

Storm Drain Inlet Protection for Construction Sites

(1060)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

A temporary device installed in or around a storm drain inlet, drop inlet, or curb inlet.

II. Purposes

This practice is intended to minimize sediment from entering storm drainage systems in areas where the contributing drainage area is temporarily disturbed.

III. Conditions Where Practice Applies

This practice applies where runoff from construction sites enters conveyance system structures, such as drain inlets, drop inlets, and curb inlets. Inlet protection devices are for drainage areas of one acre or less. Runoff from areas larger than one acre shall be routed through a properly designed sediment trapping or settling practice upstream of the inlet.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state and local laws, rules, regulations, or permit requirements governing the use and placement of storm drain inlet protection. This standard does not contain the text of federal, state, or local laws.

V. Design Criteria

This section establishes the minimum standards for design, installation, and performance requirements.

The appropriate type of inlet protection shall be installed prior to drain, drop, or curb inlet receiving runoff. The device shall remain in place and be maintained until the disturbed area is stabilized.

A. General Criteria Applicable to All Inlet Protection Devices

1. Ponding water to settle sediment is encouraged; however ponding shall not interfere with the flow of traffic, create a safety hazard, or cause property damage. All devices shall have provisions such as overflow holes or “emergency spillways” to safely pass water if the device becomes clogged.

2. The contributing drainage area to the inlet protection device shall be one acre or less. In instances where a larger contributing drainage area exists, runoff shall be routed through a properly designed sediment trapping or settling practice upstream of the inlet.

3. No gaps shall be left in the material that would allow the flow of water to bypass the inlet protection device, except for overflow holes.

4. All fabrics used as part of Type A, B, C, D, D-M and D-HR inlet protection devices must meet WisDOT specifications for the selected fabric.

5. Type FF geotextile fabric shall be used for Type, A, B, C or D inlet protection.

6. Type D-M inlet protection fabric shall be Type FF for both the upper section and the outer lower sections of the device. The replaceable interior filter fabric type shall be based according to the particle size trapped. Refer to Table 1 for the filter fabric type and exposed soil particle diameter where the device is appropriate.

7. Type D-HR inlet protection fabric shall be Type FF for the upper half of the device. Type HR fabric shall be used in the lower half of the device. Refer to Table 1 for filter fabric type and exposed soil texture and particle diameter where the device is appropriate.

Table 1			
Exposed Soil Texture	**Exposed Soil Particle Diameter (average) (mm)**	**Filtering Fabric Type***	**Recommended Inlet Protection Device Type**
Course (Sand)	≥ 0.0625	FF	D, D-M
Medium (Silt Loam)	0.0624 – 0.005	DF	D-M
Fine (Clay)	≤ 0.004	R	D-M
		HR	D-HR

* DF, R or HR filters may be used where FF is the required minimum standard. R or HR filers may be used where DF is the required minimum standard.

B. Criteria Applicable to Inlet Protection Devices for Unpaved Areas or the Pre-Paving Phase of Construction

1. Inlet protection (all device types) - See Figures 1-3.

   a. Type A devices shall be utilized around inlets in unpaved areas and should be maintained until permanent stabilization has been established. Type A devices shall be utilized on inlets prior to installation of curb and gutter or pavement and where safety considerations are not compromised on the site.

   b. Type B and C devices shall be utilized after the casting and grate are in place and may only be utilized when sufficient depth is not available to use Type D, D-M, or D-HR devices.

   c. Inlet protection Type D-M and D-HR devices shall only be used after castings are in place on top of the inlet boxes.

   Type D, D-M, and D-HR devices shall conform to the standard drawings as shown in the figures. To prevent the filter bag from blocking overflow water, there shall be three inches of clearance between the bag and the sides of the inlet. Type D, D-M and D-HR devices when used in inlets less than 30 inches in depth shall have the filter bag cinched to provide the required clearance for overflow.

2. Other inlet protection devices include, but are not limited to: straw bales, rock bags and stone weepers. These devices can be used to settle sediment or divert flow. Note: these devices are not applicable to areas adjacent to traffic.

C. Criteria Applicable to Inlet Protection Devices for the Post-Paving / Curbing Phase of Construction

1. Inlet protection Types B, C, D, D-M, and D-HR are applicable to post-paving construction. See Figures 1-3.

   a. Type B devices shall be utilized on inlets without a curb box when Type D inlet devices cannot be used.

   b. Type C devices shall be utilized on street inlets with curb heads. A 2-inch by 4-inch (nominal) piece of wood shall be wrapped and secured in the fabric and placed in front of the curb head, as shown in the figures. The wood shall not block the entire opening of the curb box and shall be secured to the grate with wire or plastic ties. Use Type C devices when Type D devices cannot be used.

   c. Utilize Type D, D-M, and D-HR devices when the depth from the top of the grate to the bottom of the inlet is 30 inches or greater. Note: Type D style devices can be modified by cinching the filter bag to fit inlet structures that are less than 30 inches in depth.

   d. Utilize Type D, D-M, and D-HR devices where street flooding or ponding water and the associated traffic safety issues are a concern, or where more effective inlet filtering is needed.

2 Other inlet protection devices are applicable to post paving construction; these devices include but are not limited to: rock bags, manufactured bags, and stone weepers. These devices can be used to either settle sediment or divert flow. Note: other than for internal to the inlet type filters these devices are not applicable to areas adjacent to traffic.

a. Manufactured rock bags shall conform to the WisDOT standard for rock bag material, including fill material.

b. Straw bale installation shall conform to the criteria outlined in the WDNR Conservation Practice Standard (1062) Ditch Check.

c. Stone weeper installation shall conform to the criteria in WDNR Conservation Practice Standard (1063) Sediment Trap.

VI. Considerations

A. Inlet protection is only one element in an erosion control plan. Other practices, including temporary stabilization and area clean up, should also be utilized upstream of the inlet.

B. Inlets should be temporarily closed or sealed to prevent entrance of runoff and sediment when site conditions allow.

C. The disturbed area should be stabilized as quickly as possible. Timely stabilization is the most effective method to control sediment entering the storm sewer.

D. Storm drain inlet protection consists of several different types of inlet filters and sediment traps. Inlet protection is only one element in an erosion control plan. Each type differs in application with selection dependent upon site conditions and inlet type. Not all designs are appropriate in all cases. The user must carefully select a design suitable for the needs and site conditions.

E. Inlet protection is only as effective as the filter or device used around the inlet. Effectiveness decreases rapidly if the inlet protection is not properly maintained. In general, inlet protection provides relatively good removal of coarse and medium-sized soil particles from runoff; however, to effectively trap fine soil particles, other practices such as the use of polyacramides, may be required. (See DNR technical standard 1050)

F. Inlet protection requires routine inspection and maintenance. Field inspections have shown where inlet protection causes excessive ponding that the device is removed, punctured, or bypassed. In such situations, a structure with an adequate overflow mechanism should be utilized instead of simply removing the inlet protection device.

G. The effectiveness of inlet protection devices in unpaved areas can be enhanced by additional excavation to increase the storage capacity around the inlet.

H. Good construction site housekeeping measures, such as maintaining clean gutters and street sweeping, are important.

I. The use of fabric intended for a finer soil type on a construction site with coarser soil may increase the required maintenance frequency due to faster clogging.

J. Consider using Type D-M and D-HR inlet protection rather than Type B, C, or D in areas with fine soils where more effective filtering is desired.

VII. Plans and Specifications

Plans and specifications for installing inlet protection shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose:

A. Locations and types of inlet protection.

B. Material specification conforming to this standard.

C. All construction documents shall identify the responsible party and include a schedule for installation, inspection, and maintenance requirements.

VIII. Operation and Maintenance

A. Remove inlet protection devices once the contributing drainage area is stabilized with appropriate vegetation or impervious surface.

B. Inlet protection shall be at a minimum inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

C. For Type A, B or C inlet protection:

1. Remove sediment deposits when sediment has accumulated between ⅓ to ½ of the design depth or the device is no longer functioning as designed.
2. Inspect the device routinely, and repair (if necessary) and restore to original dimension.
3. Sediment removed from the device shall be deposited in a suitable area and stabilized.

D. For Type D and D-M inlet protection;

1. Remove sediment when it accumulates to within 6 inches of the bottom of the overflow holes.
2. If standing water remains within 6 inches of the bottom of the overflow holes 24 hours after a runoff event, accumulated sediment shall be removed and the filtering capacity of the fabric shall be restored.
3. Holes in the Type FF fabric less than 2 inches in length may be repaired by stitching. The bag must be replaced if holes greater than 2 inches are observed in the Type FF fabric.
4. The insert filter fabric shall be replaced if any holes are observed in the fabric.
5. The filter must be replaced if the flap pockets sustain damage that compromises the integrity of the filter or the ability to perform maintenance.

E. For Type D-HR inlet protection:

1. Remove sediment when it has accumulated to within 6 inches of the bottom of the overflow holes.
2. If standing water remains within 6 inches of the bottom of the overflow holes 24 hours after a runoff event, accumulated sediment shall be removed and the filtering capacity of the fabric shall be restored.
3. Holes in the Type FF fabric less than 2 inches in length may be repaired by stitching.
4. The filter shall be replaced if any holes are observed in the Type HR fabric or holes greater than 2 inches are observed in the Type FF fabric.
5. The filter must be replaced if the flap pockets sustain damage that compromises the integrity of the filter or the ability to perform maintenance.

F. Due care shall be taken to minimize sediment falling into the inlet. Any material falling into the inlet shall be removed.

IX. References

WisDOT "Standard Specifications for Highway and Structures Construction" is available at: http://roadwaystandards.dot.wi.gov/standards/stndspec/index.htm

Temporary Grading Practices For Erosion Control

(Surface Roughening and Temporary Ditch Sumps)
(1067)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

Temporary[1] grading practices used to minimize construction site erosion. These practices include, but are not limited to surface roughening (directional tracking and tillage) and temporary ditch sumps.

II. Purpose

The purpose of these practices are to minimize erosion and sediment transport during grading operations on construction sites.

III. Conditions Where Practice Applies

These practices apply where land disturbing activities occur on construction sites. These practices shall be used in conjunction with other erosion control practices.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing these practices. This standard does not contain the text of federal, state, or local laws.

V. Criteria

These interim practices may be employed in addition to the approved grading plan to reduce erosion and sediment transport.

A. Surface Roughening - Surface roughening is abrading the soil surface with horizontal ridges and depressions across the slope to reduce runoff velocities.

1. Directional Tracking - The process of creating ridges with tracked vehicles on unvegetated slopes. This method is used for short durations on sites actively being grad and shall be used in conjunction with other practices. This practice shall be in place at the end of each workday.

   Directional tracking involves driving a tracked vehicle up and down a slope. The tracks create horizontal grooves and ridges. The rough surface slows sheet runoff and helps to prevent rills from forming. (Conversely, if the tracked vehicle is driven along the contour the tracks create vertical grooves and ridges for the water to follow, increasing erosion.)

2. Tillage - Utilizing conventional tillage equipment to create a series of ridges and furrows on the contour no more than 15 inches apart.

B. Temporary Ditch Sump - Temporary ditch sumps are ½ to 5 cubic yard excavations made in a drainageway during earthmoving operations. Their purpose is to slow and pond runoff during the time that drainageways are being graded. Sumps shall be in place prior to anticipated rain events.

Construction involves excavating sumps (holes) in the rough ditch grade, and using the excavated material to form a dike on the downstream side of the sump.

Temporary ditch sumps are not effective perimeter controls. Other sediment control practices shall be utilized prior to channels discharging into public waterways.

VI. Considerations

A. Directional tracking may compact the soil, therefore additional seedbed preparation may be required. Refer to WDNR Conservation Practice Standard Seeding for

[1] Words in the standard that are shown in italics are described in X. Definitions. The words are italicized the first time they are used in the text.

Construction Site Erosion Control (1059) for seedbed preparation and seeding criteria.

B. When constructing a temporary ditch sump, compacting the dike provides additional stability.

C. Consider at a minimum excavating ½ cubic yard per 1% gradient, for every 500 feet of channel when constructing temporary ditch sumps

VII. Plans and Specifications

Due to the interim nature of these practices, and the fact that location determinations are made in the field, they need only be referenced in the erosion control plan narration or general notes.

VIII. Operation and Maintenance

These practices shall be inspected and repaired or reinstalled after every runoff event.

IX. References

Virginia Department of Conservation and Recreation. 1992. Virginia Erosion and Sediment Control Handbook, Third Edition. Chapter 3 – 3.29 Surface Roughening.

Dane County. 2002. Dane County Erosion Control and Stormwater Manual, First Edition. Appendix Surface Roughening S-16.1.

X. Definitions

Temporary (I): An erosion control measure that is utilized during construction site grading activities.

Vegetative Buffer
For Construction Sites
(1054)

Wisconsin Department of Natural Resources
Conservation Practice Standard

I. Definition

An area of *dense vegetation*[1] intended to slow runoff and trap sediment. Vegetative Buffers are commonly referred to as filter or buffer strips.

II. Purpose

The purpose of this practice is to remove sediment in *sheet flow* by velocity reduction.

III. Conditions Where Practice Applies

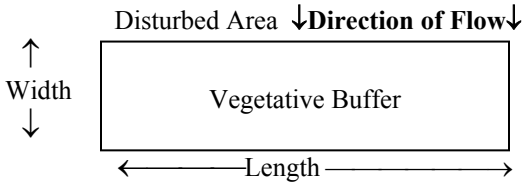
This practice applies to areas where sediment delivery is in the form of *sheet and rill erosion* from disturbed areas.

IV. Federal, State, and Local Laws

Users of this standard shall be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of a vegetative buffer. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements.



A. The vegetative buffer shall be located along the entire length of the down slope edge of the entire disturbed area for which the practice is being applied.

B. The vegetative buffer shall be located on the contour.

C. The width of the vegetative buffer shall have slopes less than 5 %.

D. The disturbed area draining to the vegetative buffer shall have slopes of 6 % or less.

E. The vegetative buffer shall have a minimum *width* of 25 feet. 25 feet is adequate for disturbed areas up to 125 feet upslope from the vegetative buffer. An additional one foot of width shall be added to the buffer for every 5 feet exceeding 125 feet upslope of the disturbed area draining to the vegetative buffer.

F. To minimize compaction and destruction of the vegetative cover, designate the vegetative buffer as an area of no disturbance. Construction equipment shall be excluded from the designated area. Vegetative buffers shall be clearly shown on plans and marked in the field.

G. Vegetative buffers shall be densely vegetated prior to upslope soil disturbance.

VI. Considerations

A. Maintaining sheet flow is critical to the function of a vegetative buffer. In some conditions, a *level spreader* may need to be constructed at the upslope side of the vegetative buffer to minimize concentrated flow.

B. Vegetative buffers may require large land areas compared to other erosion control practices.

[1] Words in the standard that are shown in italics are described in IX. Definitions. The words are italicized the first time they are used in the text.

C. Trees should not be cut down to establish a vegetative buffer. Other erosion control measures are preferred.

VII. Plans and Specifications

A. Plans and specifications for vegetative buffers shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. The plans and specifications shall address the following:

   1. Location of vegetative buffer.

   2. Limits and slopes of disturbed area and any additional contributory drainage area.

   3. Dimensions and slope of vegetative buffer.

B. All plans, standard detail drawings, or specifications shall include schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

A. Vegetative buffers shall be inspected for proper distribution of flows, sediment accumulation and signs of rill formation. Vegetative buffers shall at a minimum be inspected weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

B. If the vegetative buffer becomes silt covered, contains rills, or is otherwise rendered ineffective, other perimeter sediment control measures shall be installed. Eroded areas shall be repaired and stabilized. Repair shall be completed as soon as possible with consideration to site conditions.

C. A stand of dense vegetation shall be maintained to a height of 3 – 12 inches.

D. Prior to land disturbance the perimeter of vegetative buffers shall be flagged or fenced to prevent equipment from creating ruts, compacting the soil and to prevent damage to vegetation.

IX. Definitions

Dense vegetation (I): is defined as an existing stand of 3 – 12 inch high grassy vegetation that uniformly covers at least 90 % of a representative 1 square yard plot. Woody vegetation shall not be counted for the 90% coverage. No more than 10% of the overall buffer can be comprised of woody vegetation.

Level Spreader (VI.A): Level spreaders disperse flows over a wide area, dissipating the energy of the runoff and creating sheet flow. Common types of level spreaders are weirs and stone trenches.

Sheetflow (II)*:* Sheet flow is over plane surfaces, where runoff water flows in a thin uniform sheet across the land before it collects in a concentrated flow.

Sheet and Rill Erosion (III): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper.

Width (V.E): Is measured in the direction of flow.

APPENDIX LIST

APPENDIX A **CONTACT LIST**

APPENDIX B **NOTICE OF INTENT (NOI) FORM**

APPENDIX C **WDPES General Permit**

APPENDIX D **CONSTRUCTION SITE NOTICE**

APPENDIX E **SAMPLE INSPECTION REPORT**

APPENDIX F **LOG OF FEDERAL, STATE, OR LOCAL STORMWATER OR OTHER ENVIRONMENTAL INSPECTIONS**

APPENDIX G **NOTICE OF TERMINATION (NOT)**

APPENDIX A

PRIMARY CONTACT LIST

SWPPP CONTACT LIST
AND CONTRACTOR ACCEPTANCE FORM

Contacts for: **Casey's Marketing Company**

Date: _____

Owner's Primary Contact(s) for Storm Water Erosion Control Issues

Kevin Schulze
One Convenience Blvd.
Ankeny, IA 50021
515-965-6223

Contractor Primary Contacts:

1. **Contractor's Compliance Officer:** Responsible for overseeing compliance with all applicable permits, the Clean Water Act, and the site SWPPP. The undersigned agrees that he has read the provisions of the attached SWPPP and agrees to its terms.

Printed Name: _____

Signature: _____

Company: _____

Phone: _____

2. **Site Superintendent/Project Manager:** Responsible for the daily supervision or completion of construction at a site and able to adequately identify and implement stormwater sediment and erosion control practices and effectively instruct employees and contractors in the implementation of such practices. Has the authority to direct employees and contractors to undertake actions to comply with all applicable permits, the Clean Water Act, and the site's SWPPP. The undersigned agrees that he has read the provisions of the attached SWPPP and agrees to its terms.

Name: _____

Signature:_____

Company: _____

Phone (office): _____

Phone (mobile): _____

<u>Use additional forms if more than 2 persons listed for contractor contacts.</u>

Note to General Contractors: Date this form each time contact information is added or updated. Do not erase information from this form. If information is incorrect or outdated, line through incorrect / outdated information and write in correct / new information. If contact information changes more than once create a new updated Contact List, date, and place on top of old Contact List in the SWPPP Binder.

