Village of Germantown ...Willkommen

Fee must accompany application

- ☐ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☒ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☒ $125 Fire Department Plan Review

PAID 1-7-19 DATE

# SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. All applications must be signed and dated.

1

**APPLICANT OR AGENT**

Diversified Engineering Inc.
Nick Berner, PE

175 Ray Ave NE
New Philadelphia, OH 44663

Phone ( 330 364-1631
E-Mail nberner@div-eng.com

**PROPERTY OWNER**

Waste Management of Wisconsin, Inc.
Contact: Donald Smith, PE

PO Box 1450
Chicago, IL 60690 -1450

Phone ( 206 806- 6039
E-Mail dasmith@wm.com

**PROPERTY ADDRESS**

N96W13840 COUNTY LINE RD, GERMANTOWN, WI 53022

**NEIGHBORING USES** – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

| North | South | East | West |
|---|---|---|---|
| See attached – ADJACENT PARCEL ZONING | | | |

4

**READ AND INITIAL THE FOLLOWING:**

DAS I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

DAS I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

DAS I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5

**SIGNATURES** – ALL APPLICATION MUST BE SIGNED BY OWNER!

1/03/2019

Applicant Date

Owner Date

# SITE PLAN REVIEW CHECKLIST

Pursuant to Section 17.43 of the Municipal Code

This checklist provides a summary of requirements found in the Municipal Code. It is intended purely as a guide for developers and should not substitute for a full review of the Code and applicable regulations. (Revised 1/02)

## GENERAL INFORMATION

- [X] Provide Completed Checklist with submittal
- [X] Names and addresses of owner/developer/designer
- [X] Graphic scale, north arrow
- [X] Location sketch
- [X] Size of site (gross and net acreage)
- [X] Existing zoning
- [X] Adjacent zoning and uses
- [X] Number of residents (subdivisions)
- [X] Number of employees

## EXISTING SITE INFORMATION

- [X] Dimensions of site and lot lines (pipes found, pipes set, monuments)
- [X] Existing grades (2' contours minimum)
- [X] Adjacent property grades (within 10' minimum of property lines)
- [X] Adjacent structures (within 20' minimum of property lines)
- [X] Drainage systems and structures
- [X] Natural features (woods, streams, lakes, ponds, outcroppings)
- [X] Wetland boundaries (provide date of staking)
- [X] Floodplain elevation and boundaries
- [X] Environmental concerns (underground tanks, etc)
- [X] Roads, curbs, parking lots, pavement areas
- [X] Structures (location, size)
- [X] Rights-of-Way (existing/ultimate)
- [X] Easements (drainage, utility)
- [X] Existing utilities (sanitary, water, electric, gas, telephone)
- [X] Benchmark locations and elevations
- [X] Location of fences, wells, borings, etc.

## ARCHITECTURAL PLANS

- [X] Existing building location
- [X] Existing building elevations/materials
- [X] Proposed use (use list from Section 17.45)
- [X] Statement of design intent (narrative)
- [X] Proposed floor plans (dimension)
- [X] Square footage (total and individual rooms/stores)
- [X] Proposed elevations (dimension)
- [X] Proposed building height
- [X] Proposed materials and colors (material sample board required for new construction)
- [X] Proposed signage (elevations, color, square footage, height, construction material, lighting)
- [X] Details of any special features

## PROPOSED SITE PLAN

- [X] Grading and spot elevations
- [X] Erosion control measures (silt fencing, hay bales, rip-rap, tracking mat, stockpile locations)
- [X] Stormwater management
  - stormwater management design report
  - general drainage pattern
  - swales w/ arrows for direction of flow
  - pond design with outfalls
  - culverts (location/size)
- [X] Utilities (size, invert elevations, length, slope, etc.)
  - -- sanitary
  - -- water
  - -- stormsewer
- [X] Building location (dimension)
- [X] Building elevation (finished grade)
- [X] Location of proposed signage
- [X] Details of outside storage (including trash receptacles)
- [X] Setbacks (clearly marked and dimensioned)
- [X] Vehicular entrances (dimension to centerline of nearest intersection)
- [X] Streets (dimension and direction for one-ways)
- [X] Curve radii
- [X] Sidewalks (dimension)
- [X] Parking areas (show striping/spot elevations)
- [X] Parking setback from property line
- [X] Loading areas (dimension)
- [X] Lot coverage
  - Square footage total
  - Impervious surfaces total (%)
  - Green space total (%)
  - Percent permitted (over/under %)
- [X] Municipal utility connections
  - Sanitary sewer (pipe size/elevations)
  - Water (size, valve location, elevations)
  - Location of hydrants
- [X] Easement for public water mains

## LIGHTING PLAN

- [x] Major improvements for context
- [x] Location/nature of existing fixtures
- [x] Location of proposed fixtures
- [x] Photometric report (to scale on plan)
- [x] Manufacturers cut-sheets of all fixtures
- [x] Lighting schedule
  - key to plan
  - number/type of fixtures
  - output (wattage)
- [x] Installation details as appropriate

## LANDSCAPING PLAN

- [x] Major improvements for context (building, drives, walks)
- [x] Proposed outdoor amenities (benches, paths, etc.)
- [x] Existing vegetation
  - Species
  - Size
  - Approximate canopy in plan
- [x] Vegetation to be destroyed
  - List and show location
- [x] Proposed method of saving existing vegetation during construction
- [x] Proposed landscape features (berms, fountains)
- [x] Existing/proposed lighting
- [x] Irrigation/watering systems (locate outlets)
- [x] Plant lists or schedules
  - Keyed to plan
  - Number of each species
  - Size when planted (caliper)
- [x] Installation details/staking

## MODEL SUBMITTAL INCLUDES THE FOLLOWING PLANS:

1. Cover / Title Page
2. Existing Conditions Survey
3. General Site Plan
4. Grading, Paving & Erosion Control Plan
5. Utility Plan
6. Site Details (curbing, catch basins, detention ponds, pavement, erosion control and sign details)
7. Landscape Plan
8. Landscape details (planting schedule, berming cross-sections, method of installation)
9. Lighting Plan
10. Floor Plan
11. Exterior Building Elevations
12. Building Material Sample Board

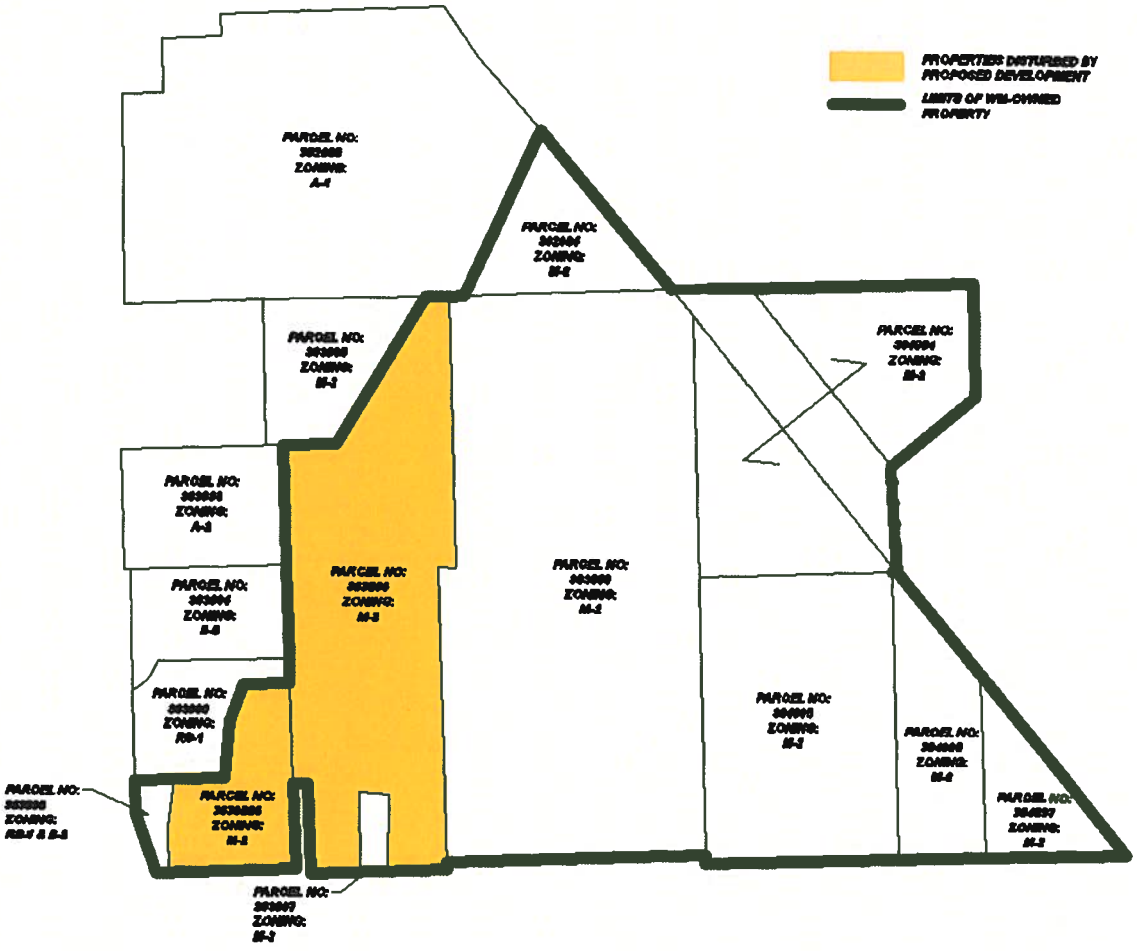
In addition to the items on this list, Village Staff and/or the Plan Commission may require additional drawings and data to be submitted for approval.

If any public improvements or work is to be done in the Public Right-of-Way, the Village will require that a Developer's Agreement be submitted and approved by the Village Board.

## ADJACENT PARCEL ZONING:

| | |
|---|---|
| GNTV_363995* | RS-1 & B-2 |
| GNTV_363990 | RS-1 |
| GNTV_363994 | B-5 |
| GNTV_363988 | A-2 |
| GNTV_363985 | M-2 |
| GNTV_362985 | A-1 |
| GNTV_363999* | M-2 |
| GNTV_363997* | M-2 |

**Note:** (*) Indicates parcels owned by Waste Management of WI, Inc.



Village of Germantown ...Willkommen

Fee must accompany application

$1460 Paid [illegible] Date 1-7-19

# CONDITIONAL USE PERMIT APPLICATION

Pursuant to Section 17.42 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

**1 APPLICANT OR AGENT**

Diversified Engineering Inc.
Nick Berner, P.E.

175 Ray Ave. NE
New Philadelphia, OH 44663

Phone (330 )364-1631
Fax (330 )364-4031
E-Mail nberner@div-eng.com

**PROPERTY OWNER**

Waste Management of Wisconsin Inc.
Donald Smith, P.E.

PO Box 1450
Chicago, IL 60690-1450

Phone (262 )806-6039
Email: dasmith@wm.com

**2 TO WHOM SHOULD THE PERMIT BE ISSUED?**

Waste Management of Wisconsin Inc.

**3**

| PROPERTY ADDRESS | TAX KEY NUMBER |
|---|---|
| N96W13840 COUNTY LINE RD GERMANTOWN, WI 53022 | 363996 & 363986 |

**4 DESCRIPTION OF EXISTING OPERATION**

Briefly describe the use as it exists today, including use, size, number of employees, hours of operation, etc. If this permit involves new construction, describe the current status of the property, e.g. "vacant." Use additional pages as necessary.

Tax Key 363996: Currently occupied by WM Port-o-let division garage, office and storage area (approximately 8.15 ac.).

Tax Key 363986: Currently occupied by WM Orchard Ridge Gas to Electric Power Plant , Industrial Pretreatment Plant and WM Healthcare Solutions building (approximately 35.63 ac.)

**5 DESCRIPTION OF PROPOSED OPERATION**

Write the name of the proposed conditional use exactly as it appears in the Municipal Code.
Germantown, WI Municipal Code, Chapter 17.34 - M-2 General Industrial District, Section 3

Describe the proposed use, including size, number of employees, hours of operation and extent of any new construction/alterations.

Conditional use permit requested for development of parcels 363996 and 363986. Proposed development includes the construction of a Waste Management Trucking Facility (250'x100') and office space (75'x130'). Hours of operation are anticipated to be 3:30am-midnight, M-F and 5am-noon, Saturday. The facility is anticipated to serve 100 employees during first shift/day shift, and approximately 10 during second shift.

## METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY — REQUIRED

6

**Tax key 363996:** Lot 2- CSM4247 V28 P30 PT of SW V1013 P676 SEC 36-9-20 8.15 ac.

**Tax key 363986:** PT NW SW V747 P264 PT SOLD SEC 36-9-20

***See attached CSM 4247 and Deed and exclusion for 363986***

## SUPPORTING DOCUMENTATION:

7

- ☒ Site plan and elevations for new construction (can be conceptual)
- ☒ Photos of existing use and/or proposed use operating elsewhere
- ☐ _____
- ☐ _____

## READ AND INITIAL THE FOLLOWING:

8

DAS I understand that the Village is under no obligation to issue a Conditional Use Permit and will do so only if the applicant successfully demonstrates that the proposed use is harmonious with the neighborhood and the long range goals of the Village.

DAS I will notify the Village if any aspect of the conditional use changes. I understand that failure to do so may result in the revocation of the CUP.

DAS I understand that a Conditional Use Permit is valid only if the conditions and restrictions of the permit are met. I understand that failure to comply with any aspect of the permit may result in revocation.

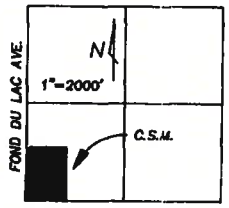
## SIGNATURES — ALL APPLICATIONS MUST BE SIGNED BY OWNER!

9

| | | | |
|---|---|---|---|
| [signature] | 1/03/2019 | Della Smith | 1/03/19 |
| Applicant | Date | Owner | Date |

# CERTIFIED SURVEY MAP NO. _____

BEING A REDIVISION OF C.S.M. NO. 3402, C.S.M. NO. 455 AND UNPLATTED LANDS, ALL IN THE SW 1/4 OF THE SW 1/4 OF SECTION 36, TOWN 9 NORTH, RANGE 20 EAST, IN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN.




LOCATION MAP

## LEGEND

O—DENOTES 1"X24" IRON PIPE WEIGHING 1.13 LBS. PER LINEAL FOOT SET

*—DENOTES BEARING ALSO REC. AT 0° 00' 11" ROTATED CLOCKWISE

ALL BEARINGS REFERENCED TO GRID NORTH OF THE WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE

## INT. ANGLES

| | | | | | |
|---|---|---|---|---|---|
| ① 89°59'55" | ⑤ 114°48'55" | ⑨ 188°07'10" | | | |
| ② 89°20'49" | ⑥ 196°36'05" | ⑩ 124°35'41" | | | |
| ③ 90°39'16" | ⑦ 177°04'31" | ⑪ 90°38'13" | | | |
| ④ 269°20'44" | ⑧ 188°47'38" | ⑫ 90°00'55" | | | |
| | | ⑬ 270°00'05" | | | |

C.S.M. NO. 3028

N 88°33'58" E * 585.74'

10'

C/L 20' ACCESS EASEMENT

N 33°09'39" E * 88.31'

N 41°16'49" E * 27.38'

N 50°04'27" E 26.01'

N 47°08'58" E * 23.91'

N 63°45'03" E * 18.47'

112.00'

S 88°33'58" W 206.86' 206.91'(R)

S 21°31'33" W 161.50'

OLD I.P. 1.46 E.

60.00'

404.94'

624.84'

FOND DU LAC AVE. (S.T.H. "145")

W. LINE OF SW. 1/4 SEC. 36-9-20 (ALSO REC. AS N 1°25'51" W)

N 1°26'02" W

LOT 1
253,428 sq. ft. ±
5.86 acres ±

100 YEAR FLOOD LIMITS

S 5°04'31" W 255.59'

963.38'

841.38'

S 2°04'15" E (ALSO REC. AS S 2°05'44" E AND S 2°05'07" E)

UNPLATTED LANDS

UNPLATTED LANDS

WISCONSIN JAMES W. HENSEL S-1892 GREENDALE, WI LAND SURVEYOR JAN. 7, 1994

S 87°54'42" W 404.23'

174.14'

230.09'

LOT 3
64,344 sq. ft. ±
1.47 acres ±

S 6°33'17" W 222.39'

25'

25'

N 0°04'15" W DRAINAGE EASEMENT

LOT 2
356,089 sq. ft. ±
8.15 acres ±

60.00'

423.92'

N 87°54'42" E 60.00'

S 2°05'18" E 204.00'

N 1°26'02" W 264.02' (ALSO REC. AS N 1°25'51" W)

S 2°05'18" E 50.00'

60.00'

145.56'

118.75'

574.77'

10.00'

60.00'

574.75'

S 87°54'47" W (ALSO REC. AS S 87°54'53" W) S. LINE OF SW. 1/4 SEC. 36-9-20

N 87°54'47" E 781.00' (ALSO REC. AS N 87°54'53" E)

50.00' N 2°04'15" W (ALSO REC. AS N 2°05'07" W)

FEE EXEMPT

SW. COR. SW. 1/4 SEC. 36-9-20

(ALSO REC. AS S 87°54'53" W)

S 87°54'47" W 206.25'

COUNTY LINE RD.

SHADED AREA DEDICATED FOR PUBLIC ROAD PURPOSES, INCLUDES PREVIOUSLY DEDICATED LANDS

0 150 225 300 450

SCALE 1"=150'


NORTH SHORE ENG. INC.
11431 N. PORT WASHINGTON RD
MEQUON WI. 53092


THIS INSTRUMENT DRAFTED BY JAMES W. HENSEL

SHEET 1 OF 3 SHEETS

658232

Map No. 4247 Vol. 28 Page 30

CERTIFIED SURVEY MAP NO. _____

Being a redivision of C.S.M. No. 3402, C.S.M. No. 455 and unplatted lands, all in the S.W. 1/4 of the S.W. 1/4 of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

SURVEYOR'S CERTIFICATE

I, James W. Hensel, Registered Land Surveyor, do hereby certify:

THAT I have surveyed, divided and mapped the following parcel of land:

C.S.M. No. 3402, C.S.M. No. 455 and unplatted lands, all in the S.W. 1/4 of the S.W. 1/4 of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

Commencing at the S.W. corner of said 1/4 Section; thence N1°26'02"W (also recorded as N1°25'51"W) along the West line of said 1/4 Section, 264.02 feet; thence N87°54'42"E, 60.00 feet to a point in the East right-of-way line of Fond du Lac Ave. (S.T.H. "145") said point also being the southwest corner of Outlot 2 of C.S.M. No. 3402; thence N1°26'02"W (also recorded as N1°25'51"W), along said East line and the West line of Outlot 2 and Lot 1 of C.S.M. No. 3402, 624.84 feet to the northwesterly corner of Lot 1 of C.S.M. No. 3402; thence N63°45'03"E (also recorded as N63°45'14"E), along the northerly line of Lot 1 of C.S.M. No. 3402, 18.47 feet; thence N47°08'58"E (also recorded as N47°09'09"E), along said northerly line, 23.91 feet; thence N50°04'27"E (also recorded as N50°04'38"E), along said northerly line, 26.01 feet; thence N41°16'49"E (also recorded as N41°17'00"E), along said northerly line, 27.58 feet; thence N33°09'39"E (also recorded as N33°09'50"E), along said northerly line, 88.31 feet to the northwest corner of Lot 1 of C.S.M. No. 3402; thence N88°33'58"E (also recorded as N88°34'09"E), along the north line of Lot 1 of C.S.M. No. 3402, 585.74 feet to the northeast corner of Lot 1 of C.S.M. No. 3402; thence S2°04'15"E (also recorded as S2°05'44"E and S2°05'07"E), along the east lines of Lot 1 and Outlot 1 of C.S.M. No. 3402, and the east line of the parcel recorded as C.S.M. No. 455, 963.38 feet to the southeast corner of the parcel recorded as C.S.M. No. 455, said point lying in the North right-of-way line of County Line Road (C.T.H. "Q"); thence S87°54'47"W (also recorded as S87°54'53"W), along said North line, 574.75 feet to the southwest corner of the aforementioned parcel; thence S2°05'18"E, 50.00 feet to a point in the South line of said 1/4 Section; thence S87°54'47"W (also recorded as S87°54'53"W), along said South line, 206.25 feet to the point of commencement. Said lands containing 16.18 acres of land more or less. Excepting the South 10.00 feet and the Southwest 60.00 feet dedicated for public road purposes.

THAT I have made such survey, land division and plat at the direction of Waste Management of Wisconsin, Inc., OWNER of said lands.

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 complied with the provisions of Chapter 236.34 of the Wisconsin statutes and the requirements of the Village of Germantown.

James W Hensel JAN. 7, 1994

James W. Hensel L.S., 1892

This instrument drafted by James W. Hensel



WISCONSIN
JAMES W. HENSEL
S-1892
GREENDALE, WI
LAND SURVEYOR

658232

Map No. 4247 Vol. 28 Page 31

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

January 8, 2019

Design Narrative

Project: Waste Management – Germantown Truck Maintenance Facility

The Germantown Truck Maintenance Facility will be a 35,035 square foot pre-engineered metal building located at parcel 363986 & 3639896. The facility will serve as a new CNG compliant facility for existing operations and staffing at the Waste Management Menomonee Falls Facility.

The building will be divided into two structures of differing eaves and use groups with a dividing masonry unit fire wall. The western portion of the facility will be a single-story 9,7500 square foot office, 15' eave, consisting of thirteen office spaces and sixteen cubicles, serving a maximum daily staff of thirty. The office space also incorporates locker rooms and launch areas to serve 90-100 drivers.

The eastern portion of the building will serve as a 25,285 square foot, 28' eave, CNG compliant maintenance facility. The space is designed to operate 14 maintenance bays split by a parts/tools and vital equipment storage space with pull through wash bay at the eastern end of the building. The building will be equipped with necessary monitoring systems, automated alarms and air change units per CNG code compliance.

The structure has been designed to match the surrounding campus of various industrial buildings owned and operated by Waste Management. Most notably in design materials, color pallet and façade. Additional design considerations have been incorporated with intent of improving site safety and appearance as well as minimize operational noise.

The building has been set approximately five hundred feet north from County Line Rd, to allow the existing dilapidated structure and staging area can be removed and replaced. The proposed design incorporates additional green space, landscaped berms and tree lined employee parking area in the place of the existing structure and storage areas. The landscaping berm has been set back from County Line Rd approximately 80-90 feet to allow for additional visibility for on-coming maintenance vehicle traffic.

Maintenance vehicle parking has been located at the north end of the parcel with a dedicated drive to the northeast connecting to the existing drive along the eastern edge of the property. The parking area has been designed to incorporate pull through and back in spaces to reduce noise during morning vehicle launches, by ensuring vehicles first move is forward. The dedicated drive to the northeast allows for vehicles to access County Line Rd at an existing pronounced intersection that features added sight distance.

Sincerely,

175 Ray Ave. N.E. New Philadelphia, OH 44663 - Phone: 330-364-1631 - Fax: 330-364-4031 - Email: dei@div-eng.com

## Village of Germantown, WI

# CONDITIONAL USE PERMIT SUBMITTAL PACKET

**For**

## Waste Management
## Truck Maintenance Facility

**N96W13840 County Line Road**
**Germantown, WI 53022**

**January 4th, 2019**

**Prepared For:**

WASTE MANAGEMENT

**Prepared By:**

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

# TABLE OF CONTENTS

**General Project Information and Applications:**


| | |
|---|---|
| Attachment 1 | Project Contacts and Site Information |
| Attachment 2 | Conditional Use Permit Application |
| Attachment 3 | Site Plan and Elevations |
| Attachment 4 | Site Photos – Existing/Proposed |

# Project Contacts and Site Information

**PROJECT OWNER:**




Waste Management of Wisconsin, Inc.
PO Box 1450
Chicago, IL 60690-1450

Contact: Donald Smith, PE
Phone: (262) 806-6039
Email: dasmith@wm.com

**OWNER REPRESENTATIVE/ ENGINEER:**




175 Ray Ave. NE
New Philadelphia, OH 44663

Project Manager: Nick Berner, PE
Phone: (330) 364-1631
Email: nberner@div-eng.com

**SITE INFORMATION:**

| | | |
|---|---|---|
| Parcels Disturbed | GNTV_363996 | GNTV_363986 |
| Acreage | 8.15 ac. | 35.63 ac. |
| Current Zoning | M-2 | M-2 |

**ADJACENT PARCEL ZONING:**

| | |
|---|---|
| GNTV_363995* | RS-1 & B-2 |
| GNTV_363990 | RS-1 |
| GNTV_363994 | B-5 |
| GNTV_363988 | A-2 |
| GNTV_363985 | M-2 |
| GNTV_362985 | A-1 |
| GNTV_363999* | M-2 |
| GNTV_363997* | M-2 |

**Note:** (*) Indicates parcels owned by Waste Management of WI, Inc.

**FEMA INFORMATION:**

| | |
|---|---|
| Community Number | 550472 |
| Panel # | 0379 |
| Suffix | D |
| Date of FIRM | 11/20/2013 |
| FIRM Zone | A |
| Base Flood Elevation | 769 FT. |

Village of Germantown ...Willkommen

**Fee must accompany application**

☐ **$1460** Paid _____ Date_____

# CONDITIONAL USE PERMIT APPLICATION

Pursuant to Section 17.42 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

## 1 APPLICANT OR AGENT

**Diversified Engineering Inc.**
**Nick Berner, P.E.**

**175 Ray Ave. NE**
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Phone (330 )364-1631

Fax (330 )364-4031

E-Mail **nberner@div-eng.com**

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**Donald Smith, P.E.**

**PO Box 1450**
**Chicago, IL 60690-1450**

Phone (262 )806-6039

Email: dasmith@wm.com

## 2 TO WHOM SHOULD THE PERMIT BE ISSUED?

**Waste Management of Wisconsin Inc.**

## 3 PROPERTY ADDRESS / TAX KEY NUMBER

| PROPERTY ADDRESS | TAX KEY NUMBER |
|---|---|
| **N96W13840 COUNTY LINE RD GERMANTOWN, WI 53022** | **363996 & 363986** |

## 4 DESCRIPTION OF EXISTING OPERATION

Briefly describe the use as it exists today, including use, size, number of employees, hours of operation, etc. If this permit involves new construction, describe the current status of the property, e.g. "vacant." Use additional pages as necessary.

Tax Key 363996: Currently occupied by WM Port-o-let division garage, office and storage area (approximately 8.15 ac.).

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Write the name of the proposed conditional use exactly as it appears in the Municipal Code.
**Germantown, WI Municipal Code, Chapter** 17.34 - **M-2 General Industrial District, Section** 3

Describe the proposed use, including size, number of employees, hours of operation and extent of any new construction/alterations.

Conditional use permit requested for development of parcels 363996 and 363986. Proposed development includes the construction of a Waste Management Trucking Facility (250'x100') and office space (75'x130'). Hours of operation are anticipated to be 3:30am-midnight, M-F and 5am-noon, Saturday. The facility is anticipated to serve 100 employees during first shift/day shift, and approximately 10 during second shift.

## METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY — REQUIRED

6

**Tax key 363996:** Lot 2- CSM4247 V28 P30 PT of SW V1013 P676 SEC 36-9-20 8.15 ac.

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***See attached CSM 4247 and Deed and exclusion for 363986***

## SUPPORTING DOCUMENTATION:

7

- ☒ Site plan and elevations for new construction (can be conceptual)
- ☒ Photos of existing use and/or proposed use operating elsewhere
- ☐ _____
- ☐ _____

## READ AND INITIAL THE FOLLOWING:

8

DAS I understand that the Village is under no obligation to issue a Conditional Use Permit and will do so only if the applicant successfully demonstrates that the proposed use is harmonious with the neighborhood and the long range goals of the Village.

DAS I will notify the Village if any aspect of the conditional use changes. I understand that failure to do so may result in the revocation of the CUP.

DAS I understand that a Conditional Use Permit is valid only if the conditions and restrictions of the permit are met. I understand that failure to comply with any aspect of the permit may result in revocation.

## SIGNATURES — ALL APPLICATIONS MUST BE SIGNED BY OWNER!

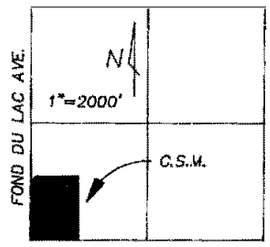
9

| | | | |
|---|---|---|---|
| [signature] | 1/03/2019 | Dell Smith | 1/03/19 |
| Applicant | Date | Owner | Date |

658232

# CERTIFIED SURVEY MAP NO. _____

BEING A REDIVISION OF C.S.M. NO. 3402, C.S.M. NO. 455 AND UNPLATTED LANDS, ALL IN THE SW 1/4 OF THE SW 1/4 OF SECTION 36, TOWN 9 NORTH, RANGE 20 EAST, IN THE VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN.




SW 1/4 SEC. 36--9--20

## LOCATION MAP

## LEGEND

O--DENOTES 1"X24" IRON PIPE WEIGHING 1.13 LBS. PER LINEAL FOOT SET

*--DENOTES BEARING ALSO REC. AT 0° 00' 11" ROTATED CLOCKWISE

ALL BEARINGS REFERENCED TO GRID NORTH OF THE WISCONSIN STATE PLANE COORDINATE SYSTEM, SOUTH ZONE

## INT. ANGLES

| | | |
|---|---|---|
| ① 89°59'55" | ⑤ 114°48'55" | ⑨ 188°07'10" |
| ② 89°20'49" | ⑥ 196°36'05" | ⑩ 124°35'41" |
| ③ 90°39'16" | ⑦ 177°04'31" | ⑪ 90°38'13" |
| ④ 269°20'44" | ⑧ 188°47'38" | ⑫ 90°00'58" |
| | | ⑬ 270°00'05" |

C.S.M. NO. 3028

N 88°33'58" E * 585.74'

10'

C/L 20' ACCESS EASEMENT

N 33°09'39" E * 88.31'

N 41°16'49" E * 27.58'

N 50°04'27" E 26.01'

N 47°08'58" E * 23.91'

N 63°45'03" E * 18.47'

112.00'

UNPLATTED LANDS

S 88°33'58" W 206.86' 206.91'(R)

S 21°31'55" W 181.50'

OLD I.P. 1.46 E.

255.59'

S 5°04'51" W

841.38'

963.38'

S 2°04'15" E (ALSO REC. AS S 2°05'44" E AND S 2°05'07" E)

UNPLATTED LANDS

FEE EXEMPT

FOND DU LAC AVE. (S.T.H. "145")

W. LINE OF SW. 1/4 SEC. 36--9--20 (ALSO REC. AS N 1°25'51" W)

N 1°26'02" W 624.84'

60.00'

404.94'

LOT 1
255,428. sq. ft. ±
5.86 acres ±

100 YEAR FLOOD LIMITS

S 87°54'42" W 404.23'

174.14'

230.09'

LOT 3
64,344. sq. ft. ±
1.47 acres ±

222.39'

S 6°33'17" W

25'

25'

N 0°04'15" W DRAINAGE EASEMENT

LOT 2
356,089. sq. ft. ±
8.15 acres ±

JAMES W. HENSEL S-1892 GREENDALE, WI

WISCONSIN LAND SURVEYOR

JAN. 7, 1994

60.00'

423.92'

N 87°54'42" E 60.00'

(ALSO REC. AS N 1°25'51" W) N 1°26'02" W 264.02'

S 2°05'18" E 204.00'

S 2°05'18" E 50.00'

60.00'

145.56'

60.00'

118.75'

574.77'

10.00'

60.00'

574.75'

S 87°54'47" W

(ALSO REC. AS S 87°54'53" W)

S. LINE OF SW. 1/4 SEC. 36--9--20

N 87°54'47" E 781.00'

(ALSO REC. AS N 87°54'53" E)

50.00' N 2°04'15" W (ALSO REC. AS N 2°05'07" W)

SW. COR. SW. 1/4 SEC. 36--9--20

(ALSO REC. AS S 87°54'53" W)

S 87°54'47" W 206.25'

COUNTY LINE RD.

SHADED AREA DEDICATED FOR PUBLIC ROAD PURPOSES, INCLUDES PREVIOUSLY DEDICATED LANDS

0 150 225 300 450

SCALE 1"=150'


NORTH SHORE ENG. INC.
11431 N. PORT WASHINGTON RD
MEQUON WI. 53092


THIS INSTRUMENT DRAFTED BY JAMES W. HENSEL

SHEET 1 OF 3 SHEETS

Map No. 4247 Vol. 28 Page 30

CERTIFIED SURVEY MAP NO. _____

Being a redivision of C.S.M. No. 3402, C.S.M. No. 455 and unplatted lands, all in the S.W. 1/4 of the S.W. 1/4 of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

658232

SURVEYOR'S CERTIFICATE

I, James W. Hensel, Registered Land Surveyor, do hereby certify:

THAT I have surveyed, divided and mapped the following parcel of land:

C.S.M. No. 3402, C.S.M. No. 455 and unplatted lands, all in the S.W. 1/4 of the S.W. 1/4 of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

Commencing at the S.W. corner of said 1/4 Section; thence N1°26'02"W (also recorded as N1°25'51"W) along the West line of said 1/4 Section, 264.02 feet; thence N87°54'42"E, 60.00 feet to a point in the East right-of-way line of Fond du Lac Ave. (S.T.H. "145") said point also being the southwest corner of Outlot 2 of C.S.M. No. 3402; thence N1°26'02"W (also recorded as N1°25'51"W), along said East line and the West line of Outlot 2 and Lot 1 of C.S.M. No. 3402, 624.84 feet to the northwesterly corner of Lot 1 of C.S.M. No. 3402; thence N63°45'03"E (also recorded as N63°45'14"E), along the northerly line of Lot 1 of C.S.M. No. 3402, 18.47 feet; thence N47°08'58"E (also recorded as N47°09'09"E), along said northerly line, 23.91 feet; thence N50°04'27"E (also recorded as N50°04'38"E), along said northerly line, 26.01 feet; thence N41°16'49"E (also recorded as N41°17'00"E), along said northerly line, 27.58 feet; thence N33°09'39"E (also recorded as N33°09'50"E), along said northerly line, 88.31 feet to the northwest corner of Lot 1 of C.S.M. No. 3402; thence N88°33'58"E (also recorded as N88°34'09"E), along the north line of Lot 1 of C.S.M. No. 3402, 585.74 feet to the northeast corner of Lot 1 of C.S.M. No. 3402; thence S2°04'15"E (also recorded as S2°05'44"E and S2°05'07"E), along the east lines of Lot 1 and Outlot 1 of C.S.M. No. 3402, and the east line of the parcel recorded as C.S.M. No. 455, 963.38 feet to the southeast corner of the parcel recorded as C.S.M. No. 455, said point lying in the North right-of-way line of County Line Road (C.T.H. "Q"); thence S87°54'47"W (also recorded as S87°54'53"W), along said North line, 574.75 feet to the southwest corner of the aforementioned parcel; thence S2°05'18"E, 50.00 feet to a point in the South line of said 1/4 Section; thence S87°54'47"W (also recorded as S87°54'53"W), along said South line, 206.25 feet to the point of commencement. Said lands containing 16.18 acres of land more or less. Excepting the South 10.00 feet and the Southwest 60.00 feet dedicated for public road purposes.

THAT I have made such survey, land division and plat at the direction of Waste Management of Wisconsin, Inc., OWNER of said lands.

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 complied with the provisions of Chapter 236.34 of the Wisconsin statutes and the requirements of the Village of Germantown.

James W Hensel JAN. 7, 1994

James W. Hensel L.S., 1892

This instrument drafted by James W. Hensel

WISCONSIN
JAMES W. HENSEL
S-1892
GREENDALE, WI
LAND SURVEYOR



Map No. 4247 Vol. 28 Page 31

658232

CERTIFIED SURVEY MAP NO. _____

Being a redivision of C.S.M. No. 3402, C.S.M. No. 455 and unplatted lands, all in the S.W. 1/4 of the S.W. 1/4 of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin.

OWNER'S CERTIFICATE

WASTE MANAGEMENT OF WISCONSIN, INC. as OWNER, hereby certifies that it caused the land described on this certified survey map to be surveyed, mapped and dedicated as represented on the certified survey map in accordance with the ordinances of the Village of Germantown.

WITNESS THE HAND AND SEAL OF SAID CORPORATION AND ITS OFFICER THIS 10th DAY OF January, 1994.

In the Presence of:

WASTE MANAGEMENT OF WISCONSIN, INC.

Robert Borkenhagen, General Manager

STATE OF WISCONSIN)
WASHINGTON COUNTY )ss

PERSONALLY came before me this 10th day of January, 1994, the above named Robert Borkenhagen, General Manager, to me known to be the person who executed the foregoing instrument and acknowledged the same.

Notary Public

My Commission expires 9/7/97

VILLAGE OF GERMANTOWN PLAN COMMISSION APPROVAL

Approved by the Village of Germantown Plan Commission, this 10th day of January, 1994.

Chairman

Secretary

JAN 21 9 00 AM '94
REGISTER OF DEEDS
OF WASHINGTON COUNTY, WI

RECORDED

Map No. 4247 Vol. 28 Page 32

VILLAGE OF GERMANTOWN BOARD APPROVAL

APPROVED by the Village of Germantown board and highway dedication accepted on this 17th day of January, 1994.

Village President

Clerk

This instrument drafted by James W. Hensel

JAMES W. HENSEL
S-1892
GREENDALE, WI
WISCONSIN
LAND SURVEYOR

JAN. 7, 1994

DOCUMENT NO

434539

VOL. REC. 747 PAGE 264

STATE BAR OF WISCONSIN FORM 1
WARRANTY DEED

FEB 19 9 26 AM '81

This Deed, made between Gordian Liermann by Emma Maas Liermann, his Attorney-In-Fact and Emma Maas Liermann, his wife

Grantor

and Waste Management of Wisconsin, Inc., a Wisconsin Corporation

Grantee,

Witnesseth, That the said Grantor, for a valuable consideration

conveys to Grantee the following described real estate in Washington County, State of Wisconsin:

Mr. Douglas D. Smiljanic
Attorney At Law
N88 W17015 Main St.
Menomonee Falls, WI 53051

All that part of the Southwest ¼ of Section 36, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin, bounded and described as follows:

Tax Key No.

COMMENCING at the West ¼ corner of the said Section 36; thence N88° 13' 49.7" E. along the North Line of the said SW ¼ of Section 36, 684.747 feet to the point of beginning of this description; thence continuing along the said North Line, 845.663 feet; thence S 01° 45' 50.53" E, 1241.501 feet; thence S 87° 54' 15.49" W, 79.981 feet; thence S 01° 45' 50.53" E, 1400.00 feet to a point on the South Line of the said SW¼ of Section 36; thence S87° 54' 15.77" W, along the said South Line, 263.23 feet; thence N 2° 05' 44.2" W, 363.00 feet; thence S 87° 54' 15.77" W and parallel to the said South Line, 120.00 feet; thence S 2° 05' 44.2" E, 363.00 feet to a point on the said South Line; thence S 87° 54' 15.77" W, along the said South Line, 235.20 feet; thence N 2° 05' 44.2" W along a public Road right of way, 445.890 feet; thence S 87° 54' 15.77" W, and parallel to the said South Line 66.00 feet; thence N 2° 05' 44.23" W 1540.00 feet; thence S 88° 13' 49.66" W, 79.49 feet; thence N 01° 26' 25.02" W, 660.00 feet to the point of beginning of this description and containing 43.667 acres.

TRANSFER
$31.00
Exempt

This is (is) (is not) homestead property.

Together with all and singular the hereditaments and appurtenances thereunto belonging.

And Gordian Liermann and Emma Maas Liermann, his wife

warrants that the title is good, indefeasible in fee simple and free and clear of encumbrances except municipal and zoning ordinances and recorded easements for public utilities located adjacent to side and rear lot lines; recorded building and use restrictions and covenants; and general taxes for the year of 1980 and 1981.

and will warrant and defend the same.

Dated this 11th day of February, 1981

Douglas D. Smiljanic (SEAL)
Douglas D. Smiljanic

(SEAL)

Gordian Liermann by Emma Maas Liermann, his Attorney-in-Fact (SEAL)

Emma Maas Liermann (SEAL)

**AUTHENTICATION**

Signatures authenticated this day of , 19

TITLE: MEMBER STATE BAR OF WISCONSIN
(If not, authorized by § 706.06, Wis. Stats.)

THIS INSTRUMENT WAS DRAFTED BY
Douglas D. Smiljanic
Attorney At Law

(Signatures may be authenticated or acknowledged. Both are not necessary.)

**ACKNOWLEDGMENT**

STATE OF WISCONSIN )
) ss
Waukesha County )

Personally came before me, this 11th day of February 1981, the above named Gordian Liermann by Emma Maas Liermann, his Attorney-In-Fact and Emma Maas Liermann, his wife

to me known to be the persons who executed the foregoing instrument and acknowledged the same.

Douglas D. Smiljanic
Douglas D. Smiljanic
Notary Public Waukesha County, Wis.
My Commission is permanent. (If not, state expiration date , 19 .)

*Names of persons signing in any capacity should be typed or printed below their signatures.

WARRANTY DEED — STATE BAR OF WISCONSIN FORM No. 1 — 1977 — Wisconsin Legal Blank Co., Inc. Milwaukee, Wis. (Job 33880)

State Bar of Wisconsin Form 1-2003
**WARRANTY DEED**

Document Number | Document Name

DOC# 1185031

Recorded
Mar. 06, 2008 AT 01:20PM
SHARON A MARTIN, REGISTER OF DEEDS
WASHINGTON COUNTY, WISCONSIN

Fee Amount: $13.00
Transfer Fee: $207.30

Recording Area 13-2

Name and Return Address
Davis & Kuelthau, SC
111 E. Kilbourn, Suite 1400
Milwaukee WI 53202

**THIS DEED**, made between **Waste Management of Wisconsin, Inc., a Wisconsin Corporation**

("Grantor," whether one or more), and **FC Milwaukee Nationals, Inc., a Wisconsin Corporation**

("Grantee," whether one or more).

Grantor for a valuable consideration, conveys to Grantee the following described real estate, together with the rents, profits, fixtures and other appurtenant interests, in **Washington** County, State of Wisconsin ("Property") (if more space is needed, please attach addendum):
**SEE ATTACHED LEGAL**

Part of GTNV 363-993
Parcel Identification Number (PIN)

This **is not** homestead property.
(is) (is not)

**SUBJECT TO THE FOLLOWING DEED RESTRICTION:**
**"The Property conveyed herein shall not be used for any purpose related to the waste industry including, but not limited to, the hauling, processing, transferring, storage, recycling or disposal of solid waste (including demolition waste) or hazardous waste. These restrictions are perpetual and declared to be covenants running with the land and shall be fully binding upon all persons or entities acquiring title to the land whether by descent, devise, purchase or otherwise."**

Grantor warrants that the title to the Property is good, indefeasible, in fee simple and free and clear of encumbrances except: **Municipal and zoning ordinances, recorded easements for public utilities serving the property, recorded building and use restrictions and covenants, and taxes levied in the year of closing.**

$ TRANSFER 207.30 FEE

Dated February 28, 2008.

_____ (SEAL)
*_____

_____ (SEAL)
*_____

**Waste Management of Wisconsin, Inc.**
_____ (SEAL)
***By:** BRENDAN SHEEHAN

_____ (SEAL)
***Title: Authorized Representative**

**AUTHENTICATION**

Signature(s) _____

authenticated on _____.

_____
*_____
TITLE: MEMBER STATE BAR OF WISCONSIN
(If not, authorized by Wis. Stat. § 706.06 )

**ACKNOWLEDGMENT**

STATE OF **ILLINOIS** )
) ss.
**Will** COUNTY )

Personally came before me on January 28, **2008**,
the above-named BRENDAN SHEEHAN, Authorized Representative, Waste Management of Wisconsin, Inc.
to me known to be the person(s) who executed the foregoing instrument and acknowledged the same.

_____
Notary Public, State of **Illinois**
My commission (is permanent) (expires: January 24, 2010 )

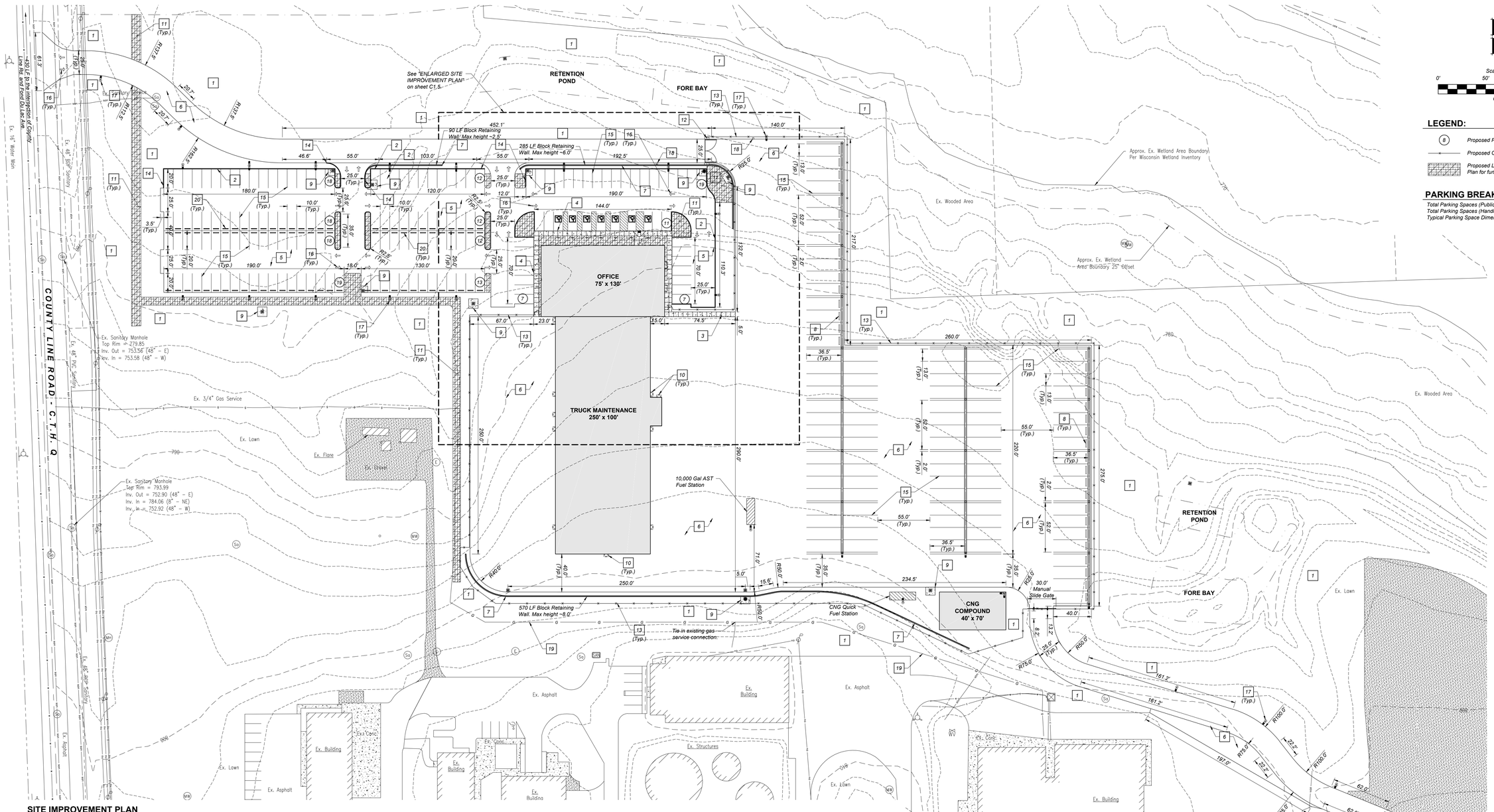
THIS INSTRUMENT DRAFTED BY:
**David E. Stewart**
**State Bar No. 1013409**

**(Signatures may be authenticated or acknowledged. Both are not necessary.)**
**NOTE: THIS IS A STANDARD FORM. ANY MODIFICATION TO THIS FORM SHOULD BE CLEARLY IDENTIFIED.**

LEGAL DESCRIIPTION

That a part of the Northwest ¼ and the Northeast ¼ of the Southwest ¼ of Section 36, Town 9 North, Range 20 East, in the Village of Germantown, Washington County, Wisconsin, bounded and described as follows:

Commencing at the Northwest corner of the Southwest ¼ of said Section; thence N88° 14' 45" E along the South line of the Northwest ¼ of said Section 684.75 feet to the point of beginning; thence continuing N88° 14' 45"E 720.75 feet to a meander line; thence S32° 13' 41" W along a meander line 795.93 feet to the end of a meander line; thence S88° 14' 45"W 279.66 feet; thence N01° 25' 30"W 660.00 feet to the point of beginning. Including all the land lying between the meander line and the property lines extended to the center line of a creek to the East. Containing 7.58 acres of land to the meander line and 7.93 acres +/- to the center line of a creek.