APPENDIX B

NOTICE OF INTENT FORM

APPENDIX C

WPDES GENERAL PERMIT

STATE OF WISCONSIN
DEPARTMENT OF NATURAL RESOURCES

GENERAL PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE ELIMINATION SYSTEM WPDES Permit No. WI-S067831-4

In compliance with the provisions of ch. 283, Wis. Stats., and chs. NR 151 and 216, Wis. Adm. Code, landowners engaged in land disturbing construction activities including clearing, grading and excavating activities are permitted to discharge

CONSTRUCTION SITE STORM WATER RUNOFF

to waters of the state in accordance with the conditions set forth in this permit.

Unless notified by the Department of Natural Resources to the contrary, the effective date of coverage under this permit is 14 working days after an applicant's complete Notice of Intent (NOI) has been received by the Department of Natural Resources.

Permit coverage continues until submittal of a Notice of Termination for a project and terminates upon written confirmation by the Department of Natural Resources. **The maximum period of permit coverage for any project is limited to 3 years per NOI.** Therefore, permit coverage terminates unless another NOI for the original project including application fee is submitted to retain coverage under this permit or a reissued version of this permit.

State of Wisconsin Department of Natural Resources
For the Secretary

By Susan Sylvester
Susan Sylvester, Acting Director
Bureau of Watershed Management
Division of Water

9/30/11
Date Permit Signed/Issued

EXPIRATION DATE: September 30, 2016

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1. APPLICABILITY CRITERIA

1.1 Eligibility

1.1.1 Subject to the provisions of Sections 1.1.3, 1.1.4 and 1.2.1 through 1.2.5:

1.1.1.1 Pursuant to the applicability criteria in s. NR 216.42, Wis. Adm. Code, this general Wisconsin Pollutant Discharge Elimination System (WPDES) permit is applicable to all new and existing storm water discharges from land disturbing construction activity occurring after the effective date of this permit until permit coverage is terminated in accordance with Section 2.9 or automatically terminates under Section 2.10. Construction activities eligible for coverage by this permit are those that involve land disturbing construction activity affecting one acre or more of land. This permit also is applicable to discharges of pit/trench dewatering at construction sites covered under this permit. Examples of some dewatering activities that may be regulated by this permit include dewatering of construction pits, sewer extension construction, pipe trenches, and other similar operations. Discharges from dewatering wells regulated under ch. NR 812, Wis. Adm. Code, that cannot be effectively treated by on-site sediment control best management practices without compromising the effectiveness of those controls for the treatment of storm water runoff are not covered by this permit.

1.1.1.2 The Department may require the landowner of any storm water discharge associated with land disturbing construction activity to apply for and obtain a storm water discharge permit if the storm water discharge is contributing to the violation of a water quality standard or contributing significant pollution to waters of the state.

1.1.2 This permit authorizes storm water discharges from land disturbing construction activities that may become mixed with other storm or wastewater discharges. Subject to compliance with the terms and conditions of this permit, storm water discharges from temporary support activities such as concrete or asphalt batch plants, equipment staging yards, material storage areas, excavated material disposal areas, and borrow areas are authorized under this permit provided that the support activity is directly related to and part of the construction site covered under this permit. This permit does not authorize a support activity that is a commercial operation serving multiple unrelated construction sites and that operates beyond the completion of the permitted construction site associated with the support activity. Other storm water or wastewater discharges that require coverage under another general or individual WPDES permit are not authorized under this permit.

1.1.3 Storm water discharges associated with industrial activity that are subject to an industrial storm water WPDES permit or which are issued an individual WPDES construction site storm water discharge permit are not authorized by this permit. For example, non-metallic mining is an industrial activity that includes land disturbance as a normal part of its operation and such land disturbance is regulated under an industrial storm water permit for that activity. If an industrial facility underwent construction or expanded its operations and land disturbance is not a normal part of its operations, then coverage under this permit would be applicable.

1.1.4 This general permit does not apply to construction sites otherwise eligible for this permit where the Wisconsin Department of Natural Resources (the Department) determines, pursuant to s. NR 216.51(5), Wis. Adm. Code, that coverage under an individual WPDES storm water discharge permit is more appropriate. The Department may require individual permit coverage for storm water discharge from a construction site otherwise eligible for coverage under this permit if any of the following occur:

1.1.4.1 The storm water discharge from a construction site is determined to be a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit.

1.1.4.2 The storm water discharge from a construction site is not in compliance with the terms and conditions of this general permit or subch. III of ch. NR 216, Wis. Adm. Code.

1.1.4.3 A change occurs in the availability of demonstrated technology or BMPs for the control or abatement of pollutants from the storm water discharge.

1.1.4.4 Effluent limitations or standards are promulgated for a storm water discharge from the construction site different from the conditions contained in ch. 216, Wis. Adm. Code.

1.2 Exclusions

The following are not eligible for coverage under this permit:

1.2.1 Storm water discharges from Indian activities within Indian Country.

Note: Permit coverage is required from the United States Environmental Protection Agency for construction site storm water discharges within Indian County and information on such permitting is available at: http://cfpub1.epa.gov/npdes/stormwater/cgp.cfm

1.2.2 Land disturbing construction activity and associated storm water discharges that affect wetlands, unless the Department determines that the land disturbing construction activity and associated storm water discharges comply with the wetland water quality standards provisions in ch. NR 103, Wis. Adm. Code.

1.2.3 Land disturbing construction activity and associated storm water discharges that affect endangered and threatened resources, unless the Department determines that the land disturbing construction activity and associated storm water discharges comply with the endangered and threatened resource protection requirements of s. 29.604, Wis. Stats., and ch. NR 27, Wis. Adm. Code.

1.2.4 Land disturbing construction activity and associated storm water discharges that affect any historic property that is listed property, or on the inventory or on the list of locally designated historic places under s. 44.45, Wis. Stats., unless the Department determines that the land disturbing construction activity and associated storm water discharges will not have an adverse effect on any historic property pursuant to s. 44.40 (3), Wis. Stats.

1.2.5 Discharges that the Department, prior to authorization of coverage under this permit, determines will cause or have reasonable potential to cause or contribute to an excursion above any applicable water quality standard. Where such determinations have been made prior to authorization, the Department may notify the applicant that an individual permit application is necessary. However, the Department may authorize coverage under this permit where the erosion control and storm water management plan required under this permit will include appropriate controls and implementation procedures designed to bring the storm water discharge into compliance with water quality standards.

1.3 Authorization

1.3.1 A landowner planning a land disturbing construction activity of one acre or more must submit a completed Notice of Intent (NOI) to the Department or to an authorized local program approved under s. NR 216.415, Wis. Adm. Code, in accordance with the requirements of Section 2.1 of this permit to be authorized to discharge storm water under this permit.

Note: The Department may approve an authorized local program if the requirements of s. NR 216.415, Wis. Adm. Code, are met. The Department will maintain a list of authorized local programs on its Internet site.

1.3.2 Only a landowner or person who becomes a qualified landowner, and who submits an NOI in compliance with Section 2. of this permit is authorized to discharge storm water from a land disturbing construction activity of one acre or more under the terms and conditions of this permit.

1.3.3 Storm water discharges from construction sites that are regulated, reviewed and approved by other Department programs and determined by the Department to meet the requirements of subch. III of ch. NR 216, Wis. Adm. Code, may be deemed by the Department to be covered by this permit and shall comply with the conditions of this permit.

1.4 More than One General Permit Can Apply

This permit may be issued to existing holders of general or individual WPDES permits, resulting in multiple WPDES permits for some sites. Facilities having other permits which do not regulate storm water discharges from land disturbing construction activities shall be subject to this permit when construction activities will disturb one acre or more of land at the site. However, storm water discharges from land disturbing construction activity associated with the normal operation of an industrial facility does not require coverage under this permit when it is regulated under an industrial storm water permit pursuant to subch. II of NR 216, Wis. Adm. Code.

1.5 Transfers

A person who has submitted a completed NOI and does not intend to control the permitted activities on the site may transfer authorization under this permit to the landowner who will control the permitted activities. The transfer shall occur upon written notification, signed by both the current permittee and the proposed permittee and sent via certified or registered mail to the Department. Unless the Department notifies the permittee to the contrary, the Department will recognize this permit coverage transfer upon receipt of written notification. The Department may require additional information to be filed prior to granting the transfer of permit coverage. The Department may, if appropriate, require an application for an individual WPDES storm water discharge permit.

Note: Transfer of permit coverage may not occur where the original landowner still owns a portion of the construction site that requires permit coverage. Where multiple landowners are required to have construction site permit coverage, each must file an NOI with the Department. Multiple landowners may utilize the same erosion control and storm water management plans if the plans address the specific needs of the construction site that they own.

1.6 Public Access to Information including Notices of Intent

Construction site NOIs that are submitted to the Department are entered into the Department's database and will be automatically listed on the Department's website.

Note: NOIs received are posted on the Department's website at:
http://www.dnr.state.wi.us/runoff/stormwater/permits/

Notices of Intent and any associated information submitted to the Department for a construction site regulated under this permit are maintained at Department regional offices. The appropriate Department regional storm water staff person may be contacted to obtain access to such information.

Note: Department storm water program contacts are listed on the Department's website at: http://dnr.wi.gov/runoff/stormwater/contact.htm. Alternatively, you may contact the storm water program at (608) 267-7694 for assistance in determining the appropriate regional storm water contact.

2. NOTICE OF INTENT AND TERMINATION REQUIREMENTS

2.1 Application Procedures

2.1.1 Persons required to obtain coverage under this permit for storm water discharge from a construction site shall submit a completed NOI to the Department or to an authorized local program in accordance with the requirements of subch. III of ch. NR 216, Wis. Adm. Code. The Department must receive the completed NOI in accordance with the requirements of this section at least 14 working days prior to commencing any land disturbing construction activities unless the Department gives prior authorization. The Department may withhold permit coverage beyond 14 working days in order to request additional information or to review project compliance with erosion control, storm water management, wetland protection, endangered and threatened resources or historic property requirements. A NOI shall be submitted on forms supplied by the Department or electronically using an Internet-based application process if the Department is capable of accepting the NOI in this manner.

Note: The Department's NOI form (also known as the Water Resources Application for Project Permits or WRAPP) may be obtained through the Department storm water Internet site at: http://dnr.wi.gov/runoff/stormwater/constrforms.htm, Department regional offices or by writing to the Wisconsin DNR, Storm Water Program – WT/3, Box 7921, Madison, Wisconsin 53707-7921.

2.1.2 An application fee shall be paid to the Department in accordance with s. NR 216.43(2), Wis. Adm. Code. However, application fees are not paid to the Department for applications filed for projects that are authorized by an authorized local program in accordance with s. NR 216.415, Wis. Adm. Code.

2.1.3 The NOI form shall be signed in accordance with Section 5.15 of this permit.

2.2 Application Retention

A copy of the NOI or other documentation that storm water discharges from the site are covered under a construction site storm water discharge permit shall be kept with the erosion control and storm water management plans on the construction site and with the landowner.

2.3 Permit Certificate

The permittee shall post the permit certificate (DNR Publication # WT-813 rev. 10/06) in a conspicuous place on the construction site. The Department will send the permit certificate to the permittee with the letter of permit coverage. An authorized local program under s. NR 216.415, Wis. Adm. Code, may make its own permit certificate or equivalent notice for posting.

2.4 Failure to Notify
Persons who fail to notify the Department of their intent to be covered under this permit, and who discharge storm water runoff to waters of the state associated with land disturbing construction activities of one acre or more, are in violation of ch. 283, Wis. Stats., ch. NR 216, Wis. Adm. Code, and the federal Clean Water Act. Failure to obtain permit coverage may result in forfeitures of up to $10,000 per day, pursuant to s. 283.91(2), Stats.

2.5 Incomplete Notice of Intent
Within 14 working days after the date the Department receives the NOI, the Department may require an applicant to submit data necessary to complete any deficient NOI or may require the applicant to submit a complete new NOI when the deficiencies are extensive or the appropriate form has not been used.

2.6 Date Coverage Effective
Unless notified by the Department to the contrary, applicants who submit a complete NOI in accordance with the provisions of subch. III of ch. NR 216, Wis. Adm. Code, are authorized to discharge storm water from land disturbing construction sites under the terms and conditions of this permit 14 working days after the date the Department receives the NOI. The Department may require the landowner to submit erosion control and storm water management plans for review. The Department may deny coverage under this permit and require submittal of an application for an individual WPDES permit based on a review of the completed NOI or other information.

2.7 Where to Submit
The NOI instructs the applicant on the appropriate Department office to which a completed NOI shall be submitted. An NOI may be submitted electronically using an Internet-based application process if the Department is capable of accepting the NOI in this manner.

2.8 Use of Information
All information contained in the NOI other than that specified as confidential by the Department shall be available to the public for inspection and copying. All confidential information, so identified by the applicant, shall be submitted separately. Confidential treatment will be considered only for information identified in documents separate from nonconfidential information, which meets the requirements of s. 283.55(2)(c), Wis. Stats., and for which written application for confidentiality has been made pursuant to s. NR 2.19, Wis. Adm. Code.

2.9 Notice of Termination
Landowners of construction sites regulated by the Department shall comply with this Section 2.9.

2.9.1 Within 45 days after a construction site has undergone final stabilization, temporary erosion control best management practices (BMPs) have been removed and all land disturbing construction activities that required coverage under this permit have ceased, the permittee shall submit a signed Notice of Termination to the Department.

2.9.2 The Notice of Termination shall be submitted on forms available from the Department. Data submitted in the Notice of Termination forms shall be used as a basis for terminating coverage under this permit. An NOT may be submitted electronically using an Internet-based application process if the Department is capable of accepting the NOT in this manner.

Note: Notice of Termination forms may be obtained through the Department storm water Internet site at: http://dnr.wi.gov/runoff/stormwater/constrforms.htm, Department regional offices or by writing to the Wisconsin DNR, Storm Water Program – WT/3, Box 7921, Madison, Wisconsin 53707-7921.

2.9.3 The Notice of Termination shall be mailed to the appropriate regional office indicated on the Notice of Termination form. An NOT may be submitted electronically using an Internet-based application process if the Department is capable of accepting the NOT in this manner.

2.9.4 Notice of Termination forms shall be signed in accordance with Section 5.15 of this permit.

2.9.5 Termination of coverage under this permit shall be effective upon the Department's written confirmation of permit termination to the permittee.

2.10 Automatic Termination

The maximum period of permit coverage for any project is limited to 3 years per Notice of Intent. Therefore, permit coverage terminates 3 years after coverage commences, unless another Notice of Intent for the original project, including application fee, is submitted to retain coverage under this permit or a reissued version of this permit.

3. EROSION CONTROL AND STORM WATER MANAGEMENT PLANS

3.1 Erosion Control Plan Requirements

Landowners of construction sites regulated by the Department shall comply with this Section 3.1.

Note: The requirements of Sections 4.2 to 4.4 of this permit apply to erosion control and storm water management plans for all construction sites regulated under this permit.

3.1.1 The permittee shall develop a site-specific construction site erosion control plan for each construction site regulated under subch. III of ch. NR 216, Wis. Adm. Code. The permittee or the permittee's representative shall implement and maintain as required by this permit and subch. III of NR 216, Wis. Adm. Code, all BMPs specified in the construction site erosion control plan from the start of land disturbing construction activities until final stabilization of the construction site.

3.1.2 The construction site erosion control plan shall meet the applicable performance standard in either s. NR 151.11, Wis. Adm. Code, for construction sites that are not transportation facilities or s. NR 151.23, Wis. Adm. Code, for transportation facility construction sites. If BMPs cannot be designed and implemented to meet the sediment reduction performance standard, the construction site erosion control plan shall include a written and site-specific explanation of why the performance standard is not attainable.

Note: Department-approved erosion and sediment control technical standards can be obtained through the Department storm water Internet site at: http://dnr.wi.gov/runoff/stormwater/techstds.htm, or contact the Department storm water program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain the erosion and sediment control technical standards.

3.1.3 The erosion control plan shall be completed prior to the submittal of a NOI for coverage under this permit and shall be amended in accordance with Section 3.3.

3.1.4 The construction site erosion control plan shall include, at a minimum, the following items:

3.1.4.1 Description of the construction site and the nature of the land disturbing construction activity, including representation of the limits of land disturbance on a USGS 7.5-minute series topographical map.

3.1.4.2 Description of the intended timing and sequence of major land disturbing construction activities for major portions of the construction site, such as grubbing, excavating, or grading.

3.1.4.3 Estimates of the total area of the construction site and the total area of the construction site that is expected to be disturbed by land disturbing construction activities.

3.1.4.4 Available data describing the surface soil as well as subsoils.

3.1.4.5 Name of immediate named receiving water from the United States Geological Survey 7.5-minute series topographic maps, and whether the receiving water is an outstanding resource water (ORW), exceptional resource water (ERW) or an impaired water.

Note: An updated list of Wisconsin impaired water bodies is available on the Department's Internet site at: http://dnr.wi.gov/org/water/wm/wqs/303d/303d.html. ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. ORWs and ERWs are also listed on the Department's Internet site at: http://dnr.wi.gov/org/water/wm/wqs/orwerw/

3.1.5 The construction site erosion control plan shall include a site map with the following items:

3.1.5.1 Pre-existing topography and drainage patterns, roads and surface waters.

3.1.5.2 Boundaries of the construction site.

3.1.5.3 Drainage patterns and approximate slopes anticipated after major grading activities.

3.1.5.4 Areas of soil disturbance.

3.1.5.5 Location of major structural and non-structural controls identified in the construction site erosion control plan.

3.1.5.6 Location of areas where stabilization practices will be employed.

3.1.5.7 Areas that will be vegetated following land disturbing construction activities.

3.1.5.8 Area and location of wetland acreage on the construction site and locations where storm water is discharged to a surface water or wetland within one-quarter mile downstream of the construction site.

3.1.5.9 Areas that will be used for infiltration of post-construction storm water runoff.

3.1.5.10 An alphanumeric or equivalent coordinate system for the entire construction site.

3.1.5.11 Additional items necessary to depict site-specific conditions.

3.1.6 The construction site erosion control plan shall include a description of appropriate erosion and sediment control BMPs that will be installed and maintained at the construction site to prevent pollutants from reaching waters of the state. The construction site erosion control plan shall clearly describe the appropriate erosion and sediment control BMPs for each major land disturbing construction activity and the timing during the period of land disturbing construction activity that the erosion and sediment control BMPs will be implemented. Erosion and sediment control BMPs shall be implemented in accordance with either s. NR 151.11(8), Wis. Adm. Code, for construction sites that are not transportation facilities or s. NR 151.23(6), Wis. Adm. Code, for transportation facility construction sites. The description of erosion and sediment control BMPs shall include the following minimum requirements:

3.1.6.1 Description of the expected level of sediment control on the construction site that achieves compliance with s. NR 151.11 or 151.23, Wis. Adm. Code, where applicable.

3.1.6.2 Description of interim and permanent stabilization practices, including a schedule for implementing the practices. The construction site erosion control plan shall ensure that existing vegetation is preserved where feasible and that disturbed portions of the construction site are stabilized as soon as practicable.

3.1.6.3 Description of any structural practices to divert flow away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the construction site.

3.1.6.4 Management of overland flow at all areas of the construction site, unless otherwise controlled by outfall controls.

3.1.6.5 Trapping of sediment in channelized flow.

3.1.6.6 Staging land disturbing construction activities to limit exposed soil areas subject to erosion.

3.1.6.7 Protection of downslope drainage inlets where they occur.

3.1.6.8 Prevent tracking of sediment from the construction site onto roads and other paved surfaces.

3.1.6.9 Prevent the discharge of sediment as part of site de-watering.

3.1.6.10 Protect separate storm drain inlet structures from receiving sediment.

3.1.6.11 Clean up of off-site sediment deposits.

3.1.6.12 Stabilization of drainage ways.

3.1.6.13 Prevent the discharge of sediment eroding from soil stockpiles existing for more than 7 days.

3.1.6.14 Prevent the transport by runoff into waters of the state of untreated wash water from vehicle and wheel washing.

3.1.6.15 Installation of permanent stabilization practices as soon as possible after final grading.

3.1.6.16 Description of erosion and sediment control practices put in place for the winter to prevent soil from leaving the construction site during periods of winter and spring thaw and rains.

3.1.6.17 Use and storage of chemicals, cement and other compounds and materials used on the construction site shall be managed during the construction period to prevent their transport by runoff into waters of the state.

3.1.6.18 Minimization of dust to the maximum extent practicable.

3.1.6.19 Minimization of soil compaction and preservation of topsoil.

3.1.6.20 Minimization of land disturbing construction activity on slopes of 20% or more.

3.1.6.21 Spill prevention and response procedures.

3.1.6.22 Additional items necessary to address site-specific conditions.

3.1.7 Sediment control BMPs shall be constructed and placed in operation prior to runoff entering waters of the state.

Note: While regional treatment facilities are appropriate for control of post-construction pollutants they should not be used for construction site sediment removal.

3.1.8 No solid materials, including building materials, may be discharged in violation of chs. 30 and 31, Wis. Stats., or 33 USC 1344 or a U.S. Army Corps of Engineers Section 404 permit issued under 33 USC 1344.

3.1.9 Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive flow from the structure to a watercourse so that the natural physical and biological characteristics and functions of the watercourse are maintained and protected.

3.1.10 Runoff settling basins and pit/trench dewatering settling basins, if used, shall be constructed and operated in accordance with good engineering practices and design standards, and as follows:

3.1.10.1 Basins shall discharge to a vegetated or otherwise stabilized area protected from erosion. The principal spillway shall discharge at the bottom of the embankment.

3.1.10.2 When the accumulated sediment reaches one-half the height of the sediment control structure, or one-half the depth of the permanent pool, the sediment shall be removed. Materials removed from basins shall be properly disposed of in a manner that will not pollute waters of the state.

3.1.10.3 Consideration should be given to installing fences around construction site settling basins for human safety.

3.1.11 All maintenance shall be done in accordance with technical standards developed pursuant to subch. V of ch. NR 151, Wis. Adm. Code. Where measures are not in accordance with the technical standards, a description of the procedures used to maintain effective operating

conditions of vegetation, erosion and sediment control measures and other protective measures shall be identified in the erosion control plan.

Note: The storm water technical standards are available on the Department Internet site at: http://dnr.wi.gov/runoff/stormwater/techstds.htm.

3.1.12 The construction site erosion control plan shall clearly identify the contractor(s) and subcontractor(s) that will install and maintain erosion and sediment control measures. This information may be added to the plan after the NOI has been submitted to Department. It shall be included in the plan prior to the commencement of land disturbing construction activities.

3.2 Storm Water Management Plan Requirements

3.2.1 Pollution caused by storm water discharges from the site after construction is completed, including rooftops, parking lots, roadways and the maintenance of grassed areas shall be addressed by a storm water management plan. A storm water management plan shall be developed prior to submitting a NOI to the Department.

Note: The requirements of Sections 4.2 to 4.4 of this permit apply to erosion control and storm water management plans for all construction sites regulated under this permit.

3.2.2 The storm water management plan shall meet the applicable performance standards in ch. NR 151, Wis. Adm. Code, as follows:

3.2.2.1 For construction sites that are not transportation facilities, meet the applicable performance standards in either s. NR 151.12, Wis. Adm. Code, or ss. NR 151.121 through NR 151.128, Wis. Adm. Code.

3.2.2.2 For transportation facility construction sites, meet the applicable performance standards in either s. NR 151.24, Wis. Adm. Code, or ss. NR 151.241 through NR 151.249, Wis. Adm. Code.

3.2.3 The storm water management plan shall include a description of the BMPs that will be installed during the construction process to control total suspended solids and peak flow, enhance infiltration, maintain or restore protective areas and to reduce petroleum in runoff that will occur after construction operations have been completed. Storm water BMPs shall be in accordance with applicable state and local regulations.

3.2.4 When permanent infiltration systems are used, appropriate on-site testing shall be conducted to determine if seasonal high groundwater elevation or top of bedrock is within 5 feet of the bottom of the proposed infiltration system.

3.2.5 Storm water BMPs shall be adequately separated from wells to prevent contamination of drinking water, and the following minimum separation distances shall be met:

3.2.5.1 Storm water infiltration systems and ponds shall be located at least 400 feet from a well serving a community water system unless the Department concurs that a lesser separation distance would provide adequate protection of a well from contamination.

3.2.5.2 Storm water BMPs shall be located with a minimum separation distance from any well serving a non-community or private water system as listed within s. NR 812.08, Wis. Adm. Code.

Note: Chapter NR 815, Wis. Adm. Code, regulates injection wells including storm water injection wells. Construction or use of a well to dispose of storm water directly into groundwater is prohibited under s. NR 815.11(5), Wis. Adm. Code.

3.2.6 For any permanent structures, provisions shall be made for long-term maintenance with the municipality or other responsible party. For an NOI submitted to the Department, a copy of the signed long-term maintenance agreement shall be submitted to the Department with the NOI unless the Department agrees that it may be submitted by an alternative date prior to termination of permit coverage. The Department may withhold permit coverage until the long-term maintenance agreement is submitted to the Department.

Note: The long-term maintenance agreement is an important requirement and the Department wants to ensure that appropriate steps are being taken to secure the agreement. For regional treatment structures, the Department encourages the landowner to obtain a municipal agreement for long-term maintenance of regional treatment structures. Long-term storm water BMPs should be maintained after permit termination in accordance with the maintenance agreement and NR 216.005, Wis. Adm. Code.

3.2.7 BMPs to control impacts from storm water runoff include infiltration systems, wet detention ponds, constructed wetlands, grassed swales, vegetative protective areas, reduced imperviousness, beneficial reuse such as irrigation or toilet flushing, combinations of these practices, or other methods which do not cause significant adverse impact on the receiving surface water or groundwater. The storm water management plan shall include an explanation of the technical basis used to select the BMPs.

Note: Department-approved storm water management technical standards can be obtained through the through the Department storm water Internet site at: http://dnr.wi.gov/runoff/stormwater/techstds.htm, or contact the Department storm water program in the Bureau of Watershed Management at (608) 267-7694 to get information on how to obtain storm water management standards.

3.3 Amendments

3.3.1 The permittee shall amend the erosion control and storm water management plans if either of the following occurs:

3.3.1.1 There is a change in design, construction, operation or maintenance at the construction site, which has the reasonable potential for the discharge of pollutants and which has not otherwise been addressed in the erosion control and storm water management plans.

3.3.1.2 The actions required by the erosion control and storm water management plans fail to reduce the impacts of pollutants carried by construction site storm water runoff.

3.3.2 For construction sites for which there has been earlier Department review of the erosion control and storm water management plans, if the permittee identifies changes needed in either plan, the permittee shall notify the Department at least 5 working days prior to making the changes in the plan.

3.3.3 The Department may, upon request of a permittee or upon finding of just cause, modify the compliance and reporting schedules or any requirement of a storm water discharge permit.

4. WATER QUALITY STANDARDS, MONITORING AND RECORDS

4.1 Water Quality Standards

This permit specifies the conditions under which storm water may be discharged to waters of the state for the purpose of achieving water quality standards contained in chs. NR 102 through 105, NR 140, and NR 207, Wis. Adm. Code. For the term of this permit, compliance with water quality standards will be addressed by adherence to general narrative-type storm water discharge limitations and implementation of the erosion control and storm water management plans and best management practices. A permittee with a construction site covered under this permit shall select, install, implement and maintain best management practices as necessary to meet applicable water quality standards. Unless notified by the Department in writing to the contrary, compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, shall be deemed as stringent as necessary to ensure that storm water discharges covered by this permit do not cause or contribute to an excursion above any applicable water quality standard.

4.2 Outstanding and Exceptional Resource Waters

4.2.1 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to an outstanding resource water (ORW) or exceptional resource water (ERW) as defined in ch. NR 102, Wis. Adm. Code.

Note: The Department recommends that an applicant for permit coverage check for ORWs and ERWs during project planning prior to submitting an NOI. ORWs and ERWs are listed in ss. NR 102.10 and 102.11, Wis. Adm. Code. A list of ORWs and ERWs may also be found on the Department's Internet site at:
http://dnr.wi.gov/org/water/wm/wqs/orwerw/

4.2.2 The permittee may not establish a new storm water discharge of pollutants to an ORW or an ERW unless the erosion control and storm water management plans required under Section 3. of this permit meets the requirements of 4.2.3 of this permit.

4.2.2.1 "New storm water discharge" means a storm water discharge that would first occur after the permittee's start date of coverage under this permit to a surface water to which the construction or post-construction site did not previously discharge storm water.

4.2.3 The permittee's erosion control and storm water management plans required under this permit shall be designed to prevent the discharge of sediment and other pollutants to any ORW or ERW in excess of the background level within the water body. Unless notified by the Department in writing to the contrary, compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, shall be deemed to be compliance with the requirements of this section. If the Department has sufficient site-specific data to determine that the permittee's construction or post-construction site storm water will discharge a pollutant in excess of the background level within an ORW or ERW, then the Department shall notify the permittee in writing that the permittee must include a written section in the erosion control and storm water management plans that discusses and identifies the management practices and control measures the permittee will implement to prevent the discharge of any pollutant in excess of the background level within the water body. This section of the permittee's plans shall specifically identify control measures and practices that will collectively be used to prevent the discharge of a pollutant in excess of the background level within the water body.

Note: Reducing or eliminating surface water discharges to an ORW or ERW by infiltrating runoff is a method to help prevent the discharge of pollutants to an ORW or ERW in excess of background levels. It is expected that post-construction storm water management practices will be designed to maintain or increase infiltration rates for the site as compared to pre-development infiltration rates for areas that discharge to any ORW or ERW. However, prohibitions, exclusions, or exemptions from infiltrating runoff may apply to runoff from potential sources of contamination or into areas that are prone to groundwater contamination as identified in s. NR 151.12(5)(c)5. and 6., Wis. Adm. Code, or s. NR 151.124(3) and (4), Wis. Adm. Code. Infiltration systems must be designed to comply with the groundwater quality standards contained in ch. NR 140, Wis. Adm. Code.

4.2.4 Protective areas of no less than 75 feet shall be maintained adjacent to any ORW and ERW as required under ss. NR 151.12 (5)(d), NR 151.125, 151.24(6), or NR 151.245, Wis. Adm. Code.

4.3 Fish and Aquatic Life Waters

4.3.1 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to a fish and aquatic life water as defined in s. NR 102.13, Wis. Adm. Code.

Note: The Department recommends that an applicant for permit coverage check for fish and aquatic life waters during project planning prior to submitting an NOI. Most receiving waters of the state are classified as a fish and aquatic life water and this classification includes all surface waters of the state except ORWs, ERWs, Great Lakes system waters and variance water identified within ss. NR 104.05 to 104.10, Wis. Adm. Code.

4.3.2 The permittee may not establish a new storm water discharge of pollutants to a fish and aquatic life water unless the erosion control and storm water management plans required under Section 3. of this permit is designed to prevent the significant lowering of water quality of any fish and aquatic life water. Significant lowering of water quality is defined within ch. NR 207, Wis. Adm. Code. Unless notified by the Department in writing to the contrary, compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, shall be deemed to be compliance with the requirements of this section.

4.3.2.1 "New storm water discharge" has the meaning given in Section 4.2.2.1 of this permit.

4.4 Impaired Water Bodies and Total Maximum Daily Load Requirements

4.4.1 "Pollutant(s) of concern" means a pollutant that is contributing to the impairment of a water body.

4.4.2 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge to an impaired water body listed in accordance with section 303(d)(1) of the federal Clean Water Act, 33 USC §1313(d)(1)(C), and the implementing regulation of the US Environmental Protection Agency, 40 CFR §130.7(c)(1). Impaired waters are those that are not meeting applicable water quality standards.

Note: The Department recommends that an applicant for permit coverage check for impaired waters during project planning prior to submitting an NOI. The section 303 (d) list of Wisconsin impaired surface water bodies may be obtained by contacting the Department or by searching for the section 303 (d) list on the Department's Internet site. The Department updates the section 303 (d) list approximately every two years. The updated list is effective upon approval by EPA. The link to the section 303 (d) list is: http://dnr.wi.gov/org/water/wm/wqs/303d/

4.4.3 A permittee that will discharge a pollutant of concern via storm water to an impaired water body shall include a written section in the erosion control and storm water management plans that specifically identifies control measures and management practices that will collectively be used to reduce, with the goal of eliminating, the storm water discharge of pollutant(s) of concern that contribute to the impairment of the water body and explain why these control measures and management practices were chosen as opposed to other alternatives. Unless notified by the Department in writing to the contrary, compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, shall be deemed to be compliance with the requirements of this section.

4.4.4 The permittee may not establish a new storm water discharge of a pollutant of concern to an impaired water body or increase an existing discharge of a pollutant of concern to an impaired water body unless the new or increased discharge causes the receiving water to meet applicable water quality standards, or the discharge is consistent with an EPA approved total maximum daily load (TMDL) allocation for the impaired water body. Unless notified by the Department in writing to the contrary, compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, shall be deemed to be compliance with the requirements of this section.

> **4.4.4.1** "New storm water discharge" has the meaning given in Section 4.2.2.1 of this permit.

4.4.5 Before beginning land-disturbing construction activity, the permittee shall determine whether any part of its construction or post-construction site storm water will discharge a pollutant of concern via storm water to a water body included in a State and Federal approved TMDL. If so, the permittee shall assess whether the TMDL wasteload allocation for the facility's discharge will be met through the existing erosion control and storm water management plans and compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, or whether changes to the plans are necessary.

Note: The Department recommends that an applicant for permit coverage check for approved TMDLs during project planning prior to submitting an NOI. State and Federal approved TMDLs can be identified by contacting the Department, or by searching for the State and Federal approved TMDL list on the Department Internet site. The link to identify the list of State and Federal approved Final TMDLs is:
http://dnr.wi.gov/org/water/wm/wqs/303d/Approved_TMDLs.html

4.4.6 After determining whether the construction or post-construction site storm water discharge is included in an EPA approved TMDL and determining that any TMDL wasteload allocation for the construction or post-construction site's discharge is not being met, the permittee shall amend the erosion control and storm water management plans. The amended plans shall include the necessary control measures to meet the requirements of the EPA approved TMDL wasteload allocation for the construction or post-construction site. If a specific wasteload allocation has not been assigned to the construction or post-construction site under a TMDL,

compliance with the applicable performance standards of subch. III or IV of ch. NR 151, Wis. Adm. Code, and this permit shall be deemed to be compliance with the TMDL.

4.5 Inspections and Maintenance

The permittee shall:

4.5.1 Conduct the following construction site inspections:

4.5.1.1 Weekly inspections of implemented erosion and sediment controls; and

4.5.1.2 Inspections of erosion and sediment controls within 24 hours after a rainfall event of 0.5 inches or greater. A "rainfall event" may be considered to be the total amount of rainfall recorded in any continuous 24-hour period.

4.5.2 Repair or replace erosion and sediment control BMPs as necessary within 24 hours of an inspection or notification indicating that repair or replacement is needed.

4.5.3 Maintain, at the construction site or via an Internet site, weekly written reports of all inspections conducted by or for the permittee. If an Internet site method is used, the landowner shall provide the Internet address to the Department prior to its use. Weekly inspection reports shall include all of the following:

4.5.3.1 The date, time and exact location of the inspection.

4.5.3.2 The name of the individual who performed the inspection.

4.5.3.3 An assessment of the condition of erosion and sediment controls.

4.5.3.4 A description of any erosion and sediment control installation or maintenance performed in response to the inspection.

4.5.3.5 A description of the present phase of construction at the site.

Note: The Department has developed a model inspection report that includes the above items and it is available through the Department's storm water Internet site at: http://dnr.wi.gov/runoff/stormwater/constrforms.htm

4.5.4 Submit the information maintained in accordance with Section 4.5.3 to the Department upon request.

4.6 Records

4.6.1 The permittee shall retain records of all construction site inspections, copies of all reports and plans required by this permit, and records of all data used to obtain coverage under this permit. Minimum periods of retention are as follows:

4.6.1.1 If there is a secure location, such as a construction site trailer, the erosion control and storm water management plans and amendments to the erosion control and storm water management plans shall be retained at the construction site until permit coverage is terminated.

4.6.1.2 All reports required by subch. III of ch. NR 216, Wis. Adm. Code, or information submitted to obtain coverage under this permit, including the erosion control and storm water management plans, amendments, and background information used in their preparation, shall be kept by the permittee for a period of at least 3 years from the date of Notice of Termination.

4.6.2 A landowner operating a construction site under approved municipal erosion and sediment plans, grading plans, or storm water management plans shall also submit signed copies of the NOI to the local agency approving the plans. If storm water from the construction site discharges to a municipal separate storm sewer system that is operating pursuant to a municipal storm water discharge permit issued pursuant to subch. I of ch. NR 216, Wis. Adm. Code, then a signed copy of the NOI shall also be sent to the operator of the system.

4.6.3 Upon request by the Department the permittee shall provide a copy of the erosion control and storm water management plans, construction site inspections and any additional data requested, within 5 working days to the Department, to the operator of the municipal storm sewer system that receives the discharge, and any municipal agency approving erosion and sediment plans, grading plans or storm water management plans. Additional information may be requested by the Department for resource waters that require additional protection such as outstanding or exceptional resource waters, or other sensitive water resources.