## SITE IMPROVEMENT PLAN

*Scale: 1" = 50'*

## KEYED NOTES:

1.) *Grass area (slope to drain). Re-seed existing lawn where disturbed by new construction and construction activities.*

2.) *6" concrete curb.*

3.) *4" concrete sidewalk.*

4.) *Integral concrete curb and walk.*

5.) *Proposed light-duty asphalt pavement.*

6.) *Proposed heavy-duty concrete pavement.*

7.) *Block Retaining Wall.*

8.) *Concrete truck wheel stop.*

9.) *Reinforced Concrete Apron.*

10.) *Frost footing at man doors.*

11.) *Proposed Landscaping: (Shown for reference). See Sheet L1.0 "Site Landscaping Plan".*

12.) *Swing Gate Operator & Concrete Pad provided & installed by G.C., equal to "LiftMaster Elite Series" Model CSW24U, 120V (Conduits & Wire by E.C.).*

13.) *6' high chain link security fence / access gate.*

14.) *Taper curb.*

15.) *Pavement painting: 4" wide yellow striping.*

16.) *Pavement marking: Yellow directional arrow.*

17.) *Proposed site lighting: By E.C. (shown for reference). See site electrical plan.*

18.) *Pedestal for gate operator access control key pad, furnished and installed by G.C. Conduit to pedestal by E.C., wiring by Access Control installer.*

19.) *Proposed relocated 3/4" gas service line location.*

20.) *Concrete parking bumper.*

**NOTE: See "SITE PLAN REVIEW SUBMITTAL PACKET" for typical construction details.*

## GENERAL NOTES:

A. *Provide smooth transition from newly paved areas to existing paved area as necessary. The existing edge of pavement shall be free of all loose debris at all areas where proposed pavement meets existing pavement. The edge of existing asphalt pavement shall be properly sealed with a tack coat material in all areas where new asphalt pavement is indicated to join existing.*

B. *Contractor is responsible for locating and verifying all existing underground utilities prior to construction, and is responsible for any damage to them during construction.*

C. *All dimensions to face of curb or edge of concrete unless otherwise noted.*

D. *All pavement markings depicting parking spaces, accessible parking spaces, access aisles and no parking signage shall be applied with mechanical equipment and templates at the locations and lengths shown on the plans (two coats all locations). Paint shall be yellow in color (unless otherwise specified) and shall meet all applicable requirements of state department of highway specifications, unless otherwise specified.*

E. *Contractor shall be solely responsible for and take all precautions necessary to avoid damage to adjacent properties during the construction phases of this project.*

F. *All construction methods and materials must conform to current standards and specifications of the federal, state, county, city or local requirements, whichever has jurisdiction.*

G. *All excavated and/or disturbed areas indicated as "grass area" (per keyed note #1), are to be seeded with a locally adaptive turf seed mix after finish grading unless otherwise noted. All newly seeded areas shall have a minimum of 6" of topsoil. Hold soil down 1" from pavement elevation. Contractor to supply straw mulch where grass seed has been planted.*

H. *All radii indicated on plans shall be constructed as circular.*

I. *Resurface or reconstruct at least to original conditions all areas where traffic by contractors, subcontractors or suppliers have damaged existing pavement, lawns or other improvements during construction, after construction work is complete.*

J. *The contractor shall verify all dimensions and elevations in the field prior to the start of construction. The contractor shall be responsible for all field dimensions and elevations during the entire construction schedule. If any discrepancies are found in these plans from actual field dimensions, the contractor shall contact the engineer immediately.*

| ISSUE DATE | 01/04/2018 | SCALE | 1" = 50' | CTR INT. | 2" |
|---|---|---|---|---|---|
| SURVEYED BY | | CHECKED BY | KJB | | |
| DRAWN BY | CDM | APPROVED BY | MJB | | |
| REV | DATE | DESCRIPTION | | DWN BY | DES BY | CHK BY | APP BY |

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS
175 RAY AVENUE, N.E.
NEW PHILADELPHIA, OH. 44663
Phone: (330) 364-1831
Fax: (330) 364-1833
e-mail: dei@dei-eng.com
Web: www.dei-eng.com

**WASTE MANAGEMENT**

PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *SITE IMPROVEMENT PLAN*

SHEET NO: **C1.4**

JOB NO: ENG-1465

D:\Data Files\Work\ENGINEERING\Civil-CAD\WM Milwaukee\Site Mgt (Existing Facility)\Drawings\Construction Set Plan_WM.dwg, 1/4/2018 7:29 PM




CONCEPTUAL EXTERIOR ELEVATION (WEST ELEVATION)

SCALE: 3/16" = 1'-0"




CONCEPTUAL EXTERIOR ELEVATION (NORTH ELEVATION)

SCALE: 3/32" = 1'-0"

ISSUE DATE 12/18/2018 SCALE AS NOTED CTR INT. --

SURVEYED BY --- CHECKED BY NJB

DRAWN BY BWS APPROVED BY NJB

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |
| | | | | | | |
| | | | | | | |

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS
175 RAY AVENUE, N.E
NEW PHILADELPHIA, OH 44663
Phone: (330) 364-1631
Fax: (330) 364-4031
e-mail: del@div-eng.com
Web: www.div-eng.com

# WASTE MANAGEMENT

PROJECT:

TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE:

CONCEPTUAL EXTERIOR ELEVATION
RENDERINGS (OPTION #1 - REV3)

SHEET NO:

A2.0

Z:\Jobs\Div-Eng\2018\2018x124 WM Wisconsin\Cad_WI Filing Folder\Conceptual Set Layout\Site Plan\WI Conditional Use Plan 2018-12-18(R1) 2018-12-19.dwg - 12/19/18 2:04 PM

# Existing Site Photos




Address sign at WM Port-o-let entrance. (July 2018)



Abandoned underground storage tank. (Dec. 2018)

# Existing Site Photos



Port-o-let maintenance garage, currently abandoned. (Dec. 2018)



Port-o-let facility maintenance garage. Used for painting and welding only.

# Existing Site Photos



Existing asphalt lot.



Interior of WM Port-o-let maintenance building. (July 2018)

# Existing Site Photos



Interior of WM Port-o-let maintenance building. (July 2018)



Various containers and vehicle storage on back lot. (July 2018)

# Existing Site Photos



Various containers being stored on back lot. (July 2018)



Various containers and vehicles being stored on back lot. (July 2018)

# Existing Site Photos



View of development area facing northeast. Currently vacant. (July 2018)



View of development area facing north. (July 2018)

# Existing Site Photos



Existing burn-off flare and maintenance building. (July 2018)



Existing gravel roadway to flare and maintenance building. (July 2018)

# Existing Site Photos




Existing leachate management facility. (July 2018)




Leachate management facility. (July 2018)

# Existing Site Photos



Existing retention pond. (Dec. 2018)



Existing retention pond. (Dec. 2018)

# Existing Site Photos



View of existing conditions facing northwest. (Dec. 2018)



View of Port-o-let facility from the northeast. (Dec. 2018)

# Existing Site Photos



View facing east from proposed development area. (Dec. 2018)



Storage of containers at Port-o-let facility. (Dec. 2018)

# Existing Site Photos



Existing lot at Port-o-let facility. (Dec. 2018)



Port-o-let facility entrance. (Dec. 2018)

# Existing Site Photos



Container storage on existing dirt lot to north of medical waste facility. (Dec. 2018)



Existing asphalt drive. View facing southwest. (Dec. 2018)

# Proposed Site Photos




Exterior elevation.




Exterior elevation.

# Proposed Site Photos



Proposed truck maintenance garage.

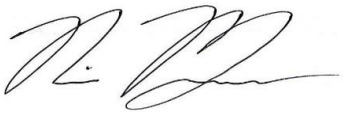


Proposed launch area.

# Proposed Site Photos



CNG fueling area.



Nicholas J. Berner, P.E.
Project Manager

175 Ray Ave. N.E. New Philadelphia, OH 44663 - Phone: 330-364-1631 - Fax: 330-364-4031 - Email: dei@div-eng.com

## Village of Germantown, WI

# SITE PLAN REVIEW SUBMITTAL PACKET

**For**

## Waste Management
## Truck Maintenance Facility

**N96W13840 County Line Road**
**Germantown, WI 53022**

**January 4th, 2019**

**Prepared For:**

WASTE MANAGEMENT

**Prepared By:**

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

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# Project Contacts and Site Information

**PROJECT OWNER:**




Waste Management of Wisconsin, Inc.
PO Box 1450
Chicago, IL 60690-1450

Contact: Donald Smith, PE
Phone: (262) 806-6039
Email: dasmith@wm.com

**OWNER REPRESENTATIVE/ ENGINEER:**




175 Ray Ave. NE
New Philadelphia, OH 44663

Project Manager: Nick Berner, PE
Phone: (330) 364-1631
Email: nberner@div-eng.com

**SITE INFORMATION:**

| | | |
|---|---|---|
| Parcels Disturbed | GNTV_363996 | GNTV_363986 |
| Acreage | 8.15 ac. | 35.63 ac. |
| Current Zoning | M-2 | M-2 |

**ADJACENT PARCEL ZONING:**

| | |
|---|---|
| GNTV_363995* | RS-1 & B-2 |
| GNTV_363990 | RS-1 |
| GNTV_363994 | B-5 |
| GNTV_363988 | A-2 |
| GNTV_363985 | M-2 |
| GNTV_362985 | A-1 |
| GNTV_363999* | M-2 |
| GNTV_363997* | M-2 |

**Note:** (*) Indicates parcels owned by Waste Management of WI, Inc.

**FEMA INFORMATION:**

| | |
|---|---|
| Community Number | 550472 |
| Panel # | 0379 |
| Suffix | D |
| Date of FIRM | 11/20/2013 |
| FIRM Zone | A |
| Base Flood Elevation | 769 FT. |

Village of Germantown

Willkommen

Fee must accompany application

- ☐ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID_____DATE_____

# SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1

**APPLICANT OR AGENT**

Diversified Engineering Inc.
Nick Berner, PE

175 Ray Ave NE
New Philadelphia, OH 44663

Phone ( 330 364-1631
E-Mail nberner@div-eng.com

**PROPERTY OWNER**

Waste Management of Wisconsin, Inc.
Contact: Donald Smith, PE

PO Box 1450
Chicago, IL 60690 -1450

Phone ( 206 806- 6039
E-Mail dasmith@wm.com

**PROPERTY ADDRESS**

N96W13840 COUNTY LINE RD, GERMANTOWN, WI 53022

**NEIGHBORING USES** – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

| North | South | East | West |
|---|---|---|---|
| See attached – ADJACENT PARCEL ZONING | | | |

4

**READ AND INITIAL THE FOLLOWING:**

DAS I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

DAS I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

DAS I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5

**SIGNATURES** – ALL APPLICATION MUST BE SIGNED BY OWNER!

1/03/2019

Applicant Date

Donald A Smith 1/03/19

Owner Date

# SITE PLAN REVIEW CHECKLIST

Pursuant to Section 17.43 of the Municipal Code

This checklist provides a summary of requirements found in the Municipal Code. It is intended purely as a guide for developers and should not substitute for a full review of the Code and applicable regulations. (Revised 1/02)

## GENERAL INFORMATION

- [X] Provide Completed Checklist with submittal
- [X] Names and addresses of owner/developer/designer
- [X] Graphic scale, north arrow
- [X] Location sketch
- [X] Size of site (gross and net acreage)
- [X] Existing zoning
- [X] Adjacent zoning and uses
- [X] Number of residents (subdivisions)
- [X] Number of employees

## EXISTING SITE INFORMATION

- [X] Dimensions of site and lot lines (pipes found, pipes set, monuments)
- [X] Existing grades (2' contours minimum)
- [X] Adjacent property grades (within 10' minimum of property lines)
- [X] Adjacent structures (within 20' minimum of property lines)
- [X] Drainage systems and structures
- [X] Natural features (woods, streams, lakes, ponds, outcroppings)
- [X] Wetland boundaries (provide date of staking)
- [X] Floodplain elevation and boundaries
- [X] Environmental concerns (underground tanks, etc)
- [X] Roads, curbs, parking lots, pavement areas
- [X] Structures (location, size)
- [X] Rights-of-Way (existing/ultimate)
- [X] Easements (drainage, utility)
- [X] Existing utilities (sanitary, water, electric, gas, telephone)
- [X] Benchmark locations and elevations
- [X] Location of fences, wells, borings, etc.

## ARCHITECTURAL PLANS

- [X] Existing building location
- [X] Existing building elevations/materials
- [X] Proposed use (use list from Section 17.45)
- [X] Statement of design intent (narrative)
- [X] Proposed floor plans (dimension)
- [X] Square footage (total and individual rooms/stores)
- [X] Proposed elevations (dimension)
- [X] Proposed building height
- [X] Proposed materials and colors (material sample board required for new construction)
- [X] Proposed signage (elevations, color, square footage, height, construction material, lighting)
- [X] Details of any special features

## PROPOSED SITE PLAN

- [X] Grading and spot elevations
- [X] Erosion control measures (silt fencing, hay bales, rip-rap, tracking mat, stockpile locations)
- [X] Stormwater management
  - stormwater management design report
  - general drainage pattern
  - swales w/ arrows for direction of flow
  - pond design with outfalls
  - culverts (location/size)
- [X] Utilities (size, invert elevations, length, slope, etc.)
  - -- sanitary
  - -- water
  - -- stormsewer
- [X] Building location (dimension)
- [X] Building elevation (finished grade)
- [X] Location of proposed signage
- [X] Details of outside storage (including trash receptacles)
- [X] Setbacks (clearly marked and dimensioned)
- [X] Vehicular entrances (dimension to centerline of nearest intersection)
- [X] Streets (dimension and direction for one-ways)
- [X] Curve radii
- [X] Sidewalks (dimension)
- [X] Parking areas (show striping/spot elevations)
- [X] Parking setback from property line
- [X] Loading areas (dimension)
- [X] Lot coverage
  - Square footage total
  - Impervious surfaces total (%)
  - Green space total (%)
  - Percent permitted (over/under %)
- [X] Municipal utility connections
  - Sanitary sewer (pipe size/elevations)
  - Water (size, valve location, elevations)
  - Location of hydrants
- [X] Easement for public water mains

## LIGHTING PLAN

- [x] Major improvements for context
- [x] Location/nature of existing fixtures
- [x] Location of proposed fixtures
- [x] Photometric report (to scale on plan)
- [x] Manufacturers cut-sheets of all fixtures
- [x] Lighting schedule
  - key to plan
  - number/type of fixtures
  - output (wattage)
- [x] Installation details as appropriate

## LANDSCAPING PLAN

- [x] Major improvements for context (building, drives, walks)
- [x] Proposed outdoor amenities (benches, paths, etc.)
- [x] Existing vegetation
  - Species
  - Size
  - Approximate canopy in plan
- [x] Vegetation to be destroyed
  - List and show location
- [x] Proposed method of saving existing vegetation during construction

- [x] Proposed landscape features (berms, fountains)
- [x] Existing/proposed lighting
- [x] Irrigation/watering systems (locate outlets)
- [x] Plant lists or schedules
  - Keyed to plan
  - Number of each species
  - Size when planted (caliper)
- [x] Installation details/staking

## MODEL SUBMITTAL INCLUDES THE FOLLOWING PLANS:

1. Cover / Title Page
2. Existing Conditions Survey
3. General Site Plan
4. Grading, Paving & Erosion Control Plan
5. Utility Plan
6. Site Details (curbing, catch basins, detention ponds, pavement, erosion control and sign details)
7. Landscape Plan
8. Landscape details (planting schedule, berming cross-sections, method of installation)
9. Lighting Plan
10. Floor Plan
11. Exterior Building Elevations
12. Building Material Sample Board

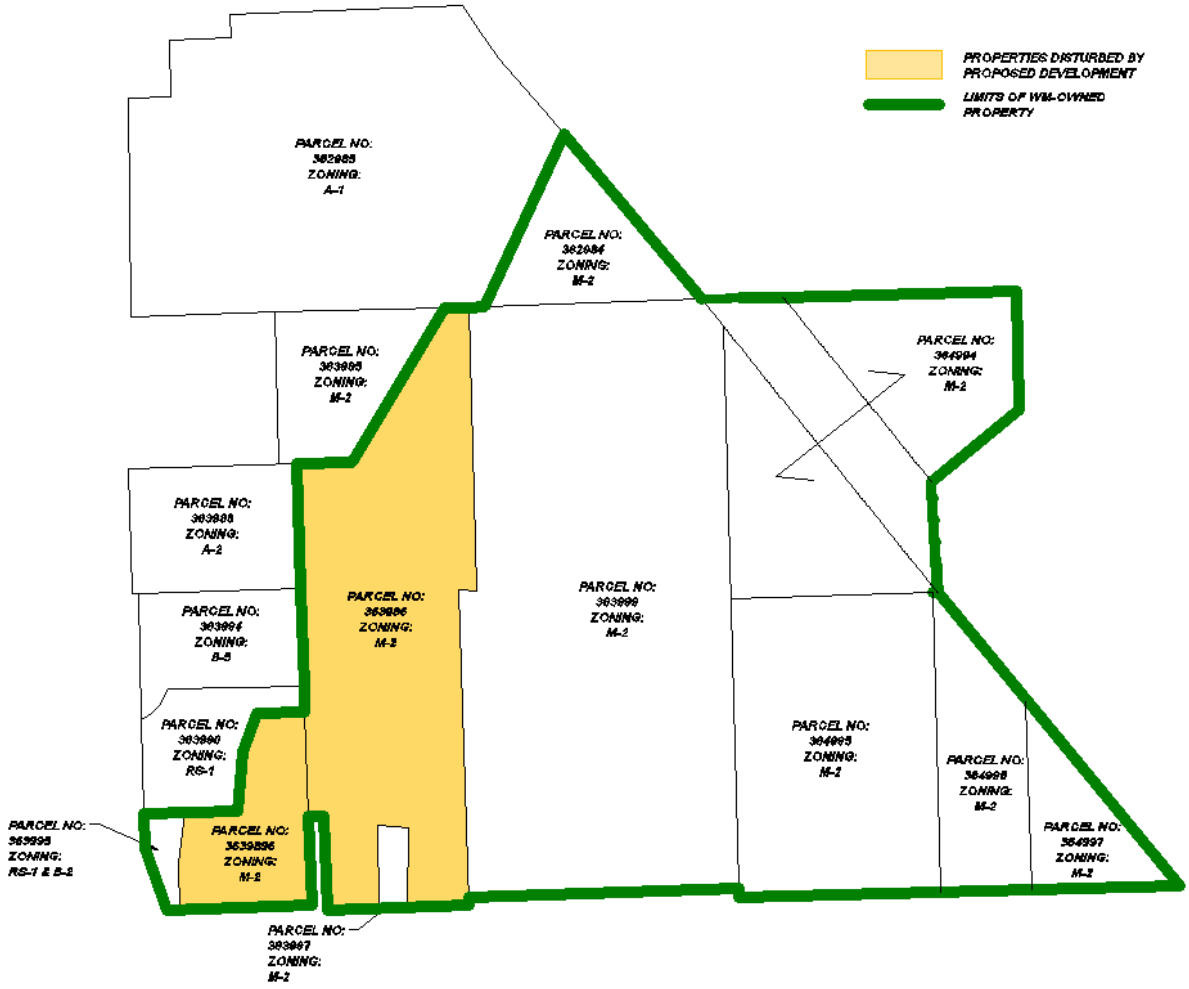
In addition to the items on this list, Village Staff and/or the Plan Commission may require additional drawings and data to be submitted for approval.

If any public improvements or work is to be done in the Public Right-of-Way, the Village will require that a Developer's Agreement be submitted and approved by the Village Board.

## ADJACENT PARCEL ZONING:

| | |
|---|---|
| GNTV_363995* | RS-1 & B-2 |
| GNTV_363990 | RS-1 |
| GNTV_363994 | B-5 |
| GNTV_363988 | A-2 |
| GNTV_363985 | M-2 |
| GNTV_362985 | A-1 |
| GNTV_363999* | M-2 |
| GNTV_363997* | M-2 |

**Note:** (*) Indicates parcels owned by Waste Management of WI, Inc.



Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

January 4, 2019

Statement of Design Intent

Project: Waste Management – Germantown Truck Maintenance Facility

The Germantown Truck Maintenance Facility has been designed to match the surrounding campus of various industrial buildings owned and operated by Waste Management. Most notably in design materials, color pallet and façade. Additional design considerations have been incorporated with intent of improving site safety and appearance as well as minimize operational noise.

The building has been set approximately five hundred feet north from County Line Rd, to allow the existing dilapidated structure and staging area can be removed and replaced. The proposed design incorporates additional green space, landscaped berms and tree lined employee parking area in the place of the existing structure and storage areas. The landscaping berm has been set back from County Line Rd approximately 80-90 feet to allow for additional visibility for on-coming maintenance vehicle traffic.

Maintenance vehicle parking has been located at the north end of the parcel with a dedicated drive to the northeast connecting to the existing drive along the eastern edge of the property. The parking area has been designed to incorporate pull through and back in spaces to reduce noise during morning vehicle launches, by ensuring vehicles first move is forward. The dedicated drive to the northeast allows for vehicles to access County Line Rd at an existing pronounced intersection that features added sight distance.

Sincerely,

Nicholas J. Berner, P.E.
Project Manager

175 Ray Ave. N.E. New Philadelphia, OH 44663 - Phone: 330-364-1631 - Fax: 330-364-4031 - Email: dei@div-eng.com

# STORM WATER MANAGEMENT PLAN REPORT: GERMANTOWN TRUCK MAINTENANCE FACILITY


## Abstract

The following report documents the analysis performed to assess the suitability of the proposed hydraulic control mechanisms at Waste Managements' Germantown Hauling Facility.



Prepared by:

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# 1.0 Narrative Description

## 1.1 Site Location

The proposed development is located in Germantown Village in Washington County, Wisconsin. The project location is directly northwest of the intersection between County Line Rd & Fond Du Lac Ave. The approximate site coordinates are: Latitude: 43.193202° & Longitude: -88.080141°. The site is located in the Menomonee River Watershed.

## 1.2 Description of Existing and Proposed Conditions

The existing site is located along the north side of County Line Rd in Washington County, Wisconsin. The existing site is a combination of developed / undeveloped areas. The developed areas are currently occupied by Waste Management's Port-o-let division's garage, office, and storage area. The undeveloped area consists of meadowland and wooded areas. There is currently a detention pond located on the north end of the site that is utilized by NE neighboring parcel, upgrading and continued usage of this pond is included in the site development.

The proposed development is for the construction of a Waste Management truck maintenance facility (250' x 100') and office space (75' x 130') along with concrete parking areas for employees and operations vehicles. The existing detention pond on the north edge of the property is to be upgraded and maintained, along with the construction of an additional stormwater detention pond along the western side of the parcel.

The existing impervious area owned and operated by WM-Port-O-Let division is to be removed and replaced with a site access drive and green area. Due to the reduction of impervious surface in this section of the development, this sub-basin (labeled Sub-Basin I on the site plan – see Appendix A) is not planned to drain to a stormwater detention facility but instead will expected to infiltrate the newly developed "green areas" or sheet flow to the existing channel located along the western edge of the parcel.

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### 1.3 Methods used for analysis

The volumetric design procedure was utilized to achieve the required stormwater performance standards set forth by the Milwaukee Metropolitan Sewer District. The volumetric design procedure analyzes the existing and future flow conditions for both the 1% (100 year) and 50% (2 year) storm event. "The volumetric design procedure ensures the total volume of runoff from the proposed site is limited to the total volume of runoff discharging from the existing site during a prescribed critical time period" (Milwaukee Metropolitan Sewer District, Ch. 13).

Stormwater calculations used during the volumetric design procedure follow USDA's technical release 55. The subsequent sections follow throw each step of the design procedure, from peak flow determination, hydrograph development, and detention pond sizing.

## 2.0 Hydrology Calculations:

### 2.1 Drainage Area

The drainage area for the proposed development totals 21.43 acres and can be split into 3 separate sub-basin areas. The sub-basins are labelled I – III, and can be seen on the on hydraulic site plan (Appendix A). The land use for each sub-basin area is broken down in sub-sequent sections during the curve number calculations for both the existing (Appendix B) & developed site (Appendix D). Impervious areas are being added and removed across the site, the increase (or decrease) in impervious areas for each sub-basin are presented below in Table 1.

Table 1. Impervious Area

| Sub-Basin | Existing Acreage | Developed Acreage |
|---|---|---|
| I | 1.899 | 1.275 |
| II | 0 | 2.83 |
| III | 0.731 | 6.42 |

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## 2.2 Curve Number & Runoff

The volumetric design procedure evaluates the 2 year and 100 year storm event to ensure the proposed development does not increase the site's runoff volume. The rainfall amount for both storm events were gathered from NOAA Atlas 14 and are presented in Table 2 below.

| Table 2 - Rainfall Amounts | |
|---|---|
| Recurrence Interval | Rainfall Amount (in.) |
| 2 year, 24 Hour | 2.65 |
| 100 year, 24 Hour | 6.41 |

The proposed development can be broken up into 3 separate sub-basins. The sub-basins can be seen in Appendix A – Site Plan. The southernmost sub-basin, consists of the demolition of the existing asphalt and building spaced currently occupied by WM's Port-O-Let division. Due to the reduction in impervious area through this sub-basin and the limited flat space available; routing stormwater in this area through a stormwater detention facility was not justifiable. The breakdown of existing and proposed site conditions, curve numbers, and runoff associated with each sub-basin is summarized in tables in Appendix B & D. Curve numbers and runoff were determined using Carlson's Hydrology Software, which utilizes the SCS curve number method.

## 2.3 Time of Concentration

The time of concentration was determined using Carlson Hydrology software, which utilizes the watershed lag method outlined in Chapter 15 (Part 630) of the National Engineering Handbook. The required input parameters are: curve number, length of flow (ft), average land slope (%). The existing site and proposed site time of concentrations are summarized in Appendix B & D.

## 2.4 Peak Flows

The peak flows for the design storms (2YR & 100YR) were then calculated and developed using Carlson Hydrology. The software applies the SCS hydrograph procedure and utilizes the same methodology used in TR-20 to generate runoff

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hydrograph's. The peak flows and calculated runoff volumes for the 2YR storm event and the 100YR storm event (pre & post development) can be found in Appendix B & D.

## 2.5 Detention Pond Sizing

Using peak flow rates and runoff volumes calculated previously a preliminary pond sizing was completed to get an approximate idea on the detention pond size needed. The 100YR storm event was evaluated for each sub-basin to determine the approximate pond size required. Carlson hydrology's detention pond sizing tool was utilized, this tool follows procedures outlined in TR-55 "Urban Hydrology for Small Watershed's Manual". The command requires the following inputs: Drainage Area (acres), Peak Inflow Discharge (cfs), desired peak outflow discharge (CFS), Runoff Q (inches), and storm type (Type II). Sub-Basin I was not evaluated due to the reduction in impervious area. The runoff volume and peak-flow rates decrease from pre-development to post-development negating the need for any additional stormwater detention structures in this area. Required detention pond storage volumes are presented in Tables 3 & 4 below.

| Table 3. Sub-Basin II Required Detention Volume | | |
|---|---|---|
| Drainage Area | 3.824 | acres |
| Peak Inflow Discharge | 27.07 | cfs |
| Desired Peak Outflow Discharge | 20.24 | cfs |
| Runoff Q (Post-Dev.) | 5.68 | inches |
| Storm Type | II | |
| Required Storage Volume | 0.3715 | ac-ft |

| Table 4. Sub-Basin III Required Detenion Volume | | |
|---|---|---|
| Drainage Area | 11.826 | acres |
| Peak Inflow Discharge | 66.49 | cfs |
| Desired Peak Outflow Discharge | 51.04 | cfs |
| Runoff Q (Post-Dev.) | 4.3 | inches |
| Storm Type | II | |
| Required Storage Volume | 0.824 | ac-ft |

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## 2.6 Detention Pond Elevation – Storage Curve

The preliminary detention pond sizing was utilized to ensure each pond had adequate storage capacity to pass the required design storms. The elevation storage tables for each detention pond can be seen in Appendix C. Each detention pond was design to account for 2' of sediment storage in the bottom of the pond, and to maintain a normal operating water level of at least 3' above the sediment storage elevation. Comparing the results of the elevation storage tables and the required storage tables, it can be seen that both pond sizes are adequate for the 2YR & 100YR storm events.

## 2.7 Outlet Structures

2'x2' Concrete outlet structures will be utilized for both detention ponds. The outlet structures sketch and typical details can be seen in Appendix C. The outlet structures both utilize a 4" drain pipe that acts as an orifice to handle flow from higher probability storm events. The top of the structure will have a grate on top of it to prevent clogging but to also allow for flow from lower probability storm events. The outlet structures are to have high performance turf reinforcement matting surrounding them to prevent erosion. A trapezoidal weir is to be utilized as an emergency overflow, in the event that the principle outlet structure clogs or is not able to function properly. The emergency spillway is situation so any flow will not be a nuisance to neighboring properties and so the resulting overflow remains on the intended water path. The emergency spillway is also to be lined with high performance turf reinforcement matting. Stage discharge curves can be seen in Appendix C.

## 2.8 Hydrograph Development

Hydrographs were developed for sub-basin II & sub-basin III for the following scenarios:

- 2 Year Storm Event
    - Pre-development Hydrograph (Appendix B).
    - Post-development Hydrograph (Appendix D).
    - Post-development with volumetric detention hydrograph (Appendix D/E).

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- 100 Year Storm Event
    - Pre-development Hydrograph (Appendix B).
    - Post-development Hydrograph (Appendix D)
    - Post-development with volumetric detention hydrograph (Appendix D/E).

## 2.9 Critical Duration Analysis

"The volumetric design procedure determines the maximum rate of runoff that can be released from a development based on the development characteristics and the timing of the overall watershed, or the critical time period. The critical time period begins at the time of maximum rainfall intensity and ends at the time of peak flow at a critical downstream location" (Milwaukee Metropolitan Sewer District, Ch. 13). The critical time period for major watercourses within the districts planning area were provided in Table 2-6 of Milwaukee Metropolitan Sewer District's Stormwater Guidance Manual, and can be seen below.

| Basin | Length of Critical Period (hr.) |
|---|---|
| Fish Creek | 1.5 |
| Fox River | 12 |
| Kinnickinnic River | 1.75 |
| Lake Michigan Direct Drainage | 1.5 |
| Lincoln Creek | 12 |
| Menomonee River | 9.5 |
| Milwaukee River (1) | 12 |
| Oak Creek | 15 |
| Oak Creek (2) | 6 |
| Root River | 7.75 |

(1) Includes Brown Deer Park Creek, Indian Creek, South Branch Creek, and Beaver Creek.

(2) Upstream of Puetz Road in the City of Oak Creek.

**Table 2-6**
Critical time periods for major watercourses within the District's planning area.

175 RAY AVE NE
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This development is located in the Menomonee River Watershed, therefore a critical time period of 9.5 Hours was used in the evaluation of the detention facility. Evaluating the hydrograph's and using the critical time period of 11:00 – 20:30, it can be seen that the total routed post-development runoff rate for each design storm is equal to or less than the pre-development condition. This satisfies the detention requirement under the volumetric design procedure. The hydrographs and results from the volumetric design procedure can be seen in Appendix F.

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# Appendix A – Site Information Exhibits:

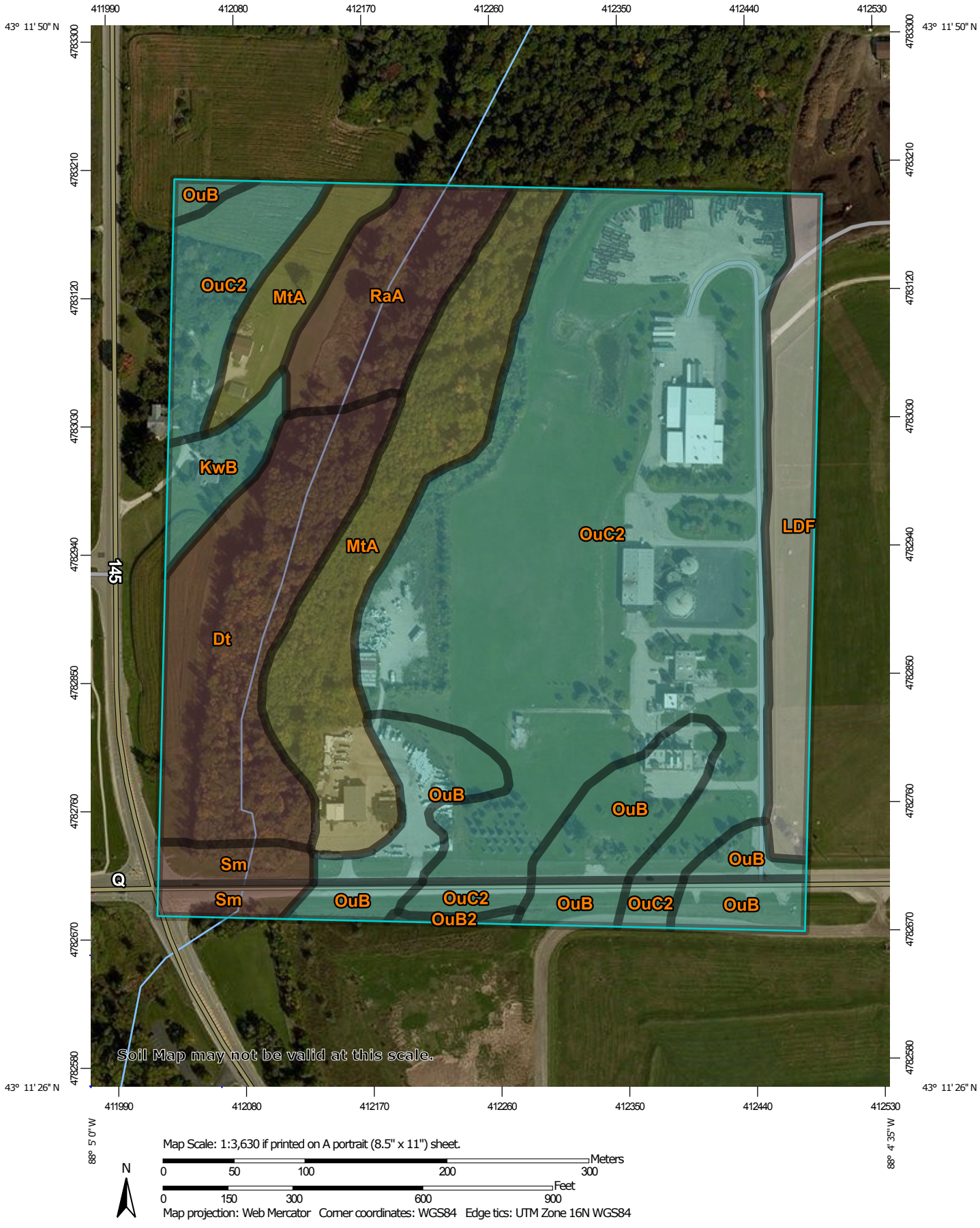
**SEE ATTACHED SIZE 'D' PLAN SHEETS**

**1. Existing Site Conditions**

**2. Proposed Site Plan**

# Appendix B - Site Soils Information

Hydrologic Soil Group—Milwaukee and Waukesha Counties, Wisconsin, and Washington County, Wisconsin
(GERMANTOWN SWMP)



## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Lines**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Points**
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**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 14, Sep 12, 2018

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 18, Sep 12, 2018

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 7, 2014—Sep 22, 2014

# Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| OuB | Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes | C | 1.8 | 3.1% |
| OuB2 | Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes, eroded | C | 0.1 | 0.2% |
| OuC2 | Ozaukee silt loam, high carbonate substratum, 6 to 12 percent slopes, eroded | C | 0.8 | 1.4% |
| Sm | Sebewa silt loam, 0 to 2 percent slopes | B/D | 0.6 | 1.0% |
| **Subtotals for Soil Survey Area** | | | **3.3** | **5.7%** |
| **Totals for Area of Interest** | | | **58.5** | **100.0%** |

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| Dt | Drummer silt loam, gravelly substratum | B/D | 6.8 | 11.5% |
| KwB | Knowles silt loam, 1 to 6 percent slopes | C | 1.2 | 2.1% |
| LDF | Landfill | | 3.6 | 6.1% |
| MtA | Mequon silt loam, 1 to 3 percent slopes | C/D | 8.2 | 14.1% |
| OuB | Ozaukee silt loam, high carbonate substratum, 2 to 6 percent slopes | C | 4.4 | 7.4% |
| OuC2 | Ozaukee silt loam, high carbonate substratum, 6 to 12 percent slopes, eroded | C | 26.8 | 45.8% |
| RaA | Radford silt loam, 0 to 3 percent slopes | B/D | 3.4 | 5.9% |
| Sm | Sebewa silt loam, 0 to 2 percent slopes | B/D | 0.8 | 1.3% |
| **Subtotals for Soil Survey Area** | | | **55.2** | **94.3%** |
| **Totals for Area of Interest** | | | **58.5** | **100.0%** |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher

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# Appendix C – Pre-Development Hydrology

| Table C1. Existing Conditions Land Usage | | | | | |
|---|---|---|---|---|---|
| Sub-Basin | Land Use | Soil Type | Area (Acres) | CN | % Area |
| 1 | Gravel Streets / Parking Area | C | 0.034 | 89 | 0.59 |
| | Paved Lots, Roofs, Driveways | C | 1.899 | 98 | 32.87 |
| | Woods (Fair) | C | 0.355 | 73 | 6.14 |
| | Meadow | C | 3.49 | 71 | 60.40 |
| | **TOTALS** | | 5.778 | 80.1 | 100 |
| 2 | Gravel Streets / Parking Area | C | 1.107 | 89 | 28.95 |
| | Woods (Fair) | C | 0.76 | 73 | 19.87 |
| | Meadow | C | 1.957 | 71 | 51.18 |
| | **TOTALS** | | 3.824 | 76.6 | 100.00 |
| 3 | Pond | C | 0.156 | 100 | 1.32 |
| | Paved Lots, Roofs, Driveways | C | 0.731 | 98 | 6.18 |
| | Woods (Fair) | C | 0.815 | 73 | 6.89 |
| | Meadow | C | 10.124 | 71 | 85.61 |
| | **TOTALS** | | 11.826 | 73.2 | 100.00 |

| Table C2. Time of Concentration | |
|---|---|
| Sub-Basin | Existing Time of Concentration (hours) |
| 1 | 0.156 |
| 2 | 0.123 |
| 3 | 0.208 |

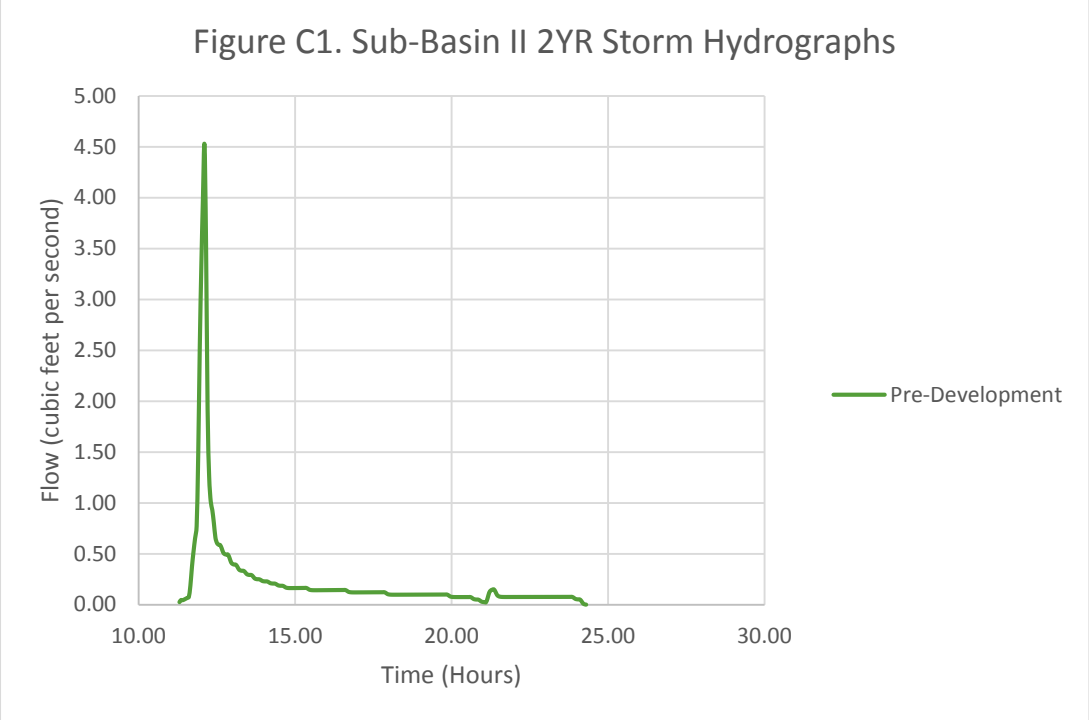
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| Table C3. Peak Flow (2YR Storm) | | |
|---|---|---|
| Sub-Basin | Existing Site Peak Flow (CFS) | Existing Site Runoff (inches) |
| 1 | 7.82 | 1.00 |
| 2 | 4.52 | 0.82 |
| 3 | 9.426 | 0.66 |

| Table C4. Peak Flow (100YR Storm) | | |
|---|---|---|
| Sub-Basin | Existing Site Peak Flow (CFS) | Existing Site Runoff (inches) |
| 1 | 31.6 | 4.61 |
| 2 | 20.24 | 3.8 |
| 3 | 51.048 | 3.45 |



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Figure C2. Sub-Basin II 100YR Storm Hydrographs

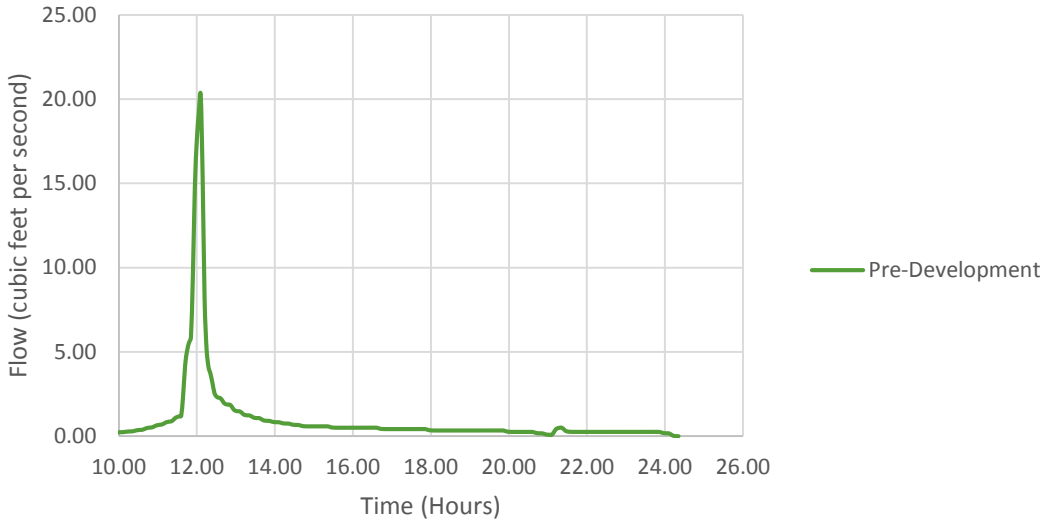
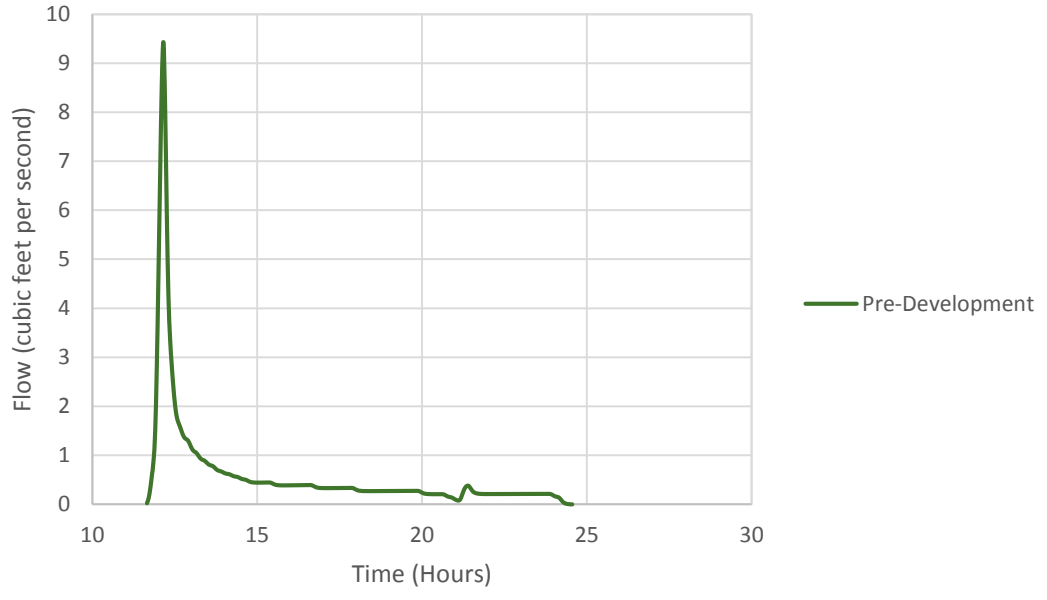


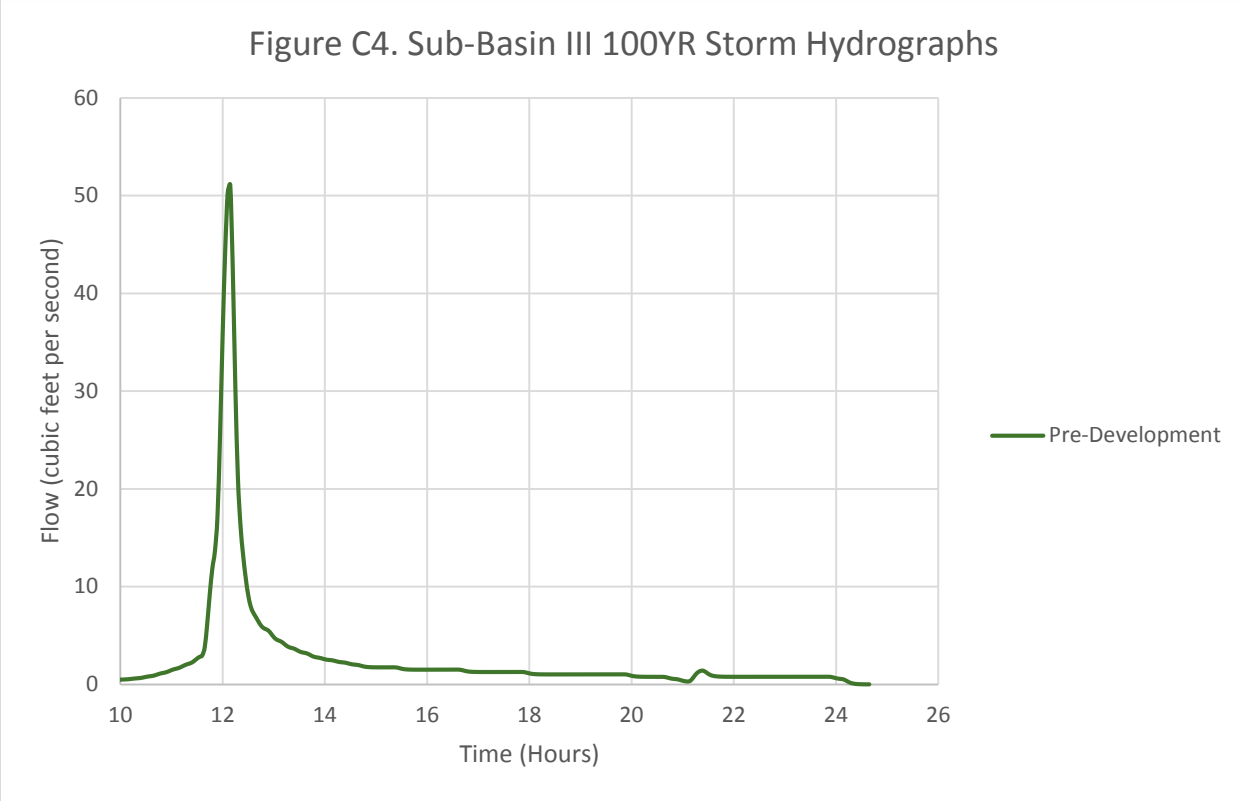

Figure C3. Sub-Basin III 2YR Storm Hydrographs



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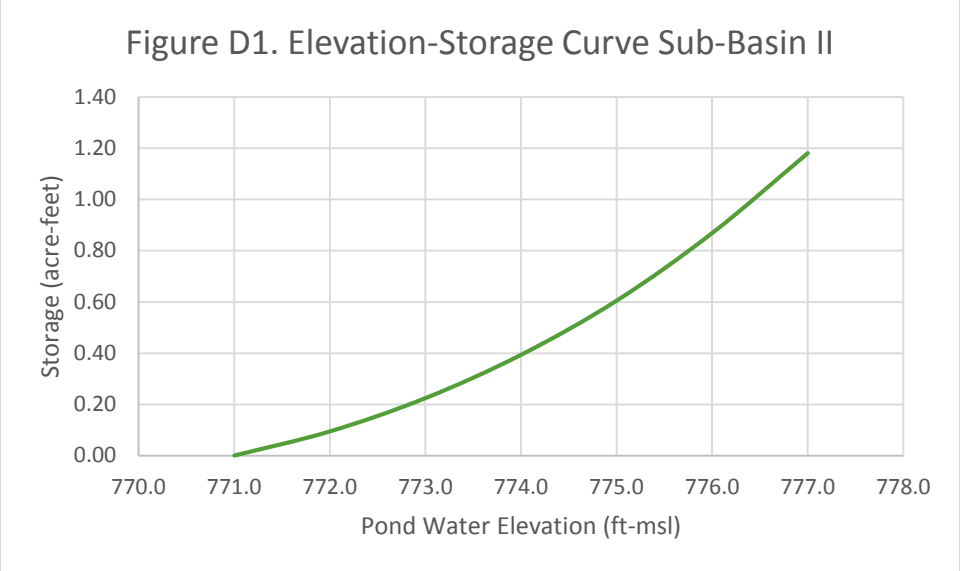
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# Appendix D – Pond & Outlet Structure Details

| Table D1. Elevation Storage Table - Sub-Basin II Detention Pond | | | | | |
|---|---|---|---|---|---|
| Water Elev | Storage AcreFt | Storage CY | Storage CF | Area Acres | Area S.F. |
| 771.0 | 0.00 | 0.0 | 0.0 | 0.08 | 3385.4 |
| 772.0 | 0.09 | 152.4 | 4113.5 | 0.11 | 4870.1 |
| 773.0 | 0.22 | 362.3 | 9781.0 | 0.15 | 6491.1 |
| 774.0 | 0.39 | 635.1 | 17148.3 | 0.19 | 8269.7 |
| 775.0 | 0.61 | 976.4 | 26362.6 | 0.23 | 10183.7 |
| 776.0 | 0.87 | 1402.7 | 37871.9 | 0.29 | 12519.2 |
| 777.0 | 1.18 | 1905.9 | 51460.3 | 0.34 | 14693.1 |
| Pond Bottom | | 769 | Sediment Storage Depth | | 2' |
| Avg. Pool Elev. | | 774.0 | Avg. Water Depth | | 3' |
| Top Elev. | | 777.0 | Total Avg. Depth | | 5' |

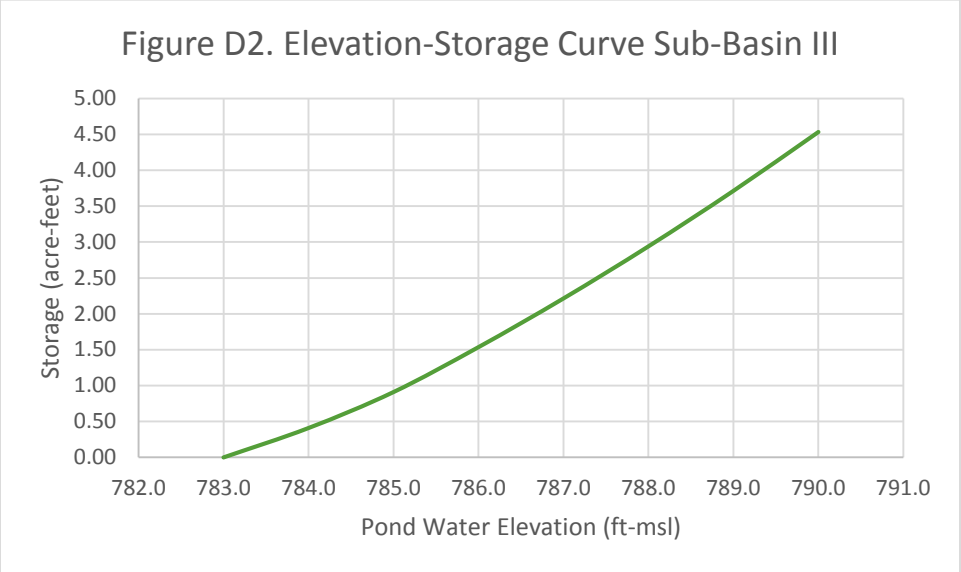


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| Table D2. Elevation Storage Table - Sub-Basin III Detention Pond | | | | | |
|---|---|---|---|---|---|
| Water Elev | Storage Acre-Ft | Storage CY | Storage CF | Area Acres | Area S.F. |
| 783.0 | 0.00 | 0.0 | 0.0 | 0.37 | 16199.1 |
| 784.0 | 0.41 | 660.7 | 17839.0 | 0.45 | 19523.9 |
| 785.0 | 0.91 | 1468.7 | 39653.7 | 0.55 | 23857.3 |
| 786.0 | 1.54 | 2478.0 | 66905.6 | 0.65 | 28501.9 |
| 787.0 | 2.21 | 3572.2 | 96450.7 | 0.70 | 30580.1 |
| 788.0 | 2.94 | 4742.8 | 128055.1 | 0.75 | 32625.4 |
| 789.0 | 3.71 | 5989.5 | 161715.2 | 0.80 | 34695.3 |
| 790.0 | 4.53 | 7312.8 | 197446.6 | 0.84 | 36768.0 |
| Pond Bottom | | 781 | Sediment Storage Depth | | 2' |
| Avg. Pool Elev. | | 786.0 | Avg. Water Depth | | 3' |
| Top Elev. | | 790.0 | Total Avg. Depth | | 5' |

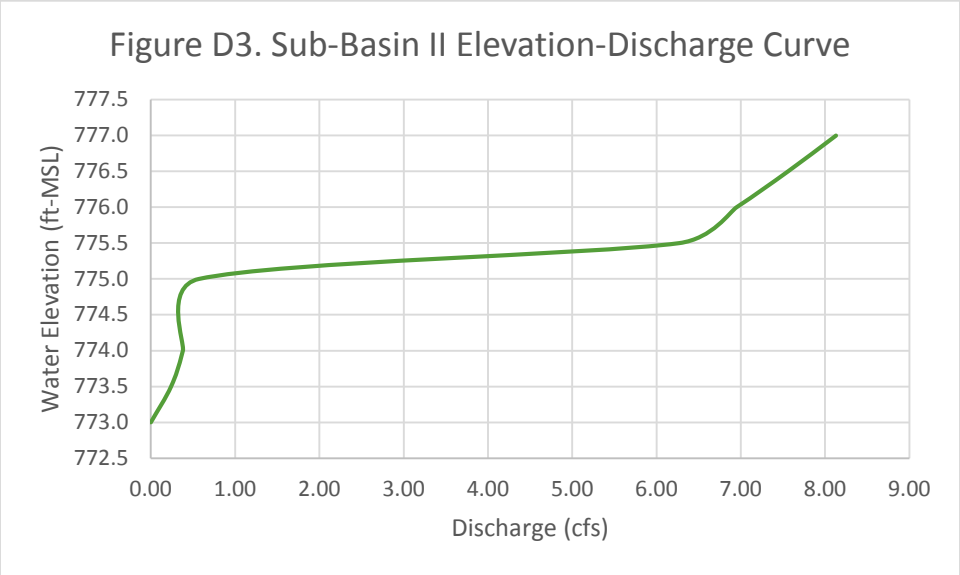


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| Table D3. Elevation Storage Curve Sub-Basin II Detention Pond | | |
|---|---|---|
| Water Elev | Stage | Discharge (CFS) |
| 773.0 | 0.00 | 0.00 |
| 773.5 | 0.50 | 0.24 |
| 774.0 | 1.00 | 0.38 |
| 775.0 | 1.50 | 0.57 |
| 775.5 | 2.00 | 6.27 |
| 776.0 | 2.50 | 6.95 |
| 776.5 | 3.00 | 7.56 |
| 777.0 | 3.50 | 8.13 |

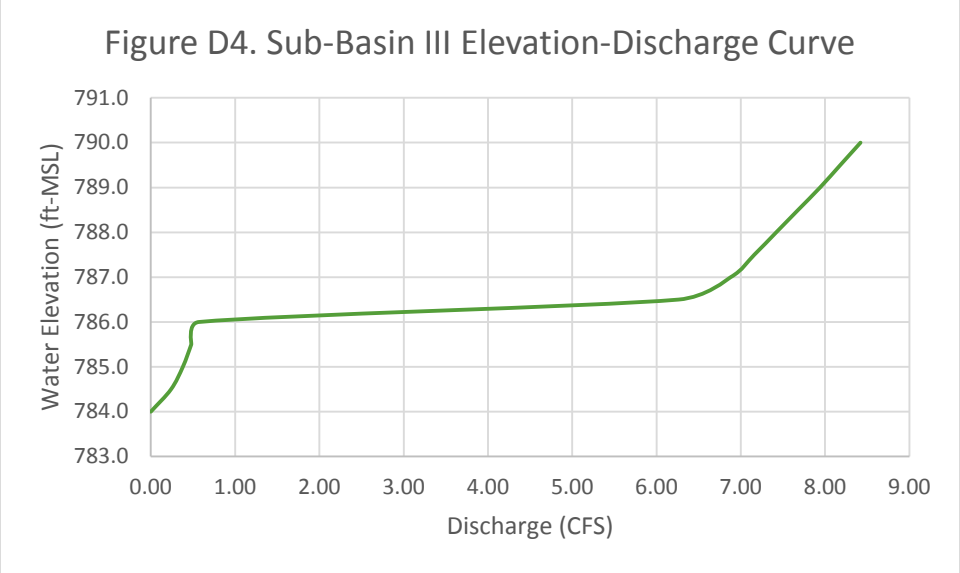


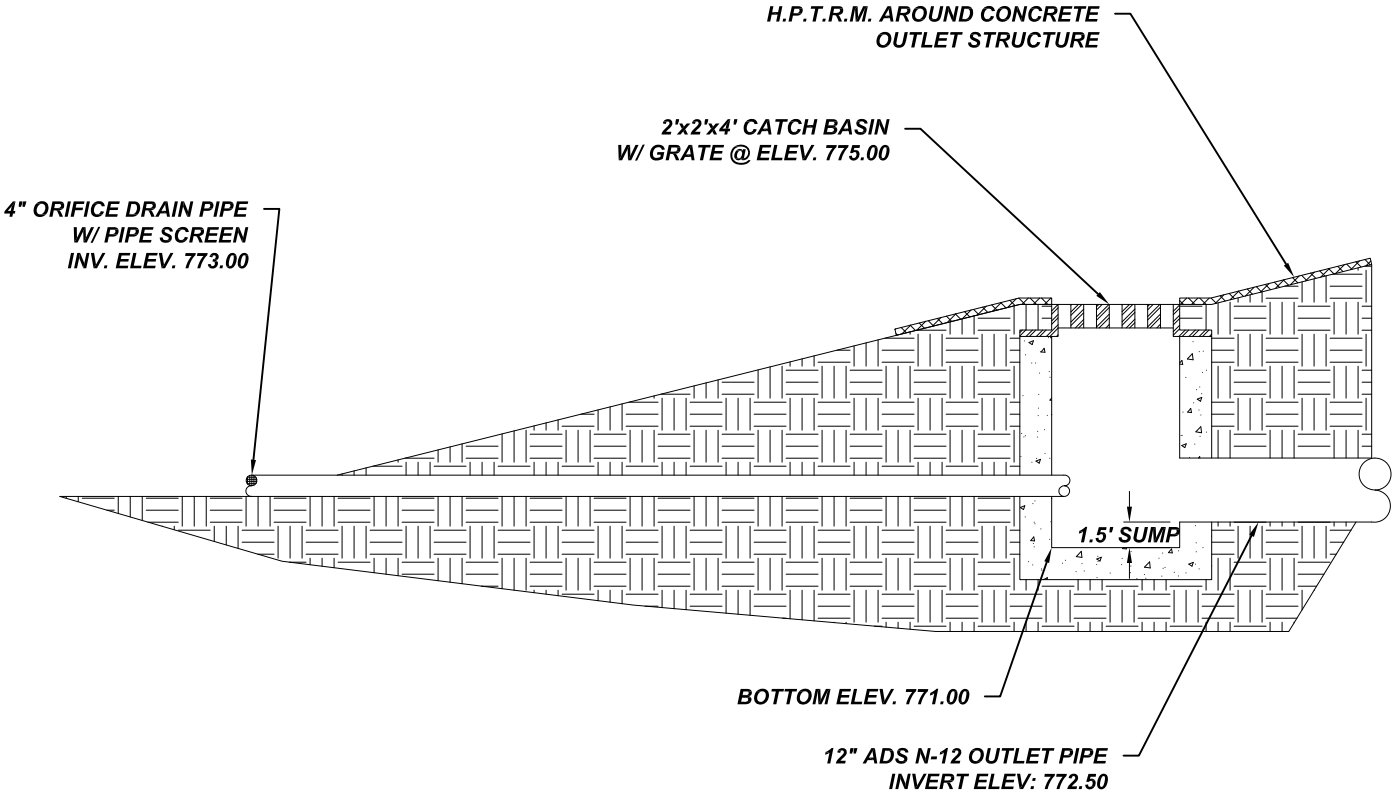
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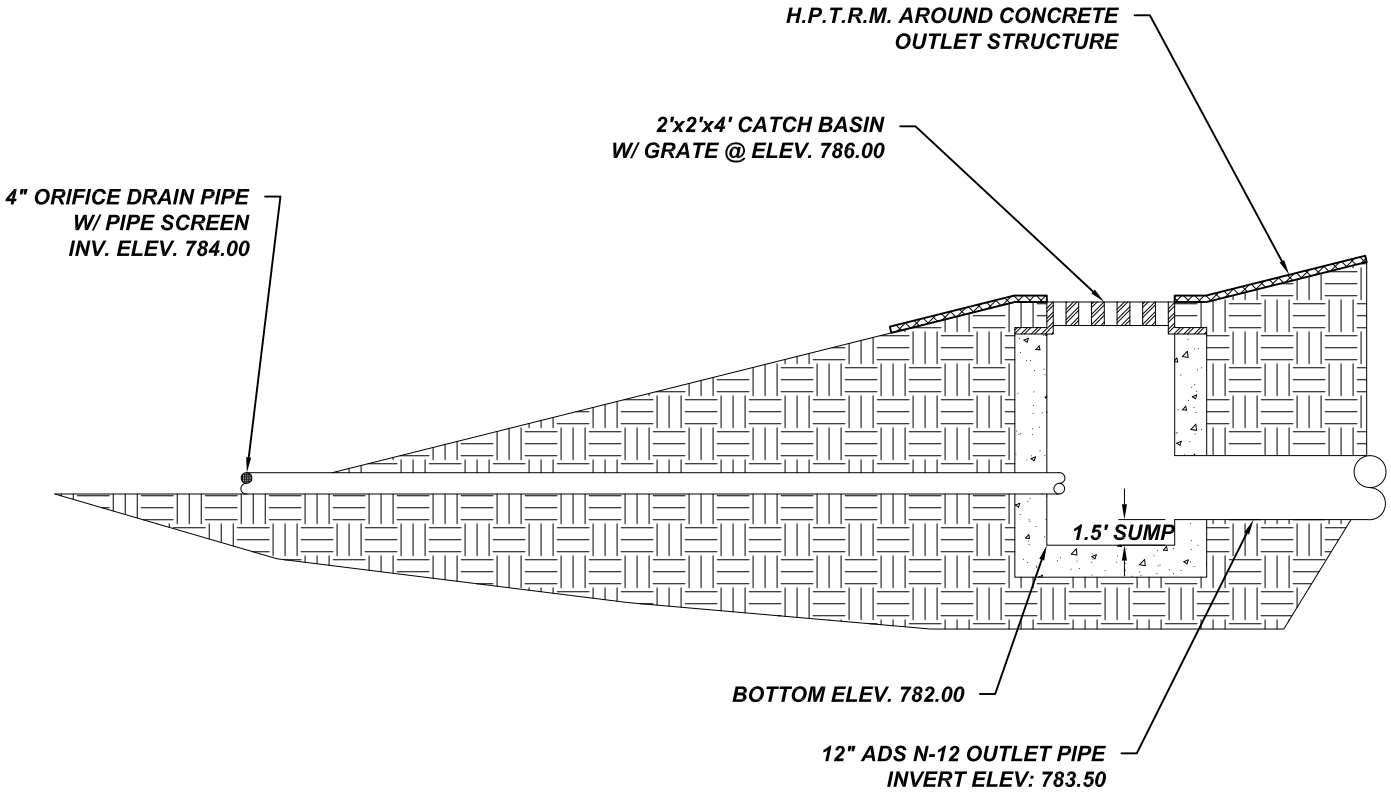
| Table D4. Elevation Storage Curve Sub-Basin II Detention Pond | | |
|---|---|---|
| Water Elev | Stage | Discharge (CFS) |
| 784.0 | 0.00 | 0.00 |
| 784.5 | 0.50 | 0.24 |
| 785.0 | 1.00 | 0.38 |
| 785.5 | 1.50 | 0.48 |
| 786.0 | 2.00 | 0.57 |
| 786.5 | 2.50 | 6.26 |
| 787.0 | 3.00 | 6.88 |
| 787.5 | 3.50 | 7.16 |
| 788.0 | 4.00 | 7.42 |
| 788.5 | 4.50 | 7.68 |
| 789.0 | 5.00 | 7.94 |
| 789.5 | 5.50 | 8.18 |
| 790.0 | 6.00 | 8.42 |






## TYPICAL DETAIL

# POND OUTLET STRUCTURE I




## TYPICAL DETAIL

# POND OUTLET STRUCTURE II

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# Appendix E -Post-Development Hydrology

| Table E1. Developed Conditions | | | | | |
|---|---|---|---|---|---|
| Sub-Basin | Land Use | Soil Type | Area (Acres) | CN | % Area |
| 1 | Herbaceous Mixture (fair) | C | 0.202 | 81 | 3.50 |
| | Paved Lots, Roofs, Driveways | C | 1.275 | 98 | 22.07 |
| | Meadow | C | 4.301 | 73 | 74.44 |
| | **TOTALS** | | 5.778 | 77.3 | 100 |
| 2 | Herbaceous Mixture (fair) | C | 0.083 | 81 | 1.99 |
| | Paved Lots, Roofs, Driveways | C | 2.83 | 98 | 68.01 |
| | Pond | C | 0.337 | 100 | 8.10 |
| | Meadow | C | 0.911 | 71 | 21.89 |
| | **TOTALS** | | 4.161 | 93.8 | 100.00 |
| 3 | Pond | C | 0.558 | 100 | 4.72 |
| | Paved Lots, Roofs, Driveways | C | 6.42 | 98 | 54.29 |
| | Meadow | C | 4.848 | 71 | 40.99 |
| | **TOTALS** | | 11.826 | 87 | 100.00 |

| Table E2. Time of Concentration | |
|---|---|
| Sub-Basin | Proposed Conditions Time of Concentration (Hours) |
| 1 | 0.214 |
| 2 | 0.095 |
| 3 | 0.155 |

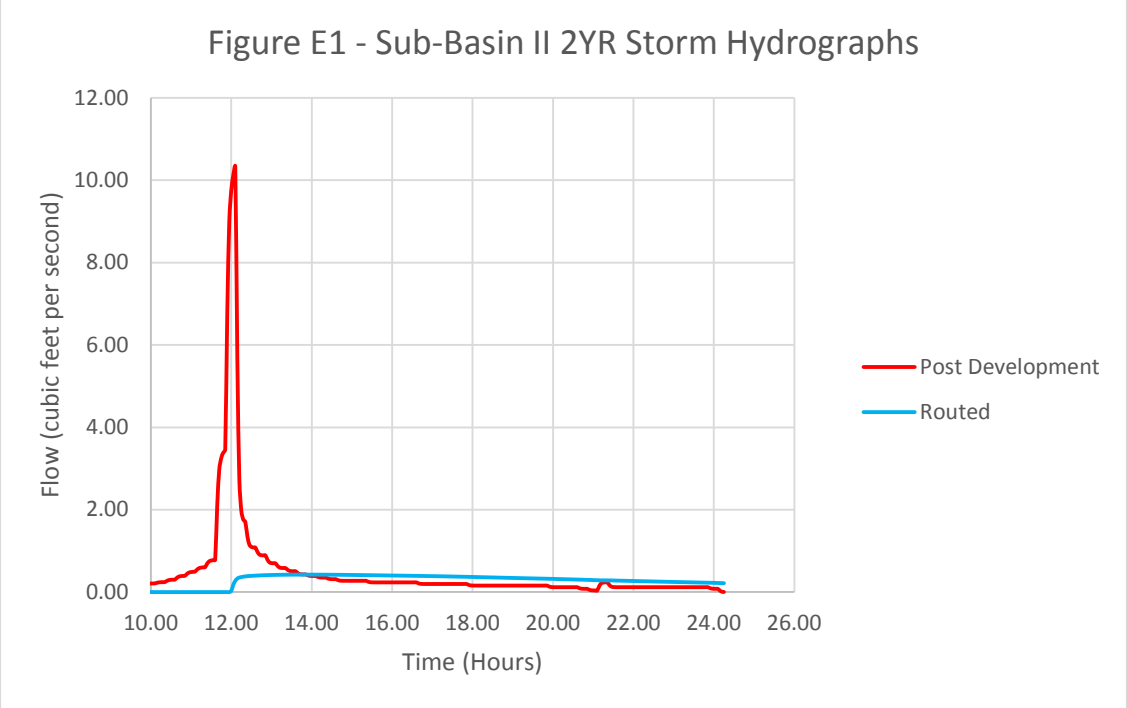
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| Table E3. Peak Flow (2YR Storm) | | |
|---|---|---|
| Sub-Basin | Proposed Site Peak Flow (CFS) | Proposed Site Runoff (inches) |
| 1 | 6.091 | 0.85 |
| 2 | 10.33 | 1.99 |
| 3 | 17.269 | 1.08 |

| Table E4. Peak Flow (100YR Storm) | | |
|---|---|---|
| Sub-Basin | Proposed Site Peak Flow (CFS) | Proposed Site Runoff (inches) |
| 1 | 27.48 | 3.87 |
| 2 | 27.07 | 5.68 |
| 3 | 66.49 | 4.30 |



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Figure E2 . Sub-Basin II 100YR Storm Hydrographs

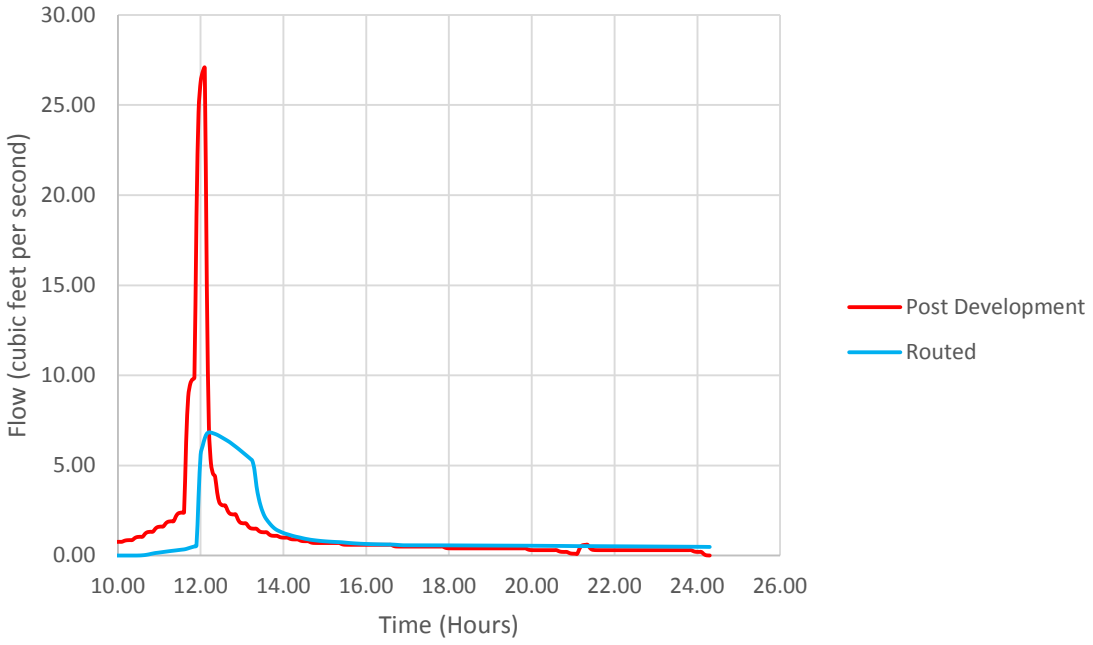
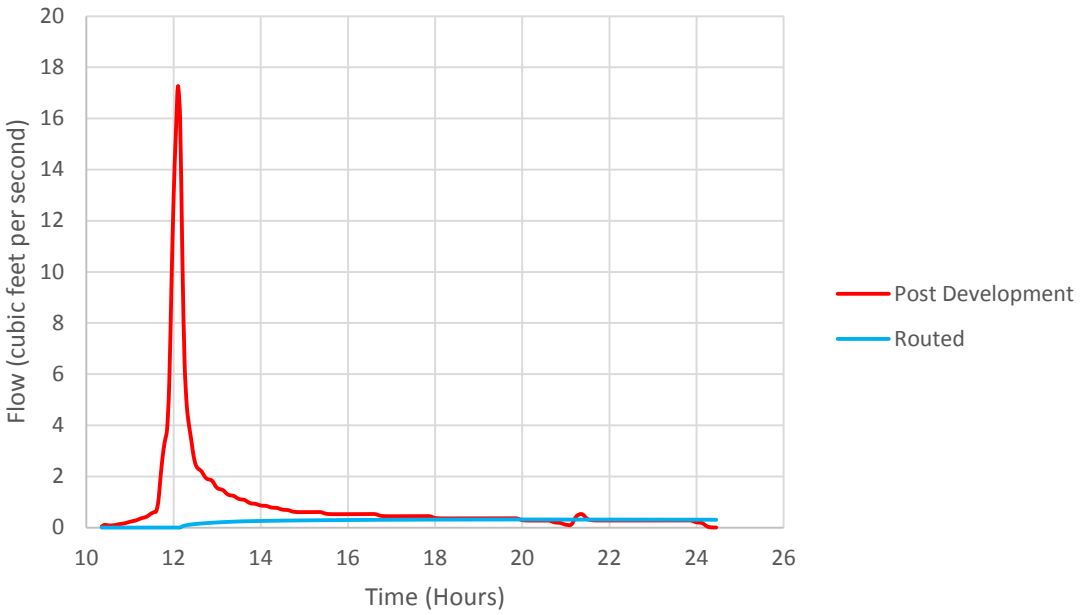


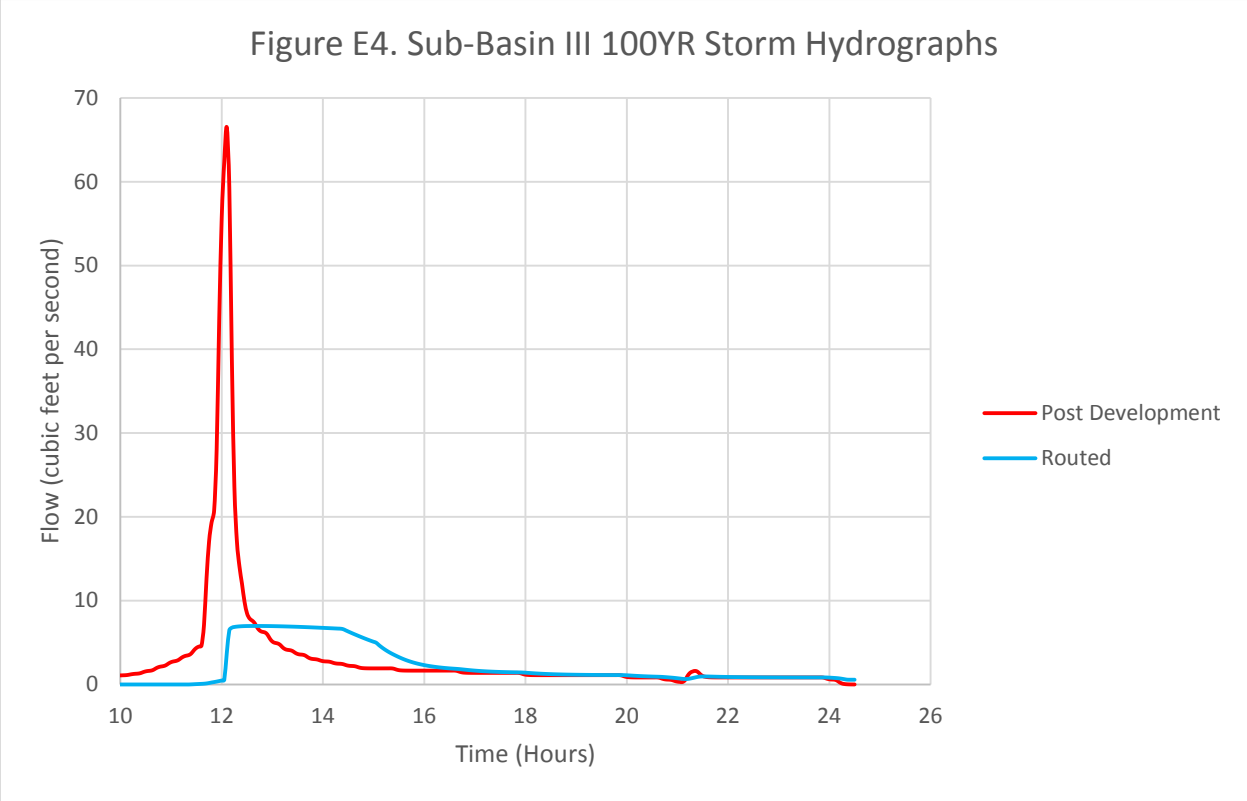

Figure E3 - Sub-Basin III 2YR Storm Hydrographs



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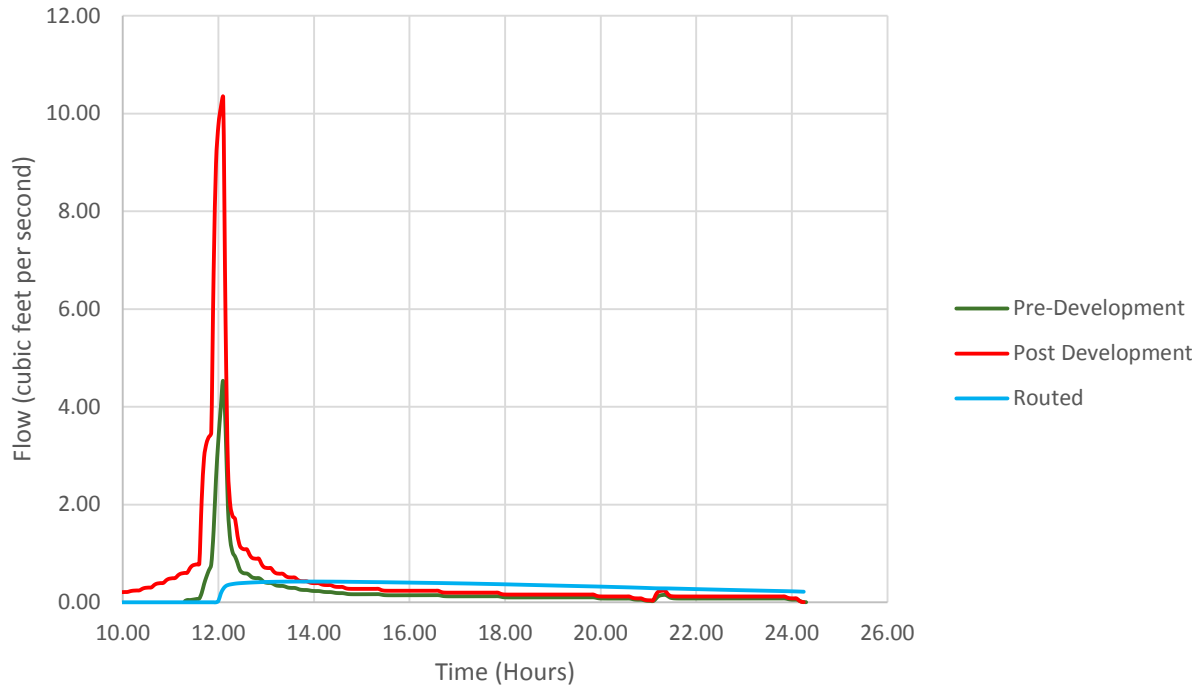
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# Appendix F -Post-Development Detention & WQ Results

Figure F1. Sub-Basin II - 2YR Storm Hydrographs

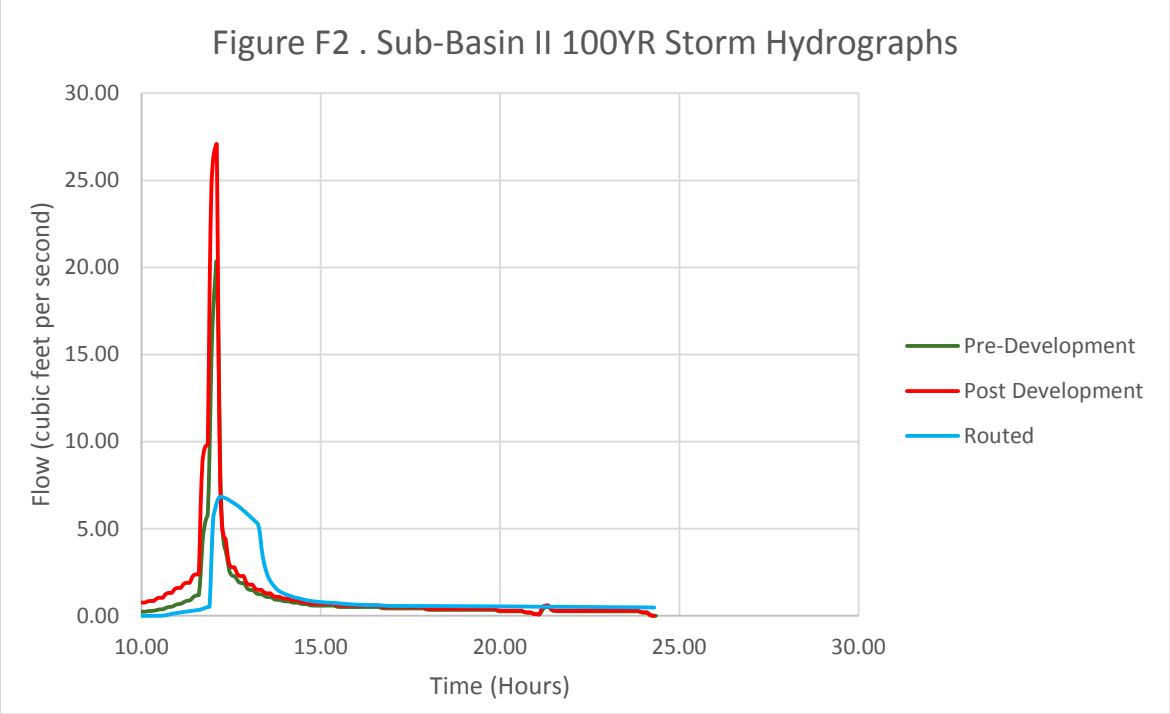



| Table F1. Sub-Basin II 2YR Storm Results | | |
|---|---|---|
| Description | Quantity | Units |
| Existing Peak Flow Rate | 4.52 | cfs |
| Developed Peak Flow Rate | 10.33 | cfs |
| Routed Peak Flow Rate | 0.42 | cfs |
| Max Pond Water Elevation | 774.19 | ft-msl |
| Existing Volumetric Runoff | 0.27 | ac-ft |
| Routed Volumetric Runoff | 0.24 | ac-ft |
| Critical Time Duration | 9.5 | hrs |

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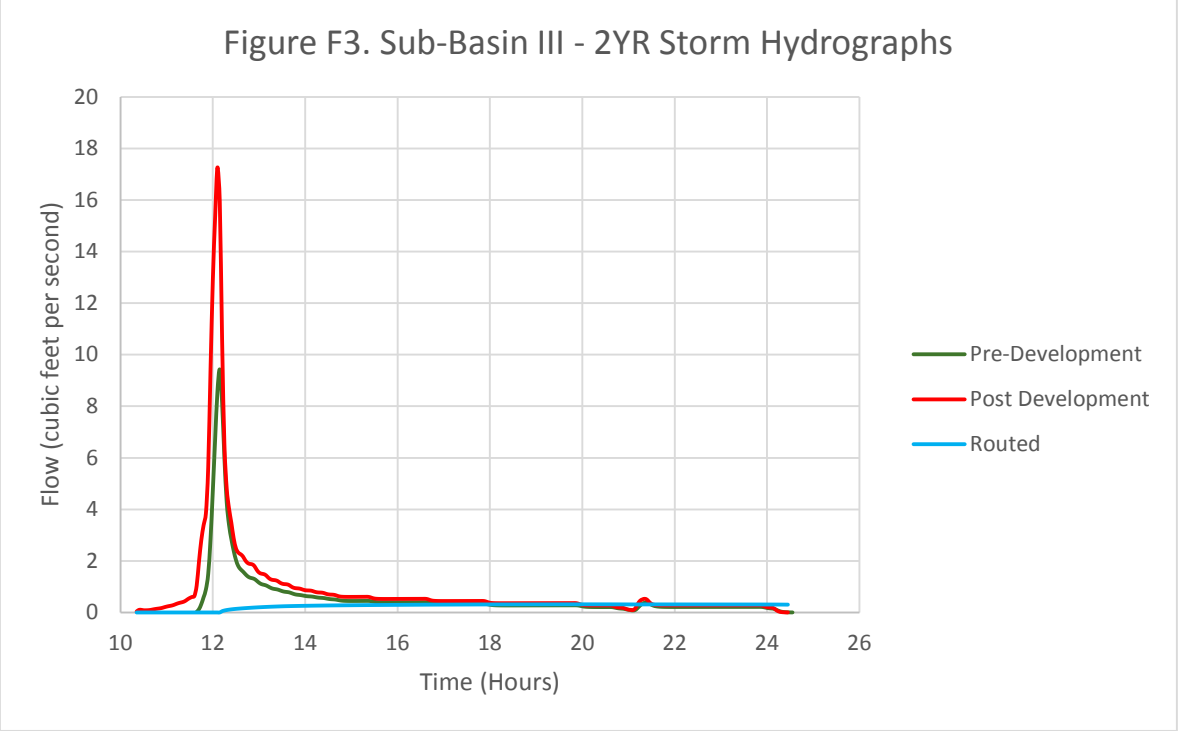



| Table F2. Sub-Basin II 100YR Storm Results | | |
|---|---|---|
| Description | Quantity | Units |
| Existing Peak Flow Rate | 20.24 | cfs |
| Developed Peak Flow Rate | 27.07 | cfs |
| Routed Peak Flow Rate | 6.83 | cfs |
| Max Pond Water Elevation | 776.41 | ft-msl |
| Existing Volumetric Runoff | 1.19 | ac-ft |
| Routed Volumetric Runoff | 1.08 | ac-ft |
| Critical Time Duration | 9.5 | hrs |

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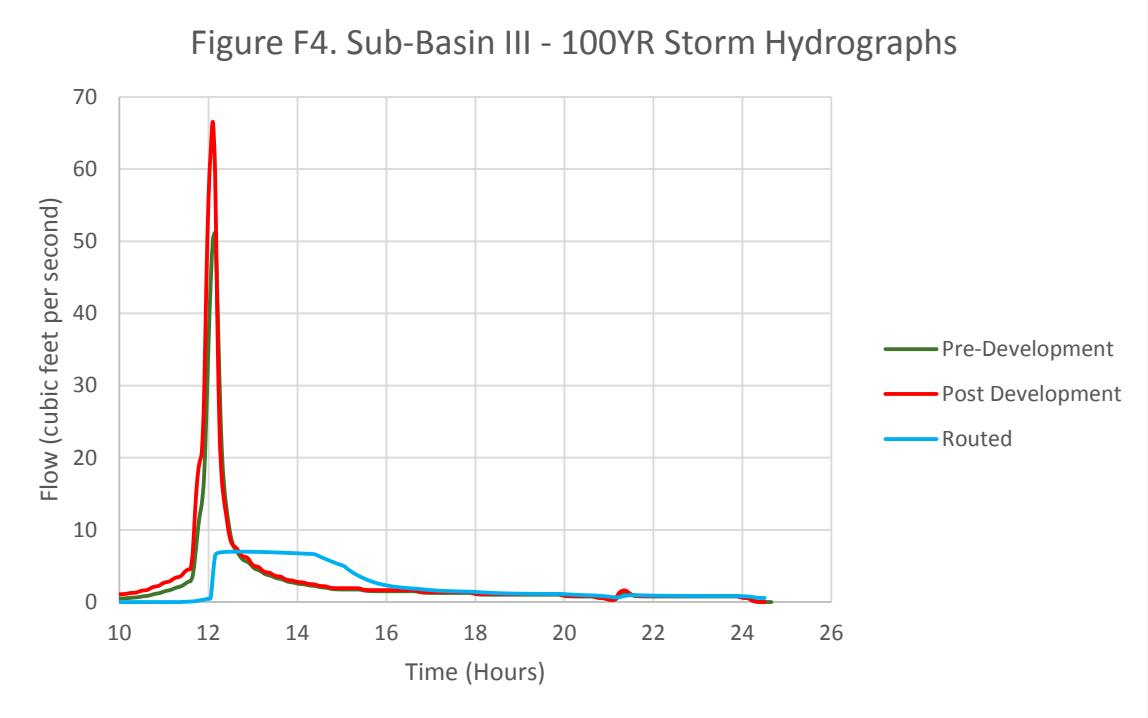



| Table F3. Sub-Basin III 2YR Storm Results | | |
|---|---|---|
| Description | Quantity | Units |
| Existing Peak Flow Rate | 9.43 | cfs |
| Developed Peak Flow Rate | 17.27 | cfs |
| Routed Peak Flow Rate | 0.32 | cfs |
| Max Pond Water Elevation | 784.74 | ft-msl |
| Existing Volumetric Runoff | 0.58 | ac-ft |
| Routed Volumetric Runoff | 0.19 | ac-ft |
| Critical Time Duration | 9.5 | hrs |

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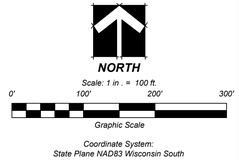

| Table F4. Sub-Basin III 100YR Storm Results | | |
|---|---|---|
| Description | Quantity | Units |
| Existing Peak Flow Rate | 51.05 | cfs |
| Developed Peak Flow Rate | 66.49 | cfs |
| Routed Peak Flow Rate | 6.98 | cfs |
| Max Pond Water Elevation | 787.19 | ft-msl |
| Existing Volumetric Runoff | 3.08 | ac-ft |
| Routed Volumetric Runoff | 2.41 | ac-ft |
| Critical Time Duration | 9.5 | hrs |

# Appendix A. Existing Site Conditions




**EXISTING CONDITIONS PLAN**

*Scale: 1" = 100'*




## GENERAL NOTES:

A. *All existing utilities are shown herein as reference only and are based on record of the various utility companies and a field survey. Contractor is responsible for determining the exact locations of all utilities prior to any construction activities.*

B. *All existing conditions, topography, utilities, and property information are taken from a survey of land situated in the City of Sterling, county of Loudoun, State of Virginia, by surveyors: Construction Quality Management, Inc., 2679 Continental Drive, Green Bay, WI. 54311, ph: (920) 465-3911, fx: (920) 465-3913 and Diversified Engineering, Inc., 175 Ray Avenue, NE, New Philadelphia, OH. 44663. ph: (330) 364-1631, fx: (330) 364-4031.*

ISSUE DATE 01/04/2018 | SCALE 1" = 100' | CTR INT. 2"
SURVEYED BY COM | CHECKED BY KJB
DRAWN BY EDW | APPROVED BY MJB

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |


Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS
175 RAY AVENUE, N.E.
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Phone: (330) 364-1631
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Web: www.vdeg.com


**WASTE MANAGEMENT**

PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *EXISTING CONDITIONS PLAN*

SHEET NO: **1/1**

JOB NO: ENG-1465


C:\Acrtv Docs\Docs\DOCS\ENG\ENG-1465 WM Maintenance Fclty - WI (Existing Facility)\Drawings\Construction Set Plan_ENG-1465.dwg

# Appendix A. SWMP Site Plan

NORTH

Scale: 1 in. = 50 ft.

0' 50' 100' 150'

Graphic Scale

Coordinate System:
State Plane NAD83 Wisconsin South

**LEGEND:**

- Silt Fence
- Inlet Protection
- Construction Entrance
- Staging / Stockpile Area
- Material Stockpile
- Riprap Outlet Protection
- Concrete Wash-out Area
- Concrete Wash-out Area

COUNTY LINE ROAD - C.T.H. Q

Proposed Perimeter Silt Fence

Maintain Existing Entrance for Construction Entrance

Construction Staging / Material Stockpile Area

Outlet Protection:
-Minimum 20 LF along ditch
-Extend sides to top of ditch or 12" above outlet elevation

110 LF @ 2.4% - 18" SDR-35 CULVERT

FL ELEV. @ OUTLET 774.50

±40 LF - 12" SDR-35 Storm

Detention Pond Outlet Structure To Daylight Into Proposed Spillway Ditch ~ Elev. 772.00

Rip Rap Line Emergency Spill-way Channel Outlet

Concrete Emergency Spill-way Elev. 776.00

Prop. 2x2 Outlet Structure (OS-01)
Top Grate = 775.00
Inv. In = 773.00 (4" Orifice - E)
Inv. Out = 772.50 (12" - S)
Bottom of Sump = 771.00

High-Performance Turf Reinforcement Mat (HPTRM)

RETENTION POND

Stormwater Retention Pond
Top Berm Elev: 777.00
Top Water Elev: 774.00
Bottom Elev: 769.00
Storage Capacity: 0.87 Ac-Ft

RETENTION POND FOREBAY

Outlet Protection:
-Minimum 20 LF along ditch
-Extend sides to top of ditch or 12" above outlet elevation

FL ELEV. @ OUTLET 780.00

±50 LF - 12" SDR-35 Storm

Prop. 4' Ø Manhole (MH-01)
Top Grate = 790.70
Inv. In = 785.60 (12" - S)
Inv. In = 781.50 (12" - N)
Inv. Out = 780.75 (12" - W)
Bottom of Sump = 780.70

Prop. 2x2 Catch Basin (CB-06)
Top Grate = 791.00
Inv. In = 786.00 (12" - N)
Inv. Out = 786.00 (12" - N)
Bottom of Sump = 785.00

±50 LF - 12" SDR-35 Storm

±185 LF - 12" SDR-35 Storm

±25 LF - 12" SDR-35 Storm

Prop. 2x2 Catch Basin (CB-07)
Top Grate = 785.75
Inv. Out = 782.00 (12" - S)
Bottom of Sump = 781.75

DRAINAGE AREA SUB-BASIN II ~ 3.82 ACRES

Approx. Ex. Wetland Area Boundary Per Wisconsin Wetland Inventory

Ex. Wooded Area

Prop. 2x2 Catch Basin (CB-04)
Top Grate = 778.65
Inv. In = 775.25 (12" - E)
Inv. In = 775.25 (12" - N)
Inv. Out = 775.15 (12" - W)
Bottom of Sump = 774.65

Prop. 2x2 Catch Basin (CB-03)
Top Grate = 781.77
Inv. In = 777.00 (12" - E)
Inv. Out = 776.25 (12" - S)
Bottom of Sump = 775.77

±165 LF - 12" SDR-35 Storm

±110 LF - 12" SDR-35 Storm

±150 LF - 12" SDR-35 Storm

Prop. 2x2 Catch Basin (CB-02)
Top Grate = 782.80
Inv. Out = 779.80 (12" - W)
Bottom of Sump = 778.80

Maintain Existing Entrance for Construction Entrance

OFFICE 75' x 130'

TRUCK INSPECTION CANOPY 120' x 30'

Prop. 2x2 Catch Basin (CB-05)
Top Grate = 790.00
Inv. Out = 787.00 (12" - W)
Bottom of Sump = 786.00

Ex. Sanitary Manhole
Top Rim = 779.85
Inv. Out = 753.56 (48" - E)
Inv. In = 753.58 (48" - W)

Prop. 2x2 Catch Basin (CB-01)
Top Grate = 779.25
Inv. Out = 776.25 (12" - W)
Bottom of Sump = 776.00

Silt Fence

Ex. 3/4" Gas Service

Ex. Lawn

Ex. Flare

Ex. Shed

Ex. Sanitary Manhole
Top Rim = 793.99
Inv. Out = 752.90 (48" - E)
Inv. In = 784.06 (8" - NE)
Inv. In = 752.92 (48" - W)

TRUCK MAINTENANCE 250' x 100'

Ex. Lawn

Prop. 2x2 Catch Basin (CB-09)
Top Grate = 793.50
Inv. In = 789.75 (12" - S)
Inv. In = 789.75 (12" - E)
Inv. Out = 789.75 (12" - S)
Bottom of Sump = 789.50

Prop. 2x2 Catch Basin (CB-08)
Top Grate = 794.00
Inv. Out = 791.00 (12" - N)
Bottom of Sump = 790.00

±250 LF - 12" SDR-35 Storm

±195 LF - 12" SDR-35 Storm

Prop. 2x2 Catch Basin (CB-10)
Top Grate = 794.70
Inv. In = 788.75 (12" - E)
Inv. Out = 788.75 (12" - S)
Bottom of Sump = 788.70

±200 LF - 12" SDR-35 Storm

CNG COMPOUND 40' x 70'

±7 LF - 12" SDR-35 Storm

Prop. 4' Ø Manhole (MH-02)
Top Grate = 801.10
Inv. Out = 789.85 (12" - W)
Bottom of Sump = 789.10

L.F.P. SUB-BASIN I

DRAINAGE AREA SUB-BASIN I ~ 5.78 ACRES

Ex. Asphalt

Ex. Building

Ex. Concr.

Ex. Gravel

Ex. Structures

Ex. Lawn

EXISTING SURFACE WATER FLOW LINES (OFF-SITE)

Approx. Ex. Wetland Area Boundary 25' Offset

Proposed Perimeter Silt Fence

Detention Pond Outlet Structure To Daylight Into Proposed Spillway Ditch ~ Elev. 782.00

±75 LF - 12" SDR-35 Storm

Rip Rap Line Emergency Spill-way Channel Outlet

Prop. 2x2 Outlet Structure (OS-02)
Top Grate = 788.00
Inv. In = 784.00 (4" Orifice - E)
Inv. Out = 783.50 (12" - S)
Bottom of Sump = 782.00

Concrete Emergency Spill-way Elev. 787.00

DRAINAGE AREA SUB-BASIN III ~ 11.83 ACRES

Ex. Wooded Area

Proposed Perimeter Silt Fence

High-Performance Turf Reinforcement Mat (HPTRM)

RETENTION POND

Proposed Retention Pond to be used as temporary sediment basin during construction. Sediment build-up to be removed and slopes re-seeded.

L.F.P. SUB-BASIN III

FL ELEV. @ OUTLET 787.00

Construction Staging / Material Stockpile Area

Proposed Concrete Wash-out Area

RETENTION POND FOREBAY

Outlet Protection:
-Minimum 20 LF along ditch
-Extend sides to top of ditch or 12" above outlet elevation.

Outlet Protection:
-Minimum 20 LF along ditch
-Extend sides to top of ditch or 12" above outlet elevation

58 LF @ 2.6% - 18" SDR-35 CULVERT W/ HDPE FLARED ENDS

Silt Fence

Stormwater Retention Pond
Top Berm Elev: 791.00
Top Water Elev: 786.00
Bottom Elev: 779.00
Storage Capacity: 1.54 Ac-Ft

Ex. Gravel

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |

ISSUE DATE 01/30/2018 | SCALE 1" = 50' | CTR INT: 2"
SURVEYED BY COM | CHECKED BY KJB
DRAWN BY AEC | APPROVED BY MJB


Diversified Engineering Inc.
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Web: www.dei-eng.com


**WASTE MANAGEMENT**

PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: STORM WATER MANAGEMENT PLAN

SHEET NO: 1/1

JOB NO: ENG-1465


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# D-Series Size 1
## LED Area Luminaire

Catalog Number

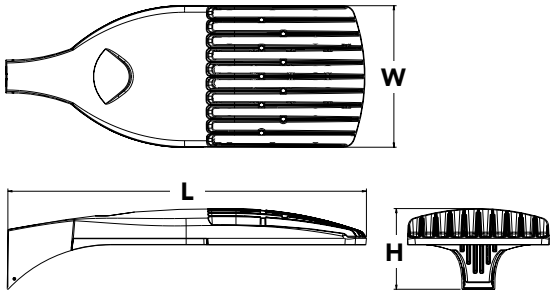
Notes

Type Fixture SA

Hit the Tab key or mouse over the page to see all interactive elements.

### Specifications

| | |
|---|---|
| **EPA:** | 1.01 ft² (0.09 m²) |
| **Length:** | 33″ (83.8 cm) |
| **Width:** | 13″ (33.0 cm) |
| **Height:** | 7-1/2″ (19.0 cm) |
| **Weight (max):** | 27 lbs (12.2 kg) |




## A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

## Ordering Information

**EXAMPLE:** DSX1 LED P7 40K T3M MVOLT SPA DDBXD

| DSX1LED | P3 | 50K | T4M | MVOLT | SPA |
|---|---|---|---|---|---|
| **Series** | **LEDs** | **Color temperature** | **Distribution** | **Voltage** | **Mounting** |

**Series**
DSX1 LED

**LEDs**
**Forward optics**
P1 P4 P7
P2 P5 P8
P3 P6 P9
**Rotated optics**
P10[1] P12[1]
P11[1] P13[1]

**Color temperature**
30K 3000 K
40K 4000 K
50K 5000 K
AMBPC Amber phosphor converted[2]

**Distribution**
T1S Type I short
T2S Type II short
T2M Type II medium
T3S Type III short
T3M Type III medium
T4M Type IV medium
TFTM Forward throw medium
T5VS Type V very short
T5S Type V short
T5M Type V medium
T5W Type V wide
BLC Backlight control[2,3]
LCCO Left corner cutoff[2,3]
RCCO Right corner cutoff[2,3]

**Voltage**
MVOLT[4,5]
120[6]
208[5,6]
240[5,6]
277[6]
347[5,6,7]
480[5,6,7]

**Mounting**
**Shipped included**
SPA Square pole mounting
RPA Round pole mounting
WBA Wall bracket
SPUMBA Square pole universal mounting adaptor[8]
RPUMBA Round pole universal mounting adaptor[8]
**Shipped separately**
KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

### Control options

**Shipped installed**
NLTAIR2 nLight AIR generation 2 enabled[10]
PER NEMA twist-lock receptacle only (controls ordered separate)[11]
PER5 Five-wire receptacle only (controls ordered separate)[11,12]
PER7 Seven-wire receptacle only (controls ordered separate)[11,12]
DMG 0-10V dimming extend out back of housing for external control (leads exit fixture)
DS Dual switching[13,14]
PIR Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRHN Network, Bi-Level motion/ambient sensor[17]
PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,15,16]
PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,15,16]
BL30 Bi-level switched dimming, 30%[5,14,18]
BL50 Bi-level switched dimming, 50%[5,14,18]
PNMTDD3 Part night, dim till dawn[5,19]
PNMT5D3 Part night, dim 5 hrs[5,19]
PNMT6D3 Part night, dim 6 hrs[5,19]
PNMT7D3 Part night, dim 7 hrs[5,19]
FAO Field adjustable output[20]

### Other options

**Shipped installed**
HS House-side shield[21]
SF Single fuse (120, 277, 347V)[6]
DF Double fuse (208, 240, 480V)[6]
L90 Left rotated optics[1]
R90 Right rotated optics[1]
**Shipped separately**
BS Bird spikes[22]
EGS External glare shield[22]

### Finish *(required)*

DDBXD Dark bronze
DBLXD Black
DNAXD Natural aluminum
DWHXD White
DDBTXD Textured dark bronze
DBLBXD Textured black
DNATXD Textured natural aluminum
DWHGXD Textured white


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## Ordering Information

### Accessories

*Ordered and shipped separately.*

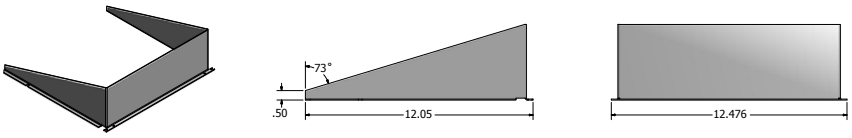
| | |
|---|---|
| DLL127F 1.5 JU | Photocell - SSL twist-lock (120-277V) [23] |
| DLL347F 1.5 CUL JU | Photocell - SSL twist-lock (347V) [23] |
| DLL480F 1.5 CUL JU | Photocell - SSL twist-lock (480V) [23] |
| DSHORT SBK U | Shorting cap [23] |
| DSX1HS 30C U | House-side shield for 30 LED unit[21] |
| DSX1HS 40C U | House-side shield for 40 LED unit[21] |
| DSX1HS 60C U | House-side shield for 60 LED unit[21] |
| PUMBA DDBXD U* | Square and round pole universal mounting bracket (specify finish)[24] |
| KMA8 DDBXD U | Mast arm mounting bracket adaptor (specify finish) [8] |

*For more control options, visit DTL and ROAM online.*

**NOTES**

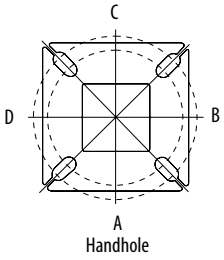
1 P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO or P4, P7, P8, P9 or P13.
3 Not available with HS.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P1 or P10. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR. Node with integral dimming. Shorting cap included.
13 Provides 50/50fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
14 Requires (2) separately switched circuits.
15 Reference Motion Sensor table on page 3.
16 Reference PER table on page 3 to see functionality.
17 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
18 Not available with 347V, 480V, PNMT, DS. For PER5 or PER7, see PER Table on page 3. Requires isolated neutral.
19 Not available with 347V, 480V, DS, BL30, BL50. For PER5 or PER7, see PER Table on page 3. Separate Dusk to Dawn required.
20 Not available with other dimming controls options
21 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
22 Must be ordered with fixture for factory pre-drilling.
23 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
24 For retrofit use only.