4.7 Compliance with Other Applicable Regulations

4.7.1 The erosion control and storm water management plans shall document other applicable municipal regulatory provisions, compliance with which will also meet the requirements of this permit. If these municipal provisions are more stringent than those provisions appearing in this permit issued pursuant to subch. III of ch. NR 216, Wis. Adm. Code, the erosion control and storm water management plans shall also include a description of how compliance with the municipal provisions will be achieved.

4.7.2 The erosion control and storm water management plans shall comply with applicable state plumbing regulations.

4.8 Department Actions

4.8.1 The Department may notify the permittee at any time that the erosion control and storm water management plans do not meet one or more of the minimum requirements of subch. III of ch. NR 216, Wis. Adm. Code, or this permit, for reducing and preventing the discharge of pollutants. The notification shall identify those provisions that are not being met by the erosion control and storm water management plan, and identify which provisions of the plan require modification in order to meet the requirements. Within the time frame identified by the Department in its notification, the permittee shall make the required changes to the erosion control and storm water management plans, perform all actions required by the revised plans, and submit to the Department a written certification that the requested changes have been made and implemented, and such other information the Department requires. The Department may revoke coverage under this permit for failure to comply with this section or it may take action under s. 283.89, Wis. Stats., or both. The landowner of a construction site where the Department has revoked coverage under this permit may not discharge storm water to waters of the state from the construction site unless an individual WPDES permit for storm water discharge is issued to the landowner.

4.8.2 The Department shall withdraw a construction site from coverage under this permit and issue an individual WPDES permit upon written request of the discharger. This permit authorizing storm water discharges from the construction site remains in effect until the Department acts on such a request and issues a specific individual WPDES permit.

4.8.3 The Department may deny coverage under this permit and require submittal of an application for an individual WPDES storm water discharge permit based on a review of the completed NOI or other relevant information. The landowner of a construction site denied or revoked coverage under this permit may not discharge storm water to waters of the state from the construction site until an individual WPDES permit for storm water discharge is issued to the landowner.

4.8.4 The Department may require the landowner of any storm water discharge covered by this permit, to apply for and obtain an individual WPDES storm water discharge permit if any of the following occur:

4.8.4.1 The storm water discharge is determined to be a significant source of pollution and more appropriately regulated by an individual WPDES storm water discharge permit.

4.8.4.2 The storm water discharge is not in compliance with the terms and conditions of subch. III of ch. NR 216, Wis. Adm. Code, or of this permit.

4.8.4.3 A change occurs in the availability of demonstrated technology or BMPs for the control or abatement of pollutants from the storm water discharge.

4.8.4.4 Effluent limitations or standards are promulgated for a storm water discharge that is different than the conditions contained in subch. III of ch. NR 216, Wis. Adm. Code.

4.8.5 Any person may submit a written request to the Department that it take action under Section 4.8.4 above.

5. STANDARD CONDITIONS

The conditions in s. NR 205.07(1) and (3), Wis. Adm. Code, are incorporated by reference in this permit. The permittee shall be responsible for meeting these requirements, except for s. NR 205.07(1)(n), which does not apply to facilities covered under general permits. Some of these requirements are outlined below in Sections 5.1 through 5.25 of this permit. Requirements not specifically outlined below can be found in s. NR 205.07(1) and (3), Wis. Adm. Code.

5.1 Spill Reporting: The permittee shall immediately notify the Department in accordance with ch. NR 706, Wis. Adm. Code, in the event that a spill or accidental release of any material or substance results in the discharge of pollutants to the waters of the state. The Department shall be notified via the 24-hour spill hotline (1-800-943-0003).

5.2 Non-storm Water Discharges: All discharges authorized by this permit shall be composed entirely of storm water associated with land disturbing construction activity, as defined in ch. NR 216, Wis. Adm. Code, or storm water and/or groundwater from excavations and/or pit dewatering.

Note: Other direct and indirect waste discharge to waters of the state is prohibited unless covered by another WPDES permit.

5.3 Work near Surface Waters and Wetlands: Any work performed in wetland areas or within areas subject to local floodplain and shoreland regulations must be in compliance with all applicable county and/or local ordinances. All applicable state permits and/or contracts required by Chapters 30, 31, and 87, Wis. Stats., (or Wisconsin Administrative Code adopted under these laws, including ch. NR 103) and applicable federal permits must be obtained as necessary.

5.4 Work near Wells: Adequate separation distances from wells shall be maintained for storm water BMPs including ponds, storm sewers, and infiltration structures as necessary in accordance with chs. NR 811 and 812, Wis. Adm. Code.

5.5 Duty to Comply: Any act of noncompliance with this permit is a violation of this permit and is grounds for enforcement action or withdrawal of permit coverage under this permit and issuance of an individual permit. If the permittee files a request for an individual WPDES permit or a notification of planned changes or anticipated noncompliance, this action by itself does not relieve the permittee of any permit condition.

5.6 Enforcement Action: The Department is authorized under s. 283.89 and 283.91, Wis. Stats., to utilize citations or referrals to the Department of Justice to enforce the conditions of this permit. Violation of a condition of this permit is subject to a fine of up to $10,000 per day of the violation.

5.7 Continuation of the Expired General Permit: The Department's goal is to reissue this general permit prior to its expiration date. However, if that does not occur, s. NR 205.08(9), Wis. Adm. Code, specifies that an application for reissuance of the permit will be considered to have been submitted for all of the dischargers in the class or category covered by this general permit. The class application for general permit reissuance allows the conditions and requirements of the expired permit to remain in effect until the permit is reissued or revoked.

5.8 Duty to halt or reduce activity: Upon failure or impairment of BMPs identified in the erosion control and storm water management plan, the permittee shall, to the extent practical and necessary to maintain permit compliance, modify or curtail operations until the BMPs are restored or an alternative method of erosion and storm water control is provided.

5.9 Other Information: When the permittee becomes aware that he or she failed to submit any relevant facts in an application for permit coverage or included incorrect information in plans or reports submitted to the Department, the permittee shall promptly submit such facts or corrected information to the Department.

5.10 Permit actions: As provided in s. 283.53, Wis. Stats., after notice and opportunity for a hearing this permit may be modified or revoked and reissued for cause.

5.11 Modifications to Permit Requirements: The Department may, upon request of a permittee and/or upon finding of just cause, grant modifications to the compliance and reporting schedules or any requirements of this permit. If the Department took this step at its discretion, it would change this general permit following required public noticing and the change would apply to all dischargers covered under this permit.

5.12 Duty to Mitigate: The permittee shall take all reasonable steps to minimize or prevent any adverse impacts on the waters of the state resulting from noncompliance with this permit.

5.13 Proper Operation and Maintenance: The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control which are installed or used by the permittee to achieve compliance with this permit and the erosion control and storm water

management plan. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with conditions of this permit.

5.14 Duty to Provide Information. The permittee shall furnish the Department, within a reasonable time, any information that the Department may request to determine whether cause exists for modifying, revoking, or reissuing this permit or to determine compliance with this permit. The permittee shall also furnish to the Department, upon request, copies of records or reports required to be kept by the permittee.

5.15 Certification and Signature Requirements: The Notice of Intent for coverage under this permit, the Notice of Termination, and all reports or information submitted to the Department as required by this permit shall be signed by the permittee as follows:

5.15.1 For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit.

5.15.2 For a unit of government, by a ranking elected official or other duly authorized representative.

5.15.3 For a limited liability company, by a manager.

5.15.4 For a partnership, by a general partner; and for a sole proprietorship, by the proprietor.

5.16 Liabilities under Other Laws: Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under section 311 of the federal Clean Water Act (CWA), any applicable federal, state or local law or regulation under authority preserved by section 510 of the CWA.

5.17 Property Rights: This permit does not convey any property rights of any sort, or any exclusive privilege. This permit does not authorize any injury or damage to private property or any invasion of personal rights, or any infringement of federal, state or local laws or regulations.

5.18 Severability: The provisions of this permit are severable, and if any provisions of this permit or the application of any provision of this permit to any circumstance is held invalid the remainder of this permit shall not be affected thereby.

5.19 Transfers: Coverage under this permit is not transferable to any person except after notice to the Department in accordance with Section 1.5 of this permit.

5.20 Inspection and Entry: The permittee shall allow authorized representatives of the Department, upon the presentation of credentials, to:

5.20.1 Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records are required to be maintained under the conditions of this permit.

5.20.2 Have access to and copy, at reasonable times, any records required under the conditions of this permit.

5.20.3 Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit.

5.20.4 Sample or monitor at reasonable times, for the purposes of assuring permit compliance, any substances or parameters at any location.

5.21 Submitting Records: Unless otherwise specified, any reports submitted to the Department shall be submitted to the appropriate Department regional storm water contact or to Wisconsin DNR, Storm Water Program – WT/3, P.O. Box 7921, Madison, WI 53707-7921.

5.22 Noncompliance: Upon becoming aware of any permit noncompliance that may endanger public health or the environment, the permittee shall report this information by a telephone call to the Department regional storm water specialist within 24 hours. A written report describing the noncompliance shall be submitted to the Department regional storm water specialist within 5 days after the permittee became aware of the noncompliance. The Department may waive the written report on a case-by-case basis based on the oral report received within 24 hours. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times; the steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and if the noncompliance has not been corrected, the length of time it is expected to continue.

5.23 Enforcement: Any violation of s. 283.33, Wis. Stats., ch. NR 216, Wis. Adm. Code, or this permit is enforceable under s. 283.89, Wis. Stats.

5.24 Removed Substances: Solids, sludges, filter backwash or other pollutants removed from or resulting from treatment or control of storm water shall be stored and disposed of in a manner to prevent any pollutant from the materials from entering the waters of the state, and to comply with all applicable federal, state, and local regulations.

5.25 Attainment of Water Quality Standards after Authorization: At any time after authorization, the Department may determine that the discharge of storm water from a permittee's construction site may cause, have the reasonable potential to cause, or contribute to an excursion of any applicable water quality standard. If such determination is made, the Department may require the permittee to do one of the following:

5.25.1 Develop and implement an action plan to adequately address the identified water quality concern.

5.25.2 Submit an individual permit application.

6. DEFINITIONS

Definitions for some of the terms found in this permit are as follows:

6.1 Authorized Local Program means a municipality that has received approval from the Department pursuant to s. NR 216.415, Wis. Adm. Code, to administer the Department's construction site permit program within its jurisdiction.

6.2 Best Management Practices or BMPs means structural or non-structural measures, practices, techniques or devices employed to avoid or minimize soil, sediment or pollutants carried in runoff to waters of the state.

6.3 Construction Site means an area upon which one or more land disturbing construction activities occur that in total will disturb one acre or more of land, including areas that are part of a larger common plan of development or sale where multiple separate and distinct land disturbing construction activities may be taking place at different times on different schedules but under one plan such that the total disturbed area is one acre or more.

6.4 Department means the State of Wisconsin Department of Natural Resources.

6.5 Erosion means the process by which the land's surface is worn away by the action of wind, water, ice or gravity.

6.6 Final Stabilization means that all land disturbing construction activities at the construction site have been completed and that a uniform perennial vegetative cover has been established with a density of at least 70% of the cover for the unpaved areas and areas not covered by permanent structures or that employ equivalent permanent stabilization measures.

6.7 Infiltration means the entry and movement of precipitation or runoff into or through soil.

6.8 Infiltration System means a device or practice such as a basin, trench, rain garden or swale designed specifically to encourage infiltration, but does not include natural infiltration in pervious surfaces such as lawns, redirecting of rooftop downspouts onto lawns or minimal infiltration from practices, such as swales or road side channels designed for conveyance and pollutant removal only.

6.9 Land Disturbing Construction Activity means any man-made alteration of the land surface resulting in a change in the topography or existing vegetative or non-vegetative soil cover that may result in storm water runoff and lead to increased soil erosion and movement of sediment into waters of the state. Land disturbing construction activity includes, but is not limited to, clearing and grubbing, demolition, excavating, pit trench dewatering, filling and grading activities.

6.10 Landowner means any person holding fee title, an easement or other interest in property that allows the person to undertake land disturbing construction activity on the property.

6.11 Municipality means any city, town, village, county, county utility district, town sanitary district, town utility district, school district or metropolitan sewage district or any other public entity created pursuant to law and having authority to collect, treat or dispose of sewage, industrial wastes, storm water or other wastes.

6.12 Notice of Intent or NOI means the Department form that must be completed and sent to the Department to obtain coverage under this permit.

6.13 Performance Standard means a narrative or measurable number specifying the minimum acceptable outcome for a facility or practice.

6.14 Permittee means a person who has applied for and received WPDES permit coverage for storm water discharge under NR 216, Wis. Adm. Code, and this permit.

6.15 Sediment means settleable solid material that is transported by runoff, suspended within runoff or deposited by runoff away from its original location.

6.16 Significant contributor means a person who discharges to waters of the state pollutants that contribute to or have the reasonable potential to contribute to an exceedence of a water quality

standard.

6.17 Stabilize means the process of making a site steadfast or firm, minimizing soil movement by the use of practices such as mulching and seeding, sodding, landscaping, paving, graveling or other appropriate measures.

6.18 Storm Water means runoff from precipitation including rain, snow, ice melt or similar water that moves on the land surface via sheet or channelized flow.

6.19 Storm Water Management Plan means a comprehensive plan designed to reduce the discharge of pollutants from storm water, after the site has undergone final stabilization, following completion of the construction activity.

6.20 Waters of the State means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, all lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water courses, drainage systems and other surface water or groundwater, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and retained completely upon the property of a person.
.

6.21 Working Day means any day except Saturday and Sunday and holidays designated in s. 230.35(4)(a), Wis. Stats.

6.22 WPDES Permit means a Wisconsin Pollutant Discharge Elimination System permit issued pursuant to ch. 283, Wis. Stats.

APPENDIX D

CONSTRUCTION SITE NOTICE

To be completed by the Contractor and located on the SWPPP Information Sign

CONTRACTOR CONSTRUCTION SITE NOTICE
FOR THE
WPDES GENERAL STORM WATER PERMIT

Contractor Firm:	
Contractor Address:	_____ _____ _____
Contact Names & Numbers:	_____ _____ Name Phone Number _____ _____ Name Phone Number
Project Description:	**Casey's General Store** **Lisbon, WI** Owner's Representative: Kevin Schulze One Convenience Blvd. Ankeny, IA 50021 515-965-6223

SWPPP PLAN FOR THIS PROJECT IS LOCATED AT:

_____

_____

APPENDIX E

WDNR INSPECTION REPORT

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

CONSTRUCTION SITE INSPECTION REPORT

Form 3400-187 (rev. 9/04)

Notice: Use of this specific form is voluntary, but the information contained on this form must be collected and kept by the permittee under s. NR 216.48(4), Wis. Adm. Code, for a construction site covered under the General WPDES Construction Site Storm Water Discharge Permit, Permit No. WI-0067831-2. This form is provided for the convenience of the permittee to meet the requirements of s. NR 216.48(4), Wis. Adm. Code. Multiple copies of this form may be made to compile the inspection report.

Inspections of implemented erosion and sediment control best management practices must be performed weekly and within 24 hours after a precipitation event 0.5 inches or greater which results in runoff.

Weekly written reports of all inspections conducted by or for the permittee must be maintained throughout the period of general permit coverage.

The information maintained in accordance with s. NR 216.48 (4) must be submitted to the Department upon request.

Name of Permittee:	
Construction Site Name (Project):	**Construction Site ID No.:**
Location:	**County:**
Contractor:	**Field Office Phone:**

Note: Weekly inspection reports, along with erosion control and stormwater management plans, are required to be maintained on site and made available upon request.

Date of inspection (mm/dd/yy): _____	**Type of inspection:** ☐ **Weekly** ☐ **Precipitation Event** ☐ **Other (specify)** _____
Time of inspection: Start: _____ **a.m./p.m.** **End:** _____ **a.m./p.m.**	**Name(s) of individual(s) performing inspection:**
Weather:	
Description of present phase of construction:	

Modifications Required	Yes	No	Not Applicable	**Comments/Recommendations** about the overall effectiveness of the erosion and sediment control measures. **Note**: For each item checked "Yes", complete the follow-up information on page 2.
Ditch Checks	☐	☐	☐	
Erosion Control Plan	☐	☐	☐	
Erosion Mat	☐	☐	☐	
Grading Practices	☐	☐	☐	
Inlet Protection	☐	☐	☐	
Mulch	☐	☐	☐	
Offsite Sediment	☐	☐	☐	
Permanent Seeding	☐	☐	☐	
Schedule / Phasing	☐	☐	☐	
Silt Fence	☐	☐	☐	
Silt Screen	☐	☐	☐	
Sod	☐	☐	☐	
Stabilized Outlet	☐	☐	☐	
Temp. Diversion Channel	☐	☐	☐	
Temp. Settling Basin	☐	☐	☐	
Temporary Seeding	☐	☐	☐	
Tracking Pads	☐	☐	☐	
Turbidity Barrier	☐	☐	☐	
Other (specify) _____	☐	☐	☐	

Name of Permittee:	
Construction Site Name (Project):	**Construction Site ID No.:**

Use the space below for detailed follow-up action items.

Exact place of erosion/sediment control inspected	Type of erosion/sediment control and its observed condition	Description of any necessary maintenance or repair to erosion/sediment control, including anticipated date of completion

APPENDIX F

FEDERAL, STATE, OR LOCAL STORMWATER OR OTHER ENVIRONMENTAL INSPECTOR SITE VISIT LOG

To be used by the Contractor to document any site visit by a government agency and any reports provided or deficiencies noted

Federal, State, or Local Stormwater or other
Environmental Inspector Site Visit Log
PLEASE MAKE MORE COPIES AS NECESSARY

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present:_____

Comments: _____

Time and Date: _____ Agency Report Prepared: Yes No

Violations Noted Yes No. If yes, brief description: _____

_____

Notification to Casey's Marketing Company representative (Date/Time): _____

Corrective Actions completed (Date/Time) if applicable:_____

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present:_____

Comments: _____

Time and Date: _____ Agency Report Prepared: Yes No

Violations Noted Yes No. If yes, brief description: _____

_____

Notification to Casey's Marketing Company representative (Date/Time): _____

Corrective Actions completed (Date/Time) if applicable:_____

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present:_____

Comments: _____

Time and Date: _____ Agency Report Prepared: Yes No

Violations Noted Yes No. If yes, brief description: _____

_____

Notification to Casey's Marketing Company representative (Date/Time): _____

Corrective Actions completed (Date/Time) if applicable:_____

Inspectors Name: _____ Agency: _____

Contractors Representative Present: _____

Others Present:_____

Comments: _____

Time and Date: _____ Agency Report Prepared: Yes No

Violations Noted Yes No. If yes, brief description: _____

_____

Notification to Casey's Marketing Company representative (Date/Time): _____

Corrective Actions completed (Date/Time) if applicable:_____

APPENDIX G

NOTICE OF TERMINATION

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notice of Termination – Storm Water Discharges Associated With Land Disturbing Construction Activities General Permit

Form 3400-162 (R 7/10)

This Notice of Termination (NOT) form is authorized by s. 283.37, Wis. Stats. Submittal of a completed NOT to the Department is mandatory for any landowner of a construction site regulated under 40 CFR Part 122, Chapter 283, Wis. Stats., and Chapter NR 216, Wis. Adm. Code. Failure to submit a completed NOT to the Department after the construction site undergoes final stabilization may result in forfeitures up to $10,000 per day, pursuant to s. 283.92 (2), Wis. Stats. Personally identifiable information on this NOT may be used for other water quality program purposes.