## External Glare Shield




## Drilling

### HANDHOLE ORIENTATION

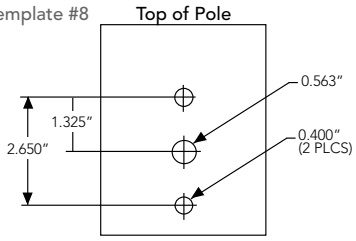



### Tenon Mounting Slipfitter **

| Tenon O.D. | Single Unit | 2 at 180° | 2 at 90° | 3 at 120° | 3 at 90° | 4 at 90° |
|---|---|---|---|---|---|---|
| 2-3/8" | AST20-190 | AST20-280 | AST20-290 | AST20-320 | AST20-390 | AST20-490 |
| 2-7/8" | AST25-190 | AST25-280 | AST25-290 | AST25-320 | AST25-390 | AST25-490 |
| 4" | AST35-190 | AST35-280 | AST35-290 | AST35-320 | AST35-390 | AST35-490 |

| Pole drilling nomenclature: # of heads at degree from handhole (default side A) | | | | | |
|---|---|---|---|---|---|
| DM19AS | DM28AS | DM29AS | DM32AS | DM39AS | DM49AS |
| 1 @ 90° | 2 @ 280° | 2 @ 90° | 3 @ 120° | 3 @ 90° | 4 @ 90° |
| Side B | Side B & D | Side B & C | Round pole only | Side B, C, & D | Sides A, B, C, D |
| Note: Review luminaire spec sheet for specific nomenclature | | | | | |

Template #8

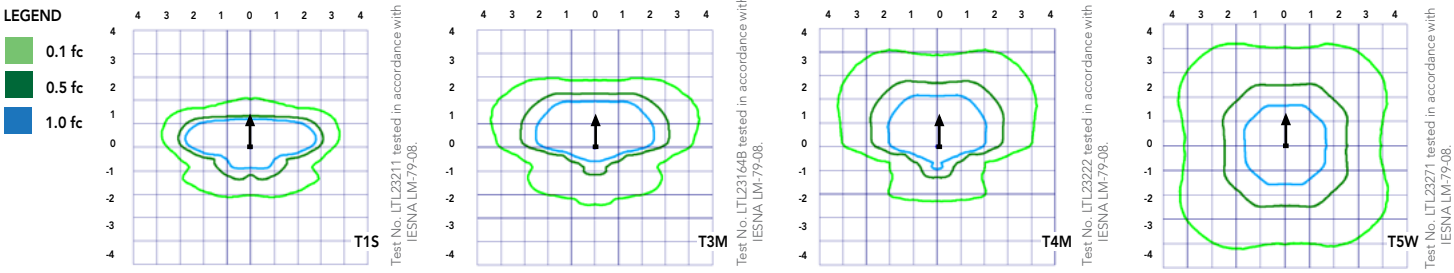



| Pole top or tenon O.D. | 4.5" @ 90° | 4" @ 90° | 3.5" @ 90° | 3" @ 90° | 4.5" @ 120° | 4" @ 120° | 3.5" @ 120° | 3" @ 120° |
|---|---|---|---|---|---|---|---|---|
| DSX SPA | Y | Y | Y | N | - | - | - | - |
| DSX RPA | Y | Y | N | N | Y | Y | Y | Y |
| DSX SPUMBA | Y | N | N | N | - | - | - | - |
| DSX RPUMBA | N | N | N | N | Y | Y | Y | N |
| | | | | | *3 fixtures @120 require round pole top/tenon. | | | |

## Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 1 homepage.

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').






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# Performance Data

## Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

| Ambient | | Lumen Multiplier |
|---|---|---|
| 0°C | 32°F | 1.04 |
| 5°C | 41°F | 1.04 |
| 10°C | 50°F | 1.03 |
| 15°C | 50°F | 1.02 |
| 20°C | 68°F | 1.01 |
| **25°C** | **77°F** | **1.00** |
| 30°C | 86°F | 0.99 |
| 35°C | 95°F | 0.98 |
| 40°C | 104°F | 0.97 |

## Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

| Operating Hours | 0 | 25000 | 50000 | 100000 |
|---|---|---|---|---|
| Lumen Maintenance Factor | 1.00 | 0.96 | 0.92 | 0.85 |

## Electrical Load

| | | | | | Current (A) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Performance Package | LED Count | Drive Current | Wattage | 120 | 208 | 240 | 277 | 347 | 480 |
| Forward Optics (Non-Rotated) | P1 | 30 | 530 | 54 | 0.45 | 0.26 | 0.23 | 0.19 | 0.10 | 0.12 |
| | P2 | 30 | 700 | 70 | 0.59 | 0.34 | 0.30 | 0.25 | 0.20 | 0.16 |
| | P3 | 30 | 1050 | 102 | 0.86 | 0.50 | 0.44 | 0.38 | 0.30 | 0.22 |
| | P4 | 30 | 1250 | 125 | 1.06 | 0.60 | 0.52 | 0.46 | 0.37 | 0.27 |
| | P5 | 30 | 1400 | 138 | 1.16 | 0.67 | 0.58 | 0.51 | 0.40 | 0.29 |
| | P6 | 40 | 1250 | 163 | 1.36 | 0.78 | 0.68 | 0.59 | 0.47 | 0.34 |
| | P7 | 40 | 1400 | 183 | 1.53 | 0.88 | 0.76 | 0.66 | 0.53 | 0.38 |
| | P8 | 60 | 1050 | 207 | 1.74 | 0.98 | 0.87 | 0.76 | 0.64 | 0.49 |
| | P9 | 60 | 1250 | 241 | 2.01 | 1.16 | 1.01 | 0.89 | 0.70 | 0.51 |
| Rotated Optics (Requires L90 or R90) | P10 | 60 | 530 | 106 | 0.90 | 0.52 | 0.47 | 0.43 | 0.33 | 0.27 |
| | P11 | 60 | 700 | 137 | 1.15 | 0.67 | 0.60 | 0.53 | 0.42 | 0.32 |
| | P12 | 60 | 1050 | 207 | 1.74 | 0.99 | 0.87 | 0.76 | 0.60 | 0.46 |
| | P13 | 60 | 1250 | 231 | 1.93 | 1.12 | 0.97 | 0.86 | 0.67 | 0.49 |

| Motion Sensor Default Settings | | | | | | |
|---|---|---|---|---|---|---|
| Option | Dimmed State | High Level (when triggered) | Photocell Operation | Dwell Time | Ramp-up Time | Ramp-down Time |
| PIR or PIRH | 3V (37%) Output | 10V (100%) Output | Enabled @ 5FC | 5 min | 3 sec | 5 min |
| *PIR1FC3V or PIRH1FC3V | 3V (37%) Output | 10V (100%) Output | Enabled @ 1FC | 5 min | 3 sec | 5 min |
| *for use with Inline Dusk to Dawn or timer. | | | | | | |

| PER Table | | | | | | |
|---|---|---|---|---|---|---|
| Control | PER (3 wire) | PER5 (5 wire) | | PER7 (7 wire) | | |
| | | | Wire 4/Wire5 | | Wire 4/Wire5 | Wire 6/Wire7 |
| Photocontrol Only (On/Off) | ✔ | ⚠ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM | ⊘ | ✔ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM with Motion (ROAM on/off only) | ⊘ | ⚠ | Wires Capped inside fixture | ⚠ | Wires Capped inside fixture | Wires Capped inside fixture |
| Future-proof* | ⊘ | ⚠ | Wired to dimming leads on driver | ✔ | Wired to dimming leads on driver | Wires Capped inside fixture |
| Future-proof* with Motion | ⊘ | ⚠ | Wires Capped inside fixture | ✔ | Wires Capped inside fixture | Wires Capped inside fixture |

✔ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 30 | 530 | P1 | 54W | T1S | 6,457 | 2 | 0 | 2 | 120 | 6,956 | 2 | 0 | 2 | 129 | 7,044 | 2 | 0 | 2 | 130 | 3,640 | 1 | 0 | 1 | 70 |
| | | | | T2S | 6,450 | 2 | 0 | 2 | 119 | 6,949 | 2 | 0 | 2 | 129 | 7,037 | 2 | 0 | 2 | 130 | 3,813 | 1 | 0 | 1 | 73 |
| | | | | T2M | 6,483 | 1 | 0 | 1 | 120 | 6,984 | 2 | 0 | 2 | 129 | 7,073 | 2 | 0 | 2 | 131 | 3,689 | 1 | 0 | 1 | 71 |
| | | | | T3S | 6,279 | 2 | 0 | 2 | 116 | 6,764 | 2 | 0 | 2 | 125 | 6,850 | 2 | 0 | 2 | 127 | 3,770 | 1 | 0 | 1 | 73 |
| | | | | T3M | 6,468 | 1 | 0 | 2 | 120 | 6,967 | 1 | 0 | 2 | 129 | 7,056 | 1 | 0 | 2 | 131 | 3,752 | 1 | 0 | 1 | 72 |
| | | | | T4M | 6,327 | 1 | 0 | 2 | 117 | 6,816 | 1 | 0 | 2 | 126 | 6,902 | 1 | 0 | 2 | 128 | 3,758 | 1 | 0 | 1 | 72 |
| | | | | TFTM | 6,464 | 1 | 0 | 2 | 120 | 6,963 | 1 | 0 | 2 | 129 | 7,051 | 1 | 0 | 2 | 131 | 3,701 | 1 | 0 | 1 | 71 |
| | | | | T5VS | 6,722 | 2 | 0 | 0 | 124 | 7,242 | 3 | 0 | 0 | 134 | 7,334 | 3 | 0 | 0 | 136 | 3,928 | 2 | 0 | 0 | 76 |
| | | | | T5S | 6,728 | 2 | 0 | 1 | 125 | 7,248 | 2 | 0 | 1 | 134 | 7,340 | 2 | 0 | 1 | 136 | 3,881 | 2 | 0 | 0 | 75 |
| | | | | T5M | 6,711 | 3 | 0 | 1 | 124 | 7,229 | 3 | 0 | 1 | 134 | 7,321 | 3 | 0 | 2 | 136 | 3,930 | 2 | 0 | 1 | 76 |
| | | | | T5W | 6,667 | 3 | 0 | 2 | 123 | 7,182 | 3 | 0 | 2 | 133 | 7,273 | 3 | 0 | 2 | 135 | 3,820 | 3 | 0 | 1 | 73 |
| | | | | BLC | 5,299 | 1 | 0 | 1 | 98 | 5,709 | 1 | 0 | 2 | 106 | 5,781 | 1 | 0 | 2 | 107 | | | | | |
| | | | | LCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| | | | | RCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| 30 | 700 | P2 | 70W | T1S | 8,249 | 2 | 0 | 2 | 118 | 8,886 | 2 | 0 | 2 | 127 | 8,999 | 2 | 0 | 2 | 129 | 4,561 | 1 | 0 | 1 | 67 |
| | | | | T2S | 8,240 | 2 | 0 | 2 | 118 | 8,877 | 2 | 0 | 2 | 127 | 8,989 | 2 | 0 | 2 | 128 | 4,777 | 1 | 0 | 1 | 70 |
| | | | | T2M | 8,283 | 2 | 0 | 2 | 118 | 8,923 | 2 | 0 | 2 | 127 | 9,036 | 2 | 0 | 2 | 129 | 4,622 | 1 | 0 | 2 | 68 |
| | | | | T3S | 8,021 | 2 | 0 | 2 | 115 | 8,641 | 2 | 0 | 2 | 123 | 8,751 | 2 | 0 | 2 | 125 | 4,724 | 1 | 0 | 1 | 69 |
| | | | | T3M | 8,263 | 2 | 0 | 2 | 118 | 8,901 | 2 | 0 | 2 | 127 | 9,014 | 2 | 0 | 2 | 129 | 4,701 | 1 | 0 | 2 | 69 |
| | | | | T4M | 8,083 | 2 | 0 | 2 | 115 | 8,708 | 2 | 0 | 2 | 124 | 8,818 | 2 | 0 | 2 | 126 | 4,709 | 1 | 0 | 2 | 69 |
| | | | | TFTM | 8,257 | 2 | 0 | 2 | 118 | 8,896 | 2 | 0 | 2 | 127 | 9,008 | 2 | 0 | 2 | 129 | 4,638 | 1 | 0 | 2 | 68 |
| | | | | T5VS | 8,588 | 3 | 0 | 0 | 123 | 9,252 | 3 | 0 | 0 | 132 | 9,369 | 3 | 0 | 0 | 134 | 4,922 | 2 | 0 | 0 | 72 |
| | | | | T5S | 8,595 | 3 | 0 | 1 | 123 | 9,259 | 3 | 0 | 1 | 132 | 9,376 | 3 | 0 | 1 | 134 | 4,863 | 2 | 0 | 0 | 72 |
| | | | | T5M | 8,573 | 3 | 0 | 2 | 122 | 9,236 | 3 | 0 | 2 | 132 | 9,353 | 3 | 0 | 2 | 134 | 4,924 | 3 | 0 | 1 | 72 |
| | | | | T5W | 8,517 | 3 | 0 | 2 | 122 | 9,175 | 4 | 0 | 2 | 131 | 9,291 | 4 | 0 | 2 | 133 | 4,787 | 3 | 0 | 1 | 70 |
| | | | | BLC | 6,770 | 1 | 0 | 2 | 97 | 7,293 | 1 | 0 | 2 | 104 | 7,386 | 1 | 0 | 2 | 106 | | | | | |
| | | | | LCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| | | | | RCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| 30 | 1050 | P3 | 102W | T1S | 11,661 | 2 | 0 | 2 | 114 | 12,562 | 3 | 0 | 3 | 123 | 12,721 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2S | 11,648 | 2 | 0 | 2 | 114 | 12,548 | 3 | 0 | 3 | 123 | 12,707 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2M | 11,708 | 2 | 0 | 2 | 115 | 12,613 | 2 | 0 | 2 | 124 | 12,773 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T3S | 11,339 | 2 | 0 | 2 | 111 | 12,215 | 3 | 0 | 3 | 120 | 12,370 | 3 | 0 | 3 | 121 | | | | | |
| | | | | T3M | 11,680 | 2 | 0 | 2 | 115 | 12,582 | 2 | 0 | 2 | 123 | 12,742 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T4M | 11,426 | 2 | 0 | 3 | 112 | 12,309 | 2 | 0 | 3 | 121 | 12,465 | 2 | 0 | 3 | 122 | | | | | |
| | | | | TFTM | 11,673 | 2 | 0 | 2 | 114 | 12,575 | 2 | 0 | 3 | 123 | 12,734 | 2 | 0 | 3 | 125 | | | | | |
| | | | | T5VS | 12,140 | 3 | 0 | 1 | 119 | 13,078 | 3 | 0 | 1 | 128 | 13,244 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5S | 12,150 | 3 | 0 | 1 | 119 | 13,089 | 3 | 0 | 1 | 128 | 13,254 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5M | 12,119 | 4 | 0 | 2 | 119 | 13,056 | 4 | 0 | 2 | 128 | 13,221 | 4 | 0 | 2 | 130 | | | | | |
| | | | | T5W | 12,040 | 4 | 0 | 3 | 118 | 12,970 | 4 | 0 | 3 | 127 | 13,134 | 4 | 0 | 3 | 129 | | | | | |
| | | | | BLC | 9,570 | 1 | 0 | 2 | 94 | 10,310 | 1 | 0 | 2 | 101 | 10,440 | 1 | 0 | 2 | 102 | | | | | |
| | | | | LCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| | | | | RCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| 30 | 1250 | P4 | 125W | T1S | 13,435 | 3 | 0 | 3 | 107 | 14,473 | 3 | 0 | 3 | 116 | 14,657 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2S | 13,421 | 3 | 0 | 3 | 107 | 14,458 | 3 | 0 | 3 | 116 | 14,641 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2M | 13,490 | 2 | 0 | 2 | 108 | 14,532 | 3 | 0 | 3 | 116 | 14,716 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T3S | 13,064 | 3 | 0 | 3 | 105 | 14,074 | 3 | 0 | 3 | 113 | 14,252 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T3M | 13,457 | 2 | 0 | 2 | 108 | 14,497 | 2 | 0 | 2 | 116 | 14,681 | 2 | 0 | 2 | 117 | | | | | |
| | | | | T4M | 13,165 | 2 | 0 | 3 | 105 | 14,182 | 2 | 0 | 3 | 113 | 14,362 | 2 | 0 | 3 | 115 | | | | | |
| | | | | TFTM | 13,449 | 2 | 0 | 3 | 108 | 14,488 | 2 | 0 | 3 | 116 | 14,672 | 2 | 0 | 3 | 117 | | | | | |
| | | | | T5VS | 13,987 | 4 | 0 | 1 | 112 | 15,068 | 4 | 0 | 1 | 121 | 15,259 | 4 | 0 | 1 | 122 | | | | | |
| | | | | T5S | 13,999 | 3 | 0 | 1 | 112 | 15,080 | 3 | 0 | 1 | 121 | 15,271 | 3 | 0 | 1 | 122 | | | | | |
| | | | | T5M | 13,963 | 4 | 0 | 2 | 112 | 15,042 | 4 | 0 | 2 | 120 | 15,233 | 4 | 0 | 2 | 122 | | | | | |
| | | | | T5W | 13,872 | 4 | 0 | 3 | 111 | 14,944 | 4 | 0 | 3 | 120 | 15,133 | 4 | 0 | 3 | 121 | | | | | |
| | | | | BLC | 11,027 | 1 | 0 | 2 | 88 | 11,879 | 1 | 0 | 2 | 95 | 12,029 | 1 | 0 | 2 | 96 | | | | | |
| | | | | LCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| 30 | 1400 | P5 | 138W | T1S | 14,679 | 3 | 0 | 3 | 106 | 15,814 | 3 | 0 | 3 | 115 | 16,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 14,664 | 3 | 0 | 3 | 106 | 15,797 | 3 | 0 | 3 | 114 | 15,997 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2M | 14,739 | 3 | 0 | 3 | 107 | 15,878 | 3 | 0 | 3 | 115 | 16,079 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T3S | 14,274 | 3 | 0 | 3 | 103 | 15,377 | 3 | 0 | 3 | 111 | 15,572 | 3 | 0 | 3 | 113 | | | | | |
| | | | | T3M | 14,704 | 2 | 0 | 3 | 107 | 15,840 | 3 | 0 | 3 | 115 | 16,040 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T4M | 14,384 | 2 | 0 | 3 | 104 | 15,496 | 3 | 0 | 3 | 112 | 15,692 | 3 | 0 | 3 | 114 | | | | | |
| | | | | TFTM | 14,695 | 2 | 0 | 3 | 106 | 15,830 | 3 | 0 | 3 | 115 | 16,030 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T5VS | 15,283 | 4 | 0 | 1 | 111 | 16,464 | 4 | 0 | 1 | 119 | 16,672 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 15,295 | 3 | 0 | 1 | 111 | 16,477 | 4 | 0 | 1 | 119 | 16,686 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5M | 15,257 | 4 | 0 | 2 | 111 | 16,435 | 4 | 0 | 2 | 119 | 16,644 | 4 | 0 | 2 | 121 | | | | | |
| | | | | T5W | 15,157 | 4 | 0 | 3 | 110 | 16,328 | 4 | 0 | 3 | 118 | 16,534 | 4 | 0 | 3 | 120 | | | | | |
| | | | | BLC | 12,048 | 1 | 0 | 2 | 87 | 12,979 | 1 | 0 | 2 | 94 | 13,143 | 1 | 0 | 2 | 95 | | | | | |
| | | | | LCCO | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |
| | | | | | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 40 | 1250 | **P6** | 163W | T1S | 17,654 | 3 | 0 | 3 | 108 | 19,018 | 3 | 0 | 3 | 117 | 19,259 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2S | 17,635 | 3 | 0 | 3 | 108 | 18,998 | 3 | 0 | 3 | 117 | 19,238 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2M | 17,726 | 3 | 0 | 3 | 109 | 19,096 | 3 | 0 | 3 | 117 | 19,337 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 17,167 | 3 | 0 | 3 | 105 | 18,493 | 3 | 0 | 3 | 113 | 18,727 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3M | 17,683 | 3 | 0 | 3 | 108 | 19,049 | 3 | 0 | 3 | 117 | 19,290 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T4M | 17,299 | 3 | 0 | 3 | 106 | 18,635 | 3 | 0 | 4 | 114 | 18,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 17,672 | 3 | 0 | 3 | 108 | 19,038 | 3 | 0 | 4 | 117 | 19,279 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T5VS | 18,379 | 4 | 0 | 1 | 113 | 19,800 | 4 | 0 | 1 | 121 | 20,050 | 4 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 18,394 | 4 | 0 | 2 | 113 | 19,816 | 4 | 0 | 2 | 122 | 20,066 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 18,348 | 4 | 0 | 2 | 113 | 19,766 | 4 | 0 | 2 | 121 | 20,016 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5W | 18,228 | 5 | 0 | 3 | 112 | 19,636 | 5 | 0 | 3 | 120 | 19,885 | 5 | 0 | 3 | 122 | | | | | |
| | | | | BLC | 14,489 | 2 | 0 | 2 | 89 | 15,609 | 2 | 0 | 3 | 96 | 15,806 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| 40 | 1400 | **P7** | 183W | T1S | 19,227 | 3 | 0 | 3 | 105 | 20,712 | 3 | 0 | 3 | 113 | 20,975 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T2S | 19,206 | 3 | 0 | 3 | 105 | 20,690 | 3 | 0 | 3 | 113 | 20,952 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T2M | 19,305 | 3 | 0 | 3 | 105 | 20,797 | 3 | 0 | 3 | 114 | 21,060 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3S | 18,696 | 3 | 0 | 3 | 102 | 20,141 | 3 | 0 | 3 | 110 | 20,396 | 3 | 0 | 4 | 111 | | | | | |
| | | | | T3M | 19,258 | 3 | 0 | 3 | 105 | 20,746 | 3 | 0 | 3 | 113 | 21,009 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T4M | 18,840 | 3 | 0 | 4 | 103 | 20,296 | 3 | 0 | 4 | 111 | 20,553 | 3 | 0 | 4 | 112 | | | | | |
| | | | | TFTM | 19,246 | 3 | 0 | 4 | 105 | 20,734 | 3 | 0 | 4 | 113 | 20,996 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T5VS | 20,017 | 4 | 0 | 1 | 109 | 21,564 | 4 | 0 | 1 | 118 | 21,837 | 4 | 0 | 1 | 119 | | | | | |
| | | | | T5S | 20,033 | 4 | 0 | 2 | 109 | 21,581 | 4 | 0 | 2 | 118 | 21,854 | 4 | 0 | 2 | 119 | | | | | |
| | | | | T5M | 19,983 | 4 | 0 | 2 | 109 | 21,527 | 5 | 0 | 3 | 118 | 21,799 | 5 | 0 | 3 | 119 | | | | | |
| | | | | T5W | 19,852 | 5 | 0 | 3 | 108 | 21,386 | 5 | 0 | 3 | 117 | 21,656 | 5 | 0 | 3 | 118 | | | | | |
| | | | | BLC | 15,780 | 2 | 0 | 3 | 86 | 16,999 | 2 | 0 | 3 | 93 | 17,214 | 2 | 0 | 3 | 94 | | | | | |
| | | | | LCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| | | | | RCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| 60 | 1050 | **P8** | 207W | T1S | 22,490 | 3 | 0 | 3 | 109 | 24,228 | 3 | 0 | 3 | 117 | 24,535 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T2S | 22,466 | 3 | 0 | 4 | 109 | 24,202 | 3 | 0 | 4 | 117 | 24,509 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T2M | 22,582 | 3 | 0 | 3 | 109 | 24,327 | 3 | 0 | 3 | 118 | 24,635 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 21,870 | 3 | 0 | 4 | 106 | 23,560 | 3 | 0 | 4 | 114 | 23,858 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T3M | 22,527 | 3 | 0 | 4 | 109 | 24,268 | 3 | 0 | 4 | 117 | 24,575 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T4M | 22,038 | 3 | 0 | 4 | 106 | 23,741 | 3 | 0 | 4 | 115 | 24,041 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 22,513 | 3 | 0 | 4 | 109 | 24,253 | 3 | 0 | 4 | 117 | 24,560 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T5VS | 23,415 | 5 | 0 | 1 | 113 | 25,224 | 5 | 0 | 1 | 122 | 25,543 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 23,434 | 4 | 0 | 2 | 113 | 25,244 | 4 | 0 | 2 | 122 | 25,564 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,221 | 5 | 0 | 4 | 112 | 25,016 | 5 | 0 | 4 | 121 | 25,332 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 18,458 | 2 | 0 | 3 | 89 | 19,885 | 2 | 0 | 3 | 96 | 20,136 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | **P9** | 241W | T1S | 25,575 | 3 | 0 | 3 | 106 | 27,551 | 3 | 0 | 3 | 114 | 27,900 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 25,548 | 3 | 0 | 4 | 106 | 27,522 | 3 | 0 | 4 | 114 | 27,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T2M | 25,680 | 3 | 0 | 3 | 107 | 27,664 | 3 | 0 | 3 | 115 | 28,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T3S | 24,870 | 3 | 0 | 4 | 103 | 26,791 | 3 | 0 | 4 | 111 | 27,130 | 3 | 0 | 4 | 113 | | | | | |
| | | | | T3M | 25,617 | 3 | 0 | 4 | 106 | 27,597 | 3 | 0 | 4 | 115 | 27,946 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T4M | 25,061 | 3 | 0 | 4 | 104 | 26,997 | 3 | 0 | 4 | 112 | 27,339 | 3 | 0 | 4 | 113 | | | | | |
| | | | | TFTM | 25,602 | 3 | 0 | 4 | 106 | 27,580 | 3 | 0 | 4 | 114 | 27,929 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T5VS | 26,626 | 5 | 0 | 1 | 110 | 28,684 | 5 | 0 | 1 | 119 | 29,047 | 5 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 26,648 | 4 | 0 | 2 | 111 | 28,707 | 5 | 0 | 2 | 119 | 29,070 | 5 | 0 | 2 | 121 | | | | | |
| | | | | T5M | 26,581 | 5 | 0 | 3 | 110 | 28,635 | 5 | 0 | 3 | 119 | 28,997 | 5 | 0 | 3 | 120 | | | | | |
| | | | | T5W | 26,406 | 5 | 0 | 4 | 110 | 28,447 | 5 | 0 | 4 | 118 | 28,807 | 5 | 0 | 4 | 120 | | | | | |
| | | | | BLC | 20,990 | 2 | 0 | 3 | 87 | 22,612 | 2 | 0 | 3 | 94 | 22,898 | 2 | 0 | 3 | 95 | | | | | |
| | | | | LCCO | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |
| | | | | | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Rotated Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 60 | 530 | **P10** | 106W | T1S | 13,042 | 3 | 0 | 3 | 123 | 14,050 | 3 | 0 | 3 | 133 | 14,228 | 3 | 0 | 3 | 134 | 7,167 | 2 | 0 | 2 | 72 |
| | | | | T2S | 12,967 | 4 | 0 | 4 | 122 | 13,969 | 4 | 0 | 4 | 132 | 14,146 | 4 | 0 | 4 | 133 | 7,507 | 2 | 0 | 2 | 76 |
| | | | | T2M | 13,201 | 3 | 0 | 3 | 125 | 14,221 | 3 | 0 | 3 | 134 | 14,401 | 3 | 0 | 3 | 136 | 7,263 | 2 | 0 | 2 | 73 |
| | | | | T3S | 12,766 | 4 | 0 | 4 | 120 | 13,752 | 4 | 0 | 4 | 130 | 13,926 | 4 | 0 | 4 | 131 | 7,424 | 2 | 0 | 2 | 75 |
| | | | | T3M | 13,193 | 4 | 0 | 4 | 124 | 14,213 | 4 | 0 | 4 | 134 | 14,393 | 4 | 0 | 4 | 136 | 7,387 | 2 | 0 | 2 | 75 |
| | | | | T4M | 12,944 | 4 | 0 | 4 | 122 | 13,945 | 4 | 0 | 4 | 132 | 14,121 | 4 | 0 | 4 | 133 | 7,400 | 2 | 0 | 2 | 75 |
| | | | | TFTM | 13,279 | 4 | 0 | 4 | 125 | 14,305 | 4 | 0 | 4 | 135 | 14,486 | 4 | 0 | 4 | 137 | 7,288 | 1 | 0 | 2 | 74 |
| | | | | T5VS | 13,372 | 3 | 0 | 1 | 126 | 14,405 | 4 | 0 | 1 | 136 | 14,588 | 4 | 0 | 1 | 138 | 7,734 | 3 | 0 | 1 | 78 |
| | | | | T5S | 13,260 | 3 | 0 | 1 | 125 | 14,284 | 3 | 0 | 1 | 135 | 14,465 | 3 | 0 | 1 | 136 | 7,641 | 3 | 0 | 0 | 77 |
| | | | | T5M | 13,256 | 4 | 0 | 2 | 125 | 14,281 | 4 | 0 | 2 | 135 | 14,462 | 4 | 0 | 2 | 136 | 7,737 | 3 | 0 | 2 | 78 |
| | | | | T5W | 13,137 | 4 | 0 | 3 | 124 | 14,153 | 4 | 0 | 3 | 134 | 14,332 | 4 | 0 | 3 | 135 | 7,522 | 3 | 0 | 2 | 76 |
| | | | | BLC | 10,906 | 3 | 0 | 3 | 103 | 11,749 | 3 | 0 | 3 | 111 | 11,898 | 3 | 0 | 3 | 112 | | | | | |
| | | | | LCCO | 7,789 | 1 | 0 | 3 | 73 | 8,391 | 1 | 0 | 3 | 79 | 8,497 | 1 | 0 | 3 | 80 | | | | | |
| | | | | RCCO | 7,779 | 4 | 0 | 4 | 73 | 8,380 | 4 | 0 | 4 | 79 | 8,486 | 4 | 0 | 4 | 80 | | | | | |
| 60 | 700 | **P11** | 137W | T1S | 16,556 | 3 | 0 | 3 | 121 | 17,835 | 3 | 0 | 3 | 130 | 18,061 | 4 | 0 | 4 | 132 | 8,952 | 2 | 0 | 2 | 68 |
| | | | | T2S | 16,461 | 4 | 0 | 4 | 120 | 17,733 | 4 | 0 | 4 | 129 | 17,957 | 4 | 0 | 4 | 131 | 9,377 | 2 | 0 | 2 | 72 |
| | | | | T2M | 16,758 | 4 | 0 | 4 | 122 | 18,053 | 4 | 0 | 4 | 132 | 18,281 | 4 | 0 | 4 | 133 | 9,072 | 2 | 0 | 2 | 69 |
| | | | | T3S | 16,205 | 4 | 0 | 4 | 118 | 17,457 | 4 | 0 | 4 | 127 | 17,678 | 4 | 0 | 4 | 129 | 9,273 | 2 | 0 | 2 | 71 |
| | | | | T3M | 16,748 | 4 | 0 | 4 | 122 | 18,042 | 4 | 0 | 4 | 132 | 18,271 | 4 | 0 | 4 | 133 | 9,227 | 2 | 0 | 2 | 70 |
| | | | | T4M | 16,432 | 4 | 0 | 4 | 120 | 17,702 | 4 | 0 | 4 | 129 | 17,926 | 4 | 0 | 4 | 131 | 9,243 | 2 | 0 | 2 | 71 |
| | | | | TFTM | 16,857 | 4 | 0 | 4 | 123 | 18,159 | 4 | 0 | 4 | 133 | 18,389 | 4 | 0 | 4 | 134 | 9,103 | 2 | 0 | 2 | 69 |
| | | | | T5VS | 16,975 | 4 | 0 | 1 | 124 | 18,287 | 4 | 0 | 1 | 133 | 18,518 | 4 | 0 | 1 | 135 | 9,661 | 3 | 0 | 1 | 74 |
| | | | | T5S | 16,832 | 4 | 0 | 1 | 123 | 18,133 | 4 | 0 | 2 | 132 | 18,362 | 4 | 0 | 2 | 134 | 9,544 | 3 | 0 | 1 | 73 |
| | | | | T5M | 16,828 | 4 | 0 | 2 | 123 | 18,128 | 4 | 0 | 2 | 132 | 18,358 | 4 | 0 | 2 | 134 | 9,665 | 3 | 0 | 2 | 74 |
| | | | | T5W | 16,677 | 4 | 0 | 3 | 122 | 17,966 | 5 | 0 | 3 | 131 | 18,193 | 5 | 0 | 3 | 133 | 9,395 | 4 | 0 | 2 | 72 |
| | | | | BLC | 13,845 | 3 | 0 | 3 | 101 | 14,915 | 3 | 0 | 3 | 109 | 15,103 | 3 | 0 | 3 | 110 | | | | | |
| | | | | LCCO | 9,888 | 1 | 0 | 3 | 72 | 10,652 | 2 | 0 | 3 | 78 | 10,787 | 2 | 0 | 3 | 79 | | | | | |
| | | | | RCCO | 9,875 | 4 | 0 | 4 | 72 | 10,638 | 4 | 0 | 4 | 78 | 10,773 | 4 | 0 | 4 | 79 | | | | | |
| 60 | 1050 | **P12** | 207W | T1S | 22,996 | 4 | 0 | 4 | 111 | 24,773 | 4 | 0 | 4 | 120 | 25,087 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T2S | 22,864 | 4 | 0 | 4 | 110 | 24,631 | 5 | 0 | 5 | 119 | 24,943 | 5 | 0 | 5 | 120 | | | | | |
| | | | | T2M | 23,277 | 4 | 0 | 4 | 112 | 25,075 | 4 | 0 | 4 | 121 | 25,393 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T3S | 22,509 | 4 | 0 | 4 | 109 | 24,248 | 5 | 0 | 5 | 117 | 24,555 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T3M | 23,263 | 4 | 0 | 4 | 112 | 25,061 | 4 | 0 | 4 | 121 | 25,378 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T4M | 22,824 | 5 | 0 | 5 | 110 | 24,588 | 5 | 0 | 5 | 119 | 24,899 | 5 | 0 | 5 | 120 | | | | | |
| | | | | TFTM | 23,414 | 5 | 0 | 5 | 113 | 25,223 | 5 | 0 | 5 | 122 | 25,543 | 5 | 0 | 5 | 123 | | | | | |
| | | | | T5VS | 23,579 | 5 | 0 | 1 | 114 | 25,401 | 5 | 0 | 1 | 123 | 25,722 | 5 | 0 | 1 | 124 | | | | | |
| | | | | T5S | 23,380 | 4 | 0 | 2 | 113 | 25,187 | 4 | 0 | 2 | 122 | 25,506 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,165 | 5 | 0 | 4 | 112 | 24,955 | 5 | 0 | 4 | 121 | 25,271 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 19,231 | 4 | 0 | 4 | 93 | 20,717 | 4 | 0 | 4 | 100 | 20,979 | 4 | 0 | 4 | 101 | | | | | |
| | | | | LCCO | 13,734 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,716 | 4 | 0 | 4 | 66 | 14,776 | 4 | 0 | 4 | 71 | 14,963 | 4 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | **P13** | 231W | T1S | 25,400 | 4 | 0 | 4 | 110 | 27,363 | 4 | 0 | 4 | 118 | 27,709 | 4 | 0 | 4 | 120 | | | | | |
| | | | | T2S | 25,254 | 5 | 0 | 5 | 109 | 27,205 | 5 | 0 | 5 | 118 | 27,550 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T2M | 25,710 | 4 | 0 | 4 | 111 | 27,696 | 4 | 0 | 4 | 120 | 28,047 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T3S | 24,862 | 5 | 0 | 5 | 108 | 26,783 | 5 | 0 | 5 | 116 | 27,122 | 5 | 0 | 5 | 117 | | | | | |
| | | | | T3M | 25,695 | 5 | 0 | 5 | 111 | 27,680 | 5 | 0 | 5 | 120 | 28,031 | 5 | 0 | 5 | 121 | | | | | |
| | | | | T4M | 25,210 | 5 | 0 | 5 | 109 | 27,158 | 5 | 0 | 5 | 118 | 27,502 | 5 | 0 | 5 | 119 | | | | | |
| | | | | TFTM | 25,861 | 5 | 0 | 5 | 112 | 27,860 | 5 | 0 | 5 | 121 | 28,212 | 5 | 0 | 5 | 122 | | | | | |
| | | | | T5VS | 26,043 | 5 | 0 | 1 | 113 | 28,056 | 5 | 0 | 1 | 121 | 28,411 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 25,824 | 4 | 0 | 2 | 112 | 27,819 | 5 | 0 | 2 | 120 | 28,172 | 5 | 0 | 2 | 122 | | | | | |
| | | | | T5M | 25,818 | 5 | 0 | 3 | 112 | 27,813 | 5 | 0 | 3 | 120 | 28,165 | 5 | 0 | 3 | 122 | | | | | |
| | | | | T5W | 25,586 | 5 | 0 | 4 | 111 | 27,563 | 5 | 0 | 4 | 119 | 27,912 | 5 | 0 | 4 | 121 | | | | | |
| | | | | BLC | 21,241 | 4 | 0 | 4 | 92 | 22,882 | 4 | 0 | 4 | 99 | 23,172 | 4 | 0 | 4 | 100 | | | | | |
| | | | | LCCO | 15,170 | 2 | 0 | 4 | 66 | 16,342 | 2 | 0 | 4 | 71 | 16,549 | 2 | 0 | 4 | 72 | | | | | |
| | | | | | 15,150 | 5 | 0 | 5 | 66 | 16,321 | 5 | 0 | 5 | 71 | 16,527 | 5 | 0 | 5 | 72 | | | | | |


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## FEATURES & SPECIFICATIONS

**INTENDED USE**
The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

**CONSTRUCTION**
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 $ft^2$) for optimized pole wind loading.

**FINISH**
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

**OPTICS**
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

**ELECTRICAL**
Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

**INSTALLATION**
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

**LISTINGS**
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

**WARRANTY**
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.


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# D-Series Size 1
## LED Area Luminaire

Catalog Number

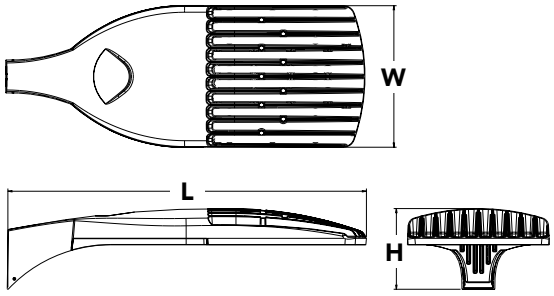
Notes

Type Fixture SA

Hit the Tab key or mouse over the page to see all interactive elements.

## Specifications

| | |
|---|---|
| **EPA:** | 1.01 ft² (0.09 m²) |
| **Length:** | 33″ (83.8 cm) |
| **Width:** | 13″ (33.0 cm) |
| **Height:** | 7-1/2″ (19.0 cm) |
| **Weight (max):** | 27 lbs (12.2 kg) |




## A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

## Ordering Information

**EXAMPLE:** DSX1 LED P7 40K T3M MVOLT SPA DDBXD

| DSX1LED | P3 | 50K | T4M | MVOLT | SPA |
|---|---|---|---|---|---|

### Series
DSX1 LED

### LEDs
**Forward optics**
P1 P4 P7
P2 P5 P8
P3 P6 P9
**Rotated optics**
P10[1] P12[1]
P11[1] P13[1]

### Color temperature
30K 3000 K
40K 4000 K
50K 5000 K
AMBPC Amber phosphor converted[2]

### Distribution
T1S Type I short
T2S Type II short
T2M Type II medium
T3S Type III short
T3M Type III medium
T4M Type IV medium
TFTM Forward throw medium
T5VS Type V very short
T5S Type V short
T5M Type V medium
T5W Type V wide
BLC Backlight control[2,3]
LCCO Left corner cutoff[2,3]
RCCO Right corner cutoff[2,3]

### Voltage
MVOLT[4,5]
120[6]
208[5,6]
240[5,6]
277[6]
347[5,6,7]
480[5,6,7]

### Mounting
**Shipped included**
SPA Square pole mounting
RPA Round pole mounting
WBA Wall bracket
SPUMBA Square pole universal mounting adaptor[8]
RPUMBA Round pole universal mounting adaptor[8]
**Shipped separately**
KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

### Control options
**Shipped installed**
NLTAIR2 nLight AIR generation 2 enabled[10]
PER NEMA twist-lock receptacle only (controls ordered separate)[11]
PER5 Five-wire receptacle only (controls ordered separate)[11,12]
PER7 Seven-wire receptacle only (controls ordered separate)[11,12]
DMG 0-10V dimming extend out back of housing for external control (leads exit fixture)
DS Dual switching[13,14]
PIR Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRHN Network, Bi-Level motion/ambient sensor[17]
PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,15,16]
PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,15,16]
BL30 Bi-level switched dimming, 30%[5,14,18]
BL50 Bi-level switched dimming, 50%[5,14,18]
PNMTDD3 Part night, dim till dawn[5,19]
PNMT5D3 Part night, dim 5 hrs[5,19]
PNMT6D3 Part night, dim 6 hrs[5,19]
PNMT7D3 Part night, dim 7 hrs[5,19]
FAO Field adjustable output[20]

### Other options
**Shipped installed**
HS House-side shield[21]
SF Single fuse (120, 277, 347V)[6]
DF Double fuse (208, 240, 480V)[6]
L90 Left rotated optics[1]
R90 Right rotated optics[1]
**Shipped separately**
BS Bird spikes[22]
EGS External glare shield[22]

### Finish *(required)*
DDBXD Dark bronze
DBLXD Black
DNAXD Natural aluminum
DWHXD White
DDBTXD Textured dark bronze
DBLBXD Textured black
DNATXD Textured natural aluminum
DWHGXD Textured white


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## Ordering Information

### Accessories

*Ordered and shipped separately.*

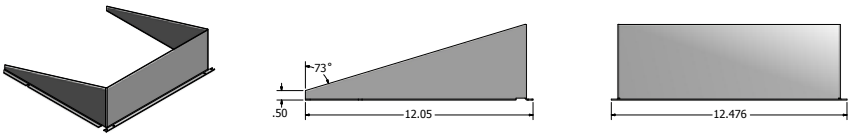
| | |
|---|---|
| DLL127F 1.5 JU | Photocell - SSL twist-lock (120-277V) [23] |
| DLL347F 1.5 CUL JU | Photocell - SSL twist-lock (347V) [23] |
| DLL480F 1.5 CUL JU | Photocell - SSL twist-lock (480V) [23] |
| DSHORT SBK U | Shorting cap [23] |
| DSX1HS 30C U | House-side shield for 30 LED unit[21] |
| DSX1HS 40C U | House-side shield for 40 LED unit[21] |
| DSX1HS 60C U | House-side shield for 60 LED unit[21] |
| PUMBA DDBXD U* | Square and round pole universal mounting bracket (specify finish)[24] |
| KMA8 DDBXD U | Mast arm mounting bracket adaptor (specify finish) [8] |

*For more control options, visit DTL and ROAM online.*

**NOTES**

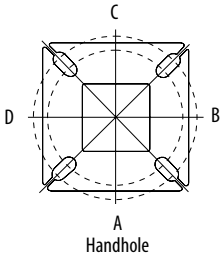
1 P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO or P4, P7, P8, P9 or P13.
3 Not available with HS.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P1 or P10. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR. Node with integral dimming. Shorting cap included.
13 Provides 50/50fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
14 Requires (2) separately switched circuits.
15 Reference Motion Sensor table on page 3.
16 Reference PER table on page 3 to see functionality.
17 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
18 Not available with 347V, 480V, PNMT, DS. For PER5 or PER7, see PER Table on page 3. Requires isolated neutral.
19 Not available with 347V, 480V, DS, BL30, BL50. For PER5 or PER7, see PER Table on page 3. Separate Dusk to Dawn required.
20 Not available with other dimming controls options
21 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
22 Must be ordered with fixture for factory pre-drilling.
23 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
24 For retrofit use only.

## External Glare Shield




## Drilling

### HANDHOLE ORIENTATION

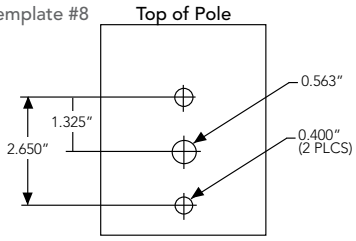



### Tenon Mounting Slipfitter **

| Tenon O.D. | Single Unit | 2 at 180° | 2 at 90° | 3 at 120° | 3 at 90° | 4 at 90° |
|---|---|---|---|---|---|---|
| 2-3/8" | AST20-190 | AST20-280 | AST20-290 | AST20-320 | AST20-390 | AST20-490 |
| 2-7/8" | AST25-190 | AST25-280 | AST25-290 | AST25-320 | AST25-390 | AST25-490 |
| 4" | AST35-190 | AST35-280 | AST35-290 | AST35-320 | AST35-390 | AST35-490 |

| Pole drilling nomenclature: # of heads at degree from handhole (default side A) | | | | | |
|---|---|---|---|---|---|
| DM19AS | DM28AS | DM29AS | DM32AS | DM39AS | DM49AS |
| 1 @ 90° | 2 @ 280° | 2 @ 90° | 3 @ 120° | 3 @ 90° | 4 @ 90° |
| Side B | Side B & D | Side B & C | Round pole only | Side B, C, & D | Sides A, B, C, D |
| Note: Review luminaire spec sheet for specific nomenclature | | | | | |

Template #8

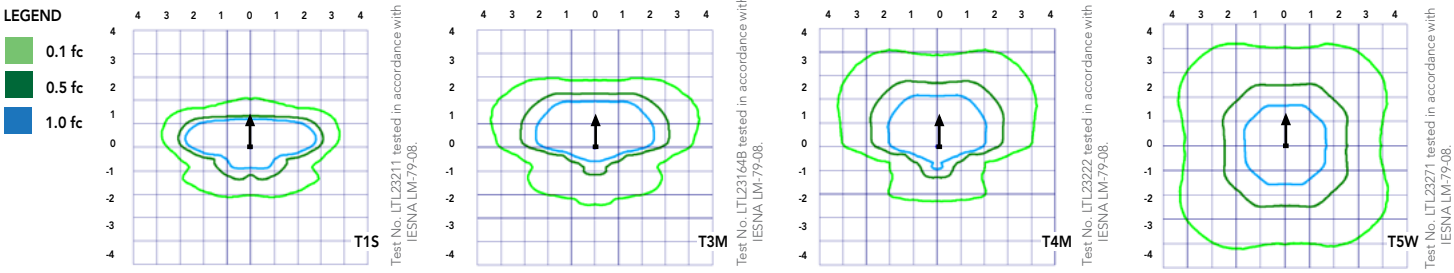



| Pole top or tenon O.D. | 4.5" @ 90° | 4" @ 90° | 3.5" @ 90° | 3" @ 90° | 4.5" @ 120° | 4" @ 120° | 3.5" @ 120° | 3" @ 120° |
|---|---|---|---|---|---|---|---|---|
| DSX SPA | Y | Y | Y | N | - | - | - | - |
| DSX RPA | Y | Y | N | N | Y | Y | Y | Y |
| DSX SPUMBA | Y | N | N | N | - | - | - | - |
| DSX RPUMBA | N | N | N | N | Y | Y | Y | N |
| | | | | | *3 fixtures @120 require round pole top/tenon. | | | |

## Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 1 homepage.

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').