Submission of this NOT constitutes notice that the landowner identified in Section I no longer intends to be authorized by a general WPDES permit to discharge storm water associated with land disturbing construction activities from the construction site identified in Section III of this NOT.

All necessary information must be provided on this NOT. Failure to complete this NOT correctly may result in rejection of this NOT by the Department. Please read all instructions before completing. Please type or clearly print your answer to all questions.

Section I: Landowner Information			
Name			Contact Person
Mailing Address			Title
City	State	ZIP Code	Telephone Number

Section II: Contractor Information			
Name			Contact Person
Mailing Address			Title
City	State	ZIP Code	Telephone Number

Section III: Construction Site Information	
Site Name	
Location Description	WDNR Site Number
☐ City of ☐ Township of, or ☐ Village of_____	County
Quarter-Quarter: NW NE / SW SE Quarter: NW NE / SW SE Is this site wholly contained on the above quarter-quarter section? ☐ Yes ☐ No	Section Township Range ___ ___ ___ ___ N ___ ___ ☐E ☐W

Section IV: Certification

I certify under penalty of law that disturbed soils at the identified site have undergone final stabilization and temporary erosion and sediment control measures have been removed or that all storm water discharges associated with construction activity that are authorized by a general WPDES storm water discharge permit have otherwise been eliminated. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with construction activity by the general WPDES permit, and that discharging pollutants in storm water associated with construction activity to waters of Wisconsin is unlawful where the discharge is not authorized by a WPDES permit.

NOTE: The person signing below must be a representative of the landowner as defined in s. NR 216.55 (4) Wis. Adm. Code. "Landowner" for purposes of this NOT is defined in s. NR 216.002 (13), Wis. Adm. Code. Failure to have this NOT properly signed will result in its rejection.

Landowner Printed Name	Title	Telephone Number
Landowner Signature		Date Signed

Mail this completed NOT to the appropriate Wisconsin Department of Natural Resources (WDNR) office in the region where the construction site is located. See the instructions on page two of this form for regional office addresses.

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notice of Termination – Storm Water Discharges Associated With Land Disturbing Construction Activities General Permit
Form 3400-162 (R 7/10)

Instructions

Please type or clearly print your answers and answer all questions. Incomplete NOT forms will be returned for completion.

Section I: Landowner Information

Provide the legal name of the person, firm, public organization, or any other entity that owns the construction site described in Section III of this application and holds or qualifies for an applicable general or individual constructions site storm water discharge permit. The mailing address and phone number given should be for the contact person.

Section II: Contractor Information

Provide the legal name of the person, firm, or any other entity that acted as the major contractor in charge or operating the construction site described in Section III of this application. The mailing address and phone number given should be for the contact person.

Section III: Construction Site Information

Enter the construction site's official or legal name and complete address, including county, city, state and zip code. Be sure to include the quarter-quarter, quarter, section, township and range (the nearest quarter section) of the site. If the site is on more than one quarter, enter the quarter that best describes the location of the site. Use additional space if needed to describe the site location. The WDNR Site Number can be found in the upper right corner of the original letter conferring coverage under the general permit from the WDNR.

Section IV: Certification

State Statutes provide for severe penalties for submitting false information on this NOT form. State regulations require this NOT to be signed as follows:

1. For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit.
2. For a unit of government, by a ranking elected official or other duly authorized representative.
3. For a partnership, by a general partner; and for a sole proprietorship, by the proprietor.
4. For a limited liability company, by a manager.

Sign the form and print the name of the individual signing the NOT and date of signature. If the form was prepared by a consultant or someone other than an employee of the site landowner, provide the name and address of the preparer.

If you need additional information about the NOT for construction activities, please contact the Department at (608) 267-7694.

Mailing Addresses

Unless otherwise directed, mail this completed NOT Form to the WDNR office associated with the county of the site location as follows:

NORTHERN REGION (NOR)				
Ashland Barron Bayfield Burnett	Douglas Florence Forest Iron	Langlade Lincoln Oneida Polk Price	Rusk Sawyer Taylor Vilas Washburn	WDNR Superior Service Center 1701 N. 4TH Street Superior, WI 54880 715-392-7988
NORTHEAST REGION (NER)				
Brown Calumet Door Fond du Lac	Green Lake Kewaunee Manitowoc Marinette	Marquette Menominee Oconto Oneida Reservation	Outagamie Shawano Waupaca Waushara Winnebago	WDNR Northeast Regional Headquarters 2984 Shawano Avenue Green Bay, WI 54313-6727 920-662-5100
WEST CENTRAL REGION (WCR)				
Adams Buffalo Chippewa Clark	Crawford Dunn Eau Claire Jackson Juneau	La Crosse Marathon Monroe Pepin Pierce	Portage St. Croix Trempealeau Vernon Wood	WDNR Wausau Service Center 5301 Rib Mountain Road Wausau, WI 54401 715-359-4522
SOUTH CENTRAL REGION (SCR)				
Columbia Dane Dodge	Grant Green Iowa	Jefferson LaFayette Richland	Rock Sauk	WDNR South Central Regional Headquarters 3911 Fish Hatchery Road Fitchburg, WI 53711 608-275-3266
SOUTHEAST REGION (SER)				
Kenosha Milwaukee	Ozaukee Racine	Sheboygan Walworth	Washington Waukesha	WDNR Sturtevant Service Center 9531 Rayne Road, Suite 4 Sturtevant, WI 53177 262-884-2300

PRESCRIPTIVE COMPLIANCE AREAS

FLOWS TO WET BASIN

INITIAL

FINAL

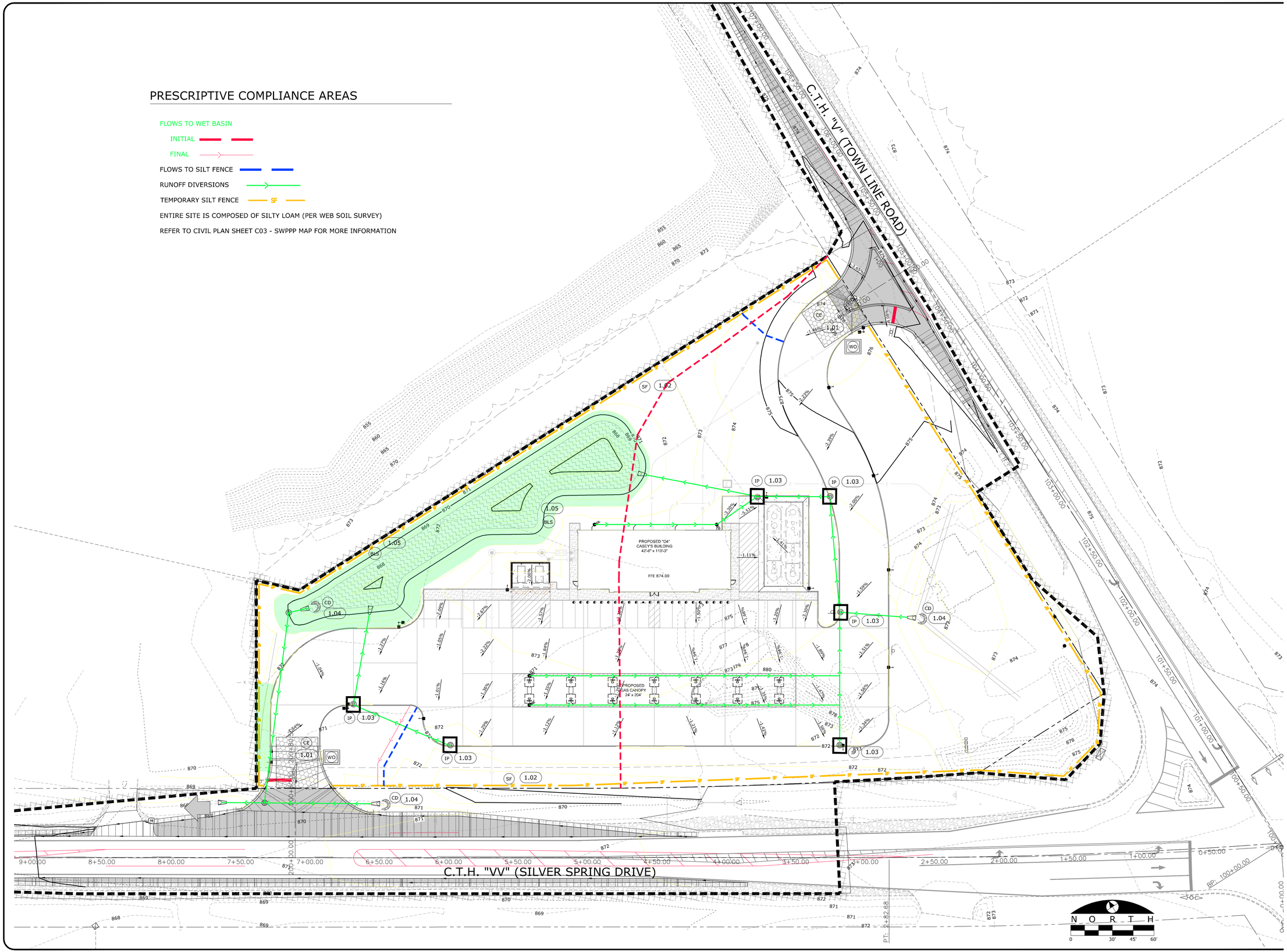
FLOWS TO SILT FENCE

RUNOFF DIVERSIONS

TEMPORARY SILT FENCE — SF

ENTIRE SITE IS COMPOSED OF SILTY LOAM (PER WEB SOIL SURVEY)

REFER TO CIVIL PLAN SHEET C03 - SWPPP MAP FOR MORE INFORMATION



ARC DESIGN RESOURCES INC.

5291 ZENITH PARKWAY
LOVES PARK, IL 61111
VOICE: (815) 484-4300
FAX: (815) 484-4303

PROJECT NAME
OWNER'S NAME

CASEY'S GENERAL STORE

NW CORNER OF CTH V AND CTH VV
LISBON, WI 53089

CASEY'S MARKETING COMPANY
ONE CONVENIENCE BLVD
ANKENY, IA 50021
KEVIN SCHULZE
(515) 965-6223

CONSULTANTS

ISSUED FOR

	DATE

REVISIONS

ITEM	DATE

SHEET TITLE

SOIL LOSS SCHEMATIC

DRAWN	BJL
CHECKED	
PM	RCS

PROJECT NUMBER
SHEET NUMBER

17176

Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.0 (06-29-2017)

YEAR 1

Developer: Casey's Marketing Company

Project: Casey's Lisbon

Date: 08/02/18

County: Waukesha

Version 1.0

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	05/01/19	05/15/19	5.0%	130	Silt Loam	0.43	0.8%	446	0.16	1.00	0.4	0.601	Silt Fence	0.2
Bare Ground	05/15/19	06/01/19	6.0%	130	Silt Loam	0.43	3.5%	64	0.29	1.00	1.0	0.955	Silt Fence	0.6
Seeding	06/01/19	10/01/19	71.0%	130	Silt Loam	0.43	3.5%	64	0.29	0.40	4.6	0.955	Silt Fence	2.6
Sod	10/01/19	11/01/19	6.0%	130	Silt Loam	0.43	3.5%	64	0.29	0.01	0.0	0.955	Silt Fence	0.0
End	11/01/19	-----	-----	-----	-------	-----	3.5%	0	-----	------	-----	0.000		0.0
		-----	-----	-----	-------	-----	0.0%	0	-----	------	-----	0.000		0.0
										TOTAL	**6.0**		**TOTAL**	**3.4**
													% Reduction Required	**NONE**

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/1-5/15	and	8/7-8/29	Turf, introduced grasses and legumes
Thaw-6/30			Native Grasses, forbs, and legumes

Designed By:	Arc Design Resources, Inc.
Date	7/24/2018

Casey's Operation and Maintenance Plan

Daily – ensure the ATG is All Functions Normal. If in alarm call Support Services (515) 965-6253. Never ignore an alarm.

Quarterly – Class A/B designated for this facility will complete the Quarterly Inspection as provided by the OSFM. This inspection form will be made available to the OSFM Inspector within 30 minutes.

Annual – An OFSM approved service provider will complete testing of sheer valve, emergency shut off switch, sump sensors and line leak detectors as required by the OSFM. Casey's EPA Department will schedule this annual requirement.

If any water or soil is generated from the underground storage tank system and needs to be disposed of, please call Casey's EPA Department at (515) 965-6238 to have it picked up and disposed of properly.

<u>Emergency Response Procedures</u>

Casey's Gas Spill Procedures

If a gas spill occurs at your store, immediately call the people listed below for the proper procedures to follow. These procedures are outlined in the Casey's EPA Manual located at the front counter.

1. **Fire Department: The Fire Department should be called if any fuel spill cannot be contained and properly absorbed with Casey's authorized absorption material.** If the fuel spill can be contained and absorbed properly without assistance from the Fire Department, they do not need to be called.

2. **Casey's EPA/Energy Management should be called IMMEDIATELY (Class A/B operator)** so they can notify government officials on a timely basis. Regardless of the time of day or the amount of the fuel spill, you must call (515)965-6238. EPA personnel can be reached at all times via a cell phone and will return your phone call immediately. **DO NOT WAIT TO CALL!!!** The company only has a required time frame in which to report a fuel spill before we are fined: If you call to report a fuel spill, please give the following information:
    - Store #
    - Store location including the state and telephone number
    - Your name
    - The time the fuel spill occurred.
    - The product that spilled (example: Super Unleaded).
    - A brief description of how the spill occurred.

3. **Area Supervisor**

Emergency Contacts:

Police Department 911 or _____

Fire Department 911 or _____

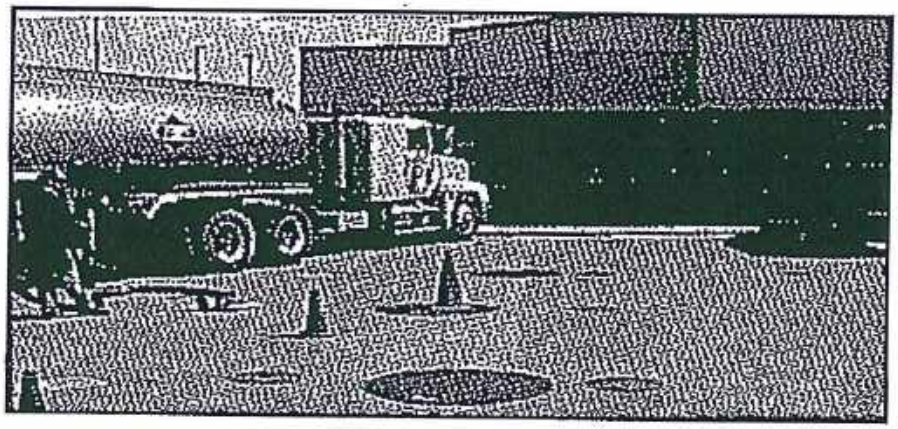
EPA Department Jill Reams-Widder (A/B operator) 515-965-6238

Location of Casey's Absorption Material _____

Address of Store _____

Spill Prevention During Delivery

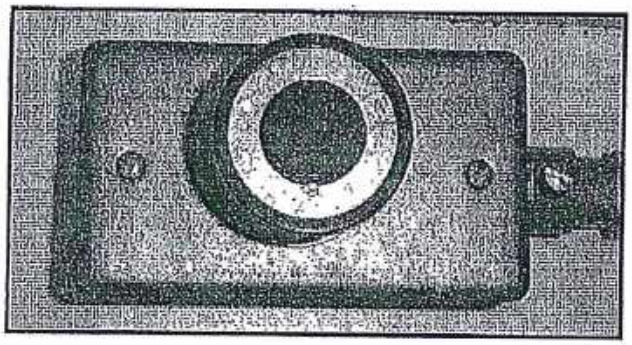
Delivering petroleum products (filling an underground storage tank) creates a risk for accidental spills and release into the environment.



Keep fill ports lids closed until the fuel delivery person requests access.

Transport Drivers are to remain with their truck when unloading fuel. Any transport driver who leaves their vehicle while unloading fuel should be reported to the corporate office Gas Department.

Tripping or pushing the emergency shut-off switch (also called an emergency shut-off button) will cut power to all pumps immediately stopping the pumping of fuels. These switches must stay free of obstructions and be clearly labeled. Call Casey's Support Services to have the emergency stop reset.



Emergency Response Procedures

Facility #: _____

(1) FACILITY - name and address where tanks are located:

Name: Casey's General Stores

Street Address: _____

City: _____ County: _____

A. Emergency contacts and information for a leak, spill, release, or when a alarm occurs:

Casey's EPA Department 515-965-6238

B. Procedures for overfill protection during delivery of regulated substances:

Transfer drivers are to remain with their truck while unloading fuel. All tanks are equipped with overfill prevention.

C. Operation of emergency shut-off systems:

Press emergency shut-off to stop flow of gas/diesel to all pumps.

Call support services 515-965-6253

D. Appropriate responses to all alarms:

Call in all alarms to support services 515-965-6253

E. Reporting of leaks, spills and releases:

Call Casey's EPA Department 515-965-6238

F. Site-specific emergency procedures, if any:

N/A

FUEL SPILLS

Follow the instructions below if a Fuel Spill occurs:

1. If a gas spill occurs at your store, assess the size of the spill. Can it be contained using Casey's Authorized Gas Safety Absorbent? If a fuel spill is too large to be contained or could potentially drain into a sewer or drain call the Fire Department immediately. The Fire Department **should be called if any fuel spill cannot be contained and properly absorbed with Casey's authorized gas absorption material.**

2. If the fuel spill **can be** contained and absorbed properly without assistance from the Fire Department, they **do not** need to be called.

Use only Casey's Authorized Gasoline Safety Absorbent. This product is available through the grocery warehouse, using order code #057550-6.

When a gas spill occurs **that is small enough to be contained and controlled:**

- Take one bucket of Casey's Authorized Gasoline Safety Absorbent material to the point of the spill and using a small Casey's disposable coffee cup, sprinkle absorption material on the fuel. Don't dump the absorption material, sprinkle and try to build the absorption material up around the outside of the spill to help contain the fuel until it is absorbed.
- Once the Casey's Authorized Gas Safety Absorbent material has absorbed all of the fuel, sweep the area and dispose of the absorption material properly.

3. **Call Casey's EPA/Energy Management IMMEDIATELY.** EPA **must** notify government officials on a timely basis when a fuel spill occurs. Regardless of the time of day or the amount of the fuel spill, you are required to call **515/965-6238.** EPA personnel can be reached at all times via a cell phone and will return your phone call immediately. **DO NOT WAIT TO CALL!!!** The company only has a small time frame in which to report a fuel spill before we are fined. If you call to report a fuel spill, please give the following information:
   - Store #
   - Store location including the state and telephone number
   - Your name
   - The time the fuel spill occurred.
   - The product that spilled (example: Super Unleaded).
   - A brief description of how the spill occurred.

4. Call your **Area Supervisor**

RECEIVED
By Gina Gresch at 1:49 pm, Aug 01, 2018

W234 N8676 WOODSIDE RD.
LISBON, WI 53089-1545
TEL: (262) 246-6100

pd 8/1/18

Plan Commission Application

Application Type and Fee (check all that apply)

*Application fees are non-refundable. Fees cover costs associated with public notification, postage, copies, and document recording, however applicants agree to pay all additional expenses that the Town may incur by virtue of contracted plan review services including but not limited to: legal, surveying and engineering costs and studies.

☐ **Commercial**
*All commercial projects including any change of occupancy, change of use, or construction/alteration must be submitted to the Lisbon Fire Department as well for review and inspections.

☐ **Residential** – Home-Based Bus. / In-Law Unit

- ☐ Accessory Building Waiver: $100 (Size/Location/Architectural Review)
- ☐ After the Fact Application: Double Fees
- ☒ Certified Survey Map: $200 + $10 Per lot
  - ☐ Dedication Fee (Per lot): $2,658 (Paid upon receipt of signed CSM)
- ☐ Conditional Use Permit: $350
  - ☐ Amendment / Original
  - ☐ Major Grading Permit
- ☐ Deed Restriction: $100
- ☐ Developer's Agreement: $250
- ☐ Groundwater Separation Waiver: $100
- ☐ Land Use Amendment: $300
- ☐ Conceptual: $100
- ☐ Plat Review:
  - ☐ Final - $200
  - ☐ Preliminary - $500
- ☐ Re-Submittal: $200
- ☐ Rezone: $350
- ☐ Sign Permit Application: $30 + Sign Fees (See Adopted Fee Schedule)
- ☐ Site Plan/Plan of Operation:
  - ☐ Amendment: $250
  - ☐ Original: $500
  - ☐ Temporary: $125
- ☐ Special Meeting: $600
- ☐ Waivers/Modification from Land Division and Development Ordinance: $200

Property Information

N51 W23563 LISBON ROAD — Property Address
SUSSEX — City
WI — State
53089 — Zip

LSBT0281996
LSBT0283999
Tax Key/Parcel ID #

150.9 ACRES
Lot Size

QUARRY
Current Zoning

Property Owner

HALQUIST STONE CO., INC
Name / Company Name TOM HALQUIST

Signature

N51 W 23563 LISBON RD
Address

SUSSEX — City
WI — State
53089 — Zip

262-246-9000 x 225 — Phone
tom@halquiststone.com — E-mail Address

Applicant

JOHN P. CASUCCI PLS
Name

RA SMITH INC
Company

16745 W. BLUEMOUND RD
Address

BROOKFIELD — City
WI — State
53005 — Zip

262-317-3247 — Phone
john.casucci@rasmith.com — E-Mail Address

A complete application along with the appropriate fees shall be submitted by the deadline stated on the meeting schedule. In order for an application to be considered complete, the application shall include the required number of site plans/maps, and all of the necessary supporting information as indicated on the Project Review Checklist. If applying for a conditional use or development agreement, a document showing vested interest in the property is required. *The Town of Lisbon reserves the right not to accept an application that is deemed incomplete.*

PROFESSIONAL SERVICE REIMBURSEMENT FEES:

Pursuant to the Town of Lisbon Municipal Code Section 1.14, the Town of Lisbon Town Board has made a determination that whenever the services of the Town Planner, Town Engineer, Town Attorney, or any other of the Town's professional staff results in a charge to the Town for that professional's time and services, and such service is not a service supplied to the Town as a whole, the Town Treasurer shall charge one hundred and five percent of the cost of that service for the fees incurred by the Town to the property owner incurring those fees even if the request is not approved. The additional five percent cost above the cost of the service is levied to cover Town administrative charges. Also, pursuant to the Town of Lisbon Municipal Code Section 1.14, certain other fees, costs, and charges are the responsibility of the property owner even if the request is not approved. Imposition of any fees, costs, or charges, however, is subject to the property owner's appeal rights as described in the Town of Lisbon Municipal Code Section 1.14

The undersigned, have been advised that, pursuant to the Town of Lisbon Municipal Code Section 1.14, if the Town Planner, Town Engineer, Town Attorney, or any other Town professional provides services to the Town because of my/our activities, whether at my/our request or at the request of the Town, I/we shall be responsible for the fees incurred by the Town. In addition, I/we have been advised that pursuant to the Town of Lisbon Municipal Code Section 1.14, certain other fees, costs, and charges are my/our responsibility even if my/our request is not approved. By signing this document, I am not waiving my/our appeal rights that are described in the Town of Lisbon Municipal Code Section 1.14.

Statements will be sent monthly so you are kept up to date regarding your current charges.

RESPONSIBLE PARTY, NAME, MAILING ADDRESS, SIGNATURE & DATE:

NAME HALQUIST STONE CO, INC TOM HALQUIST VICE PRES.

ADDRESS N51 W 23563 LISBON RD SUSSEX, WI 53089

DATE 7-31-18 SIGNATURE

PHONE 262-246-9000 X225 EMAIL tom@halquiststone.com

PROPERTY OWNER NAME, MAILING ADDRESS, SIGNATURE & DATE:

NAME

ADDRESS [SAME]

DATE SIGNATURE

PHONE EMAIL

PROJECT NAME HALQUIST STONE CO, INC CERTIFIED SURVEY MAP

Jahnke & Jahnke
Associates Inc.

CIVIL ENGINEERING
PLANNING • SURVEYING

August 27, 2018

RECEIVED
By Gina Gresch at 1:12 pm, Aug 27, 2018

Town of Lisbon
Attn: Ms. Gina Gresch, Clerk/Admin
W234N8676 Woodside Rd
Lisbon, WI 53089-1545

RE: Halquist CSM Review

Dear Ms. Gresch:

On behalf of the Town of Lisbon, our staff has review the three (3) lot Certified Survey Map of the Halquist property. The following review comments should be addressed prior to the Town affixing its signature and seal to the map.

1. Label on Sheet 1 of 12 the municipal boundary of the Town of Lisbon.
2. The Legend needs to include a symbol for the section corners shown on Page 1 of 12.
3. The curve data shown on Sheet 1 and 6 should include tangent bearings.
4. Provide dimensions of the three buildings depicted on Lot 1 along with the dimensions to the lot lines.
5. Show on Sheet 5 a 60'x60' vision corner easement at CTH K and CTH F. Provide vision corner restriction language as well.
6. List the 100 year floodplain elevation at the east and west property lines.
7. On page 11, Corporate Owner's Certificate, amend second paragraph from Town of Salem to correctly state Town of Lisbon.

Please address the above comments. Contact our office with any questions or concerns. Your cooperation is appreciated.

Respectfully,

Jahnke & Jahnke Associates Inc.
Town of Lisbon Engineer

John R. Stigler

John R. Stigler, PLS, Pres.

JRS/amf

711 West Moreland Boulevard, Waukesha, Wisconsin 53188-2479
Telephone: (262) 542-5797 • Facsimile: (262) 542-7698 • Email: jstigler@jahnkeandjahnke.com

RECEIVED
By Gina Gresch at 6:36 pm, Sep 05, 2018

raSmith

CREATIVITY BEYOND ENGINEERING

MEMORANDUM

DATE: September 4, 2018

TO: Gina Gresch, Town of Lisbon Administrator

FR: John P. Casucci, PLS – RA Smith, Inc

CC: Tom Halquist, Halquist Stone Company

RE: Review of Certified Survey Map

Gina-
Attached is a revised copy of the Certified Survey Map addressing all of the review comments from Jahnke & Jahnke and select comments from Vierbicher.

I provide the following summary:
Jahnke & Jahnke Comments:

1. Municipal boundary has been labeled on sheets 1, 6, 7 & 8
2. Section corner has been added to the legend
3. Curve data has been added to sheets 1 and 6
4. Building detail added on sheet 9
5. Vision corner detail and language added
6. 100 year flood elevations added, as referenced to the FEMA cross sections on sheet 8
7. Corporate owners certificate revised

Vierbicher Comments:
2nd bullet point

1. Topographic data NOT added for remainder of site, as it is an active quarry site.
2. Existing street pavement grades not shown. Roads are existing and will not be altered due to this CSM
3. Owners of record for abutting unplatted lands have been added
4. Zoning note added on Sheet 1
5. Sanitary Sewer and Storm Sewer not addressed, does not impact site
6. Soil Type/slope/boundaries have not been addressed.

6th bullet point: there will be no change to the C-1 Areas as a result of this Certified Survey Map.
7th bullet point: Future fire station is no longer applicable for this property.

RECEIVED
By Gina Gresch at 2:26 pm, Sep 07, 2018

vierbicher
planners | engineers | advisors

N27 W23957 Paul Road, Suite 105
Pewaukee, WI 53072
(262) 875-5000 phone
www.vierbicher.com

September 7, 2018

Town of Lisbon
Plan Commission
W234 N8676 Woodside Road
Lisbon, WI 53089-1545

RE: Halquist Revised Certified Survey Map Review

Introduction

This letter reviews the revised Certified Survey Map (CSM) application submitted by Tom Halquist (Applicant) on September 4, 2018 for the property located at N51 W23563 Lisbon Road in the Town. The revised map was prepared to address comments from Vierbicher's previous review letter dated August 23, 2018 that reviewed the original CSM. The property in question is 150.9 acres and is currently zoned Q-1 (Quarry), with C-1 (Conservancy Wetland) areas in the southeast and southwest corners of Lot 3. A substantial portion of the site also falls within the Waukesha County Shoreland Jurisdictional Boundary. The Applicant intends to divide the property into three lots of 15.0 acres (Lot 1), 17.8746 acres (Lot 2), and 118.0 acres (Lot 3).

Pertinent details with respect to this application, the Town of Lisbon Ordinances, and the Wisconsin Statutes are included below.

Town Ordinances:

- Ordinance §6.01 of Chapter 12 states that all minor land divisions require a CSM prepared by a registered land surveyor, and shall comply with the design standards and improvement requirements set forth in Sections 7.00 and 8.00, and Addendum A of the Town Code.

- Ordinance §6.02 of Chapter 12 states that maps shall show information required by Sections 4.01, 4.02, and 5.02 of Chapter 12 along with all existing buildings and structures, drives, streams and watercourses, drainage ditches, drainage easements, marshes, wooded areas, railroad tracks, and other pertinent features. After reviewing for compliance with these requirements, we have the following comments:

    - The Applicant included 1-foot topographic contours for Lot 2, but did not show contour lines for Lots 1 or 3. Ordinance §4.02(b) requires land dividers to show topographic contours of no more than 2-feet for the entire CSM. The Applicant stated that topographic data was not added for the remainder of the property because it is an active quarry site. The Applicant may need to seek a waiver for this requirement under Ordinance §2.05 of Chapter 12 of the Town Code.
    - Ordinance §4.02(f) requires land dividers to show the type, width, and elevation of any existing street pavements immediately adjacent to the land division. The Applicant omitted this information for the two roads directly adjacent to the site: Lisbon Road and Redford Road. The Applicant stated that the information was not added because the

roads already exist and will not be altered by the CSM. The Applicant may need to seek a waiver for this requirement under Ordinance §2.05 of Chapter 12 of the Town Code.

- The Applicant did not include information relating to the sanitary sewer or storm sewer at the site. Ordinance §4.02(h) requires land dividers show the location, size, and invert elevation of any existing sanitary or storm sewer infrastructure. The Applicant commented that the sanitary and storm sewer infrastructure do not impact the site, and were therefore not added to the CSM. The Applicant may need to seek a waiver for this requirement under Ordinance §2.05 of Chapter 12 of the Town Code.
- Ordinance §4.02(p) requires Applicants to show soil type, slope and boundaries as shown on the soil survey maps prepared by the U.S. Soil Conservation Service. The Applicant stated in their response letter that these features were not added to the CSM, but did not provide a reason for this omission. The Applicant may need to seek a waiver for this requirement under Ordinance §2.05 of Chapter 12 of the Town Code.

- It appears the Applicant has complied with all requirements specified under Ordinances §6.03 and §6.04 of Chapter 12.

Wisconsin Statutes

- It appears the Applicant has complied with all requirements of Chapter 236.34 of the Wisconsin Statutes.

Other Considerations

- Waukesha County GIS shows a future fire station to be placed on Lot 2 and the eastern portion of Lot 3. The Applicant stated that the future fire station is no longer applicable for this property.
- Ordinance §2.05 of Chapter 12 of the Town Code states that the Town Board may waive some CSM requirements when it judges literal application of these requirements to be inappropriate, subject to the following criteria: exceptional circumstances, preservation of property rights, and/or absence of detriment. The Town should decide whether it wishes to grant a waiver to the unaddressed requirements noted in this letter.

The issues outlined above are meant to act as a guideline to assist you in discussions about issues you think need to be addressed in order to approve this proposal.

Sincerely,

Aaron Prichard
Vierbicher

AP

cc: Town of Middleton Board
Gina Gresch, Clerk, Town of Lisbon
Dan Lindstrom, AICP, Vierbicher
John P. Casucci, PLS, RA Smith
Tom Halquist, Halquist Stone Co.

RECEIVED
By Gina Gresch at 6:37 pm, Sep 05, 2018

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

● INDICATES 1" IRON PIPE (FOUND), UNLESS NOTED

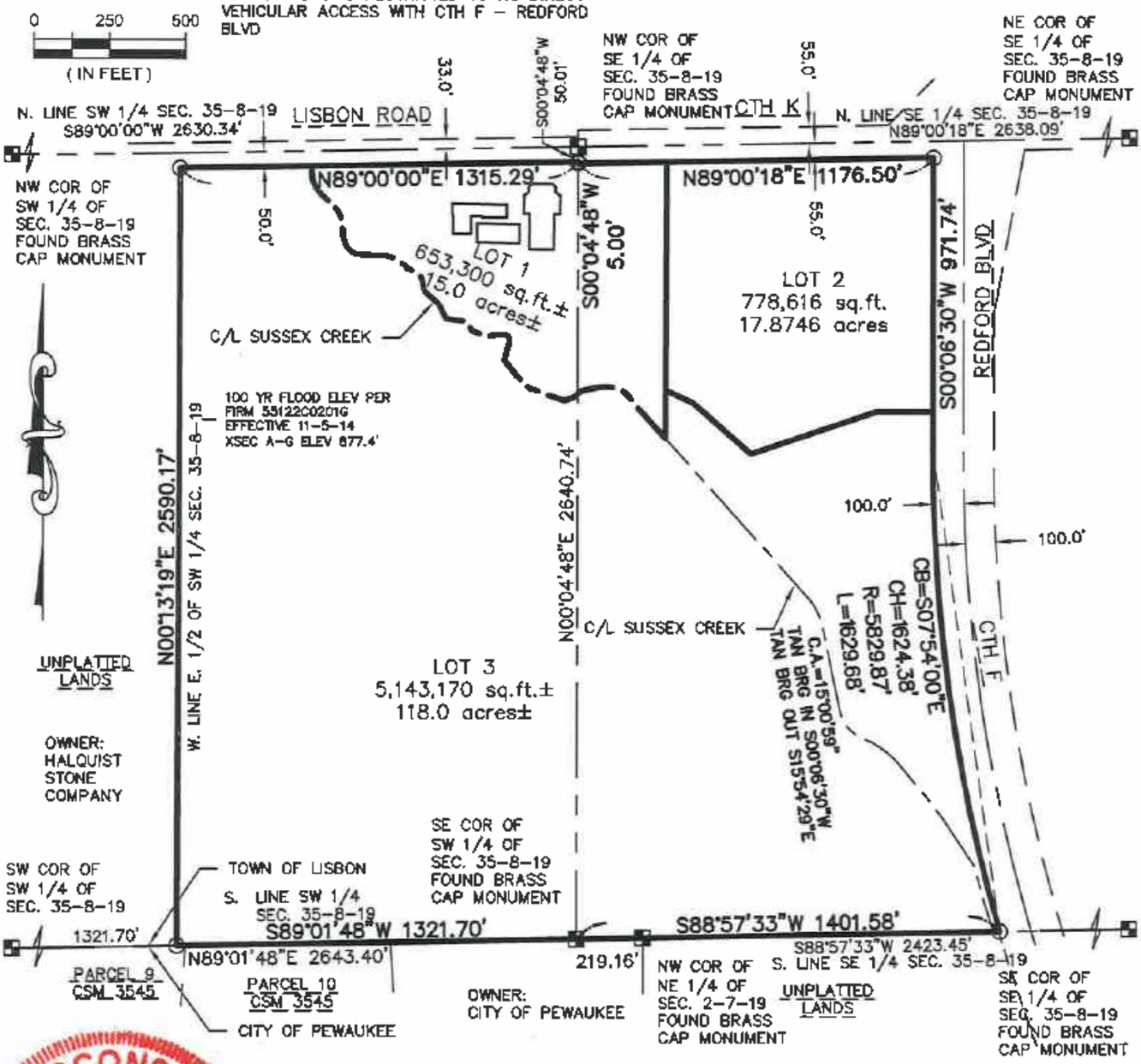
O INDICATES SET 1.315" O.D. IRON PIPE AT LEAST 18" IN LENGTH, 1.68 LBS. PER LINEAL FOOT.

■ INDICATES CONCRETE MONUMENT WITH BRASS CAP

ALL DIMENSIONS SHOWN ARE MEASURED TO THE NEAREST HUNDREDTH OF A FOOT.
ALL BEARINGS ARE REFERENCED TO THE N. LINE OF THE SE. 1/4 OF SECTION 35, T 8 N, R 19 E, WHICH BEARS N89°00'18"E . WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE.