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## Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

| Ambient | | Lumen Multiplier |
|---|---|---|
| 0°C | 32°F | 1.04 |
| 5°C | 41°F | 1.04 |
| 10°C | 50°F | 1.03 |
| 15°C | 50°F | 1.02 |
| 20°C | 68°F | 1.01 |
| **25°C** | **77°F** | **1.00** |
| 30°C | 86°F | 0.99 |
| 35°C | 95°F | 0.98 |
| 40°C | 104°F | 0.97 |

## Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

| Operating Hours | 0 | 25000 | 50000 | 100000 |
|---|---|---|---|---|
| Lumen Maintenance Factor | 1.00 | 0.96 | 0.92 | 0.85 |

## Electrical Load

| | | | | | Current (A) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Performance Package | LED Count | Drive Current | Wattage | 120 | 208 | 240 | 277 | 347 | 480 |
| Forward Optics (Non-Rotated) | P1 | 30 | 530 | 54 | 0.45 | 0.26 | 0.23 | 0.19 | 0.10 | 0.12 |
| | P2 | 30 | 700 | 70 | 0.59 | 0.34 | 0.30 | 0.25 | 0.20 | 0.16 |
| | P3 | 30 | 1050 | 102 | 0.86 | 0.50 | 0.44 | 0.38 | 0.30 | 0.22 |
| | P4 | 30 | 1250 | 125 | 1.06 | 0.60 | 0.52 | 0.46 | 0.37 | 0.27 |
| | P5 | 30 | 1400 | 138 | 1.16 | 0.67 | 0.58 | 0.51 | 0.40 | 0.29 |
| | P6 | 40 | 1250 | 163 | 1.36 | 0.78 | 0.68 | 0.59 | 0.47 | 0.34 |
| | P7 | 40 | 1400 | 183 | 1.53 | 0.88 | 0.76 | 0.66 | 0.53 | 0.38 |
| | P8 | 60 | 1050 | 207 | 1.74 | 0.98 | 0.87 | 0.76 | 0.64 | 0.49 |
| | P9 | 60 | 1250 | 241 | 2.01 | 1.16 | 1.01 | 0.89 | 0.70 | 0.51 |
| Rotated Optics (Requires L90 or R90) | P10 | 60 | 530 | 106 | 0.90 | 0.52 | 0.47 | 0.43 | 0.33 | 0.27 |
| | P11 | 60 | 700 | 137 | 1.15 | 0.67 | 0.60 | 0.53 | 0.42 | 0.32 |
| | P12 | 60 | 1050 | 207 | 1.74 | 0.99 | 0.87 | 0.76 | 0.60 | 0.46 |
| | P13 | 60 | 1250 | 231 | 1.93 | 1.12 | 0.97 | 0.86 | 0.67 | 0.49 |

| Motion Sensor Default Settings | | | | | | |
|---|---|---|---|---|---|---|
| Option | Dimmed State | High Level (when triggered) | Photocell Operation | Dwell Time | Ramp-up Time | Ramp-down Time |
| PIR or PIRH | 3V (37%) Output | 10V (100%) Output | Enabled @ 5FC | 5 min | 3 sec | 5 min |
| *PIR1FC3V or PIRH1FC3V | 3V (37%) Output | 10V (100%) Output | Enabled @ 1FC | 5 min | 3 sec | 5 min |
| *for use with Inline Dusk to Dawn or timer. | | | | | | |

| PER Table | | | | | | |
|---|---|---|---|---|---|---|
| Control | PER (3 wire) | PER5 (5 wire) | | PER7 (7 wire) | | |
| | | | Wire 4/Wire5 | | Wire 4/Wire5 | Wire 6/Wire7 |
| Photocontrol Only (On/Off) | ✔ | ⚠ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM | ⊘ | ✔ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM with Motion (ROAM on/off only) | ⊘ | ⚠ | Wires Capped inside fixture | ⚠ | Wires Capped inside fixture | Wires Capped inside fixture |
| Future-proof* | ⊘ | ⚠ | Wired to dimming leads on driver | ✔ | Wired to dimming leads on driver | Wires Capped inside fixture |
| Future-proof* with Motion | ⊘ | ⚠ | Wires Capped inside fixture | ✔ | Wires Capped inside fixture | Wires Capped inside fixture |

✔ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 30 | 530 | P1 | 54W | T1S | 6,457 | 2 | 0 | 2 | 120 | 6,956 | 2 | 0 | 2 | 129 | 7,044 | 2 | 0 | 2 | 130 | 3,640 | 1 | 0 | 1 | 70 |
| | | | | T2S | 6,450 | 2 | 0 | 2 | 119 | 6,949 | 2 | 0 | 2 | 129 | 7,037 | 2 | 0 | 2 | 130 | 3,813 | 1 | 0 | 1 | 73 |
| | | | | T2M | 6,483 | 1 | 0 | 1 | 120 | 6,984 | 2 | 0 | 2 | 129 | 7,073 | 2 | 0 | 2 | 131 | 3,689 | 1 | 0 | 1 | 71 |
| | | | | T3S | 6,279 | 2 | 0 | 2 | 116 | 6,764 | 2 | 0 | 2 | 125 | 6,850 | 2 | 0 | 2 | 127 | 3,770 | 1 | 0 | 1 | 73 |
| | | | | T3M | 6,468 | 1 | 0 | 2 | 120 | 6,967 | 1 | 0 | 2 | 129 | 7,056 | 1 | 0 | 2 | 131 | 3,752 | 1 | 0 | 1 | 72 |
| | | | | T4M | 6,327 | 1 | 0 | 2 | 117 | 6,816 | 1 | 0 | 2 | 126 | 6,902 | 1 | 0 | 2 | 128 | 3,758 | 1 | 0 | 1 | 72 |
| | | | | TFTM | 6,464 | 1 | 0 | 2 | 120 | 6,963 | 1 | 0 | 2 | 129 | 7,051 | 1 | 0 | 2 | 131 | 3,701 | 1 | 0 | 1 | 71 |
| | | | | T5VS | 6,722 | 2 | 0 | 0 | 124 | 7,242 | 3 | 0 | 0 | 134 | 7,334 | 3 | 0 | 0 | 136 | 3,928 | 2 | 0 | 0 | 76 |
| | | | | T5S | 6,728 | 2 | 0 | 1 | 125 | 7,248 | 2 | 0 | 1 | 134 | 7,340 | 2 | 0 | 1 | 136 | 3,881 | 2 | 0 | 0 | 75 |
| | | | | T5M | 6,711 | 3 | 0 | 1 | 124 | 7,229 | 3 | 0 | 1 | 134 | 7,321 | 3 | 0 | 2 | 136 | 3,930 | 2 | 0 | 1 | 76 |
| | | | | T5W | 6,667 | 3 | 0 | 2 | 123 | 7,182 | 3 | 0 | 2 | 133 | 7,273 | 3 | 0 | 2 | 135 | 3,820 | 3 | 0 | 1 | 73 |
| | | | | BLC | 5,299 | 1 | 0 | 1 | 98 | 5,709 | 1 | 0 | 2 | 106 | 5,781 | 1 | 0 | 2 | 107 | | | | | |
| | | | | LCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| | | | | RCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| 30 | 700 | P2 | 70W | T1S | 8,249 | 2 | 0 | 2 | 118 | 8,886 | 2 | 0 | 2 | 127 | 8,999 | 2 | 0 | 2 | 129 | 4,561 | 1 | 0 | 1 | 67 |
| | | | | T2S | 8,240 | 2 | 0 | 2 | 118 | 8,877 | 2 | 0 | 2 | 127 | 8,989 | 2 | 0 | 2 | 128 | 4,777 | 1 | 0 | 1 | 70 |
| | | | | T2M | 8,283 | 2 | 0 | 2 | 118 | 8,923 | 2 | 0 | 2 | 127 | 9,036 | 2 | 0 | 2 | 129 | 4,622 | 1 | 0 | 2 | 68 |
| | | | | T3S | 8,021 | 2 | 0 | 2 | 115 | 8,641 | 2 | 0 | 2 | 123 | 8,751 | 2 | 0 | 2 | 125 | 4,724 | 1 | 0 | 1 | 69 |
| | | | | T3M | 8,263 | 2 | 0 | 2 | 118 | 8,901 | 2 | 0 | 2 | 127 | 9,014 | 2 | 0 | 2 | 129 | 4,701 | 1 | 0 | 2 | 69 |
| | | | | T4M | 8,083 | 2 | 0 | 2 | 115 | 8,708 | 2 | 0 | 2 | 124 | 8,818 | 2 | 0 | 2 | 126 | 4,709 | 1 | 0 | 2 | 69 |
| | | | | TFTM | 8,257 | 2 | 0 | 2 | 118 | 8,896 | 2 | 0 | 2 | 127 | 9,008 | 2 | 0 | 2 | 129 | 4,638 | 1 | 0 | 2 | 68 |
| | | | | T5VS | 8,588 | 3 | 0 | 0 | 123 | 9,252 | 3 | 0 | 0 | 132 | 9,369 | 3 | 0 | 0 | 134 | 4,922 | 2 | 0 | 0 | 72 |
| | | | | T5S | 8,595 | 3 | 0 | 1 | 123 | 9,259 | 3 | 0 | 1 | 132 | 9,376 | 3 | 0 | 1 | 134 | 4,863 | 2 | 0 | 0 | 72 |
| | | | | T5M | 8,573 | 3 | 0 | 2 | 122 | 9,236 | 3 | 0 | 2 | 132 | 9,353 | 3 | 0 | 2 | 134 | 4,924 | 3 | 0 | 1 | 72 |
| | | | | T5W | 8,517 | 3 | 0 | 2 | 122 | 9,175 | 4 | 0 | 2 | 131 | 9,291 | 4 | 0 | 2 | 133 | 4,787 | 3 | 0 | 1 | 70 |
| | | | | BLC | 6,770 | 1 | 0 | 2 | 97 | 7,293 | 1 | 0 | 2 | 104 | 7,386 | 1 | 0 | 2 | 106 | | | | | |
| | | | | LCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| | | | | RCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| 30 | 1050 | P3 | 102W | T1S | 11,661 | 2 | 0 | 2 | 114 | 12,562 | 3 | 0 | 3 | 123 | 12,721 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2S | 11,648 | 2 | 0 | 2 | 114 | 12,548 | 3 | 0 | 3 | 123 | 12,707 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2M | 11,708 | 2 | 0 | 2 | 115 | 12,613 | 2 | 0 | 2 | 124 | 12,773 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T3S | 11,339 | 2 | 0 | 2 | 111 | 12,215 | 3 | 0 | 3 | 120 | 12,370 | 3 | 0 | 3 | 121 | | | | | |
| | | | | T3M | 11,680 | 2 | 0 | 2 | 115 | 12,582 | 2 | 0 | 2 | 123 | 12,742 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T4M | 11,426 | 2 | 0 | 3 | 112 | 12,309 | 2 | 0 | 3 | 121 | 12,465 | 2 | 0 | 3 | 122 | | | | | |
| | | | | TFTM | 11,673 | 2 | 0 | 2 | 114 | 12,575 | 2 | 0 | 3 | 123 | 12,734 | 2 | 0 | 3 | 125 | | | | | |
| | | | | T5VS | 12,140 | 3 | 0 | 1 | 119 | 13,078 | 3 | 0 | 1 | 128 | 13,244 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5S | 12,150 | 3 | 0 | 1 | 119 | 13,089 | 3 | 0 | 1 | 128 | 13,254 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5M | 12,119 | 4 | 0 | 2 | 119 | 13,056 | 4 | 0 | 2 | 128 | 13,221 | 4 | 0 | 2 | 130 | | | | | |
| | | | | T5W | 12,040 | 4 | 0 | 3 | 118 | 12,970 | 4 | 0 | 3 | 127 | 13,134 | 4 | 0 | 3 | 129 | | | | | |
| | | | | BLC | 9,570 | 1 | 0 | 2 | 94 | 10,310 | 1 | 0 | 2 | 101 | 10,440 | 1 | 0 | 2 | 102 | | | | | |
| | | | | LCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| | | | | RCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| 30 | 1250 | P4 | 125W | T1S | 13,435 | 3 | 0 | 3 | 107 | 14,473 | 3 | 0 | 3 | 116 | 14,657 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2S | 13,421 | 3 | 0 | 3 | 107 | 14,458 | 3 | 0 | 3 | 116 | 14,641 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2M | 13,490 | 2 | 0 | 2 | 108 | 14,532 | 3 | 0 | 3 | 116 | 14,716 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T3S | 13,064 | 3 | 0 | 3 | 105 | 14,074 | 3 | 0 | 3 | 113 | 14,252 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T3M | 13,457 | 2 | 0 | 2 | 108 | 14,497 | 2 | 0 | 2 | 116 | 14,681 | 2 | 0 | 2 | 117 | | | | | |
| | | | | T4M | 13,165 | 2 | 0 | 3 | 105 | 14,182 | 2 | 0 | 3 | 113 | 14,362 | 2 | 0 | 3 | 115 | | | | | |
| | | | | TFTM | 13,449 | 2 | 0 | 3 | 108 | 14,488 | 2 | 0 | 3 | 116 | 14,672 | 2 | 0 | 3 | 117 | | | | | |
| | | | | T5VS | 13,987 | 4 | 0 | 1 | 112 | 15,068 | 4 | 0 | 1 | 121 | 15,259 | 4 | 0 | 1 | 122 | | | | | |
| | | | | T5S | 13,999 | 3 | 0 | 1 | 112 | 15,080 | 3 | 0 | 1 | 121 | 15,271 | 3 | 0 | 1 | 122 | | | | | |
| | | | | T5M | 13,963 | 4 | 0 | 2 | 112 | 15,042 | 4 | 0 | 2 | 120 | 15,233 | 4 | 0 | 2 | 122 | | | | | |
| | | | | T5W | 13,872 | 4 | 0 | 3 | 111 | 14,944 | 4 | 0 | 3 | 120 | 15,133 | 4 | 0 | 3 | 121 | | | | | |
| | | | | BLC | 11,027 | 1 | 0 | 2 | 88 | 11,879 | 1 | 0 | 2 | 95 | 12,029 | 1 | 0 | 2 | 96 | | | | | |
| | | | | LCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| 30 | 1400 | P5 | 138W | T1S | 14,679 | 3 | 0 | 3 | 106 | 15,814 | 3 | 0 | 3 | 115 | 16,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 14,664 | 3 | 0 | 3 | 106 | 15,797 | 3 | 0 | 3 | 114 | 15,997 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2M | 14,739 | 3 | 0 | 3 | 107 | 15,878 | 3 | 0 | 3 | 115 | 16,079 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T3S | 14,274 | 3 | 0 | 3 | 103 | 15,377 | 3 | 0 | 3 | 111 | 15,572 | 3 | 0 | 3 | 113 | | | | | |
| | | | | T3M | 14,704 | 2 | 0 | 3 | 107 | 15,840 | 3 | 0 | 3 | 115 | 16,040 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T4M | 14,384 | 2 | 0 | 3 | 104 | 15,496 | 3 | 0 | 3 | 112 | 15,692 | 3 | 0 | 3 | 114 | | | | | |
| | | | | TFTM | 14,695 | 2 | 0 | 3 | 106 | 15,830 | 3 | 0 | 3 | 115 | 16,030 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T5VS | 15,283 | 4 | 0 | 1 | 111 | 16,464 | 4 | 0 | 1 | 119 | 16,672 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 15,295 | 3 | 0 | 1 | 111 | 16,477 | 4 | 0 | 1 | 119 | 16,686 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5M | 15,257 | 4 | 0 | 2 | 111 | 16,435 | 4 | 0 | 2 | 119 | 16,644 | 4 | 0 | 2 | 121 | | | | | |
| | | | | T5W | 15,157 | 4 | 0 | 3 | 110 | 16,328 | 4 | 0 | 3 | 118 | 16,534 | 4 | 0 | 3 | 120 | | | | | |
| | | | | BLC | 12,048 | 1 | 0 | 2 | 87 | 12,979 | 1 | 0 | 2 | 94 | 13,143 | 1 | 0 | 2 | 95 | | | | | |
| | | | | LCCO | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |
| | | | | | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 40 | 1250 | P6 | 163W | T1S | 17,654 | 3 | 0 | 3 | 108 | 19,018 | 3 | 0 | 3 | 117 | 19,259 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2S | 17,635 | 3 | 0 | 3 | 108 | 18,998 | 3 | 0 | 3 | 117 | 19,238 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2M | 17,726 | 3 | 0 | 3 | 109 | 19,096 | 3 | 0 | 3 | 117 | 19,337 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 17,167 | 3 | 0 | 3 | 105 | 18,493 | 3 | 0 | 3 | 113 | 18,727 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3M | 17,683 | 3 | 0 | 3 | 108 | 19,049 | 3 | 0 | 3 | 117 | 19,290 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T4M | 17,299 | 3 | 0 | 3 | 106 | 18,635 | 3 | 0 | 4 | 114 | 18,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 17,672 | 3 | 0 | 3 | 108 | 19,038 | 3 | 0 | 4 | 117 | 19,279 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T5VS | 18,379 | 4 | 0 | 1 | 113 | 19,800 | 4 | 0 | 1 | 121 | 20,050 | 4 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 18,394 | 4 | 0 | 2 | 113 | 19,816 | 4 | 0 | 2 | 122 | 20,066 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 18,348 | 4 | 0 | 2 | 113 | 19,766 | 4 | 0 | 2 | 121 | 20,016 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5W | 18,228 | 5 | 0 | 3 | 112 | 19,636 | 5 | 0 | 3 | 120 | 19,885 | 5 | 0 | 3 | 122 | | | | | |
| | | | | BLC | 14,489 | 2 | 0 | 2 | 89 | 15,609 | 2 | 0 | 3 | 96 | 15,806 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| 40 | 1400 | P7 | 183W | T1S | 19,227 | 3 | 0 | 3 | 105 | 20,712 | 3 | 0 | 3 | 113 | 20,975 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T2S | 19,206 | 3 | 0 | 3 | 105 | 20,690 | 3 | 0 | 3 | 113 | 20,952 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T2M | 19,305 | 3 | 0 | 3 | 105 | 20,797 | 3 | 0 | 3 | 114 | 21,060 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3S | 18,696 | 3 | 0 | 3 | 102 | 20,141 | 3 | 0 | 3 | 110 | 20,396 | 3 | 0 | 4 | 111 | | | | | |
| | | | | T3M | 19,258 | 3 | 0 | 3 | 105 | 20,746 | 3 | 0 | 3 | 113 | 21,009 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T4M | 18,840 | 3 | 0 | 4 | 103 | 20,296 | 3 | 0 | 4 | 111 | 20,553 | 3 | 0 | 4 | 112 | | | | | |
| | | | | TFTM | 19,246 | 3 | 0 | 4 | 105 | 20,734 | 3 | 0 | 4 | 113 | 20,996 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T5VS | 20,017 | 4 | 0 | 1 | 109 | 21,564 | 4 | 0 | 1 | 118 | 21,837 | 4 | 0 | 1 | 119 | | | | | |
| | | | | T5S | 20,033 | 4 | 0 | 2 | 109 | 21,581 | 4 | 0 | 2 | 118 | 21,854 | 4 | 0 | 2 | 119 | | | | | |
| | | | | T5M | 19,983 | 4 | 0 | 2 | 109 | 21,527 | 5 | 0 | 3 | 118 | 21,799 | 5 | 0 | 3 | 119 | | | | | |
| | | | | T5W | 19,852 | 5 | 0 | 3 | 108 | 21,386 | 5 | 0 | 3 | 117 | 21,656 | 5 | 0 | 3 | 118 | | | | | |
| | | | | BLC | 15,780 | 2 | 0 | 3 | 86 | 16,999 | 2 | 0 | 3 | 93 | 17,214 | 2 | 0 | 3 | 94 | | | | | |
| | | | | LCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| | | | | RCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| 60 | 1050 | P8 | 207W | T1S | 22,490 | 3 | 0 | 3 | 109 | 24,228 | 3 | 0 | 3 | 117 | 24,535 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T2S | 22,466 | 3 | 0 | 4 | 109 | 24,202 | 3 | 0 | 4 | 117 | 24,509 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T2M | 22,582 | 3 | 0 | 3 | 109 | 24,327 | 3 | 0 | 3 | 118 | 24,635 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 21,870 | 3 | 0 | 4 | 106 | 23,560 | 3 | 0 | 4 | 114 | 23,858 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T3M | 22,527 | 3 | 0 | 4 | 109 | 24,268 | 3 | 0 | 4 | 117 | 24,575 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T4M | 22,038 | 3 | 0 | 4 | 106 | 23,741 | 3 | 0 | 4 | 115 | 24,041 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 22,513 | 3 | 0 | 4 | 109 | 24,253 | 3 | 0 | 4 | 117 | 24,560 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T5VS | 23,415 | 5 | 0 | 1 | 113 | 25,224 | 5 | 0 | 1 | 122 | 25,543 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 23,434 | 4 | 0 | 2 | 113 | 25,244 | 4 | 0 | 2 | 122 | 25,564 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,221 | 5 | 0 | 4 | 112 | 25,016 | 5 | 0 | 4 | 121 | 25,332 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 18,458 | 2 | 0 | 3 | 89 | 19,885 | 2 | 0 | 3 | 96 | 20,136 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | P9 | 241W | T1S | 25,575 | 3 | 0 | 3 | 106 | 27,551 | 3 | 0 | 3 | 114 | 27,900 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 25,548 | 3 | 0 | 4 | 106 | 27,522 | 3 | 0 | 4 | 114 | 27,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T2M | 25,680 | 3 | 0 | 3 | 107 | 27,664 | 3 | 0 | 3 | 115 | 28,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T3S | 24,870 | 3 | 0 | 4 | 103 | 26,791 | 3 | 0 | 4 | 111 | 27,130 | 3 | 0 | 4 | 113 | | | | | |
| | | | | T3M | 25,617 | 3 | 0 | 4 | 106 | 27,597 | 3 | 0 | 4 | 115 | 27,946 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T4M | 25,061 | 3 | 0 | 4 | 104 | 26,997 | 3 | 0 | 4 | 112 | 27,339 | 3 | 0 | 4 | 113 | | | | | |
| | | | | TFTM | 25,602 | 3 | 0 | 4 | 106 | 27,580 | 3 | 0 | 4 | 114 | 27,929 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T5VS | 26,626 | 5 | 0 | 1 | 110 | 28,684 | 5 | 0 | 1 | 119 | 29,047 | 5 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 26,648 | 4 | 0 | 2 | 111 | 28,707 | 5 | 0 | 2 | 119 | 29,070 | 5 | 0 | 2 | 121 | | | | | |
| | | | | T5M | 26,581 | 5 | 0 | 3 | 110 | 28,635 | 5 | 0 | 3 | 119 | 28,997 | 5 | 0 | 3 | 120 | | | | | |
| | | | | T5W | 26,406 | 5 | 0 | 4 | 110 | 28,447 | 5 | 0 | 4 | 118 | 28,807 | 5 | 0 | 4 | 120 | | | | | |
| | | | | BLC | 20,990 | 2 | 0 | 3 | 87 | 22,612 | 2 | 0 | 3 | 94 | 22,898 | 2 | 0 | 3 | 95 | | | | | |
| | | | | LCCO | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |
| | | | | | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Rotated Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 60 | 530 | **P10** | 106W | T1S | 13,042 | 3 | 0 | 3 | 123 | 14,050 | 3 | 0 | 3 | 133 | 14,228 | 3 | 0 | 3 | 134 | 7,167 | 2 | 0 | 2 | 72 |
| | | | | T2S | 12,967 | 4 | 0 | 4 | 122 | 13,969 | 4 | 0 | 4 | 132 | 14,146 | 4 | 0 | 4 | 133 | 7,507 | 2 | 0 | 2 | 76 |
| | | | | T2M | 13,201 | 3 | 0 | 3 | 125 | 14,221 | 3 | 0 | 3 | 134 | 14,401 | 3 | 0 | 3 | 136 | 7,263 | 2 | 0 | 2 | 73 |
| | | | | T3S | 12,766 | 4 | 0 | 4 | 120 | 13,752 | 4 | 0 | 4 | 130 | 13,926 | 4 | 0 | 4 | 131 | 7,424 | 2 | 0 | 2 | 75 |
| | | | | T3M | 13,193 | 4 | 0 | 4 | 124 | 14,213 | 4 | 0 | 4 | 134 | 14,393 | 4 | 0 | 4 | 136 | 7,387 | 2 | 0 | 2 | 75 |
| | | | | T4M | 12,944 | 4 | 0 | 4 | 122 | 13,945 | 4 | 0 | 4 | 132 | 14,121 | 4 | 0 | 4 | 133 | 7,400 | 2 | 0 | 2 | 75 |
| | | | | TFTM | 13,279 | 4 | 0 | 4 | 125 | 14,305 | 4 | 0 | 4 | 135 | 14,486 | 4 | 0 | 4 | 137 | 7,288 | 1 | 0 | 2 | 74 |
| | | | | T5VS | 13,372 | 3 | 0 | 1 | 126 | 14,405 | 4 | 0 | 1 | 136 | 14,588 | 4 | 0 | 1 | 138 | 7,734 | 3 | 0 | 1 | 78 |
| | | | | T5S | 13,260 | 3 | 0 | 1 | 125 | 14,284 | 3 | 0 | 1 | 135 | 14,465 | 3 | 0 | 1 | 136 | 7,641 | 3 | 0 | 0 | 77 |
| | | | | T5M | 13,256 | 4 | 0 | 2 | 125 | 14,281 | 4 | 0 | 2 | 135 | 14,462 | 4 | 0 | 2 | 136 | 7,737 | 3 | 0 | 2 | 78 |
| | | | | T5W | 13,137 | 4 | 0 | 3 | 124 | 14,153 | 4 | 0 | 3 | 134 | 14,332 | 4 | 0 | 3 | 135 | 7,522 | 3 | 0 | 2 | 76 |
| | | | | BLC | 10,906 | 3 | 0 | 3 | 103 | 11,749 | 3 | 0 | 3 | 111 | 11,898 | 3 | 0 | 3 | 112 | | | | | |
| | | | | LCCO | 7,789 | 1 | 0 | 3 | 73 | 8,391 | 1 | 0 | 3 | 79 | 8,497 | 1 | 0 | 3 | 80 | | | | | |
| | | | | RCCO | 7,779 | 4 | 0 | 4 | 73 | 8,380 | 4 | 0 | 4 | 79 | 8,486 | 4 | 0 | 4 | 80 | | | | | |
| 60 | 700 | **P11** | 137W | T1S | 16,556 | 3 | 0 | 3 | 121 | 17,835 | 3 | 0 | 3 | 130 | 18,061 | 4 | 0 | 4 | 132 | 8,952 | 2 | 0 | 2 | 68 |
| | | | | T2S | 16,461 | 4 | 0 | 4 | 120 | 17,733 | 4 | 0 | 4 | 129 | 17,957 | 4 | 0 | 4 | 131 | 9,377 | 2 | 0 | 2 | 72 |
| | | | | T2M | 16,758 | 4 | 0 | 4 | 122 | 18,053 | 4 | 0 | 4 | 132 | 18,281 | 4 | 0 | 4 | 133 | 9,072 | 2 | 0 | 2 | 69 |
| | | | | T3S | 16,205 | 4 | 0 | 4 | 118 | 17,457 | 4 | 0 | 4 | 127 | 17,678 | 4 | 0 | 4 | 129 | 9,273 | 2 | 0 | 2 | 71 |
| | | | | T3M | 16,748 | 4 | 0 | 4 | 122 | 18,042 | 4 | 0 | 4 | 132 | 18,271 | 4 | 0 | 4 | 133 | 9,227 | 2 | 0 | 2 | 70 |
| | | | | T4M | 16,432 | 4 | 0 | 4 | 120 | 17,702 | 4 | 0 | 4 | 129 | 17,926 | 4 | 0 | 4 | 131 | 9,243 | 2 | 0 | 2 | 71 |
| | | | | TFTM | 16,857 | 4 | 0 | 4 | 123 | 18,159 | 4 | 0 | 4 | 133 | 18,389 | 4 | 0 | 4 | 134 | 9,103 | 2 | 0 | 2 | 69 |
| | | | | T5VS | 16,975 | 4 | 0 | 1 | 124 | 18,287 | 4 | 0 | 1 | 133 | 18,518 | 4 | 0 | 1 | 135 | 9,661 | 3 | 0 | 1 | 74 |
| | | | | T5S | 16,832 | 4 | 0 | 1 | 123 | 18,133 | 4 | 0 | 2 | 132 | 18,362 | 4 | 0 | 2 | 134 | 9,544 | 3 | 0 | 1 | 73 |
| | | | | T5M | 16,828 | 4 | 0 | 2 | 123 | 18,128 | 4 | 0 | 2 | 132 | 18,358 | 4 | 0 | 2 | 134 | 9,665 | 3 | 0 | 2 | 74 |
| | | | | T5W | 16,677 | 4 | 0 | 3 | 122 | 17,966 | 5 | 0 | 3 | 131 | 18,193 | 5 | 0 | 3 | 133 | 9,395 | 4 | 0 | 2 | 72 |
| | | | | BLC | 13,845 | 3 | 0 | 3 | 101 | 14,915 | 3 | 0 | 3 | 109 | 15,103 | 3 | 0 | 3 | 110 | | | | | |
| | | | | LCCO | 9,888 | 1 | 0 | 3 | 72 | 10,652 | 2 | 0 | 3 | 78 | 10,787 | 2 | 0 | 3 | 79 | | | | | |
| | | | | RCCO | 9,875 | 4 | 0 | 4 | 72 | 10,638 | 4 | 0 | 4 | 78 | 10,773 | 4 | 0 | 4 | 79 | | | | | |
| 60 | 1050 | **P12** | 207W | T1S | 22,996 | 4 | 0 | 4 | 111 | 24,773 | 4 | 0 | 4 | 120 | 25,087 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T2S | 22,864 | 4 | 0 | 4 | 110 | 24,631 | 5 | 0 | 5 | 119 | 24,943 | 5 | 0 | 5 | 120 | | | | | |
| | | | | T2M | 23,277 | 4 | 0 | 4 | 112 | 25,075 | 4 | 0 | 4 | 121 | 25,393 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T3S | 22,509 | 4 | 0 | 4 | 109 | 24,248 | 5 | 0 | 5 | 117 | 24,555 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T3M | 23,263 | 4 | 0 | 4 | 112 | 25,061 | 4 | 0 | 4 | 121 | 25,378 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T4M | 22,824 | 5 | 0 | 5 | 110 | 24,588 | 5 | 0 | 5 | 119 | 24,899 | 5 | 0 | 5 | 120 | | | | | |
| | | | | TFTM | 23,414 | 5 | 0 | 5 | 113 | 25,223 | 5 | 0 | 5 | 122 | 25,543 | 5 | 0 | 5 | 123 | | | | | |
| | | | | T5VS | 23,579 | 5 | 0 | 1 | 114 | 25,401 | 5 | 0 | 1 | 123 | 25,722 | 5 | 0 | 1 | 124 | | | | | |
| | | | | T5S | 23,380 | 4 | 0 | 2 | 113 | 25,187 | 4 | 0 | 2 | 122 | 25,506 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,165 | 5 | 0 | 4 | 112 | 24,955 | 5 | 0 | 4 | 121 | 25,271 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 19,231 | 4 | 0 | 4 | 93 | 20,717 | 4 | 0 | 4 | 100 | 20,979 | 4 | 0 | 4 | 101 | | | | | |
| | | | | LCCO | 13,734 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,716 | 4 | 0 | 4 | 66 | 14,776 | 4 | 0 | 4 | 71 | 14,963 | 4 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | **P13** | 231W | T1S | 25,400 | 4 | 0 | 4 | 110 | 27,363 | 4 | 0 | 4 | 118 | 27,709 | 4 | 0 | 4 | 120 | | | | | |
| | | | | T2S | 25,254 | 5 | 0 | 5 | 109 | 27,205 | 5 | 0 | 5 | 118 | 27,550 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T2M | 25,710 | 4 | 0 | 4 | 111 | 27,696 | 4 | 0 | 4 | 120 | 28,047 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T3S | 24,862 | 5 | 0 | 5 | 108 | 26,783 | 5 | 0 | 5 | 116 | 27,122 | 5 | 0 | 5 | 117 | | | | | |
| | | | | T3M | 25,695 | 5 | 0 | 5 | 111 | 27,680 | 5 | 0 | 5 | 120 | 28,031 | 5 | 0 | 5 | 121 | | | | | |
| | | | | T4M | 25,210 | 5 | 0 | 5 | 109 | 27,158 | 5 | 0 | 5 | 118 | 27,502 | 5 | 0 | 5 | 119 | | | | | |
| | | | | TFTM | 25,861 | 5 | 0 | 5 | 112 | 27,860 | 5 | 0 | 5 | 121 | 28,212 | 5 | 0 | 5 | 122 | | | | | |
| | | | | T5VS | 26,043 | 5 | 0 | 1 | 113 | 28,056 | 5 | 0 | 1 | 121 | 28,411 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 25,824 | 4 | 0 | 2 | 112 | 27,819 | 5 | 0 | 2 | 120 | 28,172 | 5 | 0 | 2 | 122 | | | | | |
| | | | | T5M | 25,818 | 5 | 0 | 3 | 112 | 27,813 | 5 | 0 | 3 | 120 | 28,165 | 5 | 0 | 3 | 122 | | | | | |
| | | | | T5W | 25,586 | 5 | 0 | 4 | 111 | 27,563 | 5 | 0 | 4 | 119 | 27,912 | 5 | 0 | 4 | 121 | | | | | |
| | | | | BLC | 21,241 | 4 | 0 | 4 | 92 | 22,882 | 4 | 0 | 4 | 99 | 23,172 | 4 | 0 | 4 | 100 | | | | | |
| | | | | LCCO | 15,170 | 2 | 0 | 4 | 66 | 16,342 | 2 | 0 | 4 | 71 | 16,549 | 2 | 0 | 4 | 72 | | | | | |
| | | | | | 15,150 | 5 | 0 | 5 | 66 | 16,321 | 5 | 0 | 5 | 71 | 16,527 | 5 | 0 | 5 | 72 | | | | | |


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## FEATURES & SPECIFICATIONS

**INTENDED USE**
The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

**CONSTRUCTION**
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 $ft^2$) for optimized pole wind loading.

**FINISH**
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

**OPTICS**
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

**ELECTRICAL**
Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

**INSTALLATION**
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

**LISTINGS**
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

**WARRANTY**
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.


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# D-Series Size 1
## LED Area Luminaire

Catalog Number

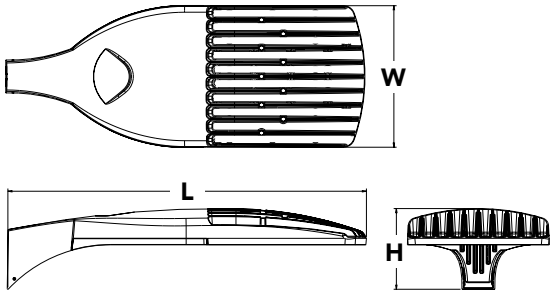
Notes

Type Fixture SA

Hit the Tab key or mouse over the page to see all interactive elements.

## Specifications

| | |
|---|---|
| **EPA:** | 1.01 ft² (0.09 m²) |
| **Length:** | 33″ (83.8 cm) |
| **Width:** | 13″ (33.0 cm) |
| **Height:** | 7-1/2″ (19.0 cm) |
| **Weight (max):** | 27 lbs (12.2 kg) |




## A+ Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability1
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background[1]

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

## Ordering Information

**EXAMPLE:** DSX1 LED P7 40K T3M MVOLT SPA DDBXD

| DSX1LED | P3 | 50K | T4M | MVOLT | SPA |
|---|---|---|---|---|---|
| **Series** | **LEDs** | **Color temperature** | **Distribution** | **Voltage** | **Mounting** |

**Series**
DSX1 LED

**LEDs**
**Forward optics**
P1 P4 P7
P2 P5 P8
P3 P6 P9
**Rotated optics**
P10[1] P12[1]
P11[1] P13[1]

**Color temperature**
30K 3000 K
40K 4000 K
50K 5000 K
AMBPC Amber phosphor converted[2]

**Distribution**
T1S Type I short
T2S Type II short
T2M Type II medium
T3S Type III short
T3M Type III medium
T4M Type IV medium
TFTM Forward throw medium
T5VS Type V very short
T5S Type V short
T5M Type V medium
T5W Type V wide
BLC Backlight control[2,3]
LCCO Left corner cutoff[2,3]
RCCO Right corner cutoff[2,3]

**Voltage**
MVOLT[4,5]
120[6]
208[5,6]
240[5,6]
277[6]
347[5,6,7]
480[5,6,7]

**Mounting**
**Shipped included**
SPA Square pole mounting
RPA Round pole mounting
WBA Wall bracket
SPUMBA Square pole universal mounting adaptor[8]
RPUMBA Round pole universal mounting adaptor[8]
**Shipped separately**
KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[9]

### Control options

**Shipped installed**
NLTAIR2 nLight AIR generation 2 enabled[10]
PER NEMA twist-lock receptacle only (controls ordered separate)[11]
PER5 Five-wire receptacle only (controls ordered separate)[11,12]
PER7 Seven-wire receptacle only (controls ordered separate)[11,12]
DMG 0-10V dimming extend out back of housing for external control (leads exit fixture)
DS Dual switching[13,14]
PIR Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRH Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[5,15,16]
PIRHN Network, Bi-Level motion/ambient sensor[17]
PIR1FC3V Bi-level, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[5,15,16]
PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[5,15,16]
BL30 Bi-level switched dimming, 30%[5,14,18]
BL50 Bi-level switched dimming, 50%[5,14,18]
PNMTDD3 Part night, dim till dawn[5,19]
PNMT5D3 Part night, dim 5 hrs[5,19]
PNMT6D3 Part night, dim 6 hrs[5,19]
PNMT7D3 Part night, dim 7 hrs[5,19]
FAO Field adjustable output[20]

### Other options

**Shipped installed**
HS House-side shield[21]
SF Single fuse (120, 277, 347V)[6]
DF Double fuse (208, 240, 480V)[6]
L90 Left rotated optics[1]
R90 Right rotated optics[1]
**Shipped separately**
BS Bird spikes[22]
EGS External glare shield[22]

### Finish *(required)*

DDBXD Dark bronze
DBLXD Black
DNAXD Natural aluminum
DWHXD White
DDBTXD Textured dark bronze
DBLBXD Textured black
DNATXD Textured natural aluminum
DWHGXD Textured white


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## Ordering Information

### Accessories

*Ordered and shipped separately.*

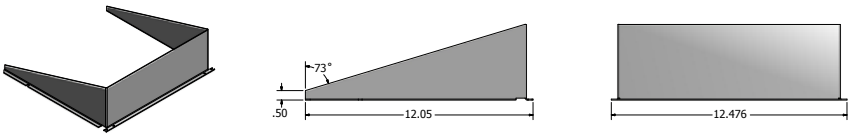
| | |
|---|---|
| DLL127F 1.5 JU | Photocell - SSL twist-lock (120-277V) [23] |
| DLL347F 1.5 CUL JU | Photocell - SSL twist-lock (347V) [23] |
| DLL480F 1.5 CUL JU | Photocell - SSL twist-lock (480V) [23] |
| DSHORT SBK U | Shorting cap [23] |
| DSX1HS 30C U | House-side shield for 30 LED unit[21] |
| DSX1HS 40C U | House-side shield for 40 LED unit[21] |
| DSX1HS 60C U | House-side shield for 60 LED unit[21] |
| PUMBA DDBXD U* | Square and round pole universal mounting bracket (specify finish)[24] |
| KMA8 DDBXD U | Mast arm mounting bracket adaptor (specify finish) [8] |

*For more control options, visit DTL and ROAM online.*

**NOTES**

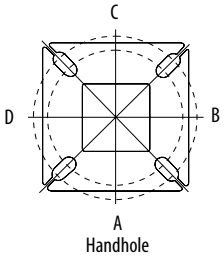
1 P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
2 AMBPC is not available with BLC, LCCO, RCCO or P4, P7, P8, P9 or P13.
3 Not available with HS.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 Any PIRx with BL30, BL50 or PNMT, is not available with 208V, 240V, 347V, 480V or MVOLT. It is only available in 120V or 277V specified.
6 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
7 Not available in P1 or P10. Not available with BL30, BL50 or PNMT options.
8 Existing drilled pole only. Available as a separate combination accessory; for retrofit use only: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
9 Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
10 Must be ordered with PIRHN.
11 Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
12 If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR. Node with integral dimming. Shorting cap included.
13 Provides 50/50fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
14 Requires (2) separately switched circuits.
15 Reference Motion Sensor table on page 3.
16 Reference PER table on page 3 to see functionality.
17 Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
18 Not available with 347V, 480V, PNMT, DS. For PER5 or PER7, see PER Table on page 3. Requires isolated neutral.
19 Not available with 347V, 480V, DS, BL30, BL50. For PER5 or PER7, see PER Table on page 3. Separate Dusk to Dawn required.
20 Not available with other dimming controls options
21 Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
22 Must be ordered with fixture for factory pre-drilling.
23 Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
24 For retrofit use only.

## External Glare Shield




## Drilling

### HANDHOLE ORIENTATION

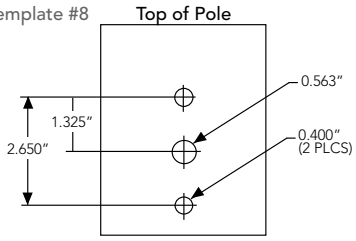



### Tenon Mounting Slipfitter **

| Tenon O.D. | Single Unit | 2 at 180° | 2 at 90° | 3 at 120° | 3 at 90° | 4 at 90° |
|---|---|---|---|---|---|---|
| 2-3/8" | AST20-190 | AST20-280 | AST20-290 | AST20-320 | AST20-390 | AST20-490 |
| 2-7/8" | AST25-190 | AST25-280 | AST25-290 | AST25-320 | AST25-390 | AST25-490 |
| 4" | AST35-190 | AST35-280 | AST35-290 | AST35-320 | AST35-390 | AST35-490 |

| Pole drilling nomenclature: # of heads at degree from handhole (default side A) | | | | | |
|---|---|---|---|---|---|
| DM19AS | DM28AS | DM29AS | DM32AS | DM39AS | DM49AS |
| 1 @ 90° | 2 @ 280° | 2 @ 90° | 3 @ 120° | 3 @ 90° | 4 @ 90° |
| Side B | Side B & D | Side B & C | Round pole only | Side B, C, & D | Sides A, B, C, D |
| Note: Review luminaire spec sheet for specific nomenclature | | | | | |

Template #8

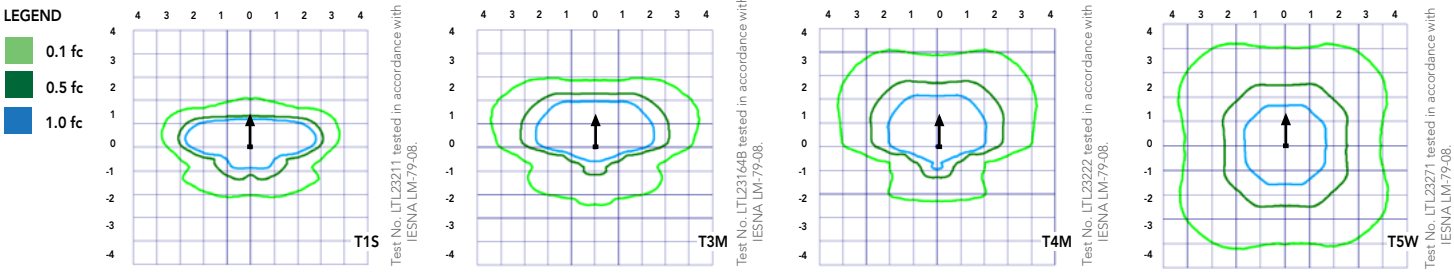



| Pole top or tenon O.D. | 4.5" @ 90° | 4" @ 90° | 3.5" @ 90° | 3" @ 90° | 4.5" @ 120° | 4" @ 120° | 3.5" @ 120° | 3" @ 120° |
|---|---|---|---|---|---|---|---|---|
| DSX SPA | Y | Y | Y | N | - | - | - | - |
| DSX RPA | Y | Y | N | N | Y | Y | Y | Y |
| DSX SPUMBA | Y | N | N | N | - | - | - | - |
| DSX RPUMBA | N | N | N | N | Y | Y | Y | N |
| | | | | | *3 fixtures @120 require round pole top/tenon. | | | |

## Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Area Size 1 homepage.

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').






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## Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

| Ambient | | Lumen Multiplier |
|---|---|---|
| 0°C | 32°F | 1.04 |
| 5°C | 41°F | 1.04 |
| 10°C | 50°F | 1.03 |
| 15°C | 50°F | 1.02 |
| 20°C | 68°F | 1.01 |
| **25°C** | **77°F** | **1.00** |
| 30°C | 86°F | 0.99 |
| 35°C | 95°F | 0.98 |
| 40°C | 104°F | 0.97 |

## Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

| Operating Hours | 0 | 25000 | 50000 | 100000 |
|---|---|---|---|---|
| Lumen Maintenance Factor | 1.00 | 0.96 | 0.92 | 0.85 |

## Electrical Load

| | | | | | Current (A) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Performance Package | LED Count | Drive Current | Wattage | 120 | 208 | 240 | 277 | 347 | 480 |
| Forward Optics (Non-Rotated) | P1 | 30 | 530 | 54 | 0.45 | 0.26 | 0.23 | 0.19 | 0.10 | 0.12 |
| | P2 | 30 | 700 | 70 | 0.59 | 0.34 | 0.30 | 0.25 | 0.20 | 0.16 |
| | P3 | 30 | 1050 | 102 | 0.86 | 0.50 | 0.44 | 0.38 | 0.30 | 0.22 |
| | P4 | 30 | 1250 | 125 | 1.06 | 0.60 | 0.52 | 0.46 | 0.37 | 0.27 |
| | P5 | 30 | 1400 | 138 | 1.16 | 0.67 | 0.58 | 0.51 | 0.40 | 0.29 |
| | P6 | 40 | 1250 | 163 | 1.36 | 0.78 | 0.68 | 0.59 | 0.47 | 0.34 |
| | P7 | 40 | 1400 | 183 | 1.53 | 0.88 | 0.76 | 0.66 | 0.53 | 0.38 |
| | P8 | 60 | 1050 | 207 | 1.74 | 0.98 | 0.87 | 0.76 | 0.64 | 0.49 |
| | P9 | 60 | 1250 | 241 | 2.01 | 1.16 | 1.01 | 0.89 | 0.70 | 0.51 |
| Rotated Optics (Requires L90 or R90) | P10 | 60 | 530 | 106 | 0.90 | 0.52 | 0.47 | 0.43 | 0.33 | 0.27 |
| | P11 | 60 | 700 | 137 | 1.15 | 0.67 | 0.60 | 0.53 | 0.42 | 0.32 |
| | P12 | 60 | 1050 | 207 | 1.74 | 0.99 | 0.87 | 0.76 | 0.60 | 0.46 |
| | P13 | 60 | 1250 | 231 | 1.93 | 1.12 | 0.97 | 0.86 | 0.67 | 0.49 |

| Motion Sensor Default Settings | | | | | | |
|---|---|---|---|---|---|---|
| Option | Dimmed State | High Level (when triggered) | Photocell Operation | Dwell Time | Ramp-up Time | Ramp-down Time |
| PIR or PIRH | 3V (37%) Output | 10V (100%) Output | Enabled @ 5FC | 5 min | 3 sec | 5 min |
| *PIR1FC3V or PIRH1FC3V | 3V (37%) Output | 10V (100%) Output | Enabled @ 1FC | 5 min | 3 sec | 5 min |
| *for use with Inline Dusk to Dawn or timer. | | | | | | |

| PER Table | | | | | | |
|---|---|---|---|---|---|---|
| Control | PER (3 wire) | PER5 (5 wire) | | PER7 (7 wire) | | |
| | | | Wire 4/Wire5 | | Wire 4/Wire5 | Wire 6/Wire7 |
| Photocontrol Only (On/Off) | ✔ | ⚠ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM | ⊘ | ✔ | Wired to dimming leads on driver | ⚠ | Wired to dimming leads on driver | Wires Capped inside fixture |
| ROAM with Motion (ROAM on/off only) | ⊘ | ⚠ | Wires Capped inside fixture | ⚠ | Wires Capped inside fixture | Wires Capped inside fixture |
| Future-proof* | ⊘ | ⚠ | Wired to dimming leads on driver | ✔ | Wired to dimming leads on driver | Wires Capped inside fixture |
| Future-proof* with Motion | ⊘ | ⚠ | Wires Capped inside fixture | ✔ | Wires Capped inside fixture | Wires Capped inside fixture |

✔ Recommended
⊘ Will not work
⚠ Alternate

*Future-proof means: Ability to change controls in the future.