GRAPHIC SCALE
0 250 500
(IN FEET)

LOT 2 AND 3 IS RESTRICTED TO NO DIRECT VEHICULAR ACCESS WITH CTH F – REDFORD BLVD

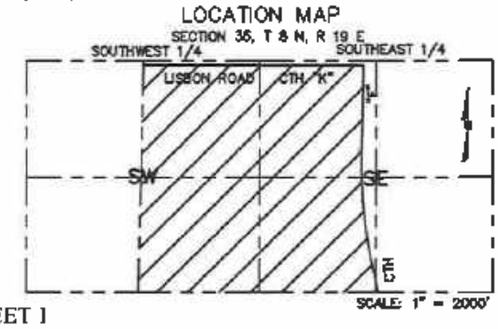


WISCONSIN
7-13-18
JOHN P. CASUCCI
S-2055
OCONOMOWOC, WIS.
LAND SURVEYOR

Rev 9-4-18

OWNER:
HALQUIST STONE COMPANY, INC
N51W23563 LISBON ROAD
SUSSEX, WI 53089
262-246-9000 X225

LOCATION MAP
SECTION 35, T 8 N, R 19 E



SCALE: 1" = 2000'

ZONING NOTE: SITE IS ZONED Q-1 QUARRYING AND C-1 CONSERVANCY WETLAND. SITE IS SUBJECT TO WAUKESHA COUNTY SHORELAND JURISDICTIONAL BOUNDARY.

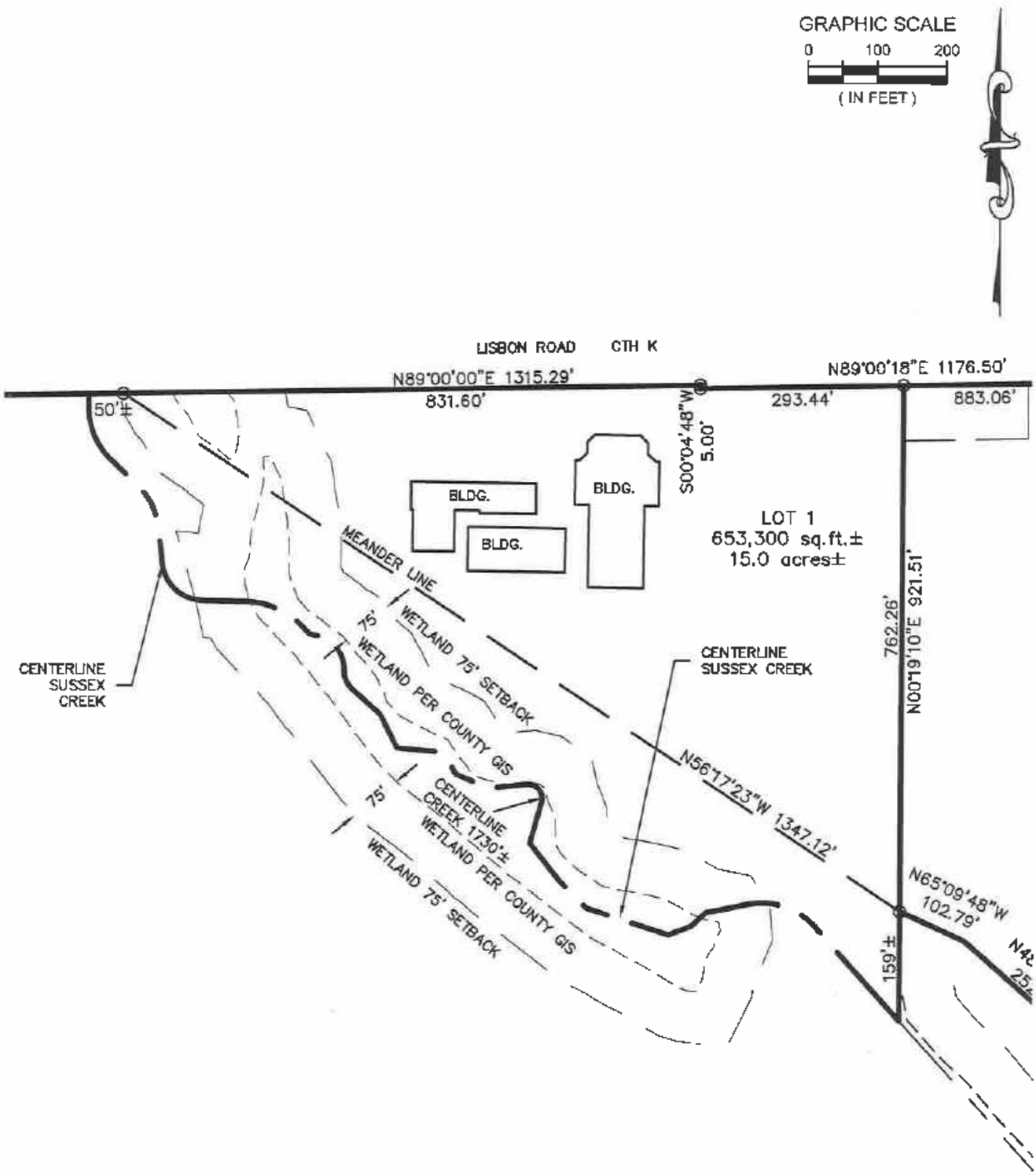
SUBDIVIDER: JOHN P. CASUCCI, PLS

raSmith
CREATIVITY BEYOND ENGINEERING
16745 W. Bluemound Road
Brookfield, WI 53005-5938
(262) 781-1000
rasmith.com

S:\5167554\dwg\ CS111L.dwg \ SHEET 1

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.



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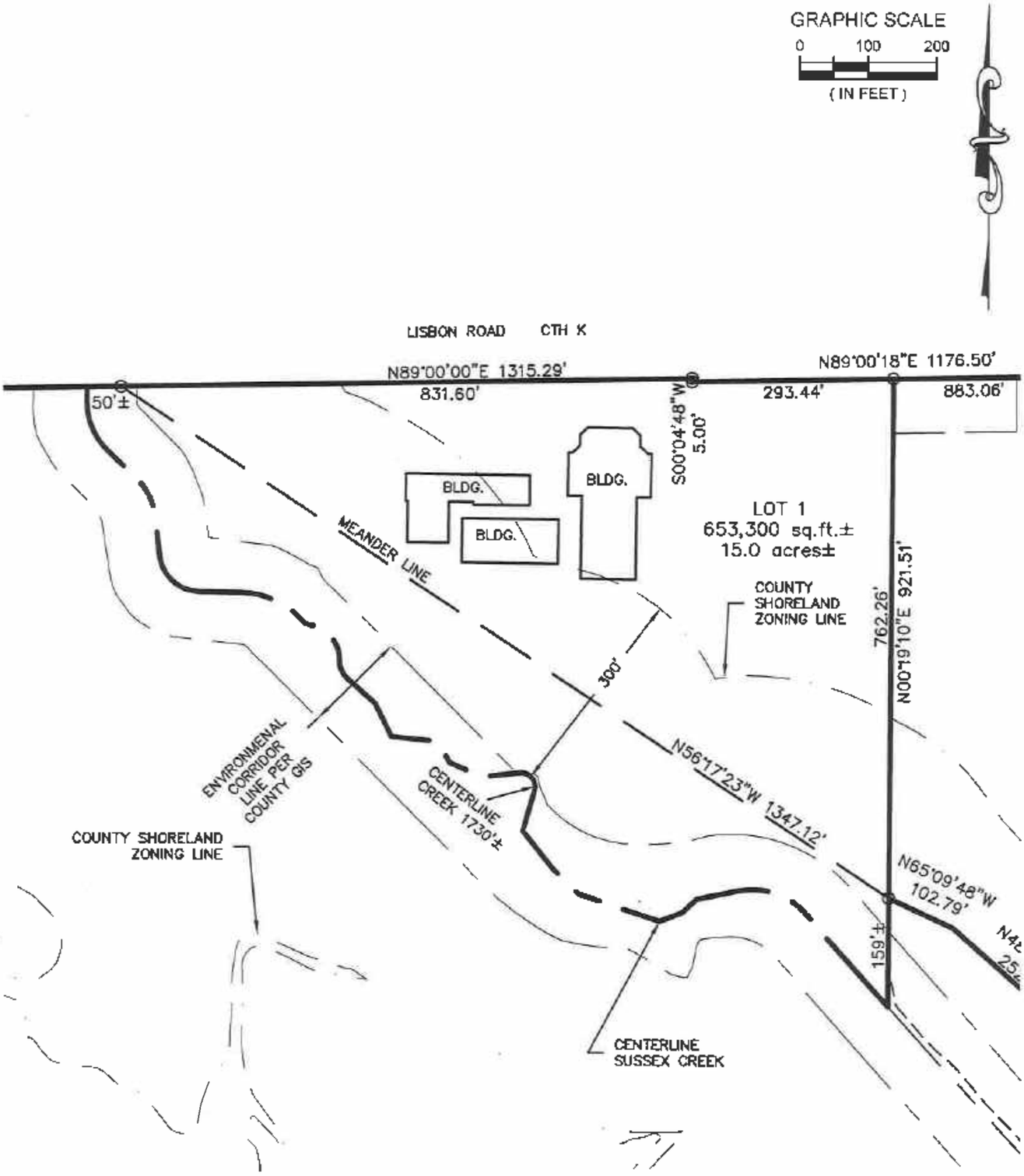

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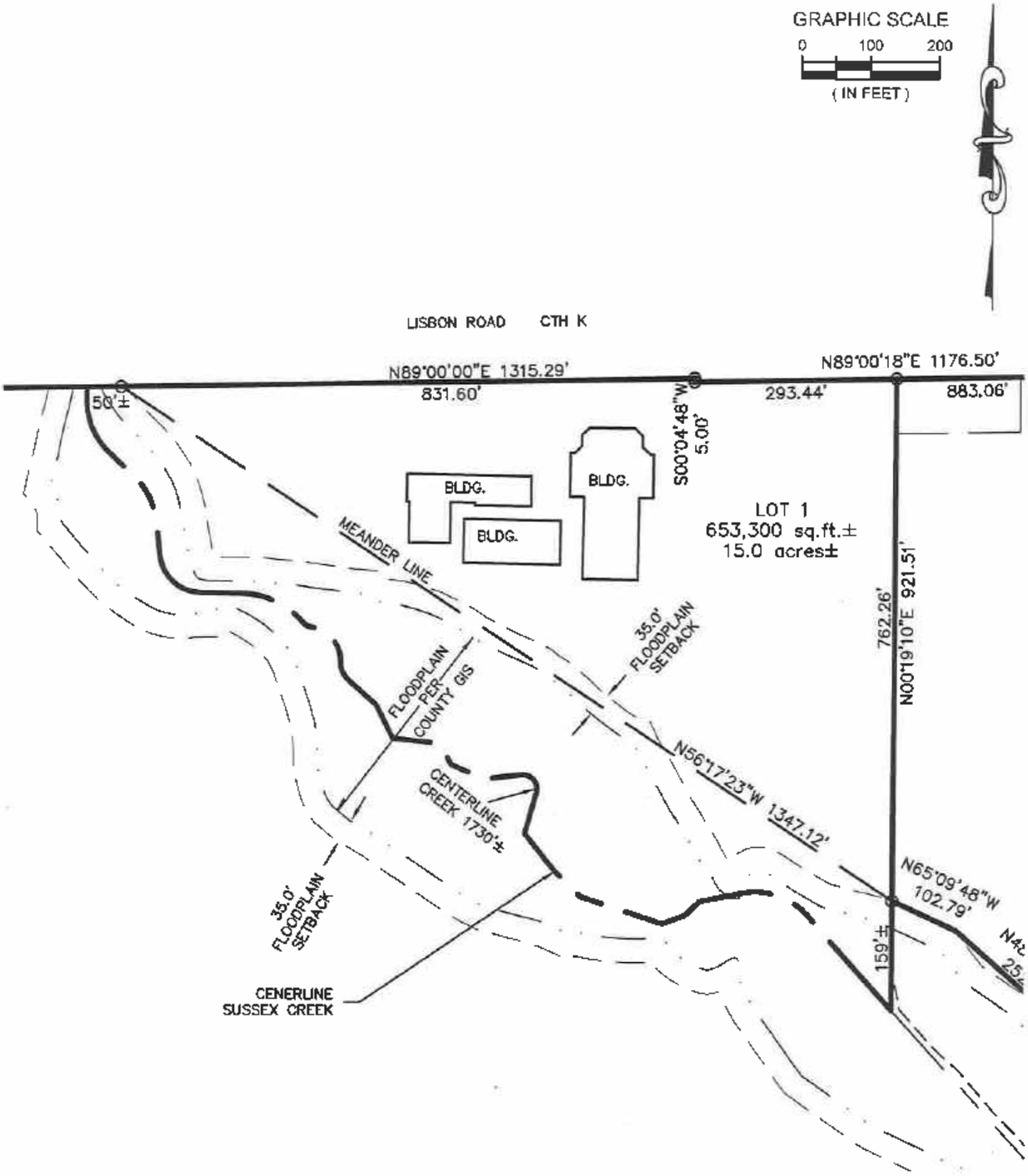

CERTIFIED SURVEY MAP NO. _____

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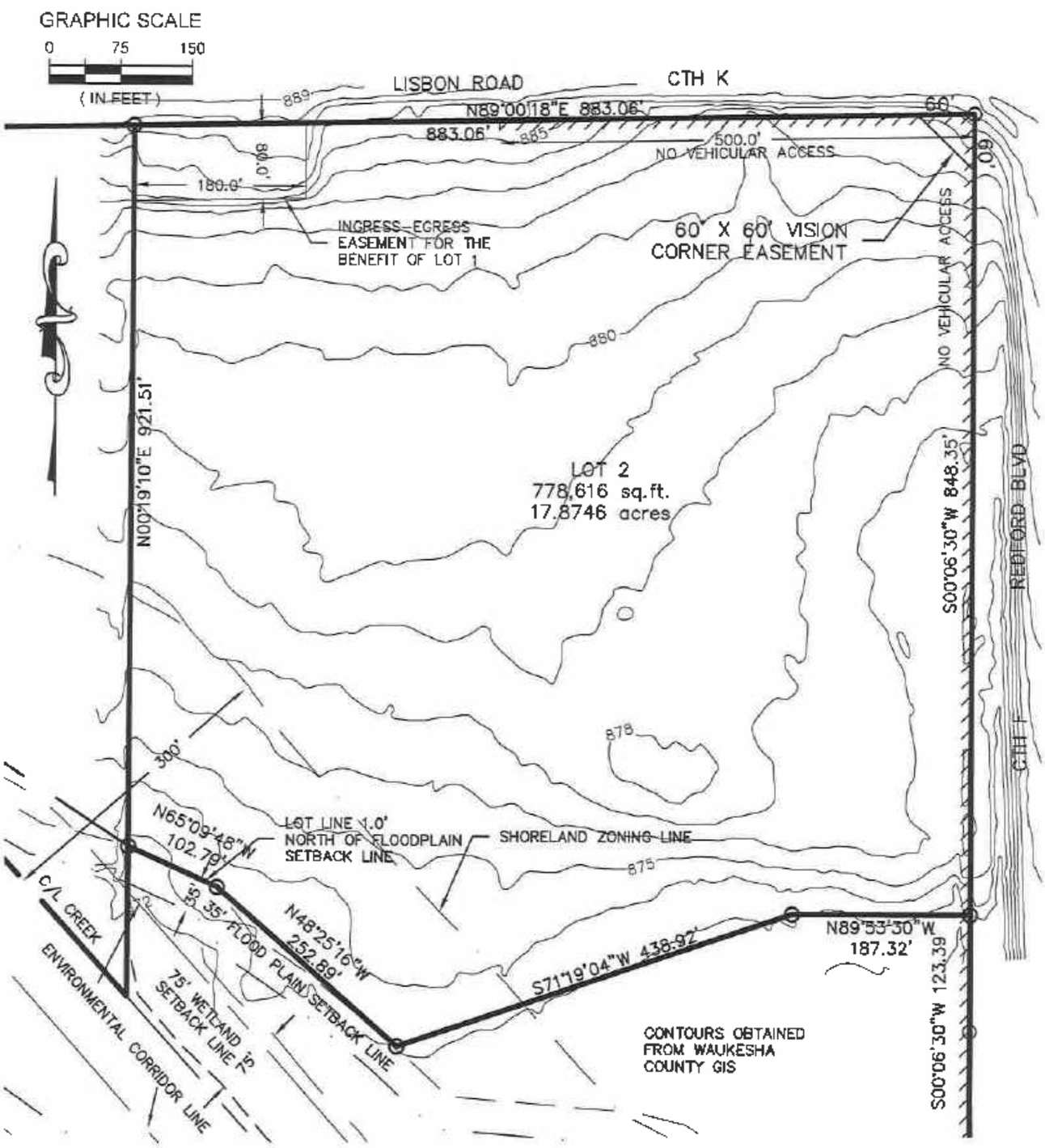
VISION SETBACK LINES:
Section 3 (g)(1)(B)(ii) Across each sector between intersecting streets or highways, one (1) or more of which has an established width of one hundred (100) feet or more, a vision setback line shall be established by a straight line connecting two (2) points on the intersecting base setback lines, which points are located sixty (60) feet distant from the intersection of said base setback lines.

Section 3 (g)(1)(E) In the vision setback area, no structure of any kind shall be permitted which exceeds a height of two (2) feet above the elevation of the center of the intersection, except for necessary highway and traffic signs, public utility lines, and open fences through which there is clear vision, nor shall any plant material be permitted which obscures safe vision of the approaches to the intersection.



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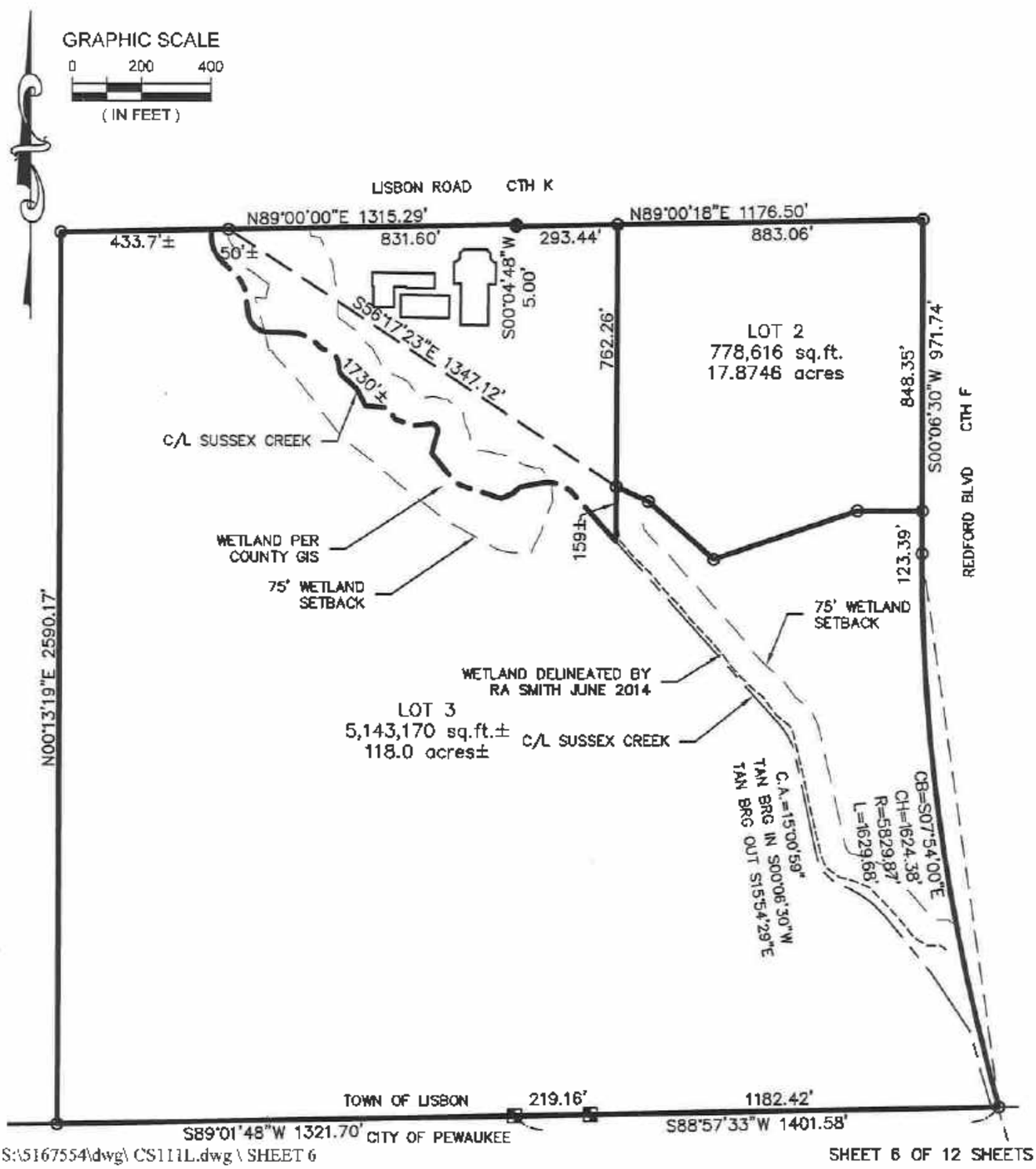

CERTIFIED SURVEY MAP NO. _____

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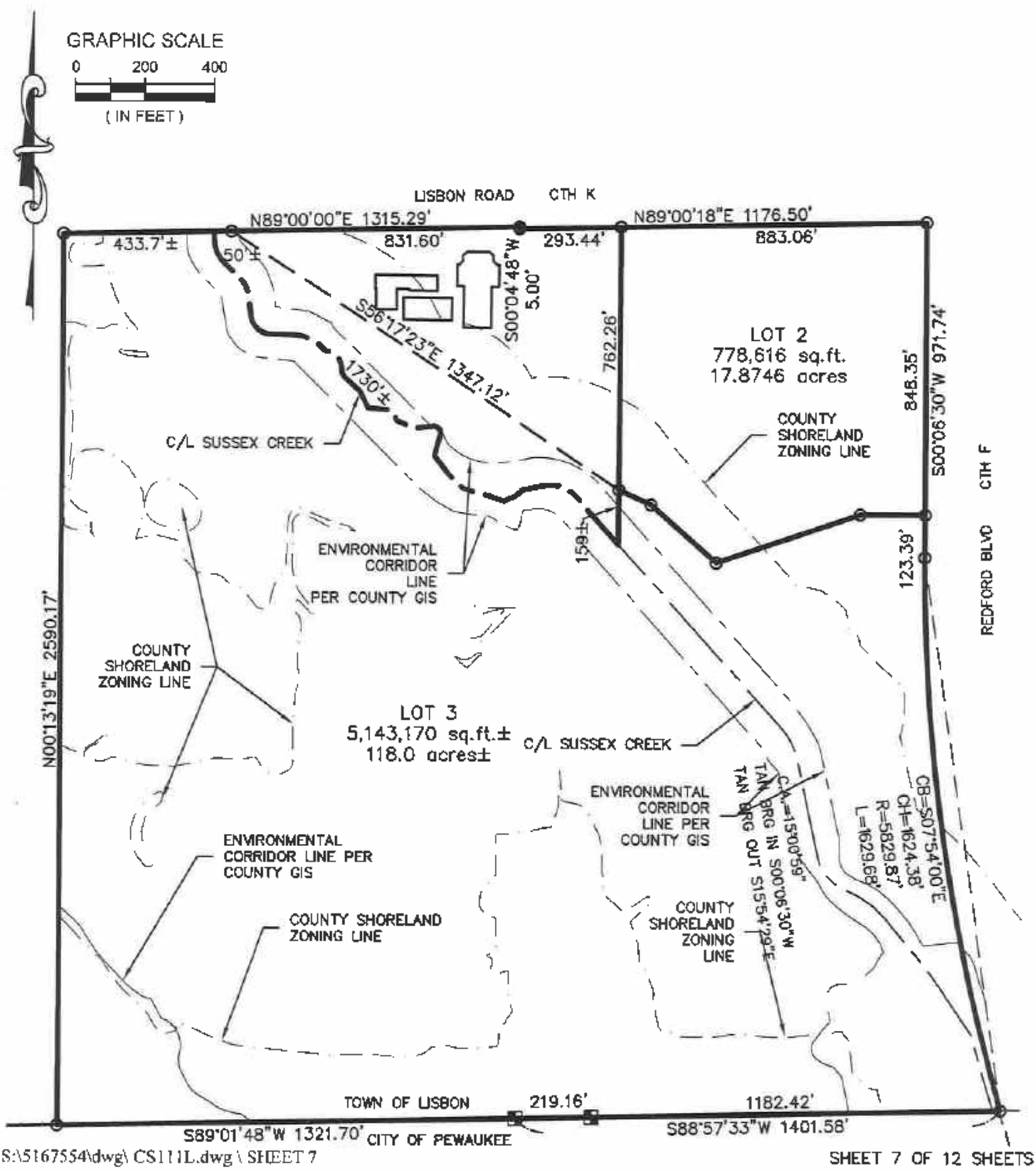
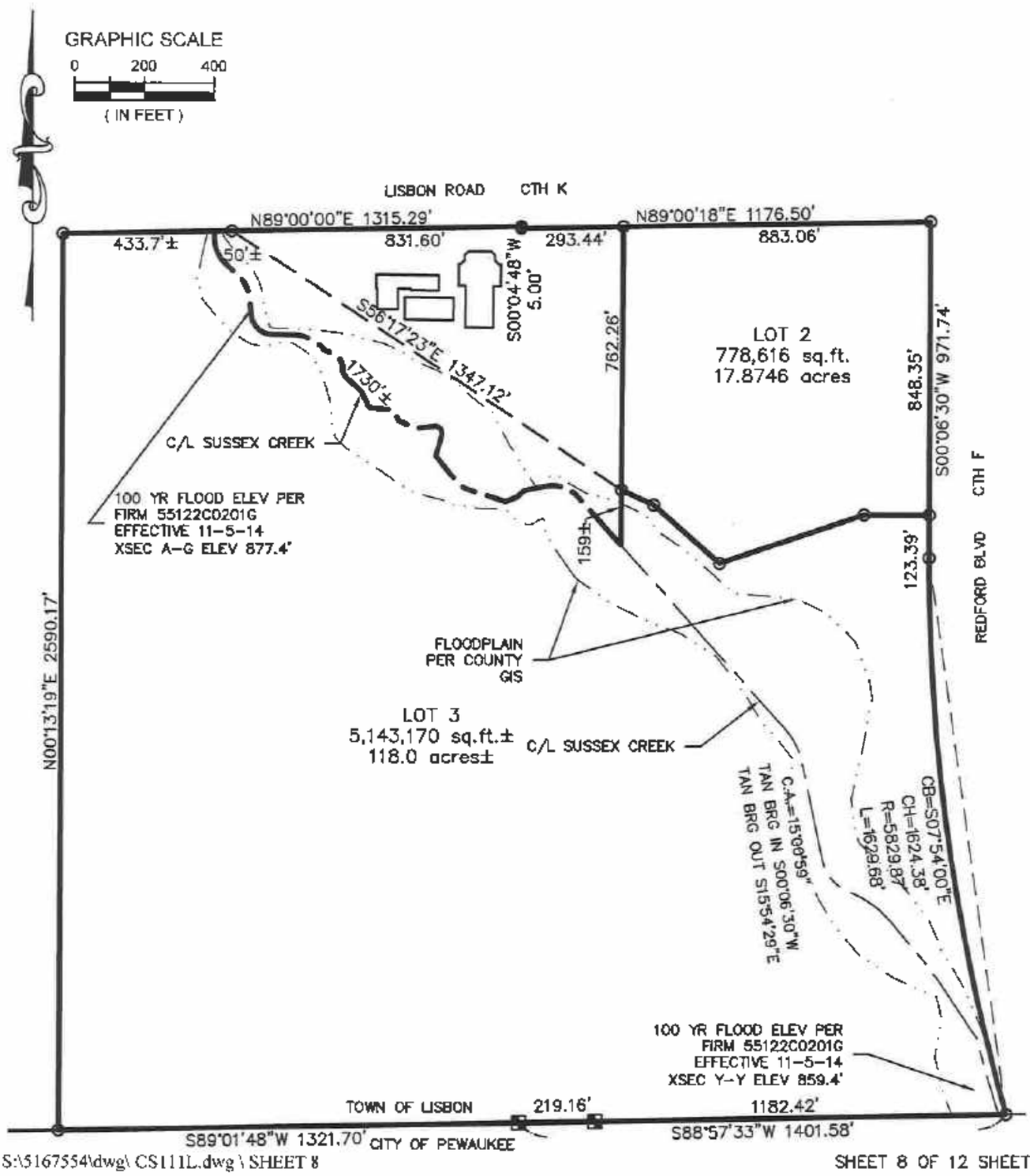


S:\5167554\dwg\ CS111L.dwg \ SHEET 7

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.



CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

INDICATES FLOOD PLAIN LINE PER WAUKESHA COUNTY GIS

INDICATES WETLAND LINE PER WAUKESHA COUNTY GIS

INDICATES WETLAND LINE DELINEATED BY R.A. SMITH, INC. JUNE 2014

INDICATES SHORELAND ZONING LINE PER WAUKESHA COUNTY GIS

INDICATES ENVIRONMENTAL CORRIDOR LINE PER WAUKESHA COUNTY GIS

WETLANDS, FLOODPLAIN & ENVIRONMENTAL CORRIDOR PRESERVATION RESTRICTIONS

Those areas of this Certified Survey Map, which depicted as Wetlands, Floodplain & Environmental Corridors are subject to the following restrictions:

Grading and filling shall be prohibited unless specifically authorized by the municipality in which they are located and, if applicable, the Waukesha County Department of Parks and Land Use Division, the Wisconsin Department of Natural Resources and the Army Corps of Engineers.

The removal of topsoil or other earthen materials shall be prohibited, unless specifically authorized as noted above.

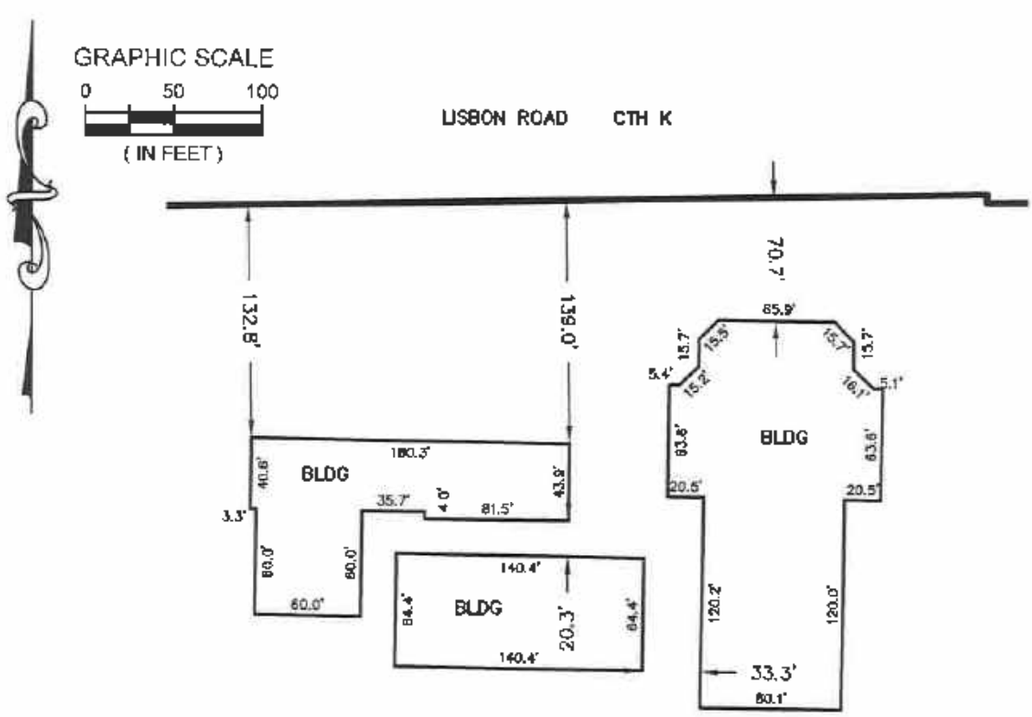
The removal or destruction of any vegetative cover, i.e., trees, shrubs, grasses, etc., shall be prohibited, with the exception of the removal of dead, diseased or dying vegetation at the discretion of landowner, or silvicultural thinning upon the recommendation of a forester or naturalist, and with the approval of the Waukesha County Department of Parks and Land Use, shall also be permitted.

Grazing by domesticated animals, i.e., horses, cows, etc, shall be discouraged to the greatest extent possible.

The introduction of plant material not indigenous to the existing environment of the Primary Environmental Corridor Area(s) shall be prohibited.

Ponds may be permitted subject to the approval of the municipality in which they are located and, if applicable, the Waukesha County Department of Parks and Land Use-Planning and Zoning Division, the Wisconsin Department of Natural Resources and the Army Corps of Engineers.

The construction of buildings within the Primary Environmental Corridor Preservation Area is prohibited.



BUILDING DETAIL

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN }
:SS
WAUKESHA COUNTY }

I, JOHN P. CASUCCI, Professional Land Surveyor, do hereby certify:

THAT I have surveyed, divided and mapped a division of that part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

COMMENCING at the Northwest corner of said Southeast 1/4; thence South 00°04'48" West along the West line of said 1/4 Section a distance of 50.01 feet to a point in the South line of Lisbon Road and the point of beginning of lands to be described; thence continuing South 00°04'48" West along said South line 5.00 feet to a point; thence North 89°00'18" East along said South line 1176.50 feet to a point in the West line of Redford Road; thence South 00°06'30" West along said West line 971.74 feet to a point; thence Southeasterly 1629.68 feet along said West line and an arc of a curve whose center lies to the Northeast, whose radius is 5829.87 feet and whose chord bears South 07°54'00" East 1624.38 feet to a point in the South line of said Southeast 1/4 Section; thence South 88°57'33" West along said South line 1401.58 feet to the Southeast corner of the Southwest 1/4 of Section 35; thence South 89°01'48" West along the South line of said 1/4 Section 1321.70 feet to a point in the West line of the East 1/2 of the Southwest 1/4 of said Section 35; thence North 00°13'19" East along said West line 2590.17 feet to a point in the South line of Lisbon Road; thence North 89°00'00" East along said South line 1315.29 feet to the point of beginning.

Containing 6,575,085 square feet or 150.9432 acres.

THAT I have made such survey, land division and map by the direction of HALQUIST STONE COMPANY, INC., owner.

THAT such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

THAT I have fully complied with the provisions of Chapter 236.34 of the Wisconsin Statutes and the regulations of the Town of Lisbon and Waukesha County in surveying, dividing and mapping said lands.

_____ _____(SEAL)
DATE JOHN P. CASUCCI,
PROFESSIONAL LAND SURVEYOR S-2055

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

CORPORATE OWNER'S CERTIFICATE

HALQUIST STONE COMPANY, INC., a corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, as owner, certify that said corporation caused the land described on this map to the surveyed, divided and mapped as represented on this map in accordance with the provisions of Chapter 236 of the Wisconsin Statues and the Ordinances of the Waukesha County and Town of Lisbon.

HALQUIST STONE COMPANY, INC., does further certify that this map is required by S.236.10 or 236.12 to be submitted to the following for approval or objection: Waukesha County and the Town of Lisbon.

WITNESS the hand and seal of HALQUIST STONE COMPANY, INC., has caused these

presents to be signed by _____, its _____,

this _____ day of _____, 2018.

HALQUIST STONE COMPANY, INC.

_____

STATE OF WISCONSIN }
:SS
_____ COUNTY }

PERSONALLY came before me this _____ day of _____, 2018, the

above named _____, to me known to be the person who executed

the foregoing instrument, and to me known to be such _____ of said corporation and acknowledged that he executed the foregoing instrument as such officer, by its authority.

_____(SEAL)
Notary Public, State of Wisconsin
My commission expires _____

CERTIFIED SURVEY MAP NO. _____

That part of the Northeast 1/4 and Southeast 1/4 of the Southwest 1/4 of Section 35 and the Northwest 1/4, Southwest 1/4 and Southeast 1/4 of the Southeast 1/4 of Section 35, all in Township 8 North, Range 19 East, in the Town of Lisbon, Waukesha County, Wisconsin.

TOWN OF LISBON PLAN COMMISSION APPROVAL

APPROVED by the Plan Commission of the Town of Lisbon, signed on this _____ day of _

_____, 2018.

_____ _____

Joseph Osterman, Chairperson Jane Stadler, Secretary

TOWN OF LISBON BOARD APPROVAL

APPROVED by the Town Board of the Town of Lisbon, signed on this _____ day of _

_____, 2018.

_____ _____

Joseph Osterman, Chairperson Gina Gresch,Town Clerk

WAUKESHA COUNTY DEPARTMENT OF PARKS & LAND USE

The above, which has been filed for approval as required by Chapter 236 of the Wisconsin State Statues, is hereby approved on this _____ day of _____, 2018.

_____

Dale R. Shaver, Director

THIS INSTRUMENT WAS DRAFTED BY JOHN P. CASUCCI,