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 30 | 530 | P1 | 54W | T1S | 6,457 | 2 | 0 | 2 | 120 | 6,956 | 2 | 0 | 2 | 129 | 7,044 | 2 | 0 | 2 | 130 | 3,640 | 1 | 0 | 1 | 70 |
| | | | | T2S | 6,450 | 2 | 0 | 2 | 119 | 6,949 | 2 | 0 | 2 | 129 | 7,037 | 2 | 0 | 2 | 130 | 3,813 | 1 | 0 | 1 | 73 |
| | | | | T2M | 6,483 | 1 | 0 | 1 | 120 | 6,984 | 2 | 0 | 2 | 129 | 7,073 | 2 | 0 | 2 | 131 | 3,689 | 1 | 0 | 1 | 71 |
| | | | | T3S | 6,279 | 2 | 0 | 2 | 116 | 6,764 | 2 | 0 | 2 | 125 | 6,850 | 2 | 0 | 2 | 127 | 3,770 | 1 | 0 | 1 | 73 |
| | | | | T3M | 6,468 | 1 | 0 | 2 | 120 | 6,967 | 1 | 0 | 2 | 129 | 7,056 | 1 | 0 | 2 | 131 | 3,752 | 1 | 0 | 1 | 72 |
| | | | | T4M | 6,327 | 1 | 0 | 2 | 117 | 6,816 | 1 | 0 | 2 | 126 | 6,902 | 1 | 0 | 2 | 128 | 3,758 | 1 | 0 | 1 | 72 |
| | | | | TFTM | 6,464 | 1 | 0 | 2 | 120 | 6,963 | 1 | 0 | 2 | 129 | 7,051 | 1 | 0 | 2 | 131 | 3,701 | 1 | 0 | 1 | 71 |
| | | | | T5VS | 6,722 | 2 | 0 | 0 | 124 | 7,242 | 3 | 0 | 0 | 134 | 7,334 | 3 | 0 | 0 | 136 | 3,928 | 2 | 0 | 0 | 76 |
| | | | | T5S | 6,728 | 2 | 0 | 1 | 125 | 7,248 | 2 | 0 | 1 | 134 | 7,340 | 2 | 0 | 1 | 136 | 3,881 | 2 | 0 | 0 | 75 |
| | | | | T5M | 6,711 | 3 | 0 | 1 | 124 | 7,229 | 3 | 0 | 1 | 134 | 7,321 | 3 | 0 | 2 | 136 | 3,930 | 2 | 0 | 1 | 76 |
| | | | | T5W | 6,667 | 3 | 0 | 2 | 123 | 7,182 | 3 | 0 | 2 | 133 | 7,273 | 3 | 0 | 2 | 135 | 3,820 | 3 | 0 | 1 | 73 |
| | | | | BLC | 5,299 | 1 | 0 | 1 | 98 | 5,709 | 1 | 0 | 2 | 106 | 5,781 | 1 | 0 | 2 | 107 | | | | | |
| | | | | LCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| | | | | RCCO | 3,943 | 1 | 0 | 2 | 73 | 4,248 | 1 | 0 | 2 | 79 | 4,302 | 1 | 0 | 2 | 80 | | | | | |
| 30 | 700 | P2 | 70W | T1S | 8,249 | 2 | 0 | 2 | 118 | 8,886 | 2 | 0 | 2 | 127 | 8,999 | 2 | 0 | 2 | 129 | 4,561 | 1 | 0 | 1 | 67 |
| | | | | T2S | 8,240 | 2 | 0 | 2 | 118 | 8,877 | 2 | 0 | 2 | 127 | 8,989 | 2 | 0 | 2 | 128 | 4,777 | 1 | 0 | 1 | 70 |
| | | | | T2M | 8,283 | 2 | 0 | 2 | 118 | 8,923 | 2 | 0 | 2 | 127 | 9,036 | 2 | 0 | 2 | 129 | 4,622 | 1 | 0 | 2 | 68 |
| | | | | T3S | 8,021 | 2 | 0 | 2 | 115 | 8,641 | 2 | 0 | 2 | 123 | 8,751 | 2 | 0 | 2 | 125 | 4,724 | 1 | 0 | 1 | 69 |
| | | | | T3M | 8,263 | 2 | 0 | 2 | 118 | 8,901 | 2 | 0 | 2 | 127 | 9,014 | 2 | 0 | 2 | 129 | 4,701 | 1 | 0 | 2 | 69 |
| | | | | T4M | 8,083 | 2 | 0 | 2 | 115 | 8,708 | 2 | 0 | 2 | 124 | 8,818 | 2 | 0 | 2 | 126 | 4,709 | 1 | 0 | 2 | 69 |
| | | | | TFTM | 8,257 | 2 | 0 | 2 | 118 | 8,896 | 2 | 0 | 2 | 127 | 9,008 | 2 | 0 | 2 | 129 | 4,638 | 1 | 0 | 2 | 68 |
| | | | | T5VS | 8,588 | 3 | 0 | 0 | 123 | 9,252 | 3 | 0 | 0 | 132 | 9,369 | 3 | 0 | 0 | 134 | 4,922 | 2 | 0 | 0 | 72 |
| | | | | T5S | 8,595 | 3 | 0 | 1 | 123 | 9,259 | 3 | 0 | 1 | 132 | 9,376 | 3 | 0 | 1 | 134 | 4,863 | 2 | 0 | 0 | 72 |
| | | | | T5M | 8,573 | 3 | 0 | 2 | 122 | 9,236 | 3 | 0 | 2 | 132 | 9,353 | 3 | 0 | 2 | 134 | 4,924 | 3 | 0 | 1 | 72 |
| | | | | T5W | 8,517 | 3 | 0 | 2 | 122 | 9,175 | 4 | 0 | 2 | 131 | 9,291 | 4 | 0 | 2 | 133 | 4,787 | 3 | 0 | 1 | 70 |
| | | | | BLC | 6,770 | 1 | 0 | 2 | 97 | 7,293 | 1 | 0 | 2 | 104 | 7,386 | 1 | 0 | 2 | 106 | | | | | |
| | | | | LCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| | | | | RCCO | 5,038 | 1 | 0 | 2 | 72 | 5,427 | 1 | 0 | 2 | 78 | 5,496 | 1 | 0 | 2 | 79 | | | | | |
| 30 | 1050 | P3 | 102W | T1S | 11,661 | 2 | 0 | 2 | 114 | 12,562 | 3 | 0 | 3 | 123 | 12,721 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2S | 11,648 | 2 | 0 | 2 | 114 | 12,548 | 3 | 0 | 3 | 123 | 12,707 | 3 | 0 | 3 | 125 | | | | | |
| | | | | T2M | 11,708 | 2 | 0 | 2 | 115 | 12,613 | 2 | 0 | 2 | 124 | 12,773 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T3S | 11,339 | 2 | 0 | 2 | 111 | 12,215 | 3 | 0 | 3 | 120 | 12,370 | 3 | 0 | 3 | 121 | | | | | |
| | | | | T3M | 11,680 | 2 | 0 | 2 | 115 | 12,582 | 2 | 0 | 2 | 123 | 12,742 | 2 | 0 | 2 | 125 | | | | | |
| | | | | T4M | 11,426 | 2 | 0 | 3 | 112 | 12,309 | 2 | 0 | 3 | 121 | 12,465 | 2 | 0 | 3 | 122 | | | | | |
| | | | | TFTM | 11,673 | 2 | 0 | 2 | 114 | 12,575 | 2 | 0 | 3 | 123 | 12,734 | 2 | 0 | 3 | 125 | | | | | |
| | | | | T5VS | 12,140 | 3 | 0 | 1 | 119 | 13,078 | 3 | 0 | 1 | 128 | 13,244 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5S | 12,150 | 3 | 0 | 1 | 119 | 13,089 | 3 | 0 | 1 | 128 | 13,254 | 3 | 0 | 1 | 130 | | | | | |
| | | | | T5M | 12,119 | 4 | 0 | 2 | 119 | 13,056 | 4 | 0 | 2 | 128 | 13,221 | 4 | 0 | 2 | 130 | | | | | |
| | | | | T5W | 12,040 | 4 | 0 | 3 | 118 | 12,970 | 4 | 0 | 3 | 127 | 13,134 | 4 | 0 | 3 | 129 | | | | | |
| | | | | BLC | 9,570 | 1 | 0 | 2 | 94 | 10,310 | 1 | 0 | 2 | 101 | 10,440 | 1 | 0 | 2 | 102 | | | | | |
| | | | | LCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| | | | | RCCO | 7,121 | 1 | 0 | 3 | 70 | 7,671 | 1 | 0 | 3 | 75 | 7,768 | 1 | 0 | 3 | 76 | | | | | |
| 30 | 1250 | P4 | 125W | T1S | 13,435 | 3 | 0 | 3 | 107 | 14,473 | 3 | 0 | 3 | 116 | 14,657 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2S | 13,421 | 3 | 0 | 3 | 107 | 14,458 | 3 | 0 | 3 | 116 | 14,641 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T2M | 13,490 | 2 | 0 | 2 | 108 | 14,532 | 3 | 0 | 3 | 116 | 14,716 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T3S | 13,064 | 3 | 0 | 3 | 105 | 14,074 | 3 | 0 | 3 | 113 | 14,252 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T3M | 13,457 | 2 | 0 | 2 | 108 | 14,497 | 2 | 0 | 2 | 116 | 14,681 | 2 | 0 | 2 | 117 | | | | | |
| | | | | T4M | 13,165 | 2 | 0 | 3 | 105 | 14,182 | 2 | 0 | 3 | 113 | 14,362 | 2 | 0 | 3 | 115 | | | | | |
| | | | | TFTM | 13,449 | 2 | 0 | 3 | 108 | 14,488 | 2 | 0 | 3 | 116 | 14,672 | 2 | 0 | 3 | 117 | | | | | |
| | | | | T5VS | 13,987 | 4 | 0 | 1 | 112 | 15,068 | 4 | 0 | 1 | 121 | 15,259 | 4 | 0 | 1 | 122 | | | | | |
| | | | | T5S | 13,999 | 3 | 0 | 1 | 112 | 15,080 | 3 | 0 | 1 | 121 | 15,271 | 3 | 0 | 1 | 122 | | | | | |
| | | | | T5M | 13,963 | 4 | 0 | 2 | 112 | 15,042 | 4 | 0 | 2 | 120 | 15,233 | 4 | 0 | 2 | 122 | | | | | |
| | | | | T5W | 13,872 | 4 | 0 | 3 | 111 | 14,944 | 4 | 0 | 3 | 120 | 15,133 | 4 | 0 | 3 | 121 | | | | | |
| | | | | BLC | 11,027 | 1 | 0 | 2 | 88 | 11,879 | 1 | 0 | 2 | 95 | 12,029 | 1 | 0 | 2 | 96 | | | | | |
| | | | | LCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 8,205 | 1 | 0 | 3 | 66 | 8,839 | 1 | 0 | 3 | 71 | 8,951 | 1 | 0 | 3 | 72 | | | | | |
| 30 | 1400 | P5 | 138W | T1S | 14,679 | 3 | 0 | 3 | 106 | 15,814 | 3 | 0 | 3 | 115 | 16,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 14,664 | 3 | 0 | 3 | 106 | 15,797 | 3 | 0 | 3 | 114 | 15,997 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2M | 14,739 | 3 | 0 | 3 | 107 | 15,878 | 3 | 0 | 3 | 115 | 16,079 | 3 | 0 | 3 | 117 | | | | | |
| | | | | T3S | 14,274 | 3 | 0 | 3 | 103 | 15,377 | 3 | 0 | 3 | 111 | 15,572 | 3 | 0 | 3 | 113 | | | | | |
| | | | | T3M | 14,704 | 2 | 0 | 3 | 107 | 15,840 | 3 | 0 | 3 | 115 | 16,040 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T4M | 14,384 | 2 | 0 | 3 | 104 | 15,496 | 3 | 0 | 3 | 112 | 15,692 | 3 | 0 | 3 | 114 | | | | | |
| | | | | TFTM | 14,695 | 2 | 0 | 3 | 106 | 15,830 | 3 | 0 | 3 | 115 | 16,030 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T5VS | 15,283 | 4 | 0 | 1 | 111 | 16,464 | 4 | 0 | 1 | 119 | 16,672 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 15,295 | 3 | 0 | 1 | 111 | 16,477 | 4 | 0 | 1 | 119 | 16,686 | 4 | 0 | 1 | 121 | | | | | |
| | | | | T5M | 15,257 | 4 | 0 | 2 | 111 | 16,435 | 4 | 0 | 2 | 119 | 16,644 | 4 | 0 | 2 | 121 | | | | | |
| | | | | T5W | 15,157 | 4 | 0 | 3 | 110 | 16,328 | 4 | 0 | 3 | 118 | 16,534 | 4 | 0 | 3 | 120 | | | | | |
| | | | | BLC | 12,048 | 1 | 0 | 2 | 87 | 12,979 | 1 | 0 | 2 | 94 | 13,143 | 1 | 0 | 2 | 95 | | | | | |
| | | | | LCCO | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |
| | | | | | 8,965 | 1 | 0 | 3 | 65 | 9,657 | 1 | 0 | 3 | 70 | 9,780 | 1 | 0 | 3 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Forward Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 40 | 1250 | P6 | 163W | T1S | 17,654 | 3 | 0 | 3 | 108 | 19,018 | 3 | 0 | 3 | 117 | 19,259 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2S | 17,635 | 3 | 0 | 3 | 108 | 18,998 | 3 | 0 | 3 | 117 | 19,238 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T2M | 17,726 | 3 | 0 | 3 | 109 | 19,096 | 3 | 0 | 3 | 117 | 19,337 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 17,167 | 3 | 0 | 3 | 105 | 18,493 | 3 | 0 | 3 | 113 | 18,727 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3M | 17,683 | 3 | 0 | 3 | 108 | 19,049 | 3 | 0 | 3 | 117 | 19,290 | 3 | 0 | 3 | 118 | | | | | |
| | | | | T4M | 17,299 | 3 | 0 | 3 | 106 | 18,635 | 3 | 0 | 4 | 114 | 18,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 17,672 | 3 | 0 | 3 | 108 | 19,038 | 3 | 0 | 4 | 117 | 19,279 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T5VS | 18,379 | 4 | 0 | 1 | 113 | 19,800 | 4 | 0 | 1 | 121 | 20,050 | 4 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 18,394 | 4 | 0 | 2 | 113 | 19,816 | 4 | 0 | 2 | 122 | 20,066 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 18,348 | 4 | 0 | 2 | 113 | 19,766 | 4 | 0 | 2 | 121 | 20,016 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5W | 18,228 | 5 | 0 | 3 | 112 | 19,636 | 5 | 0 | 3 | 120 | 19,885 | 5 | 0 | 3 | 122 | | | | | |
| | | | | BLC | 14,489 | 2 | 0 | 2 | 89 | 15,609 | 2 | 0 | 3 | 96 | 15,806 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| | | | | RCCO | 10,781 | 1 | 0 | 3 | 66 | 11,614 | 1 | 0 | 3 | 71 | 11,761 | 2 | 0 | 3 | 72 | | | | | |
| 40 | 1400 | P7 | 183W | T1S | 19,227 | 3 | 0 | 3 | 105 | 20,712 | 3 | 0 | 3 | 113 | 20,975 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T2S | 19,206 | 3 | 0 | 3 | 105 | 20,690 | 3 | 0 | 3 | 113 | 20,952 | 3 | 0 | 3 | 114 | | | | | |
| | | | | T2M | 19,305 | 3 | 0 | 3 | 105 | 20,797 | 3 | 0 | 3 | 114 | 21,060 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T3S | 18,696 | 3 | 0 | 3 | 102 | 20,141 | 3 | 0 | 3 | 110 | 20,396 | 3 | 0 | 4 | 111 | | | | | |
| | | | | T3M | 19,258 | 3 | 0 | 3 | 105 | 20,746 | 3 | 0 | 3 | 113 | 21,009 | 3 | 0 | 3 | 115 | | | | | |
| | | | | T4M | 18,840 | 3 | 0 | 4 | 103 | 20,296 | 3 | 0 | 4 | 111 | 20,553 | 3 | 0 | 4 | 112 | | | | | |
| | | | | TFTM | 19,246 | 3 | 0 | 4 | 105 | 20,734 | 3 | 0 | 4 | 113 | 20,996 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T5VS | 20,017 | 4 | 0 | 1 | 109 | 21,564 | 4 | 0 | 1 | 118 | 21,837 | 4 | 0 | 1 | 119 | | | | | |
| | | | | T5S | 20,033 | 4 | 0 | 2 | 109 | 21,581 | 4 | 0 | 2 | 118 | 21,854 | 4 | 0 | 2 | 119 | | | | | |
| | | | | T5M | 19,983 | 4 | 0 | 2 | 109 | 21,527 | 5 | 0 | 3 | 118 | 21,799 | 5 | 0 | 3 | 119 | | | | | |
| | | | | T5W | 19,852 | 5 | 0 | 3 | 108 | 21,386 | 5 | 0 | 3 | 117 | 21,656 | 5 | 0 | 3 | 118 | | | | | |
| | | | | BLC | 15,780 | 2 | 0 | 3 | 86 | 16,999 | 2 | 0 | 3 | 93 | 17,214 | 2 | 0 | 3 | 94 | | | | | |
| | | | | LCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| | | | | RCCO | 11,742 | 2 | 0 | 3 | 64 | 12,649 | 2 | 0 | 3 | 69 | 12,809 | 2 | 0 | 3 | 70 | | | | | |
| 60 | 1050 | P8 | 207W | T1S | 22,490 | 3 | 0 | 3 | 109 | 24,228 | 3 | 0 | 3 | 117 | 24,535 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T2S | 22,466 | 3 | 0 | 4 | 109 | 24,202 | 3 | 0 | 4 | 117 | 24,509 | 3 | 0 | 4 | 118 | | | | | |
| | | | | T2M | 22,582 | 3 | 0 | 3 | 109 | 24,327 | 3 | 0 | 3 | 118 | 24,635 | 3 | 0 | 3 | 119 | | | | | |
| | | | | T3S | 21,870 | 3 | 0 | 4 | 106 | 23,560 | 3 | 0 | 4 | 114 | 23,858 | 3 | 0 | 4 | 115 | | | | | |
| | | | | T3M | 22,527 | 3 | 0 | 4 | 109 | 24,268 | 3 | 0 | 4 | 117 | 24,575 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T4M | 22,038 | 3 | 0 | 4 | 106 | 23,741 | 3 | 0 | 4 | 115 | 24,041 | 3 | 0 | 4 | 116 | | | | | |
| | | | | TFTM | 22,513 | 3 | 0 | 4 | 109 | 24,253 | 3 | 0 | 4 | 117 | 24,560 | 3 | 0 | 4 | 119 | | | | | |
| | | | | T5VS | 23,415 | 5 | 0 | 1 | 113 | 25,224 | 5 | 0 | 1 | 122 | 25,543 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 23,434 | 4 | 0 | 2 | 113 | 25,244 | 4 | 0 | 2 | 122 | 25,564 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,221 | 5 | 0 | 4 | 112 | 25,016 | 5 | 0 | 4 | 121 | 25,332 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 18,458 | 2 | 0 | 3 | 89 | 19,885 | 2 | 0 | 3 | 96 | 20,136 | 2 | 0 | 3 | 97 | | | | | |
| | | | | LCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,735 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | P9 | 241W | T1S | 25,575 | 3 | 0 | 3 | 106 | 27,551 | 3 | 0 | 3 | 114 | 27,900 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T2S | 25,548 | 3 | 0 | 4 | 106 | 27,522 | 3 | 0 | 4 | 114 | 27,871 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T2M | 25,680 | 3 | 0 | 3 | 107 | 27,664 | 3 | 0 | 3 | 115 | 28,014 | 3 | 0 | 3 | 116 | | | | | |
| | | | | T3S | 24,870 | 3 | 0 | 4 | 103 | 26,791 | 3 | 0 | 4 | 111 | 27,130 | 3 | 0 | 4 | 113 | | | | | |
| | | | | T3M | 25,617 | 3 | 0 | 4 | 106 | 27,597 | 3 | 0 | 4 | 115 | 27,946 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T4M | 25,061 | 3 | 0 | 4 | 104 | 26,997 | 3 | 0 | 4 | 112 | 27,339 | 3 | 0 | 4 | 113 | | | | | |
| | | | | TFTM | 25,602 | 3 | 0 | 4 | 106 | 27,580 | 3 | 0 | 4 | 114 | 27,929 | 3 | 0 | 4 | 116 | | | | | |
| | | | | T5VS | 26,626 | 5 | 0 | 1 | 110 | 28,684 | 5 | 0 | 1 | 119 | 29,047 | 5 | 0 | 1 | 121 | | | | | |
| | | | | T5S | 26,648 | 4 | 0 | 2 | 111 | 28,707 | 5 | 0 | 2 | 119 | 29,070 | 5 | 0 | 2 | 121 | | | | | |
| | | | | T5M | 26,581 | 5 | 0 | 3 | 110 | 28,635 | 5 | 0 | 3 | 119 | 28,997 | 5 | 0 | 3 | 120 | | | | | |
| | | | | T5W | 26,406 | 5 | 0 | 4 | 110 | 28,447 | 5 | 0 | 4 | 118 | 28,807 | 5 | 0 | 4 | 120 | | | | | |
| | | | | BLC | 20,990 | 2 | 0 | 3 | 87 | 22,612 | 2 | 0 | 3 | 94 | 22,898 | 2 | 0 | 3 | 95 | | | | | |
| | | | | LCCO | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |
| | | | | | 15,619 | 2 | 0 | 4 | 65 | 16,825 | 2 | 0 | 4 | 70 | 17,038 | 2 | 0 | 4 | 71 | | | | | |


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# Performance Data

## Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

### Rotated Optics

| LED Count | Drive Current | Power Package | System Watts | Dist. Type | 30K (3000 K, 70 CRI) | | | | | 40K (4000 K, 70 CRI) | | | | | 50K (5000 K, 70 CRI) | | | | | AMBPC (Amber Phosphor Converted) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW | Lumens | B | U | G | LPW |
| 60 | 530 | **P10** | 106W | T1S | 13,042 | 3 | 0 | 3 | 123 | 14,050 | 3 | 0 | 3 | 133 | 14,228 | 3 | 0 | 3 | 134 | 7,167 | 2 | 0 | 2 | 72 |
| | | | | T2S | 12,967 | 4 | 0 | 4 | 122 | 13,969 | 4 | 0 | 4 | 132 | 14,146 | 4 | 0 | 4 | 133 | 7,507 | 2 | 0 | 2 | 76 |
| | | | | T2M | 13,201 | 3 | 0 | 3 | 125 | 14,221 | 3 | 0 | 3 | 134 | 14,401 | 3 | 0 | 3 | 136 | 7,263 | 2 | 0 | 2 | 73 |
| | | | | T3S | 12,766 | 4 | 0 | 4 | 120 | 13,752 | 4 | 0 | 4 | 130 | 13,926 | 4 | 0 | 4 | 131 | 7,424 | 2 | 0 | 2 | 75 |
| | | | | T3M | 13,193 | 4 | 0 | 4 | 124 | 14,213 | 4 | 0 | 4 | 134 | 14,393 | 4 | 0 | 4 | 136 | 7,387 | 2 | 0 | 2 | 75 |
| | | | | T4M | 12,944 | 4 | 0 | 4 | 122 | 13,945 | 4 | 0 | 4 | 132 | 14,121 | 4 | 0 | 4 | 133 | 7,400 | 2 | 0 | 2 | 75 |
| | | | | TFTM | 13,279 | 4 | 0 | 4 | 125 | 14,305 | 4 | 0 | 4 | 135 | 14,486 | 4 | 0 | 4 | 137 | 7,288 | 1 | 0 | 2 | 74 |
| | | | | T5VS | 13,372 | 3 | 0 | 1 | 126 | 14,405 | 4 | 0 | 1 | 136 | 14,588 | 4 | 0 | 1 | 138 | 7,734 | 3 | 0 | 1 | 78 |
| | | | | T5S | 13,260 | 3 | 0 | 1 | 125 | 14,284 | 3 | 0 | 1 | 135 | 14,465 | 3 | 0 | 1 | 136 | 7,641 | 3 | 0 | 0 | 77 |
| | | | | T5M | 13,256 | 4 | 0 | 2 | 125 | 14,281 | 4 | 0 | 2 | 135 | 14,462 | 4 | 0 | 2 | 136 | 7,737 | 3 | 0 | 2 | 78 |
| | | | | T5W | 13,137 | 4 | 0 | 3 | 124 | 14,153 | 4 | 0 | 3 | 134 | 14,332 | 4 | 0 | 3 | 135 | 7,522 | 3 | 0 | 2 | 76 |
| | | | | BLC | 10,906 | 3 | 0 | 3 | 103 | 11,749 | 3 | 0 | 3 | 111 | 11,898 | 3 | 0 | 3 | 112 | | | | | |
| | | | | LCCO | 7,789 | 1 | 0 | 3 | 73 | 8,391 | 1 | 0 | 3 | 79 | 8,497 | 1 | 0 | 3 | 80 | | | | | |
| | | | | RCCO | 7,779 | 4 | 0 | 4 | 73 | 8,380 | 4 | 0 | 4 | 79 | 8,486 | 4 | 0 | 4 | 80 | | | | | |
| 60 | 700 | **P11** | 137W | T1S | 16,556 | 3 | 0 | 3 | 121 | 17,835 | 3 | 0 | 3 | 130 | 18,061 | 4 | 0 | 4 | 132 | 8,952 | 2 | 0 | 2 | 68 |
| | | | | T2S | 16,461 | 4 | 0 | 4 | 120 | 17,733 | 4 | 0 | 4 | 129 | 17,957 | 4 | 0 | 4 | 131 | 9,377 | 2 | 0 | 2 | 72 |
| | | | | T2M | 16,758 | 4 | 0 | 4 | 122 | 18,053 | 4 | 0 | 4 | 132 | 18,281 | 4 | 0 | 4 | 133 | 9,072 | 2 | 0 | 2 | 69 |
| | | | | T3S | 16,205 | 4 | 0 | 4 | 118 | 17,457 | 4 | 0 | 4 | 127 | 17,678 | 4 | 0 | 4 | 129 | 9,273 | 2 | 0 | 2 | 71 |
| | | | | T3M | 16,748 | 4 | 0 | 4 | 122 | 18,042 | 4 | 0 | 4 | 132 | 18,271 | 4 | 0 | 4 | 133 | 9,227 | 2 | 0 | 2 | 70 |
| | | | | T4M | 16,432 | 4 | 0 | 4 | 120 | 17,702 | 4 | 0 | 4 | 129 | 17,926 | 4 | 0 | 4 | 131 | 9,243 | 2 | 0 | 2 | 71 |
| | | | | TFTM | 16,857 | 4 | 0 | 4 | 123 | 18,159 | 4 | 0 | 4 | 133 | 18,389 | 4 | 0 | 4 | 134 | 9,103 | 2 | 0 | 2 | 69 |
| | | | | T5VS | 16,975 | 4 | 0 | 1 | 124 | 18,287 | 4 | 0 | 1 | 133 | 18,518 | 4 | 0 | 1 | 135 | 9,661 | 3 | 0 | 1 | 74 |
| | | | | T5S | 16,832 | 4 | 0 | 1 | 123 | 18,133 | 4 | 0 | 2 | 132 | 18,362 | 4 | 0 | 2 | 134 | 9,544 | 3 | 0 | 1 | 73 |
| | | | | T5M | 16,828 | 4 | 0 | 2 | 123 | 18,128 | 4 | 0 | 2 | 132 | 18,358 | 4 | 0 | 2 | 134 | 9,665 | 3 | 0 | 2 | 74 |
| | | | | T5W | 16,677 | 4 | 0 | 3 | 122 | 17,966 | 5 | 0 | 3 | 131 | 18,193 | 5 | 0 | 3 | 133 | 9,395 | 4 | 0 | 2 | 72 |
| | | | | BLC | 13,845 | 3 | 0 | 3 | 101 | 14,915 | 3 | 0 | 3 | 109 | 15,103 | 3 | 0 | 3 | 110 | | | | | |
| | | | | LCCO | 9,888 | 1 | 0 | 3 | 72 | 10,652 | 2 | 0 | 3 | 78 | 10,787 | 2 | 0 | 3 | 79 | | | | | |
| | | | | RCCO | 9,875 | 4 | 0 | 4 | 72 | 10,638 | 4 | 0 | 4 | 78 | 10,773 | 4 | 0 | 4 | 79 | | | | | |
| 60 | 1050 | **P12** | 207W | T1S | 22,996 | 4 | 0 | 4 | 111 | 24,773 | 4 | 0 | 4 | 120 | 25,087 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T2S | 22,864 | 4 | 0 | 4 | 110 | 24,631 | 5 | 0 | 5 | 119 | 24,943 | 5 | 0 | 5 | 120 | | | | | |
| | | | | T2M | 23,277 | 4 | 0 | 4 | 112 | 25,075 | 4 | 0 | 4 | 121 | 25,393 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T3S | 22,509 | 4 | 0 | 4 | 109 | 24,248 | 5 | 0 | 5 | 117 | 24,555 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T3M | 23,263 | 4 | 0 | 4 | 112 | 25,061 | 4 | 0 | 4 | 121 | 25,378 | 4 | 0 | 4 | 123 | | | | | |
| | | | | T4M | 22,824 | 5 | 0 | 5 | 110 | 24,588 | 5 | 0 | 5 | 119 | 24,899 | 5 | 0 | 5 | 120 | | | | | |
| | | | | TFTM | 23,414 | 5 | 0 | 5 | 113 | 25,223 | 5 | 0 | 5 | 122 | 25,543 | 5 | 0 | 5 | 123 | | | | | |
| | | | | T5VS | 23,579 | 5 | 0 | 1 | 114 | 25,401 | 5 | 0 | 1 | 123 | 25,722 | 5 | 0 | 1 | 124 | | | | | |
| | | | | T5S | 23,380 | 4 | 0 | 2 | 113 | 25,187 | 4 | 0 | 2 | 122 | 25,506 | 4 | 0 | 2 | 123 | | | | | |
| | | | | T5M | 23,374 | 5 | 0 | 3 | 113 | 25,181 | 5 | 0 | 3 | 122 | 25,499 | 5 | 0 | 3 | 123 | | | | | |
| | | | | T5W | 23,165 | 5 | 0 | 4 | 112 | 24,955 | 5 | 0 | 4 | 121 | 25,271 | 5 | 0 | 4 | 122 | | | | | |
| | | | | BLC | 19,231 | 4 | 0 | 4 | 93 | 20,717 | 4 | 0 | 4 | 100 | 20,979 | 4 | 0 | 4 | 101 | | | | | |
| | | | | LCCO | 13,734 | 2 | 0 | 3 | 66 | 14,796 | 2 | 0 | 4 | 71 | 14,983 | 2 | 0 | 4 | 72 | | | | | |
| | | | | RCCO | 13,716 | 4 | 0 | 4 | 66 | 14,776 | 4 | 0 | 4 | 71 | 14,963 | 4 | 0 | 4 | 72 | | | | | |
| 60 | 1250 | **P13** | 231W | T1S | 25,400 | 4 | 0 | 4 | 110 | 27,363 | 4 | 0 | 4 | 118 | 27,709 | 4 | 0 | 4 | 120 | | | | | |
| | | | | T2S | 25,254 | 5 | 0 | 5 | 109 | 27,205 | 5 | 0 | 5 | 118 | 27,550 | 5 | 0 | 5 | 119 | | | | | |
| | | | | T2M | 25,710 | 4 | 0 | 4 | 111 | 27,696 | 4 | 0 | 4 | 120 | 28,047 | 4 | 0 | 4 | 121 | | | | | |
| | | | | T3S | 24,862 | 5 | 0 | 5 | 108 | 26,783 | 5 | 0 | 5 | 116 | 27,122 | 5 | 0 | 5 | 117 | | | | | |
| | | | | T3M | 25,695 | 5 | 0 | 5 | 111 | 27,680 | 5 | 0 | 5 | 120 | 28,031 | 5 | 0 | 5 | 121 | | | | | |
| | | | | T4M | 25,210 | 5 | 0 | 5 | 109 | 27,158 | 5 | 0 | 5 | 118 | 27,502 | 5 | 0 | 5 | 119 | | | | | |
| | | | | TFTM | 25,861 | 5 | 0 | 5 | 112 | 27,860 | 5 | 0 | 5 | 121 | 28,212 | 5 | 0 | 5 | 122 | | | | | |
| | | | | T5VS | 26,043 | 5 | 0 | 1 | 113 | 28,056 | 5 | 0 | 1 | 121 | 28,411 | 5 | 0 | 1 | 123 | | | | | |
| | | | | T5S | 25,824 | 4 | 0 | 2 | 112 | 27,819 | 5 | 0 | 2 | 120 | 28,172 | 5 | 0 | 2 | 122 | | | | | |
| | | | | T5M | 25,818 | 5 | 0 | 3 | 112 | 27,813 | 5 | 0 | 3 | 120 | 28,165 | 5 | 0 | 3 | 122 | | | | | |
| | | | | T5W | 25,586 | 5 | 0 | 4 | 111 | 27,563 | 5 | 0 | 4 | 119 | 27,912 | 5 | 0 | 4 | 121 | | | | | |
| | | | | BLC | 21,241 | 4 | 0 | 4 | 92 | 22,882 | 4 | 0 | 4 | 99 | 23,172 | 4 | 0 | 4 | 100 | | | | | |
| | | | | LCCO | 15,170 | 2 | 0 | 4 | 66 | 16,342 | 2 | 0 | 4 | 71 | 16,549 | 2 | 0 | 4 | 72 | | | | | |
| | | | | | 15,150 | 5 | 0 | 5 | 66 | 16,321 | 5 | 0 | 5 | 71 | 16,527 | 5 | 0 | 5 | 72 | | | | | |


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## FEATURES & SPECIFICATIONS

**INTENDED USE**
The sleek design of the D-Series Size 1 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

**CONSTRUCTION**
Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (1.01 $ft^2$) for optimized pole wind loading.

**FINISH**
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

**OPTICS**
Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 3000 K, 4000 K and 5000 K (70 CRI) configurations. The D-Series Size 1 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

**ELECTRICAL**
Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L85/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

**INSTALLATION**
Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 1 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 1 utilizes the AERIS™ series pole drilling pattern (template #8). Optional terminal block and NEMA photocontrol receptacle are also available.

**LISTINGS**
UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

**WARRANTY**
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

**Note:** Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.


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# LED AREA LIGHTS - LSI SLICE LARGE (XLCL)



**US patent D726,947 7,828,456 8,002,428 8,177,386 8,434,893 8,567,983 and US & Int'l. patents pending**

**LIGHT OUTPUT - XLCL**

| | | Lumens (Nominal) Type 3 | Type FT | Type 5 | FTA | Watts (Nominal) |
|---|---|---|---|---|---|---|
| Cool White | SS | 45,800 | 49,500 | 50,700 | 51,300 | 435 |
| | HO | 53,400 | 57,300 | 59,200 | 59,100 | 542 |
| Neutral White | SS | 45,600 | 48,600 | 49,600 | 50,400 | 435 |
| | HO | 52,800 | 56,300 | 57,600 | 57,700 | 542 |

LED Chips are frequently updated therefore values may increase.

**SMARTTEC™ -** LSI drivers feature integral sensor which reduces drive current, when ambient temperatures exceed rated temperature.

**ENERGY SAVING CONTROL OPTION -** DIM - 0-10 volt dimming enabled. Availabl with integrated LSI Controls wireless modules.

**LEDS -** Select high-brightness LEDs in Cool White (5000K), or Neutral White (4000K) color temperature, 70 CRI.

**DISTRIBUTION/PERFORMANCE -** Types 3, 5, FT, FT-L, FT-R and FTA available. Type FTA available for single automotive front row design. FT-L and FT-R allow for D180 mounting configurations with factory set optics for applications such automotive front row. Exceptional uniformity creates bright environment at lower light levels.

**HOUSING -** One-piece, die-formed aluminum housing contains factory prewired driver in a gasketed, weather-resistant wiring compartment. Hinged wiring access door (with safety lanyard) located underneath. Fixture is IP65 rated.

**OPTICAL UNIT -** Clear tempered optical-grade flat glass lens permanently sealed to weather-tight aluminum optic frame (includes pressure-stabilizing breather).

**MOUNTING -** Tapered rear design allows fixtures to be mounted in 90° and 120° configurations. Use with 5" traditional drilling pattern. A round pole plate (RPP2) is required for mounting to round poles. Wall mount available by ordering wall mounting bracket (BKS-BO-WM-*-CLR). Mast Arm mounting available by ordering BKA-NM-MA-5-XLCL-CLR adaptor (for 2" pipe). See Accessories for all brackets.

**ELECTRICAL -** Two-stage surge protection (including separate surge protection built into electronic driver) meets IEEE C62.41.2-2002, Location Category C. Available with universal voltage power supply 120-277VAC (50/60Hz input) and 347-480 VAC. Optional twistlock photocell receptacle is available. Photocell must be ordered separately.

**DRIVER -** Available in SS (Super Saver) and HO (High Output) drive currents. Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can be easily accessed.

**OPERATING TEMPERATURE -** -40°C to +50°C (-40°F to +122°F)

**FINISH -** Fixtures are finished with LSI's DuraGrip® polyester powder coat finishing process. The DuraGrip finish withstands extreme weather changes without cracking or peeling. Available in black, bronze and white. Other standard LSI finishes available. Consult factory.

**WARRANTY -** LSI LED fixtures carry a limited 5-year warranty.

**PHOTOMETRICS -** Please visit our web site at www.lsi-industries.com for detailed photometric data.

**SHIPPING WEIGHT (in carton) -** 55 lbs./24.9Kg

**LISTING -** UL listed to US and international safety standards. Suitable for wet locations.

**This product, or selected versions of this product, meet the standards listed below. Please consult factory for your specific requirements.**

ARRA Funding Compliant · DLC · cULus LISTED wet location · RoHS COMPLIANT · CE · FC · IP65

Fixtures comply with ANSI C136.31-2010 American National Standard for Roadway Lighting Equipment - Luminaire Vibration 1.5G requirements.



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# LED AREA LIGHTS - LSI SLICE LARGE (XLCL)

## LUMINAIRE ORDERING INFORMATION

TYPICAL ORDER EXAMPLE: **XLCL FT LED HO CW UE WHT PCR**

| Prefix | Distribution | Light Source | Drive Current | Color Temperature | Input Voltage | Finish | Optional Controls | Options |
|---|---|---|---|---|---|---|---|---|
| XLCL | 3 - Type III<br>5 - Type V<br>FT - Forward Throw<br>FT-L - Forward Optic Rotated for D180 Mount (Left Side)<br>FT-R - Forward Optic Rotated for D180 Mount (Right Side)<br>FTA – Forward Throw Automotive | LED | SS - Super Saver<br>HO -High Output | CW - Cool White (5000K)<br>NW - Neutral White (4000K) | UE - Universal Voltage (120-277V)<br>347-480 Universal Voltage (347-480V) | BLK - Black<br>BRZ - Bronze<br>WHT - White | Wireless Controls System [5]<br>PCM - Platinum Control System<br>PCMH - Host/Satelite Platinum Control System<br>GCM - Gold Control System<br>GCMH - Host/Satelite Gold Control System | DIM - 0-10V Dimming (from External Signal)<br>PCR - Photoelectric Control Receptacle[1] |

### LUMINAIRE EPA CHART - XLCL

| | |
|---|---|
| Single | .7 |
| D180° | 1.4 |
| D90° | 1.1 |
| T90° | 2.3 |
| TN120° | 2.3 |
| Q90° | 2.6 |

**Note:** House Side Shield adds to fixture EPA. Consult Factory.

### ACCESSORY ORDERING INFORMATION

(Accessories are field installed)

| Description | Order Number |
|---|---|
| BKS-BO-WM-*-CLR Wall Mount Plate | 123111CLR |
| XLCL-3/FT-HSS RM - External House Side Shield (Black only - rear mounted) | 610098BLK[2] |
| XLCL-FT-L/FT-R-HSS SM - External House Side Shield (Black only - side mounted) | 610100BLK[2] |
| BKA-NM-MA-5-XLCL-CLR Mast Arm Adaptor | 617865 CLR |
| RPP2 - Round Pole Plate | 162914CLR |
| PC120 Photocell for use with PCR option (120V) | 122514[3] |
| PC208-277 Photocell for use with PCR option (208V, 240V, 277V)) | 122515[3] |
| PC347 Photocell for use with PCR option (347V) | 159516[3] |
| PC480 Photocell for use with PCR option (480V) | 225180[3] |
| FK120 - Single Fusing (120V) | FK120[4] |
| FK277 - Single Fusing (277V) | FK277[4] |
| DFK208,240 - Double Fusing (208V, 240V) | DFK208,240[4] |
| DFK480 Double Fusing (480V) | DFK480[4] |
| FK347 Single Fusing (347V) | FK347[4] |

**FOOTNOTES:**

1- Photocell must be ordered separately. See Accessories.

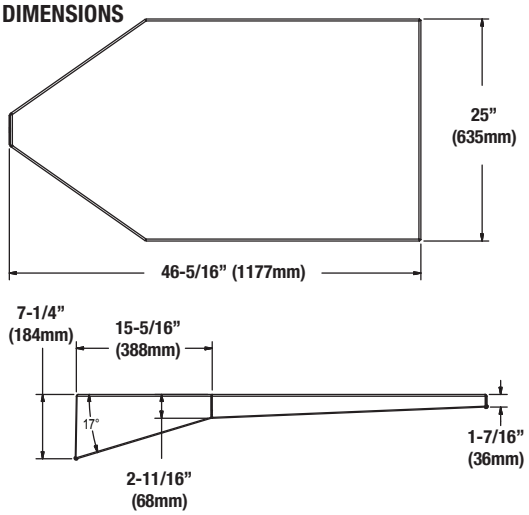
2- House Side Shields add to fixture EPA. Consult factory.

3- Factory installed PCR option required. See Options.

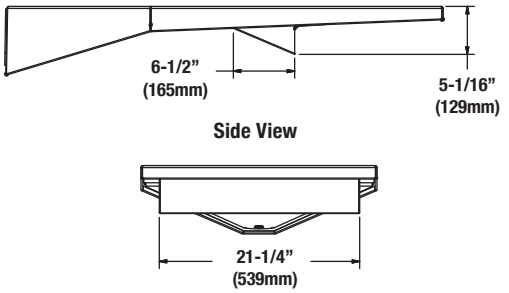
4- Fusing must be located in hand hole of pole.

5- For wireless controls information and accessories, see Controls Section.

### DIMENSIONS

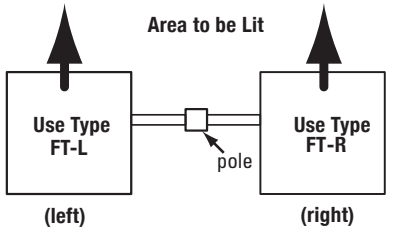



### House Side Sheilds

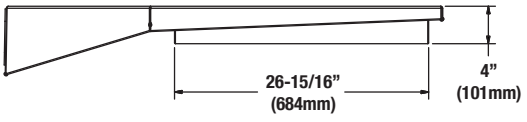



**Rear Mount (610098BLK)**

### LEFT AND RIGHT VERSIONS OF TYPE FT REFLECTORS (TOP VIEW)




**Note:** Optics are not field-rotatable. For D180 Forward Throw installations specify left (FT-L) and/or right (FT-R) side mounting. Orientation is based on standing at the pole and looking out at the area to be lit.




**Side Mount (610100BLK)**



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# LED AREA LIGHTS - LSI SLICE LARGE (XLCL)

## BUG LISTING

### XLCL - Type 3

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 53,365 | 545 | 98 | B5-U0-G4 |
| | CW-HSS | 36,015 | 543 | 66 | B4-U0-G4 |
| | NW | 52,840 | 544 | 97 | B5-U0-G4 |
| | NW-HSS | 35,358 | 543 | 65 | B4-U0-G4 |
| SS | CW | 45,829 | 424 | 108 | B5-U0-G4 |
| | CW-HSS | 31,300 | 427 | 73 | B4-U0-G3 |
| | NW | 45,570 | 428 | 106 | B5-U0-G4 |
| | NW-HSS | 30,512 | 429 | 71 | B4-U0-G3 |

### XLCL - Type 5

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 59,153 | 547 | 108 | B5-U0-G4 |
| | CW-HSS | 36,076 | 544 | 66 | B4-U0-G4 |
| | NW | 57,636 | 545 | 106 | B5-U0-G4 |
| | NW-HSS | 35,681 | 544 | 66 | B4-U0-G4 |
| SS | CW | 50,680 | 434 | 117 | B5-U0-G4 |
| | CW-HSS | 31,200 | 427 | 73 | B4-U0-G4 |
| | NW | 49,629 | 434 | 114 | B5-U0-G4 |
| | NW-HSS | 29,657 | 422 | 70 | B4-U0-G4 |

### XLCL - Type FTA

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 59061 | 533 | 111 | B4-U0-G3 |
| | CW-HSS | 55,330 | 533 | 104 | B4-U0-G3 |
| | NW | 57,718 | 533 | 108 | B4-U0-G3 |
| | NW-HSS | 54,094 | 533 | 102 | B4-U0-G3 |
| SS | CW | 51,332 | 429 | 120 | B4-U0-G3 |
| | CW-HSS | 48,395 | 429 | 113 | B4-U0-G3 |
| | NW | 50,417 | 429 | 117 | B4-U0-G3 |
| | NW-HSS | 47,071 | 429 | 110 | B4-U0-G2 |

### XLCL - Type FT

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 57,320 | 545 | 105 | B4-U0-G5 |
| | CW-HSS | 41,895 | 544 | 77 | B3-U0-G5 |
| | NW | 56,282 | 546 | 103 | B4-U0-G5 |
| | NW-HSS | 41,730 | 544 | 77 | B3-U0-G5 |
| SS | CW | 49,499 | 437 | 113 | B4-U0-G5 |
| | CW-HSS | 37,097 | 427 | 87 | B3-U0-G4 |
| | NW | 48,586 | 437 | 111 | B4-U0-G5 |
| | NW-HSS | 35,457 | 425 | 83 | B3-U0-G4 |

### XLCL - Type FT-L

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 58,144 | 545 | 107 | B5-U0-G5 |
| | CW-HSS | 48,083 | 547 | 88 | B5-U0-G5 |
| | NW | 57,001 | 544 | 105 | B5-U0-G5 |
| | NW-HSS | 45,910 | 544 | 84 | B5-U0-G5 |
| SS | CW | 49,913 | 435 | 115 | B5-U0-G5 |
| | CW-HSS | 41,457 | 428 | 97 | B5-U0-G5 |
| | NW | 48,751 | 434 | 112 | B5-U0-G5 |
| | NW-HSS | 39,767 | 423 | 94 | B5-U0-G5 |

### XLCL - Type FT-R

| Drive Current | Color Temp.* | Lumens | Watts | LER | BUG Rating |
|---|---|---|---|---|---|
| HO | CW | 58,144 | 545 | 107 | B5-U0-G5 |
| | CW-HSS | 48,083 | 547 | 88 | B5-U0-G5 |
| | NW | 57,001 | 544 | 105 | B5-U0-G5 |
| | NW-HSS | 45,910 | 544 | 84 | B5-U0-G5 |
| SS | CW | 49,913 | 435 | 115 | B5-U0-G5 |
| | CW-HSS | 41,457 | 428 | 97 | B5-U0-G5 |
| | NW | 48,751 | 434 | 112 | B5-U0-G5 |
| | NW-HSS | 39,768 | 423 | 94 | B5-U0-G5 |

* Color Temperature: NW-4000K, CW-5000K


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LSI INDUSTRIES INC.

# LED SURFACE MOUNT - LEGACY™ (CRUS SM)



**US & Int'l. patents pending.**

**HOUSING -** One-piece, die-formed, aluminum housing with powder coated finish. One conduit knockout and four mounting holes. 2x2 housing is formed from zinc-coated steel.

**LEDS -** Features an array of select, mid-power, high brightness, high efficiency LED chips; 5000K color temperature, 70 CRI.

**DRIVE CURRENT -** Choice of Very Low Wattage (VLW), Low Wattage (LW), Super Saver (SS), High Output (HO) or Very High Output (VHO).

**OPTICS / DISTRIBUTION -** Symmetrical, which directs light through a glass lens to provide a uniform distribution of light to vertical and horizontal surfaces.

**OPTICAL UNIT -** Features an ultra-slim 7/8" profile die cast housing, with a standard flat clear or diffused glass lens. Unit is water-resistant, sealed to an IP67 rating. Integral designed heat sink does not trap dirt and grime, ensuring cool running performance over the life of the fixture.

**PRESSURE STABILIZING VENT -** Luminaire assembly incorporates a pressure stabilizing vent breather to prevent seal fatigue and failure.

**DRIVER-** State-of-the-art driver technology superior energy-efficiency and optimum light output. Driver components are fully encased in potting for moisture resistance. Complies with IEC and FCC standards. 0-10 V dimming supplied standard with all drive currents.

**ADAPTOR PANEL -** Die formed galvanized steel, with powder coat finish.

**OPERATING TEMPERATURE -** -40°C to 50°C (-40°F to +122°F)

**ELECTRICAL -** Universal voltage power supply, 120-277 VAC, 50/60 HZ input. Drivers feature two-stage surge protection (including separate surge protection built into electronic driver) meets IEEE C62.41.2-2002, Scenario 1, Location Category C.

**FINISH -** Standard color is white and is finished with LSI's DuraGrip polyester powder coat process. DuraGrip withstands extreme weather changes without cracking or peeling.

**INSTALLATION -** Pre-assembled optical unit and mounting panel attaches to fixture housing via 4 fasteners. Driver is pre-mounted to back of optical assembly.

**SHIPPING WEIGHT -** 35 pounds.

**EXPECTED LIFE -** Minimum 60,000 to 100,000 hours depending upon the ambient temperature of the installation location. See LSI web site for specific guidance.

**WARRANTY -** Limited 5-year warranty.

**PHOTOMETRICS -** Applications layouts are available upon request. Contact LSI Petroleum Lighting or petroleum.apps@lsi-industries.com

**LISTING -** UL listed to UL 1598, UL 8750 and other U.S. and International safety standards. Suitable for wet locations. For a list of the specific products in this series that are DLC listed, please consult the LED Lighting section of our website or the Design Lights website at www.designlights.org.

**This product, or selected versions of this product, meet the standards listed below. Please consult factory for your specific requirements.**

Intertek wet location

RoHS COMPLIANT

**IP67**

**Project Name** _____ **Fixture Type** _____

**Catalog #** _____

6/6/17

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LSI INDUSTRIES INC.

# LED SURFACE MOUNT - LEGACY™ (CRUS SM)

## LUMINAIRE ORDERING INFORMATION

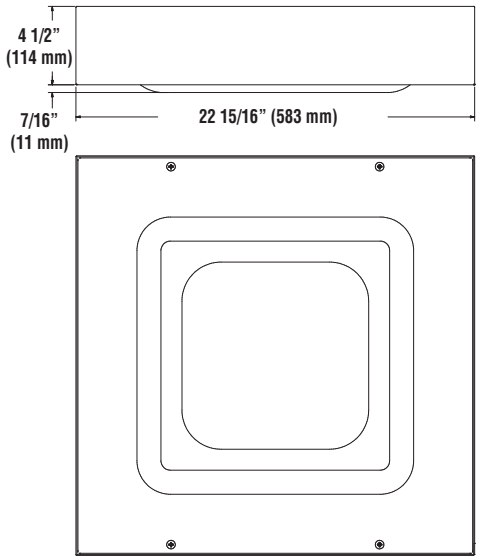
TYPICAL ORDER EXAMPLE: **CRUS SM SC LED VHO 50 UE WHT**

| Prefix | Distribution | Light Source | Drive Current | Color Temperature | Input Voltage | Finish | Options |
|---|---|---|---|---|---|---|---|
| CRUS SM (Surface Mount) | SC - Standard Symmetric | LED | VLW - Very Low Watt<br>LW - Low Watt<br>SS - Super Saver<br>HO - High Output<br>VHO - Very High Output | 50 - 5000K | UE - Universal Voltage (120-277V)<br>347-480 Volt | WHT - White<br>BRZ - Bronze<br>BLK - Black | DFL - Diffused Lens |

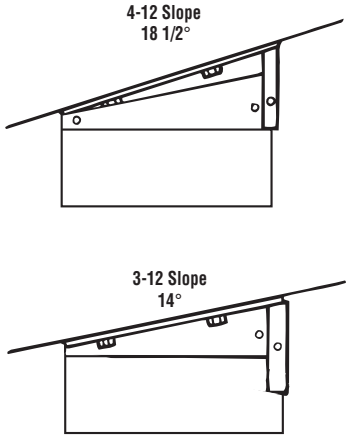
### ACCESSORY ORDERING INFORMATION

| Description | Order Number |
|---|---|
| SSA Slope Surface Adaptor | 52152 CLR |
| 2x2 Shallow Housing Only | 545376 |
| 10' Toggle Cable Hanger | TCH10 |

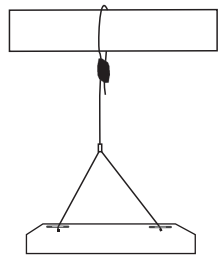
## DIMENSIONS




### SLOPE SURFACE ADAPTOR – SSA ACCESSORY




### TOGGLE CABLE HANGER

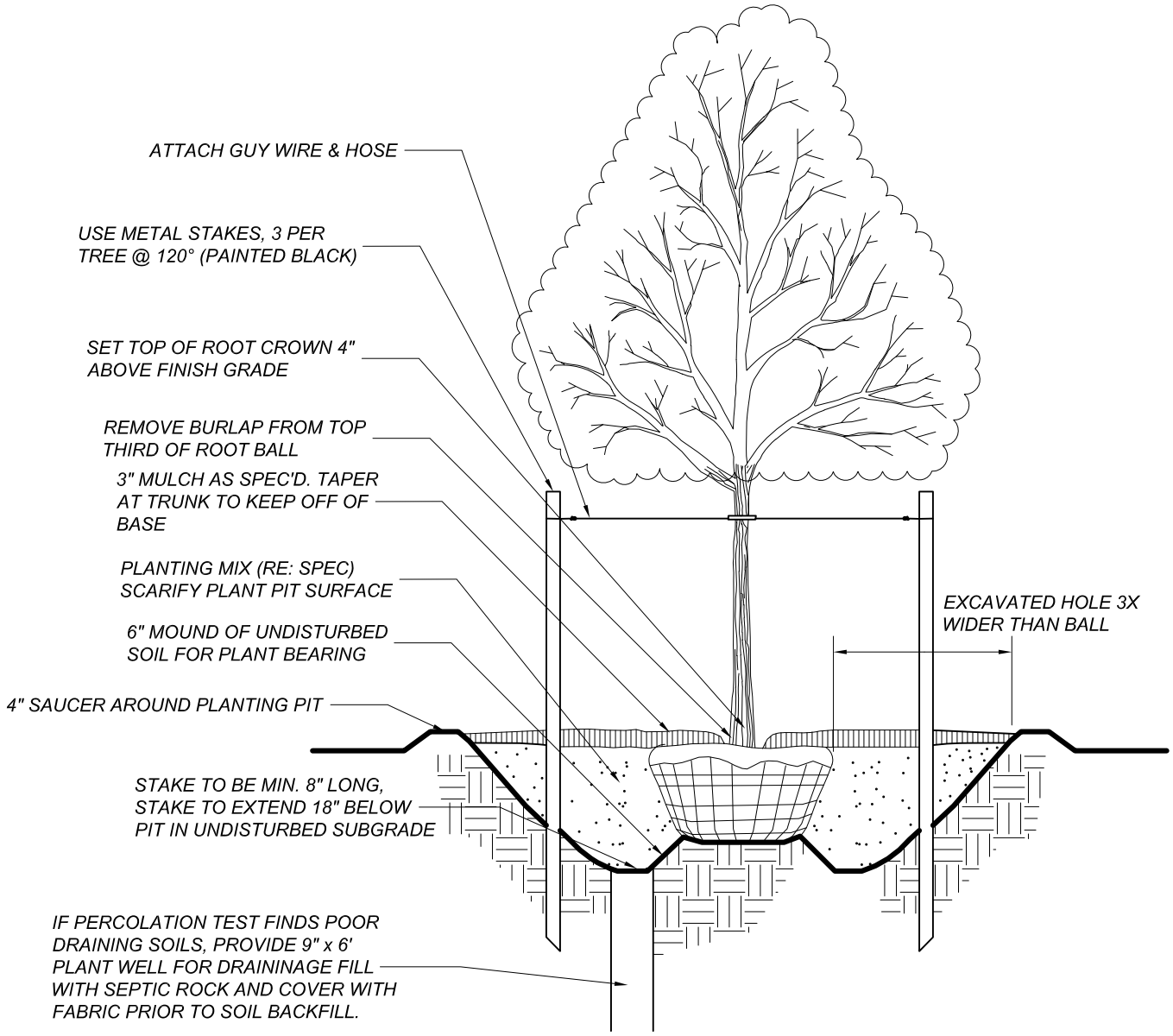


### LIGHT OUTPUT - CRUS SM

| | | Lumens | | Watts | LPW | |
|---|---|---|---|---|---|---|
| | | SC | AC | SC/AC | SC | AC |
| Cool White | VLW - Very Low Watt | 9055 | 7632 | 61 | 148 | 125 |
| | LW - Low Watt | 10525 | 8884 | 74 | 142 | 120 |
| | SS - Super Saver | 13674 | 11595 | 98 | 140 | 118 |
| | HO - High Output | 18633 | 15145 | 132 | 141 | 115 |
| | VHO - Very High Output | 22418 | 17262 | 159 | 141 | 109 |

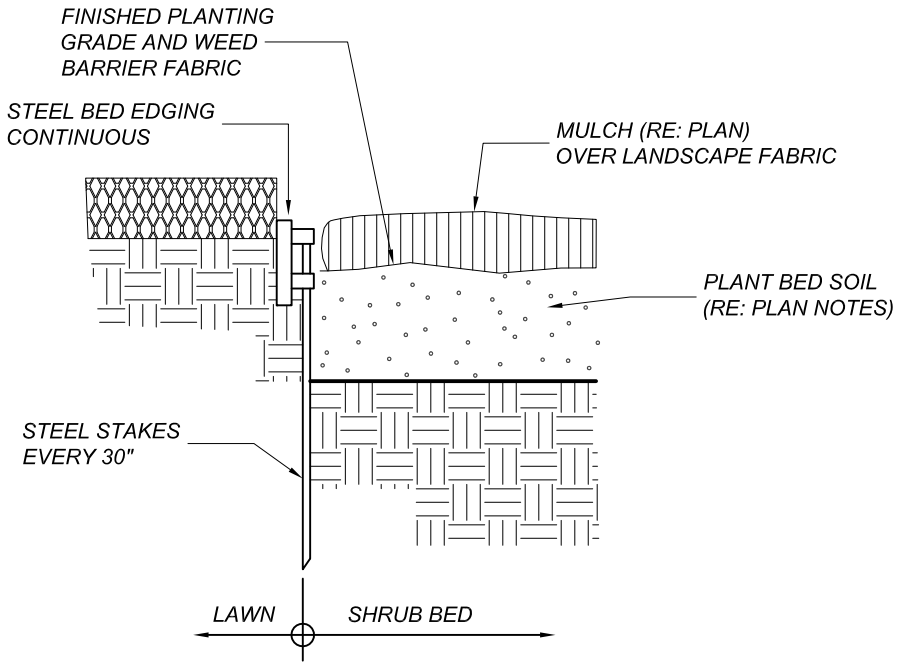


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## TYPICAL LANDSCAPING DETAIL

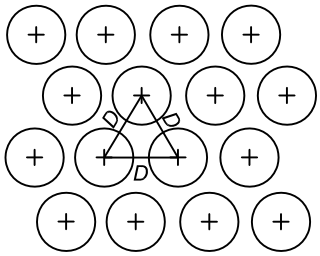
# TREE PLANTING

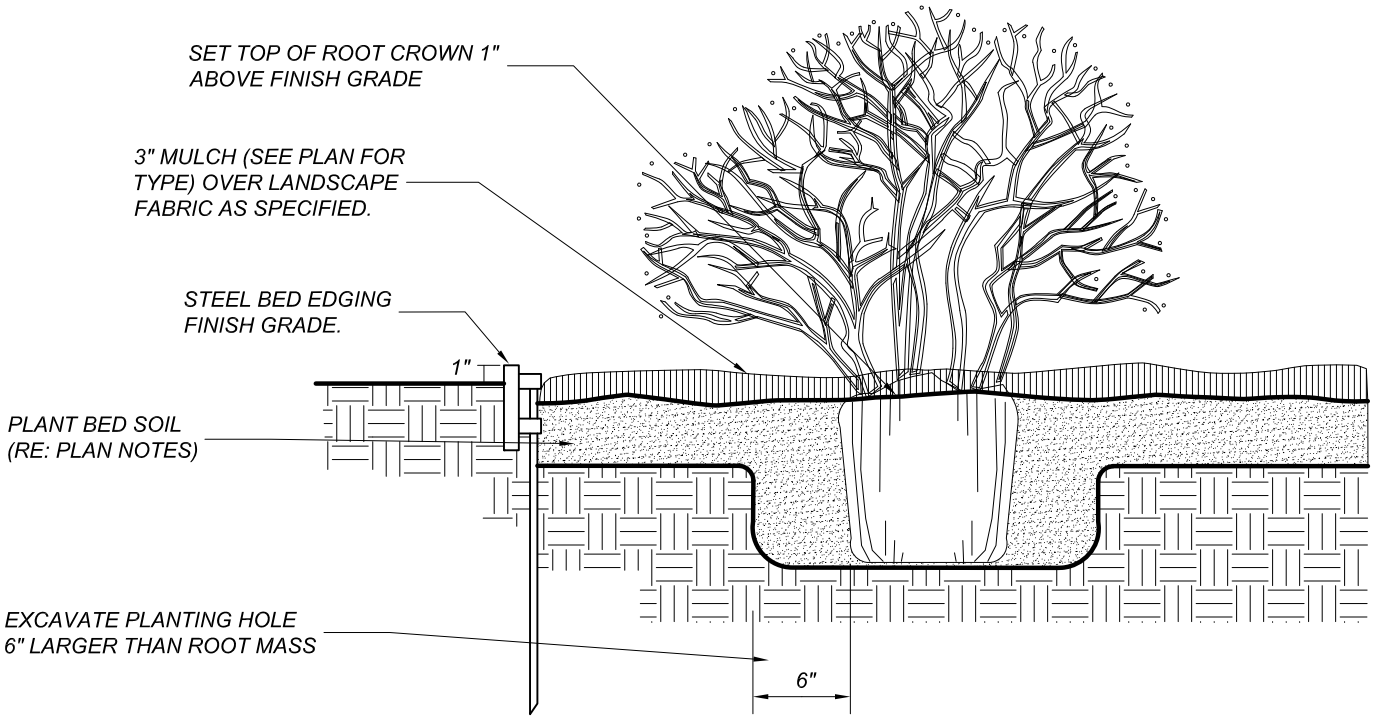



## TYPICAL LANDSCAPING DETAIL

# STEEL BED EDGING

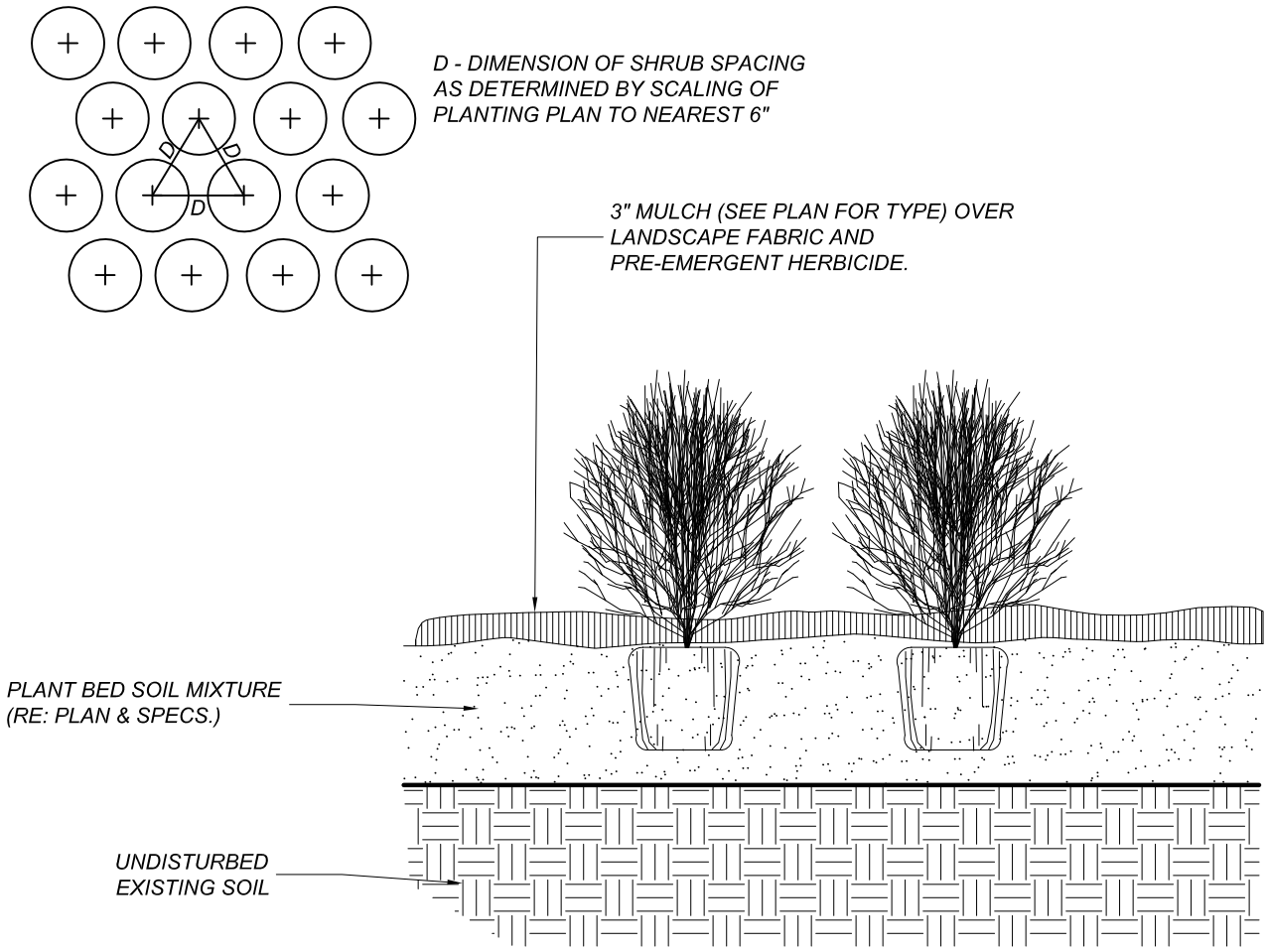
D - DIMENSION OF SHRUB SPACING AS DETERMINED BY SCALING OF PLANTING PLAN TO NEAREST 6"




## TYPICAL LANDSCAPING DETAIL

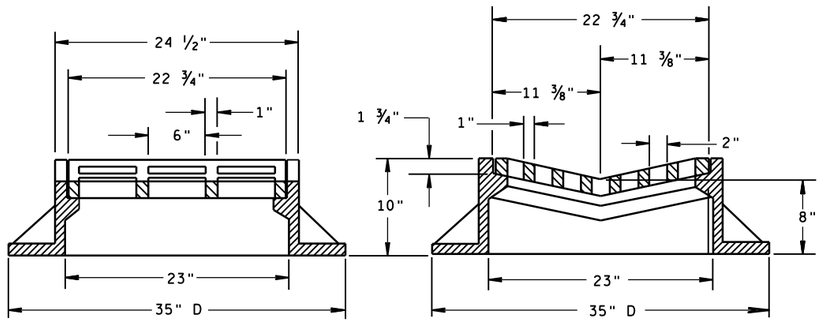
# SHRUB PLANTING

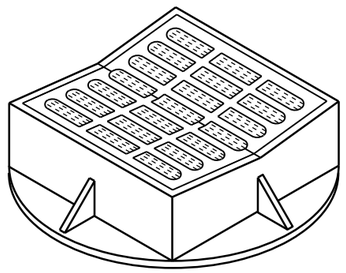



## TYPICAL LANDSCAPING DETAIL

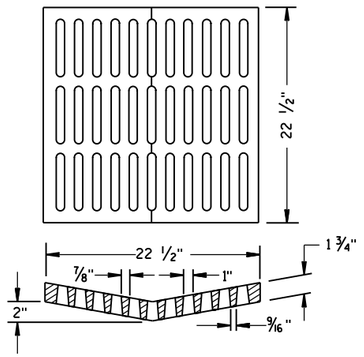
# PERENNIAL PLANTING

# SDD 8a5-b Inlet Covers Type B, B-A, C, MS, MS-A, and WM



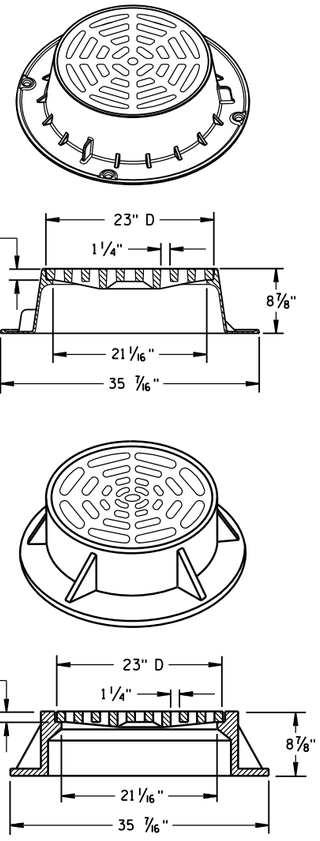



TYPE "B"




ALTERNATIVE GRATE FOR TYPE "B" COVER

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS POSSIBLE.
**NOTED AS TYPE B-A ON THE DRAINAGE TABLE**




TYPE "C"

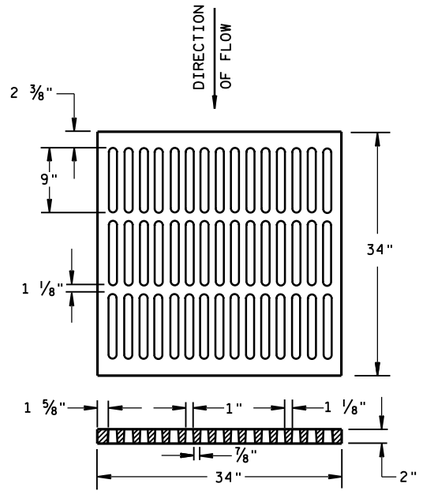
**NOTE: EITHER CASTING IS ACCEPTABLE**

## 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.

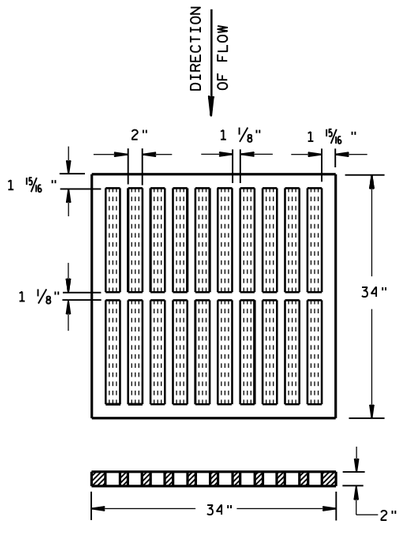
DETAIL DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR CATCH BASIN, MANHOLE AND INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

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



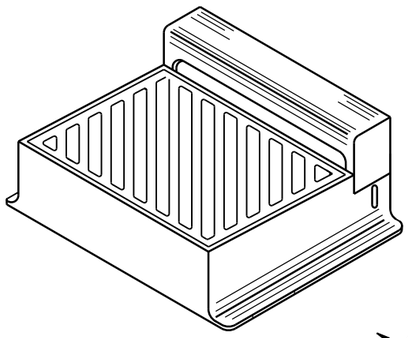

ALTERNATIVE TYPE "MS"

USE WHERE PEDESTRIAN OR BICYCLE TRAFFIC IS PERMITTED
**NOTED AS TYPE MS-A ON THE DRAINAGE TABLE**

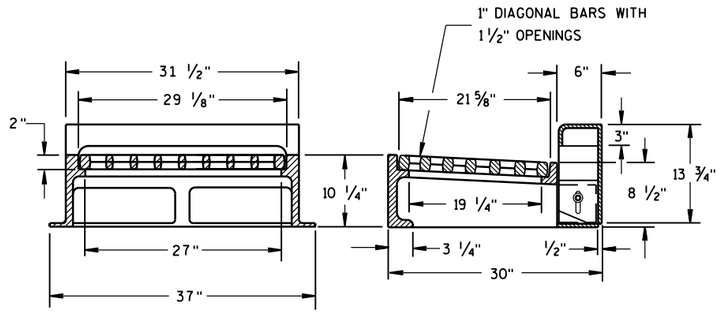



TYPE "MS"

USE ON FREEWAYS AND EXPRESSWAYS
**NOTED AS TYPE MS ON DRAINAGE TABLE**




DIAGONAL SLOTS, SHALL BE ORIENTED TO THE DIRECTION OF FLOW AS ILLUSTRATED. GRATES ARE MANUFACTURED TO BE REVERSIBLE.




NOTE: CURB BOX HEIGHT ADJUSTABLE 6" TO 9"

TYPE "WM"

**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

6

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

# *Inlet Covers Type B, B-A, C, MS, MS-A, and WM*

**References:**

FDM 13-25-30
Neenah Foundry Company Catalog "Construction Castings"

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.0606 | Inlet Covers Type B | EACH |
| 611.0609 | Inlet Covers Type B-A | EACH |
| 611.0612 | Inlet Covers Type C | EACH |
| 611.0642 | Inlet Covers Type MS | EACH |
| 611.0645 | Inlet Covers Type MS-A | EACH |
| 611.0660 | Inlet Covers Type WM | EACH |

**Standardized Special Provisions associated with this drawing:**

NONE

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

When alternative grates are required, note a Type B-A or MS-A and use the appropriate bid item number.

Inlet Covers Type B and B-A are placed on Inlets 2x2-FT. Type B and B-A covers may also be placed on Inlets 3-FT and 4-FT Diameter and Catch Basins 3-FT, 4-FT, 5-FT and 6-FT Diameter with a flat top 2x2-FT opening.

Inlet Covers Type C are placed on circular inlets, circular catch basins, and square or circular manholes with a 2' diameter opening size.

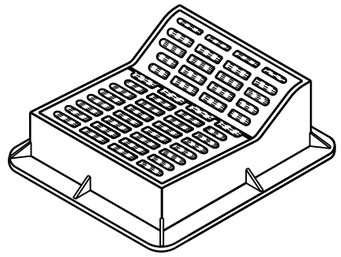
Inlet Covers Type MS and MS-A are to be placed on Inlet Median 1, 2, 3, or 4 Grates.

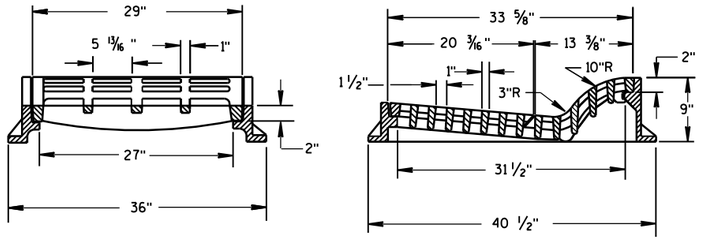
Inlet Covers Type WM is placed on Inlets and Catch Basins 2x2.5-FT. Type WM Covers may also be placed on Inlets 4-FT Diameter and Catch Basins 4-FT, 5-FT and 6-FT Diameter with a flat top 2x2.5-FT opening.

**Contact Person:**

Ann-Marie Kirsch (608) 267-3766

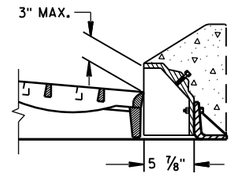
# SDD 8a5-c Inlet Covers Type F, HM, HM-S, S, T, V, HM-GJ, and HM-GJ-S






## TYPE "F"

USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.




## ALTERNATIVE CURB BOX FOR TYPE "HM" COVER

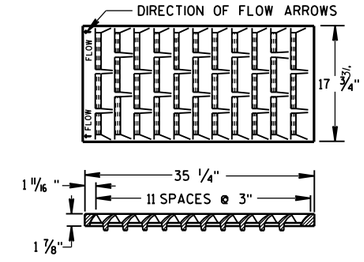
USE WITH TYPES G & J CONCRETE CURB & GUTTER, 30 INCH
**NOTED AS TYPE HM-GJ ON DRAINAGE TABLE**

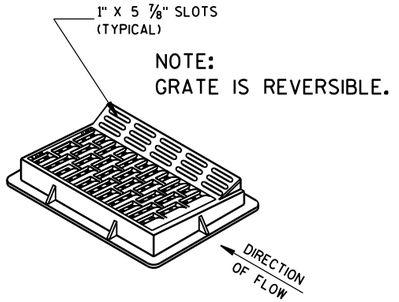
NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM-GJ" COVER
**NOTED AS TYPE HM-GJ-S ON DRAINAGE TABLE**

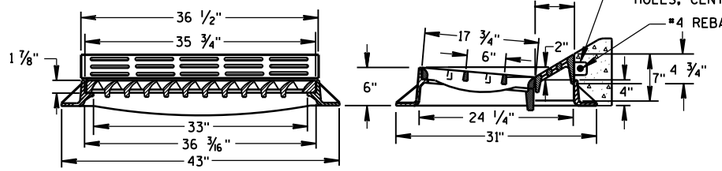
## GENERAL NOTES

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 INLET COVERS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.



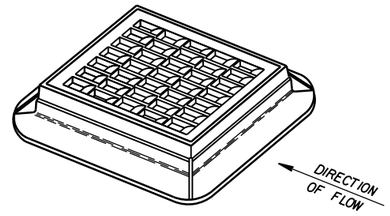



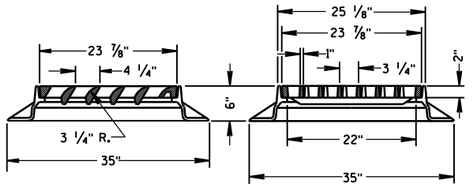




## TYPE "HM"

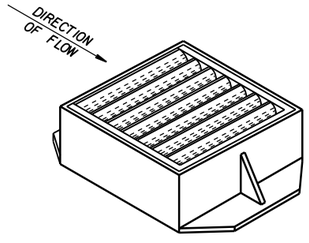
USE WITH TYPES A & D CONCRETE CURB & GUTTER, 36 INCH.

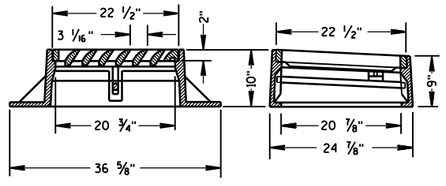
NOTE:
SPECIAL GRATE FOR THE
TYPE "H" COVER MAY ALSO BE
USED FOR THE TYPE "HM" COVER
**NOTED AS TYPE HM-S ON DRAINAGE TABLE**



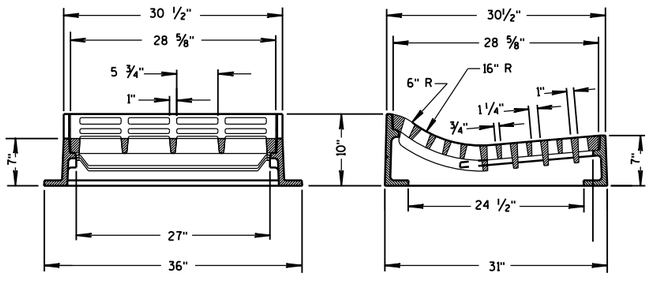



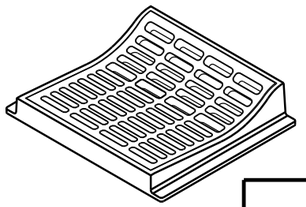

## TYPE "S"




## TYPE "V"



## TYPE "T"

USE WITH TYPES R & T CONCRETE CURB & GUTTER, 36 INCH.

**INLET COVERS**
**TYPE F, HM, HM-S, S, T, V, HM-GJ, & HM-GJ-S**

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 5-19c

6

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

# *Inlet Covers Type F, HM, HM-S, S, T, V, HM-GJ, and HM-GJ-S*

**References:**

FDM 11-20-1
FDM 11-45-10
FDM 13-25-15
FDM 13-25-30
Neenah Foundry Company Catalog "Construction Castings"

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.0615 | Inlet Covers Type F | EACH |
| 611.0627 | Inlet Covers Type HM | EACH |
| 611.0630 | Inlet Covers Type HM-GJ | EACH |
| 611.0633 | Inlet Covers Type HM-GJ-S | EACH |
| 611.0636 | Inlet Covers Type HM-S | EACH |
| 611.0654 | Inlet Covers Type V | EACH |
| 611.0651 | Inlet Covers Type S | EACH |
| 611.0652 | Inlet Covers Type T | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

When special grate is required for Type HM cover, note the inlet as HM-S.

When special grate is required for Type HM-GJ cover, note the inlet as HM-GJ-S. Note alternative curb box for Type HM cover, note the inlet as Type HM-GJ.

Inlet cover Type F is placed on Inlets and Catch Basins 2.5x3-FT. Type F covers may also be placed on Inlets 4-FT Diameter and Catch Basins 4-FT, 5-FT and 6-FT Diameter with a flat top 2.5x3-FT opening.

Inlet Covers Type HM, HM-S, HM-GJ and HM-GJ-S are placed on Inlets and Catch Basins 2x3-FT. Type HM, HM-S, HM-GJ and HM-GJ-S covers may also be placed on Inlets 4-FT Diameter, Catch Basins 4-FT, 5-FT and 6-FT Diameter with a flat top 2x3-FT opening.

Inlet Cover Type S is placed on Inlets 2x2-FT or 2x2.5-FT. Inlet Cover Type S may also be placed on Inlets 3-FT and Catch Basin 3-FT Diameter with a flat top 2x2-FT opening or Inlets 4-FT Diameter and Catch Basins 4-FT, 5-FT and 6-FT Diameter with a flat top 2x2-FT or 2x2.5-FT opening.

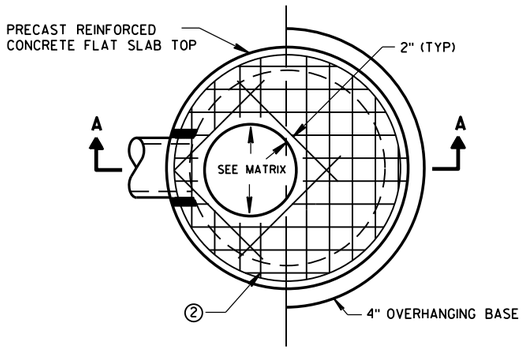
Inlet Cover Type T is placed on Inlets 2x2.5-FT. Inlet Cover Type T may also be placed on Inlets 4-FT Diameter and Catch Basin 4-FT, 5-FT and 6-FT Diameter with a flat top 2x2.5-FT opening. Type T covers are used on Type R and T curb and gutter.

Inlet Cover Type V can be placed on Inlets 2x2-FT or 2x2.5-FT. However, Type V have unique dimensions that don't fit these inlets well. Consider using Inlet 3-FT or Catch Basin 3-FT to 6-FT with a 24x21-Inch centered opening. A special construction detail will be required.

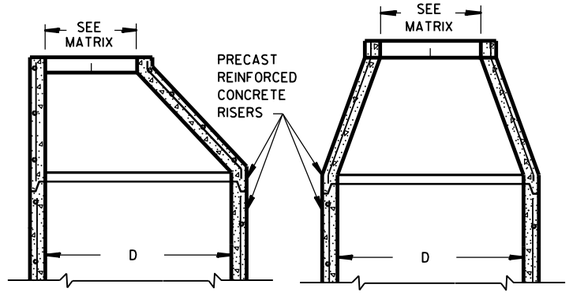
**Contact Person:**

Ann-Marie Kirsch (608) 267-3766

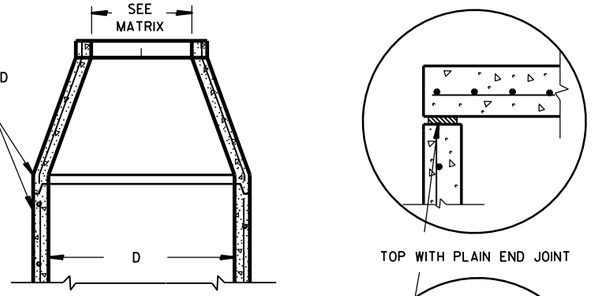
# SDD 8a8 Catch Basins 3-FT, 4-FT, 5-FT and 6-FT Diameter



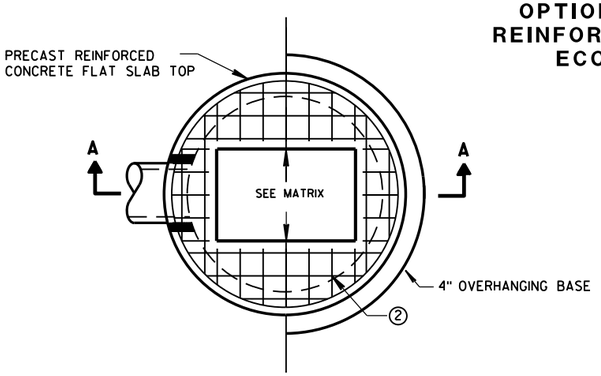

PLAN VIEW CIRCULAR OPENING



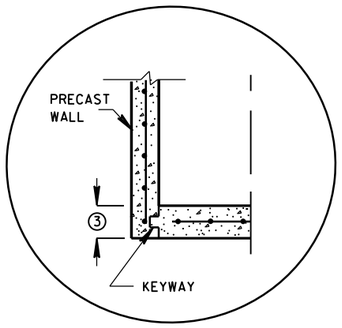

OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP




OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP




PLAN VIEW RECTANGULAR OPENING

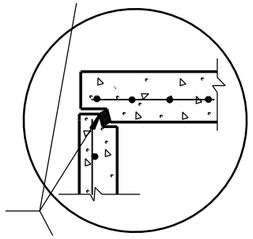



PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION

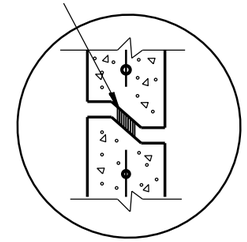


TOP WITH PLAIN END JOINT

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)

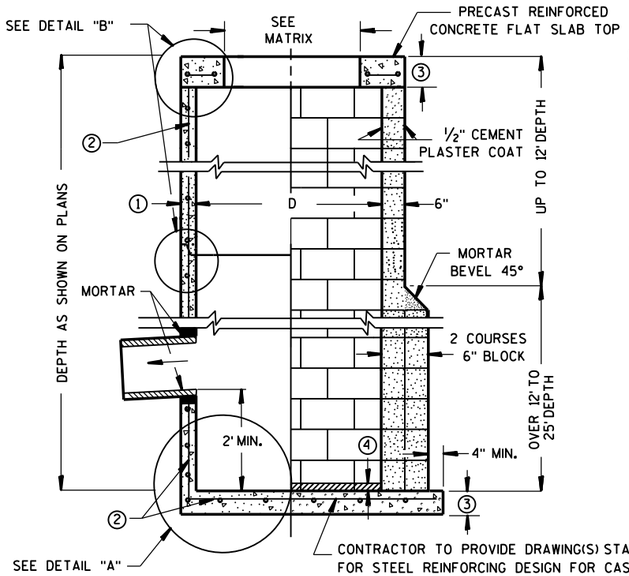


TOP WITH TONGUE AND GROOVE JOINT



RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

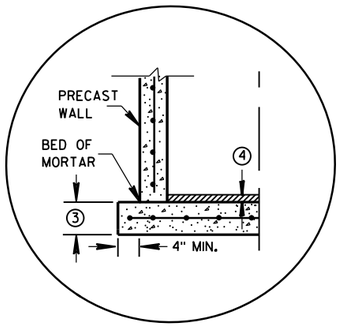



CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES

SECTION A-A

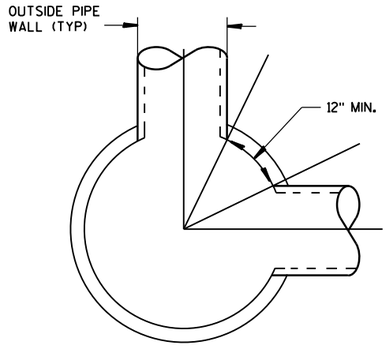
PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②




SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"




DETAIL "C"

## 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 | ALL A'S | ALL B'S | BW | C | F | ALL H'S | S | T | V | WM | Z |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | OPENING SIZE (FT) | | | | | | | | | | | |
| 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

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

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

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

Version 2 | **Standard Detail Drawing 8a8** | *October 3, 2016*

*Catch Basins 3-FT, 4-FT, 5-FT and 6-FT Diameter*

**References:**

FDM 13-25-30

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.1003 | Catch Basins 3-FT Diameter | EACH |
| 611.1004 | Catch Basins 4-FT Diameter | EACH |
| 611.1005 | Catch Basins 5-FT Diameter | EACH |
| 611.1006 | Catch Basins 6-FT Diameter | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

| | |
|---|---|
| SDD 8A5 | Inlet cover sheets "a", "b", "c" and "d". |
| SDD 8D17 | Manholes, Manhole and Inlet Covers |

**Design Notes:**

Guidelines for matching catch basin opening size and inlet covers are provided on the front side of this SDD.

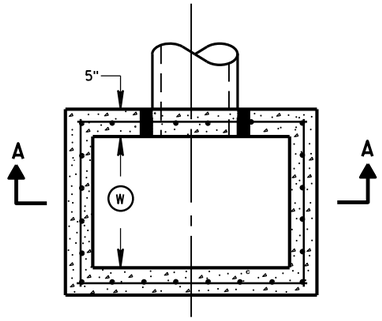
A pipe matrix on the front side of this SDD provides guidance for selecting the maximum inside pipe diameter.

If a sump depth greater than 2' is required this must be specified in the miscellaneous quantities comments.

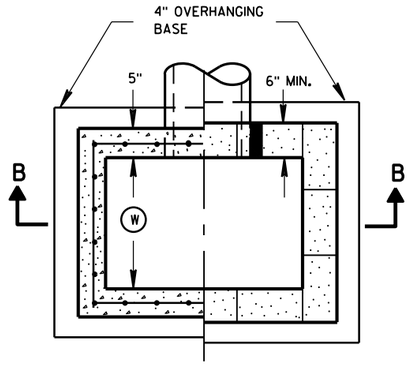
Catch Basins should be used only on projects that have a maintenance agreement for cleaning the sumps. Catch basins should not be used in municipalities that do not want them because of insect control.

**Contact Person:**

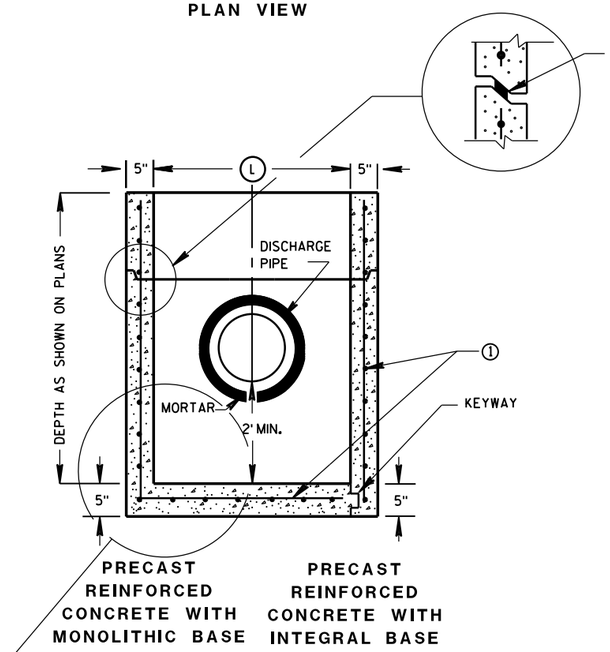
Ed Lilla (608) 266-2312




PLAN VIEW



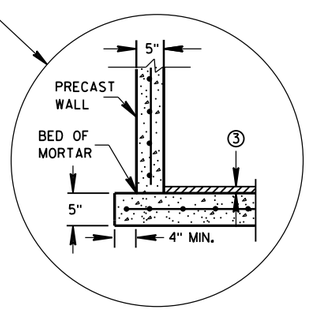

PLAN VIEW



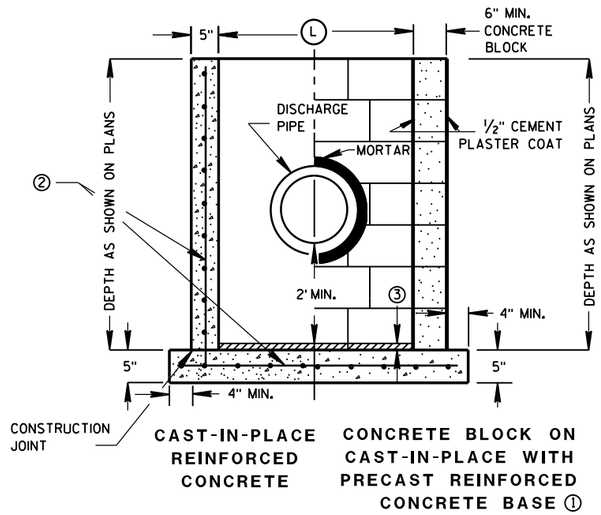

PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE

SECTION A-A




SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION




CAST-IN-PLACE REINFORCED CONCRETE

CONCRETE BLOCK ON CAST-IN-PLACE WITH PRECAST REINFORCED CONCRETE BASE ①

SECTION B-B

## 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 PRECAST CATCH BASIN UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES 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.

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

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

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND 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.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3" CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST CATCH BASINS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

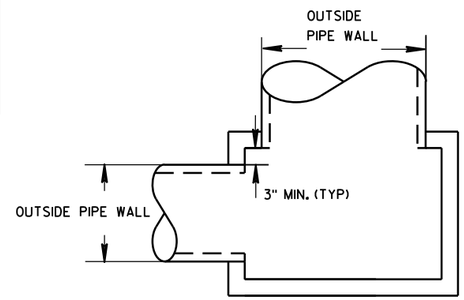
③ 1" CONCRETE KEY POURED AFTER INSTALLATION. 2' SUMP MEASURED FROM TOP OF KEY.

### CATCH BASIN COVER MATRIX

| CATCH BASIN SIZE | | INLET COVER TYPE | F | ALL H'S |
|---|---|---|---|---|
| | WIDTH (W) (FT) | LENGTH (L) (FT) | | |
| 2X3-FT | 2 | 3 | | X |
| 2.5X3-FT | 2.5 | 3 | X | |

### PIPE MATRIX

| CATCH BASIN SIZE | MAXIMUM INSIDE PIPE DIAMETER FOR TWO PIPES | |
|---|---|---|
| | WIDTH (IN) | LENGTH (IN) |
| 2X3-FT | 12 | 24 |
| 2.5X3-FT | 18 | 24 |




DETAIL "A"

CATCH BASINS 2X3-FT AND 2.5X3-FT

| | |
|---|---|
| CATCH BASINS 2X3-FT AND 2.5X3-FT | |
| STATE OF WISCONSIN DEPARTMENT OF TRANSPORTATION | |
| APPROVED Sept., 2016 DATE FHWA | /S/ Rodney Taylor ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR |

| Version 2 | **Standard Detail Drawing 8a9** | *October 3, 2016* |
|---|---|---|

*Catch Basins 2x3-FT and 2.5x3-FT*

**References:**

FDM 13-25-30

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.1230 | Catch Basins 2x3-FT | EACH |
| 611.1253 | Catch Basins 2.5x3-FT | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

| | |
|---|---|
| SDD 8A5 | Inlet cover sheets "a" and "c" |
| SDD 8D17 | Manholes, Manhole and Inlet Covers |

**Design Notes:**

Guidelines for matching catch basin opening size and inlet covers are provided on the front side of this SDD.

A pipe matrix on the front side of this SDD provides guidance for selecting the maximum inside pipe diameter. The inside pipe diameter was determined by the pipe entering perpendicular to the structure at 90°. Pipes entering at a skewed angle should be evaluated on a case by case basis.

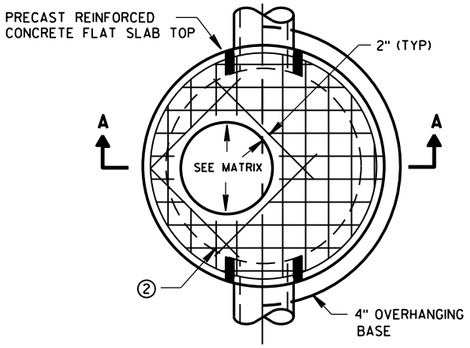
If a sump depth greater than 2' is required this must be specified in the miscellaneous quantities comments.

Catch Basins should be used only on projects that have a maintenance agreement for cleaning the sumps. Catch basins should not be used in municipalities that do not want them because of insect control.

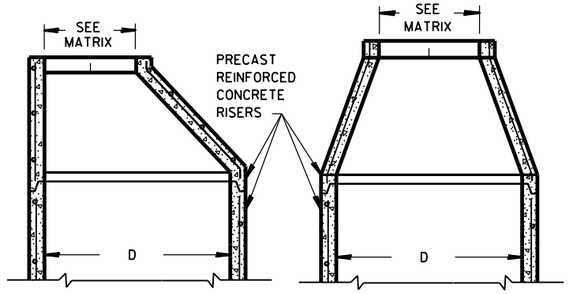
**Contact Person:**

Ed Lilla (608) 266-2312

# SDD 8b9 Manholes 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, and 8-FT Diameter

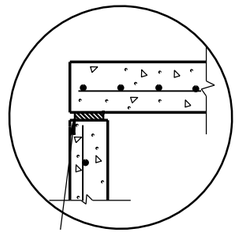



PLAN VIEW CIRCULAR OPENING

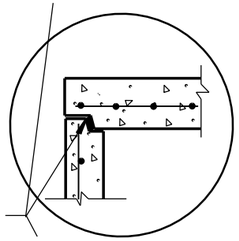



OPTIONAL PRECAST REINFORCED CONCRETE ECCENTRIC TOP

OPTIONAL PRECAST REINFORCED CONCRETE CONCENTRIC TOP

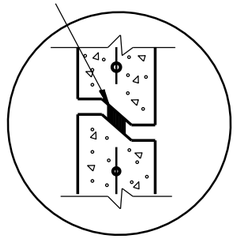


TOP WITH PLAIN END JOINT



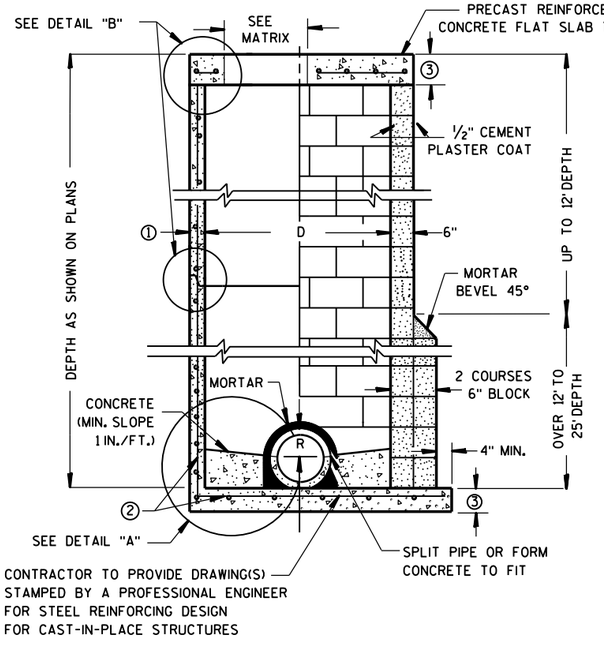
JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C990 (TYP)

TOP WITH TONGUE AND GROOVE JOINT



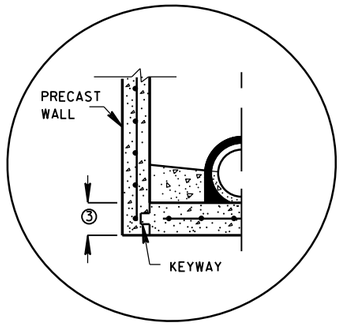
RISER WITH TONGUE AND GROOVE JOINT

DETAIL "B"

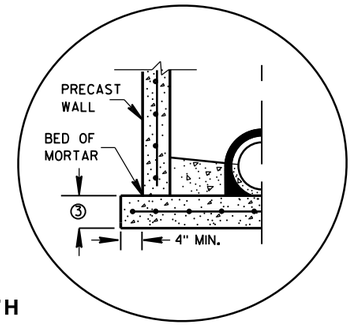



PRECAST REINFORCED CONCRETE WITH MONOLITHIC BASE

CONCRETE BLOCK WITH CAST-IN-PLACE OR PRECAST REINFORCED CONCRETE BASE ②

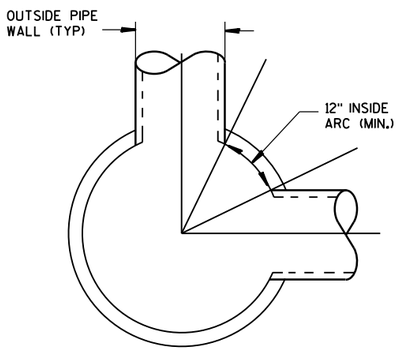



PRECAST REINFORCED CONCRETE WITH INTEGRAL BASE OPTION




SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

DETAIL "A"




DETAIL "C"

## 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 MANHOLE 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 CONE TOPS (ECCENTRIC OR CONCENTRIC) OR PRECAST REINFORCED 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" 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.

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

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

ALL PRECAST MANHOLE UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

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, 7 INCHES FOR 6-FT, 8 INCHES FOR 7-FT AND 9 INCHES FOR 8-FT DIAMETER PRECAST MANHOLES.

② FOR PRECAST MANHOLES 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".

## MANHOLE COVER OPENING MATRIX

| MANHOLE COVER TYPE | C | ALL J'S | K | L | M |
|---|---|---|---|---|---|
| OPENING SIZE (FT) | | | | | |
| 2 DIA. | X | X | | X | |
| 3 DIA. | | | X | | X |

## PIPE MATRIX

| MANHOLE 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 | 36 |
| 7-FT | 48 | 36 |
| 8-FT | 60 | 42 |

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-FT DIAMETER

MANHOLES 3-FT, 4-FT, 5-FT, 6-FT, 7-FT AND 8-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 B 9-2

6

S.D.D. 8 B 9-2

Version 2 **Standard Detail Drawing 8b9** *October 3, 2016*

*Manholes 3-FT, 4-FT, 5-FT, 6-FT, 7-FT, and 8-FT Diameter*

**References:**

FDM 13-25-15

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.2003 | Manholes 3-FT Diameter | EACH |
| 611.2004 | Manholes 4-FT Diameter | EACH |
| 611.2005 | Manholes 5-FT Diameter | EACH |
| 611.2006 | Manholes 6-FT Diameter | EACH |
| 611.2007 | Manholes 7-FT Diameter | EACH |
| 611.2008 | Manholes 8-FT Diameter | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

| | |
|---|---|
| SDD 8A5 | Inlet cover sheets "b" and "d". |
| SDD 8D17 | Manholes, Manhole and Inlet Covers |

**Design Notes:**

Guidelines for matching manhole opening size and manhole covers are provided on the front side of this SDD.

A pipe matrix on the front side of this SDD guidance for selecting the maximum inside pipe diameter.

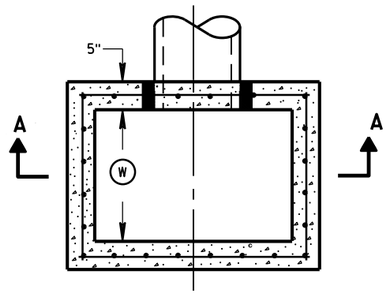
Manholes should be used as follows:

1. For cleaning and maintenance locations spaced as recommended in FDM chapter 13
2. At changes in pipe size
3. At bends in pipe
4. Where flow needs to be split or diverted

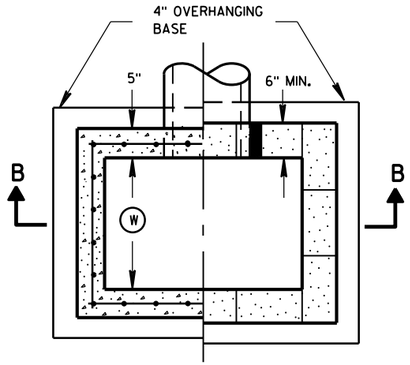
Precast concrete manholes 10' and 12' in diameter are available but require a special construction detail. A structural design should be completed to determine the wall thickness and steel requirements for the top, walls and base.

**Contact Person:**

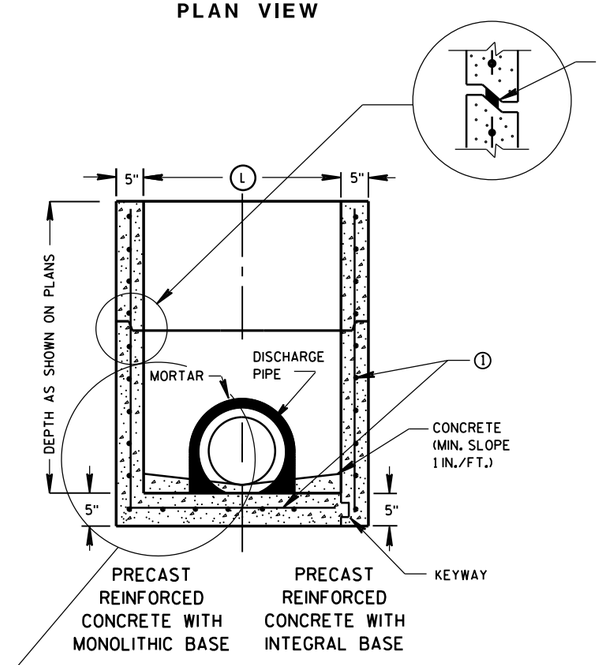
Ed Lilla (608) 266-2312



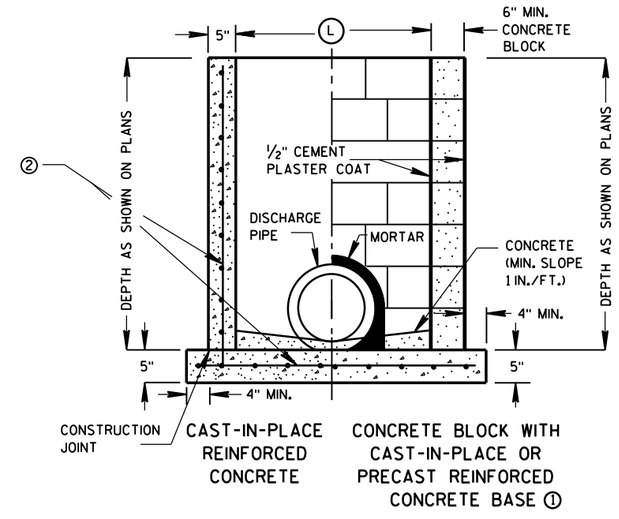

PLAN VIEW



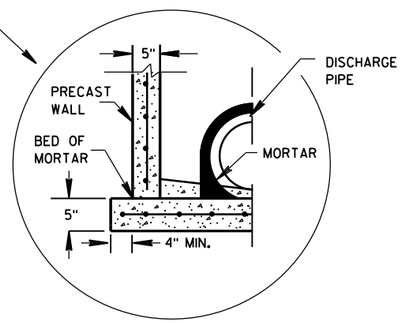

PLAN VIEW




SECTION A-A




SECTION B-B




SEPARATE PRECAST REINFORCED CONCRETE BASE OPTION

## 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 INLET 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 PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

ALL DRAINAGE STRUCTURES ARE DESIGNATED ON THE PLANS AS "MANHOLES 3X3-L", "CATCH BASINS 4-B", "INLETS 2X3-H", ETC. THE FIRST NUMBERS DESIGNATES 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.

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

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

4" OVERHANGING BASES ARE REQUIRED FOR CAST-IN-PLACE REINFORCED CONCRETE AND 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.

MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3 INCH CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

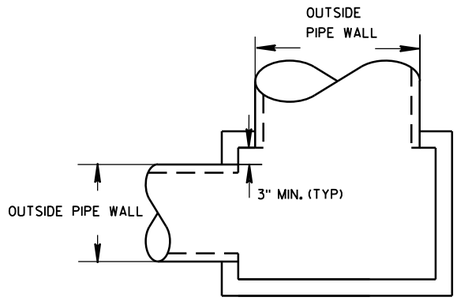
② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

## INLET COVER MATRIX

| INLET SIZE | | INLET COVER TYPE | ALL A'S | ALL B'S | BW | F | ALL H'S | S | T | V | WM |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | WIDTH (W) (FT) | LENGTH (L) (FT) | | | | | | | | | |
| 2X2-FT | 2 | 2 | X | X | | | | X | | X | |
| 2X2.5-FT | 2 | 2.5 | | | X | | | X | X | X | X |
| 2X3-FT | 2 | 3 | | | | | X | | | | |
| 2.5X3-FT | 2.5 | 3 | | | | X | | | | | |

## PIPE MATRIX

| INLET SIZE | MAXIMUM INSIDE PIPE DIAMETER | |
|---|---|---|
| | WIDTH (IN) | LENGTH (IN) |
| 2X2-FT | 12 | 12 |
| 2X2.5-FT | 12 | 18 |
| 2X3-FT | 12 | 24 |
| 2.5X3-FT | 18 | 24 |




DETAIL "A"

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

INLETS 2X2-FT, 2X2.5-FT, 2X3-FT AND 2.5X3-FT

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

# *Inlets 2x2-FT, 2x2.5-FT, 2x3-FT, and 2.5x3-FT*

**References:**

FDM 13-25-30

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.3220 | Inlets 2x2-FT | EACH |
| 611.3225 | Inlets 2x2.5-FT | EACH |
| 611.3230 | Inlets 2x3-FT | EACH |
| 611.3253 | Inlets 2.5x3-FT | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

| | |
|---|---|
| SDD 8A5 | Inlet cover sheets "a", "b", "c" and "d". |
| SDD 8D17 | Manholes, Manhole and Inlet Covers |

**Design Notes:**

Guidelines for matching inlet opening size and inlet covers are provided on the front side of this SDD.

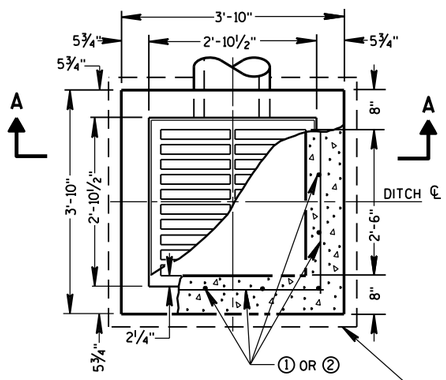
A pipe matrix on the front side of this SDD provides guidance for selecting the maximum inside pipe diameter. The inside pipe diameter was determined by the pipe entering perpendicular to the structure at 90°. Pipes entering at a skewed angle should be evaluated on a case by case basis.

Inlets should be kept as shallow as possible to reduce cost.

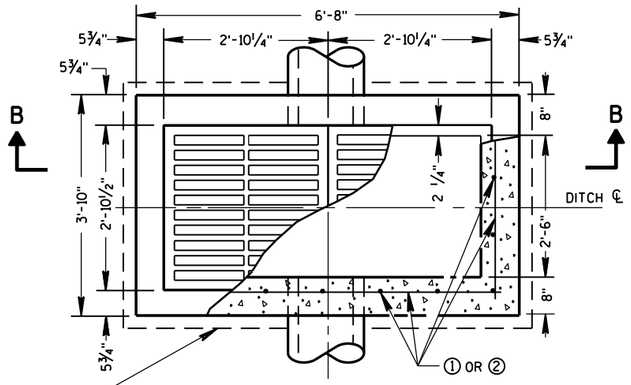
**Contact Person:**

Ed Lilla (608) 266-2312

# SDD 8c8 Inlets Median 1 and 2 Grate

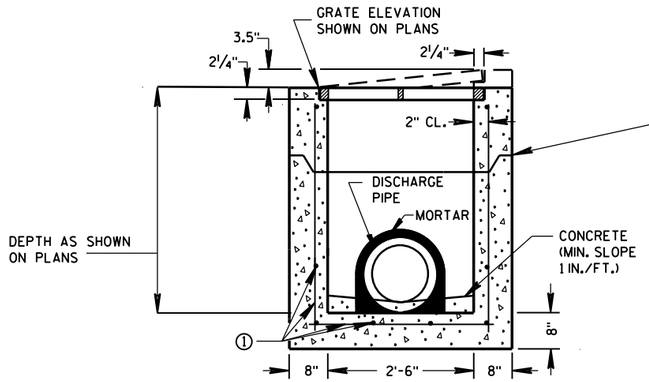



PLAN VIEW

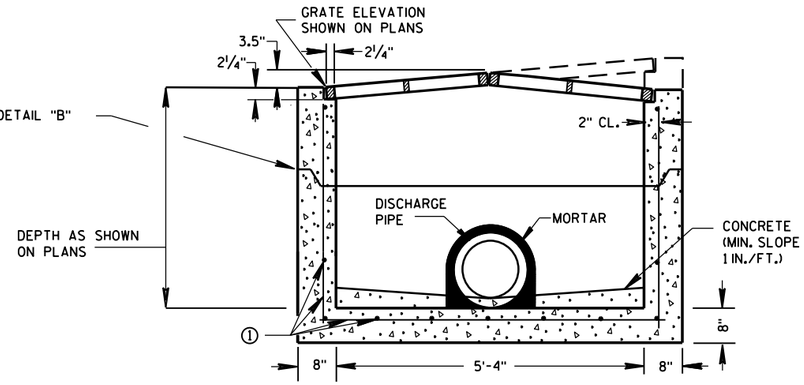



PLAN VIEW

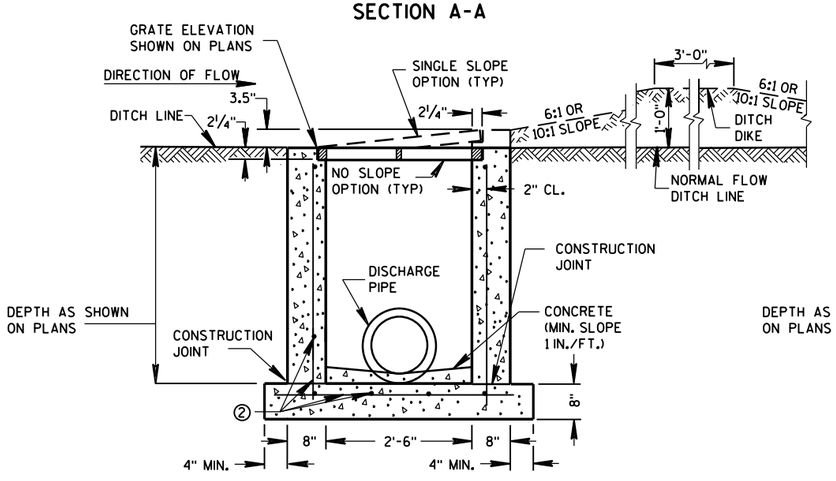
4" OVERHANGING BASE ON REINFORCED CAST-IN-PLACE CONCRETE INLETS



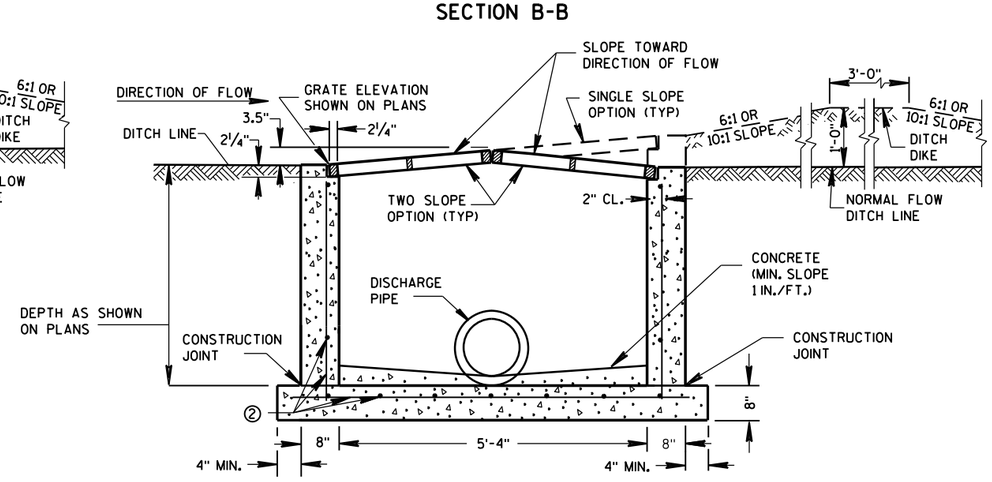

PRECAST REINFORCED CONCRETE SECTION A-A




PRECAST REINFORCED CONCRETE SECTION B-B




REINFORCED CAST-IN-PLACE CONCRETE SECTION A-A




REINFORCED CAST-IN-PLACE CONCRETE SECTION B-B

## INLETS MEDIAN 1 GRATE

## INLETS MEDIAN 2 GRATE

## 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 INLET UNITS REQUIRED FOR THE PROJECT UNTIL A LIST OF SIZES IS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR PROPOSED ALTERNATE DESIGNS FOR INLETS WHICH MAY INCLUDE PRECAST REINFORCED CONCRETE INLETS, SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PROVIDING THAT SUCH ALTERNATE DESIGNS MAKE PROVISION FOR EQUIVALENT CAPACITY AND STRENGTH.

ALL MEDIAN INLETS ARE DESIGNATED ON THE PLANS AS "INLETS, IG-MS", ETC. THE FIRST NUMBER AND LETTER DESIGNATE THE TYPE OF STRUCTURE, AND THE FOLLOWING LETTERS DESIGNATE 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.

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

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

ALL PRECAST INLET UNITS SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF ASTM C 913.

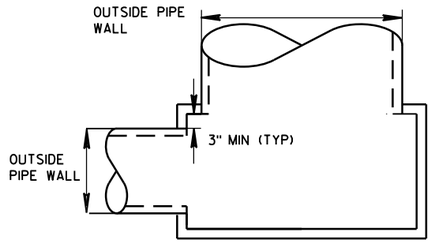
MAXIMUM INSIDE PIPE DIAMETER DETERMINED BY 3" CLEARANCE ON EACH SIDE OF THE OUTSIDE WALL OF THE PIPE. SEE DETAIL "A". ASSUMES PIPE ENTERS PERPENDICULAR TO THE STRUCTURE.

① FOR PRECAST INLETS PROVIDE REINFORCING STEEL IN ACCORDANCE TO ASTM C 913.

② CONTRACTOR TO PROVIDE DRAWING(S) STAMPED BY A PROFESSIONAL ENGINEER FOR STEEL REINFORCING DESIGN FOR CAST-IN-PLACE STRUCTURES.

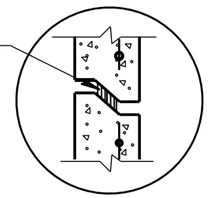
### PIPE MATRIX

| | MAXIMUM INSIDE PIPE DIAMETER | |
|---|---|---|
| INLET SIZE | WIDTH (IN) | LENGTH (IN) |
| 1 GRATE | 18 | 18 |
| 2 GRATE | 18 | 42 |




DETAIL "A"

JOINTS TO BE SEALED WITH A BUTYL RUBBER SEAL PER SEALANT MANUFACTURERS RECOMMENDATIONS CONFORMING TO ASTM C 990 (TYP)



DETAIL "B"

INLETS MEDIAN 1 AND 2 GRATE

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
Sept., 2016
DATE
FHWA

/S/ Rodney Taylor
ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR

Version 2 | **Standard Detail Drawing 8c8** | *October 3, 2016*

*Inlets Median 1 and 2 Grate*

**References:**

FDM 13-25-30

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.3901 | Inlets Median 1 Grate | EACH |
| 611.3902 | Inlets Median 2 Grate | EACH |
| 611.0642 | Inlets Cover Type MS | EACH |
| 611.0645 | Inlets Cover Type MS-A | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

SDD 8A5 Inlet cover sheet "b".

**Design Notes:**

A pipe matrix on the front side of this SDD provides guidance for selecting the maximum inside pipe diameter. The inside pipe diameter was determined by the pipe entering perpendicular to the structure at 90°. Pipes entering as a skewed angle should be evaluated on a case by case basis.

For Inlets Median 1 Grate, the designer must specify the slope of the inlet cover as either single slope or no slope.

For Inlets Median 2 Grate, the designer must specify the slope of the two inlet covers as either single slope, two different slopes or no slope.

Designer must specify either a MS or MS-A inlet cover.

Inlets Median 1 and 2 Grate with MS or MS-A covers shall not be used in paved areas with traffic.

Grates shall be sloped no greater than 10 to 1.

Ditch Dikes shall be sloped at:

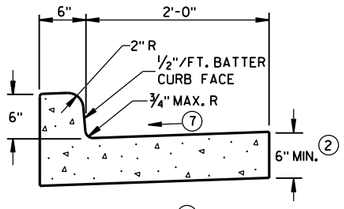
6:1 for design speeds less than 60 m.p.h.

10:1 for design speeds greater than or equal to 60 m.p.h.

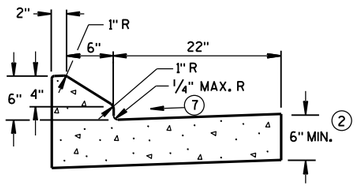
**Contact Person:**

Ed Lilla (608) 266-2312

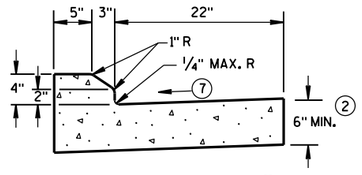
# SDD 8d1-a Concrete Curb, Concrete Curb & Gutter



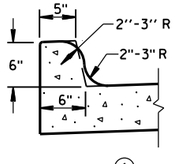

TYPES A (1) & D



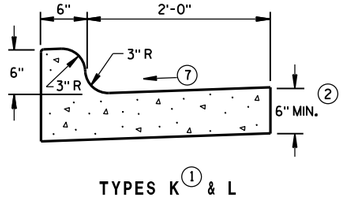

6" SLOPED CURB TYPES G (1) & J




4" SLOPED CURB TYPES G (1) & J

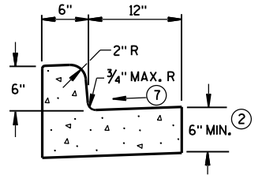



TYPES K (1) & L
(OPTIONAL CURB SHAPE)



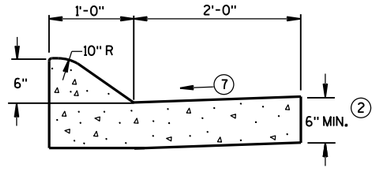

TYPES K (1) & L

CONCRETE CURB & GUTTER 30"

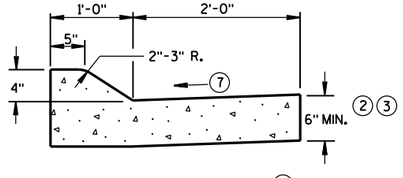



TYPES A (1) & D

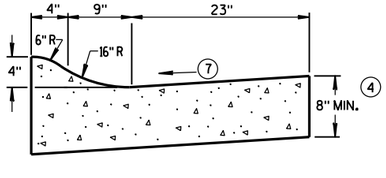
CONCRETE CURB & GUTTER 18"




6" SLOPED CURB TYPES A (1) & D

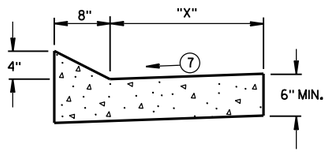



4" SLOPED CURB TYPES A (1) & D




4" SLOPED CURB TYPES R (1) & T (5)

CONCRETE CURB & GUTTER 36"




TYPES TBT & TBTT (1)

CONCRETE CURB & GUTTER

| TBT & TBTT | "X" |
|---|---|
| 30" | 22" |
| 36" | 28" |

## 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.

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, R AND TBTT.

(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) USE 8" MINIMUM GUTTER THICKNESS WHEN USED WITH AN ADJACENT CONCRETE TRUCK APRON PLACED BEHIND BACK OF CURB.

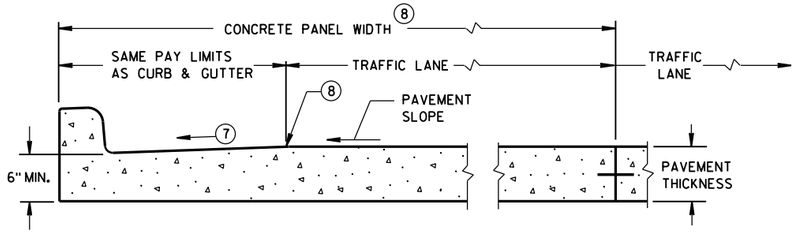
(4) THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 8" MINIMUM GUTTER THICKNESS IS MAINTAINED.

(5) THE FACE OF CURB IS 6" FROM THE BACK OF CURB.

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

(7) USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.

(8) INCLUDE LONGITUDINAL JOINT AND TIE BARS ALONG LANE EDGE WHEN CONCRETE PANEL WIDTH EXCEEDS THE MAXIMUM WIDTH PER TABLE BELOW. LONGITUDINAL JOINT(S) ARE NOT ALLOWED WITHIN TRAFFIC LANES AND BIKE LANES. LONGITUDINAL JOINT MAY BE SAWED.

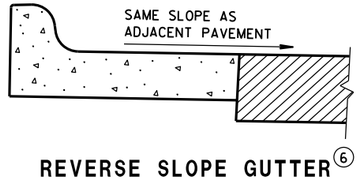



PARTIAL SECTION OF PAVEMENT *
WITH INTEGRAL CURB & GUTTER

PAVEMENT THICKNESS AND MAXIMUM CONCRETE PANEL WIDTH TABLE

| PAVEMENT THICKNESS | MAXIMUM PANEL WIDTH |
|---|---|
| LESS THAN 10" | 12' |
| 10" & ABOVE | 15' |

* BIKE LANE IS NOT SHOWN.




REVERSE SLOPE GUTTER (6)
(TYPICAL FOR ALL CURB & GUTTER TYPES)

CONCRETE CURB & GUTTER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

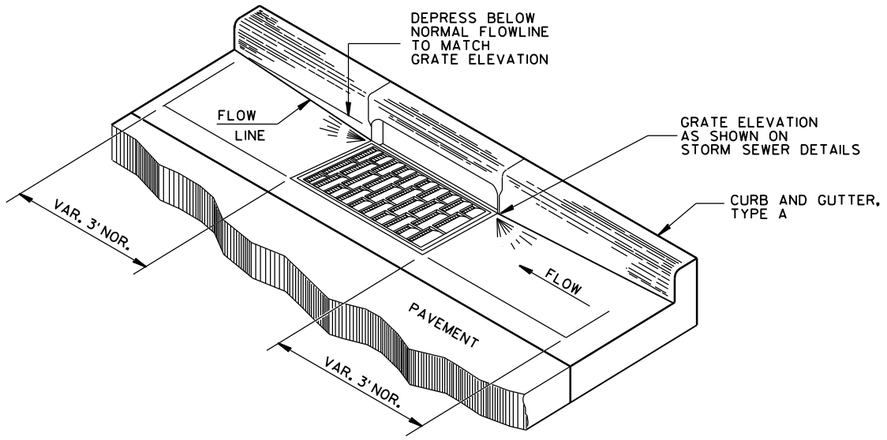
6

S.D.D. 8 D 1-20a

6

S.D.D. 8 D 1-20a

# SDD 8d1-b Concrete Curb Ties and Curb & Gutter Applications




**DETAIL OF CURB AND GUTTER AT INLETS**

(TYPE H INLET COVER SHOWN)

## GENERAL NOTES

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

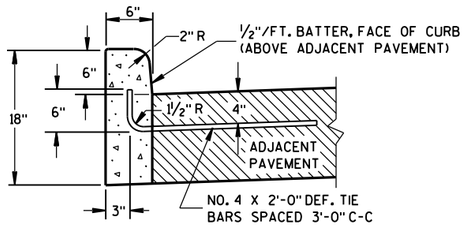
PAVEMENT TIES AND TIE BARS SHALL BE EPOXY COATED IN CONFORMANCE WITH SUBSECTION 505.2.6.2 OF THE STANDARD SPECIFICATIONS.

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

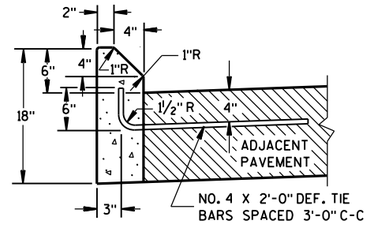
(1) TIE BARS ARE REQUIRED FOR CURB AND GUTTER TYPES A, G, K, R AND TBTT.

(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.

(9) REFER TO SDD 8D18 AND SDD 8D19 FOR ADDITIONAL DRIVEWAY ENTRANCE CURB DETAILS.

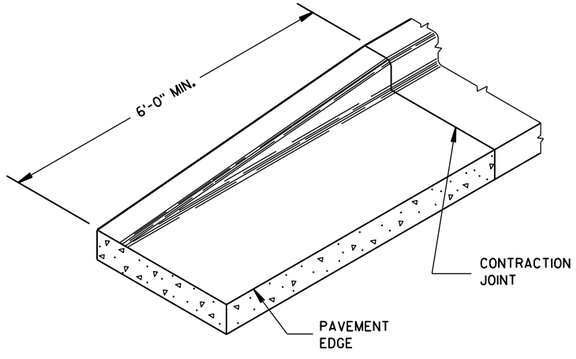



TYPES A (1) & D

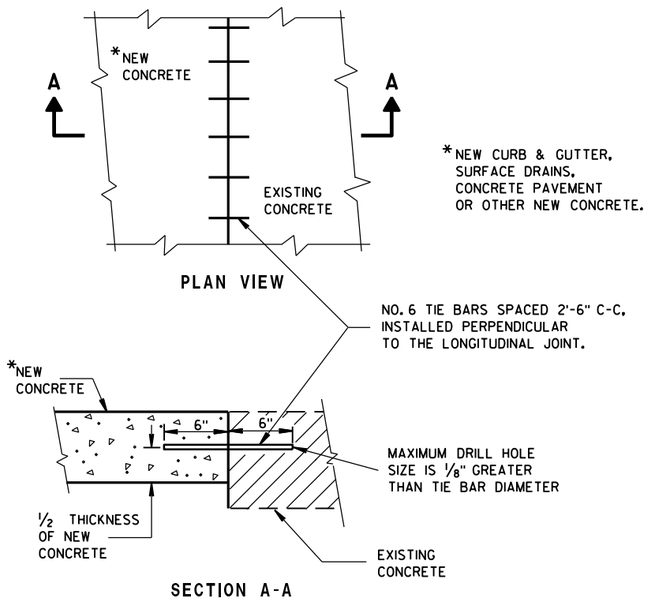



TYPES G (1) & J

**CONCRETE CURB**



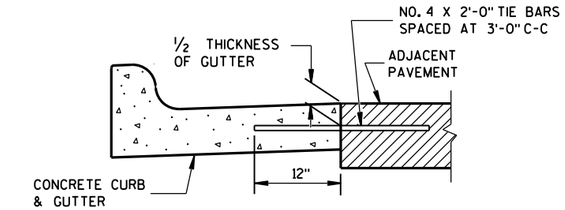

**END SECTION CURB & GUTTER**



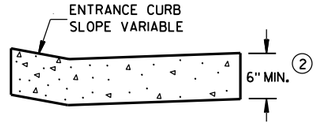

PLAN VIEW

SECTION A-A

**TIE BARS DRILLED INTO EXISTING PAVEMENT**




**TYPICAL TIE BAR LOCATION** (1)




**DRIVEWAY ENTRANCE CURB** (9)

(WHEN DIRECTED BY THE ENGINEER)

**CONCRETE CURB, TIES AND CURB AND GUTTER APPLICATIONS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
June, 2017 — DATE
/S/ Rodney Taylor — ROADWAY STANDARDS DEVELOPMENT UNIT SUPERVISOR
FHWA

6

S.D.D. 8 D 1-20b

# *Concrete Curb, Concrete Curb & Gutter and Ties*

**References:**

FDM 11-20-1

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 416.0610 | Drilled Ties Bars | EACH |
| 601.0105 | Concrete Curb Type A | LF |
| 601.0110 | Concrete Curb Type D | LF |
| 601.0115 | Concrete Curb Type G | LF |
| 601.0120 | Concrete Curb Type J | LF |
| 601.0150 | Concrete Curb Integral Type D | LF |
| 601.0155 | Concrete Curb Integral Type J | LF |
| 601.0405 | Concrete Curb & Gutter 18-Inch Type A | LF |
| 601.0407 | Concrete Curb & Gutter 18-Inch Type D | LF |
| 601.0409 | Concrete Curb & Gutter 30-Inch Type A | LF |
| 601.0411 | Concrete Curb & Gutter 30-Inch Type D | LF |
| 601.0413 | Concrete Curb & Gutter 6-Inch Sloped 30-Inch Type G | LF |
| 601.0415 | Concrete Curb & Gutter 6-Inch Sloped 30-Inch Type J | LF |
| 601.0417 | Concrete Curb & Gutter 30-Inch Type K | LF |
| 601.0419 | Concrete Curb & Gutter 30-Inch Type L | LF |
| 601.0452 | Concrete Curb & Gutter Integral 30-Inch Type D | LF |
| 601.0454 | Concrete Curb & Gutter Integral 30-Iinch Type J | LF |
| 601.0456 | Concrete Curb & Gutter Integral 30-Inch Type L | LF |
| 601.0501 | Concrete Curb & Gutter Integral 4-Inch Sloped 36-Inch | LF |
| 601.0511 | Concrete Curb & Gutter Integral 6-Inch Sloped 36-Inch | LF |
| 601.0551 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type A | LF |
| 601.0553 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type D | LF |
| 601.0555 | Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type A | LF |
| 601.0557 | Concrete Curb & Gutter 6-Inch Sloped 36-Inch Type D | LF |
| 601.0574 | Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type G | LF |
| 601.0576 | Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type J | LF |
| 601.0580 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type R | LF |
| 601.0582 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type T | LF |
| 601.0584 | Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBT | LF |
| 601.0586 | Concrete Curb & Gutter 4-Inch Sloped 30-Inch Type TBTT | LF |
| 601.0588 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBT | LF |
| 601.0590 | Concrete Curb & Gutter 4-Inch Sloped 36-Inch Type TBTT | LF |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

Any special curb or curb and gutter, different from those listed above, requires a SPV.0900 item number, special provision and special detail.

List in miscellaneous quantities all curb and curb and gutter types along with STA-STA limits LT and RT. Label typical finished sections with curb and curb and gutter types. Indicate on plan sheets where reverse slope gutter is required.

A 4% gutter cross slope is the standard slope. The longstanding 3/4” per foot (= 6.25%) cross slope may still be used for various applications. Refer to FDM 11-20-1.2.1.1 for gutter cross slope selection and plan labeling criteria. Also refer to FDM 11-46-10.3 for gutter cross slope guidance with curb ramp applications. Provide inlet spacing for selected gutter cross slope per FDM 13-25-15. Provide construction detail if project requires modification to the standard gutter cross slope.

The face of curb for the Type R and T is 6-inches from the back of curb.

Use the end section curb & gutter at railroad crossings where curb & gutter is present and at driveways where the sidewalk is adjacent to the back of curb.

Curb and gutter Type TBT (Thrie Beam Transition) and TBTT (Thrie Beam Transition Tied) can be used with thrie beam transitions to control water by the thrie beam transition. See the Thrie Beam Transition SDDs for more information. In some cases, TBT and TBTT are required for proper performance of the thrie beam transition.

**Note:**

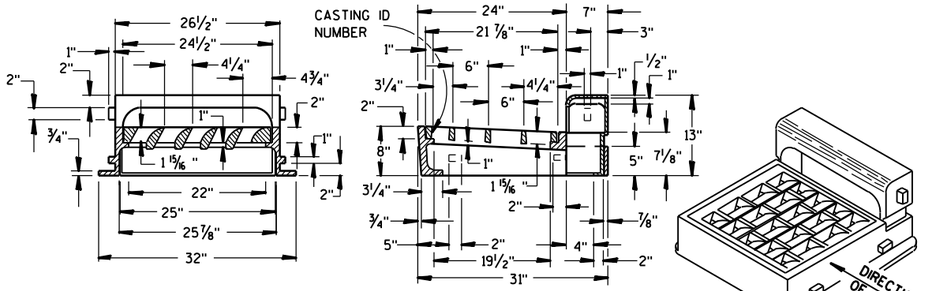
Do not use this SDD for Items 601.0199.s Concrete Curb Precast or 465.0310 Asphaltic Curb. Always include a special detail in the plan for these items. (See CADDS cell 9 or 10 in file CDCRBFTR.CEL and modify titles to match that of item 465.0310.)

**Contact Person:**

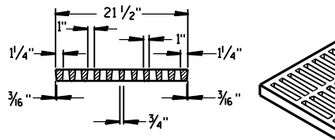
Ann-Marie Kirsch (608) 267-3766

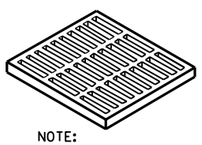
# SDD 8d17 Manholes, Manhole and Inlet Covers

## INLET COVERS

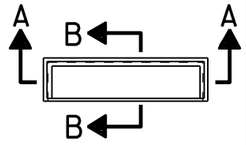


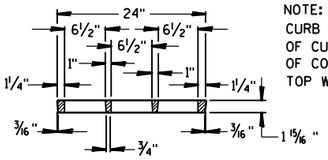

### TYPE "R"
SHOWING SPECIAL GRATE NO. 1
(TO BE NOTED AS R-1 IN DRAINAGE TABLE)



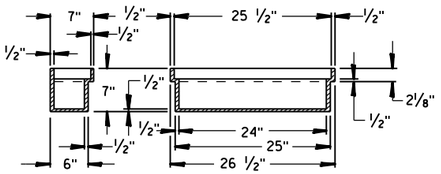


(APPROX. WEIGHT - 510 LBS.)
FRAME..... 245 LBS.
CURB..... 120 LBS.
GRATE..... 145 LBS.



NOTE:
CURB PLUG USED IN PLACE OF CURB BOX IN ABSENCE OF CONC. CURB. FILL TO TOP WITH CONCRETE.

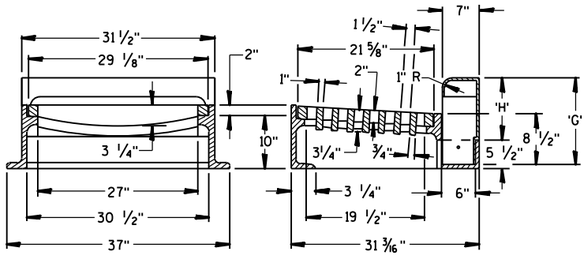


SECTION B-B SECTION A-A

### GRATE FOR TYPE "R" INLET COVER
(GRATE..... 150 LBS.)
(TO BE USED UNLESS OTHERWISE NOTED IN DRAINAGE TABLE)

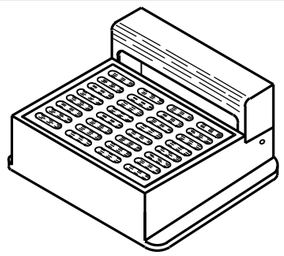
### SPECIAL CURB PLUG "P"
(CURB PLUG..... 85 LBS.)
(TO BE NOTED AS R-P IN DRAINAGE TABLE)

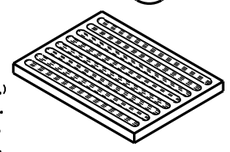
'H' = 9" FOR 6" CURB 'G' = 13 ¾" FOR 6" CURB
'H' = 11" FOR 8" CURB 'G' = 15 ¾" FOR 8" CURB



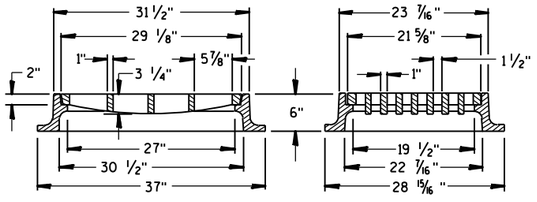
### TYPE "W"

(APPROX. WEIGHT - 670 LBS.)
FRAME..... 350 LBS.
CURB BOX..... 135 LBS.
GRATE..... 185 LBS.

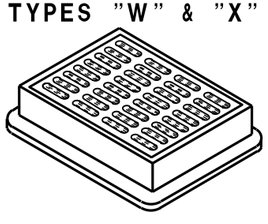




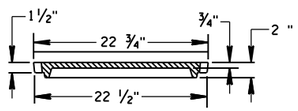
ALTERNATE GRATE
(FOR EXPRESSWAY RAMPS)
TYPES "W" & "X"



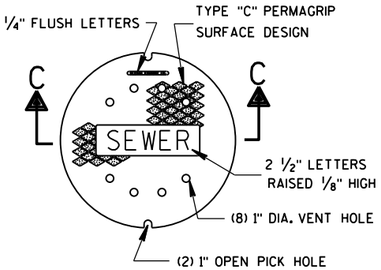
### TYPE "X"
(APPROX. WEIGHT - 470 LBS.)

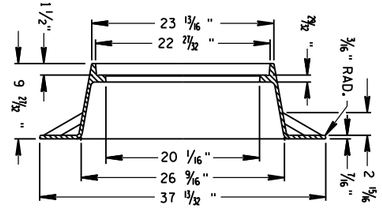


## MANHOLE COVER



SECTION C-C



### TYPE "Q"
(APPROX. WEIGHT - 290 LBS.)

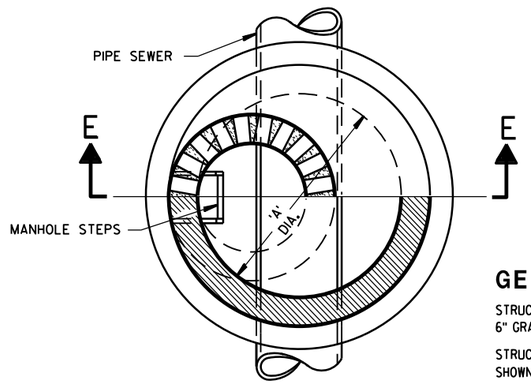
### TABLE OF DIMENSIONS

| TYPE | 'A' | 'B' | 'C' |
|---|---|---|---|
| 11 | 3'-6" | 2'-8" | 12" - 36"* |
| 12 | 4'-0" | 3'-8" | 12" - 42"** |
| 13 | 5'-0" | 5'-8" | 42" - 48" |
| 14 | 6'-0" | 7'-8" | 54" - 60" |

* 12" - 21" FOR PRECAST MANHOLES
** 12" - 24" FOR PRECAST MANHOLES

THE FIRST STEP SHALL BE PLACED 16" ABOVE THE BENCH.

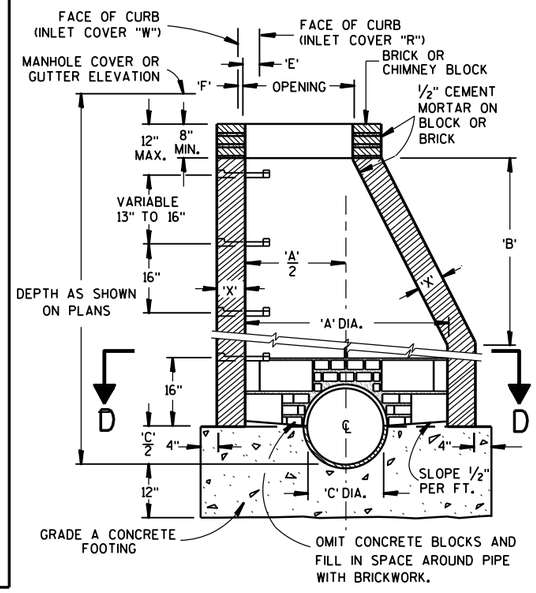
## MANHOLE



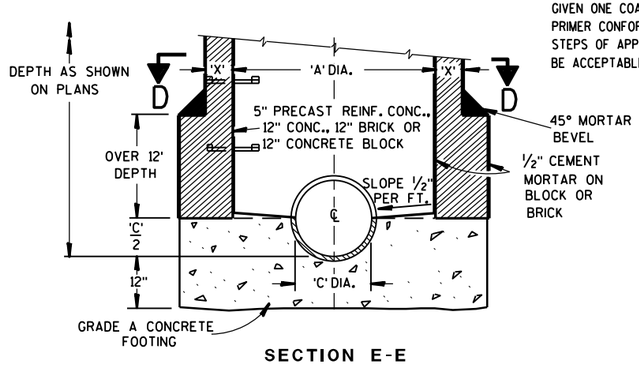

HALF SECTION D-D

### TABLE OF OPENING DIMENSIONS

| COVER TYPE | DESCRIPTION | OPENING | 'E' | 'F' |
|---|---|---|---|---|
| "O" | ROUND | 2'-2" DIA. | — | — |
| "W" | CURB BOX | 1'-8" X 2'-6" | — | 1" |
| "X" | INLET | 1'-10" X 2'-6" | — | — |
| "R" | CURB BOX | 2'-0" X 2'-1" | 4" | — |




SECTION E-E




SECTION E-E

TYPES 11, 12, 13 & 14

### GENERAL NOTES

STRUCTURE WALL THICKNESS 'X' TO BE 8" BRICK, 6" CONCRETE BLOCK, 6" GRADE A CONCRETE OR 5" PRECAST REINFORCED CONCRETE.

STRUCTURE FOOTINGS ARE TO BE GRADE A CONCRETE OF THE THICKNESS SHOWN IN THE DETAIL OR 5" PRECAST REINFORCED CONCRETE.

REINFORCEMENT FOR 5" PRECAST REINFORCED CONCRETE SHALL BE 6" X 6" W16 X W16 WELDED SREEL WIRE FABRIC AND SHALL BE EMBEDDED 2" CLEAR.

PRECAST INLET UNITS AND BASES SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF AASHTO DESIGNATION M 199.

PRECAST CONCRETE FLAT SLAB TOPS MAY BE USED ON THE STRUCTURES. THE TOPS SHALL BE INSTALLED ON A BED OF MORTAR.

PRECAST REINFORCED BASES SHALL BE PLACED ON A BED OF MATERIAL AT LEAST 6" IN DEPTH, WHICH MEETS THE REQUIREMENTS FOR GRANULAR BACK-FILL. THIS BEDDING SHALL BE COMPACTED AND PROVIDE UNIFORM SUPPORT FOR THE ENTIRE AREA OF THE BASE.

SET FRAME ELEVATION 0.03 FT. LOWER THAN ELEVATION INDICATED ON THE PLANS.

THE CONTRACTOR MAY FORM AND POUR MONOLITHIC CONCRETE INVERT PROVIDED THE PIPE ENDS ARE EXTENDED INTO THE M.H. AND NOT TERMINATED WITHIN THE M.H. WALLS.

MANHOLE STEPS

STEPS MEETING THE FOLLOWING REQUIREMENTS SHALL BE INSTALLED IN ALL STRUCTURES OVER 5 FEET IN DEPTH; 16 INCH C-C MAX. SPACING; PROJECT A MINIMUM CLEAR DISTANCE OF 4 INCHES FROM THE WALL AT THE POINT OF EMBEDMENT; MINIMUM WALL EMBEDMENT OF 3 INCHES IN PRECAST MANHOLE AND 6 INCHES IN 8 INCH BRICK OR 6 INCH BLOCK MANHOLE; TREAD OF STEP SHALL HAVE A NON-SKID SURFACE AND BE FLANKED BY CLEATS, WITH A MINIMUM OF 10 INCHES CLEAR BETWEEN CLEATS, TO PREVENT FOOT SLIPPING OFF THE EDGE CLEATS SHALL BE A MINIMUM OF ¾ INCH HIGH BY ¾ INCH WIDE HAVING A MINIMUM THICKNESS OF ⅜ INCH. STEPS SHALL BE CAPABLE OF SUPPORTING A CONCENTRATED LOAD OF 300 LBS. FERROUS METAL STEPS NOT PAINTED OR TREATED TO RESIST CORROSION SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 1 INCH.

SOLID ALUMINUM STEPS SHALL HAVE A MINIMUM CROSS SECTIONAL DIMENSION OF 0.75 INCH. ALUMINUM SURFACES TO BE EMBEDDED IN CONCRETE SHALL BE GIVEN ONE COAT OF SUITABLE QUALITY PAINT, SUCH AS ZINC CHROMATE PRIMER CONFORMING TO FEDERAL SPECIFICATION TT-P-645 OR EQUIVALENT. STEPS OF APPROVED POLYPROPYLENE PLASTIC COATED REINFORCING BAR WILL BE ACCEPTABLE.

**MANHOLES, MANHOLE & INLET COVERS**

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
4/12/2011 — DATE
/S/ Jerry H. Zogg — ROADSIDE STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 D 17-6

# *Manholes, Manhole and Inlet Covers*

**References:**

FDM 13-25-30

Neenah Foundry Company Catalog “Construction Castings”

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 611.0225 | Manholes Type 11 | EACH |
| 611.0230 | Manholes Type 12 | EACH |
| 611.0235 | Manholes Type 13 | EACH |
| 611.0240 | Manholes Type 14 | EACH |
| 611.0555 | Manhole Covers Type Q | EACH |
| 611.0657 | Inlet Covers Type W | EACH |
| 611.0663 | Inlet Covers Type X | EACH |
| 601.0648 | Inlet Covers Type R | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

This SDD replaces SDD 8M3-5. It is for use in Milwaukee County only. This includes the City of Milwaukee and other communities in Milwaukee County.

When special grate No. 1 is needed for Type R Inlet Covers, bid as Type R but show as R-1 in drainage table. Special curb plug “P” should be shown as R-P in drainage table, but is bid as Type R.

**Contact Person:**

Ann-Marie Kirsch (608) 267-3766

# SDD 8f1 Apron Endwalls for Culvert Pipe

## METAL APRON ENDWALLS

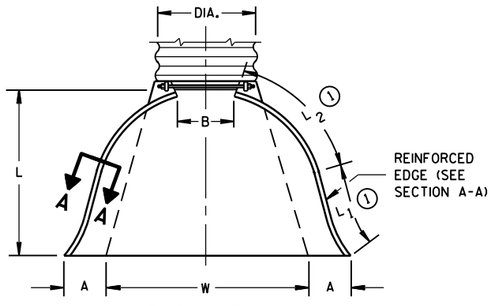
| PIPE DIA. (IN.) | MIN. THICK. (inches) | | DIMENSIONS (inches) | | | | | | | APPROX. SLOPE | BODY |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | STEEL | ALUM. | A (±1") | B (MAX.) | H (±1") | L (±1 1/2") | $L_1$ ① | $L_2$ ① | W (±2") | | |
| 12 | .064 | .060 | 6 | 6 | 6 | 21 | 12 | 17 1/2 | 24 | 2 1/2 to 1 | 1 Pc. |
| 15 | .064 | .060 | 7 | 8 | 6 | 26 | 14 | 21 3/4 | 30 | 2 1/2 to 1 | 1 Pc. |
| 18 | .064 | .060 | 8 | 10 | 6 | 31 | 15 | 28 1/4 | 36 | 2 1/2 to 1 | 1 Pc. |
| 21 | .064 | .060 | 9 | 12 | 6 | 36 | 18 | 29 5/8 | 42 | 2 1/2 to 1 | 1 Pc. |
| 24 | .064 | .075 | 10 | 13 | 6 | 41 | 18 | 37 1/4 | 48 | 2 1/2 to 1 | 1 Pc. |
| 30 | .079 | .075 | 12 | 16 | 8 | 51 | 18 | 52 1/4 | 60 | 2 1/2 to 1 | 1 Pc. |
| 36 | .079 | .105 | 14 | 19 | 9 | 60 | 24 | 59 3/4 | 72 | 2 1/2 to 1 | 2 Pc. |
| 42 | .109 | .105 | 16 | 22 | 11 | 69 | 24 | 75 5/8 | 84 | 2 1/2 to 1 | 2 Pc. |
| 48 | .109 | .105 | 18 | 27 | 12 | 78 | 24 | 81 | 90 | 2 1/4 to 1 | 3 Pc. |
| 54 | .109 | .105 | 18 | 30 | 12 | 84 | 30 | 85 1/2 | 102 | 2 1/4 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 | 1 1/2 to 1 | 3 Pc. |
| 84 | .109× | .105× | 18 | 45 | 12 | 87 | — | — | 138 | 1 1/2 to 1 | 3 Pc. |
| 90 | .109× | .105× | 18 | 37 | 12 | 87 | — | — | 144 | 1 1/2 to 1 | 3 Pc. |
| 96 | .109× | .105× | 18 | 35 | 12 | 87 | — | — | 150 | 1 1/2 to 1 | 3 Pc. |

× EXCEPT CENTER PANEL SEE GENERAL NOTES

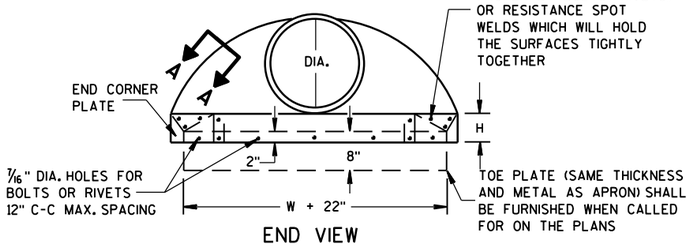
## REINFORCED CONCRETE APRON ENDWALLS

| PIPE DIA. (IN.) | DIMENSIONS (inches) | | | | | | | APPROX. SLOPE |
|---|---|---|---|---|---|---|---|---|
| | T | A | B | C | D | E | G | |
| 12 | 2 | 4 | 24 | 48 7/8 | 72 7/8 | 24 | 2 | 3 to 1 |
| 15 | 2 1/4 | 6 | 27 | 46 | 73 | 30 | 2 1/4 | 3 to 1 |
| 18 | 2 1/2 | 9 | 27 | 46 | 73 | 36 | 2 1/2 | 3 to 1 |
| 21 | 2 3/4 | 9 | 36 | 37 1/2 | 73 1/2 | 42 | 2 3/4 | 3 to 1 |
| 24 | 3 | 9 1/2 | 43 1/2 | 30 | 73 1/2 | 48 | 3 | 3 to 1 |
| 27 | 3 1/4 | 10 1/2 | 49 1/2 | 24 | 73 1/2 | 54 | 3 1/4 | 3 to 1 |
| 30 | 3 1/2 | 12 | 54 | 19 3/4 | 73 1/2 | 60 | 3 1/2 | 3 to 1 |
| 36 | 4 | 15 | 63 | 34 3/4 | 97 3/4 | 72 | 4 | 3 to 1 |
| 42 | 4 1/2 | 21 | 63 | 35 | 98 | 78 | 4 1/2 | 3 to 1 |
| 48 | 5 | 24 | 72 | 26 | 98 | 84 | 5 | 3 to 1 |
| 54 | 5 1/2 | 27 | 65 | * 33 1/4 - ** 35 | * 98 1/4 - ** 100 | 90 | 5 1/2 | 2 2/5 to 1 |
| 60 | 6 | * ** 30-35 | 60 | 39 | 99 | 96 | 5 | 2 to 1 |
| 66 | 6 1/2 | * ** 24-30 | * ** 72-78 | * ** 21-27 | 99 | 102 | 5 1/2 | 2 to 1 |
| 72 | 7 | * ** 24-36 | 78 | 21 | 99 | 108 | 6 | 2 to 1 |
| 78 | 7 1/2 | * ** 24-36 | 78 | 21 | 99 | 114 | 6 1/2 | 2 to 1 |
| 84 | 8 | 36 | 90 1/2 | 21 | 111 1/2 | 120 | 6 1/2 | 1 1/2 to 1 |
| 90 | 8 1/2 | 41 | 87 1/2 | 24 | 111 1/2 | 132 | 6 1/2 | 1 1/2 to 1 |

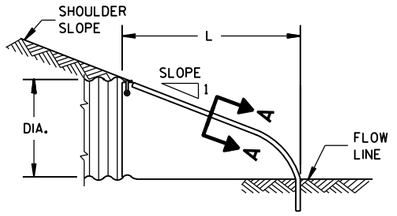
*MINIMUM
**MAXIMUM




PLAN VIEW

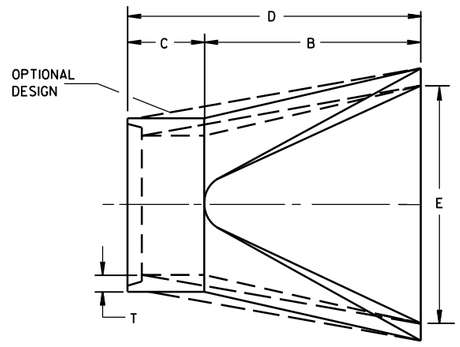



END VIEW

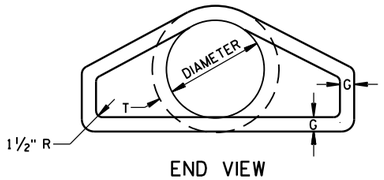



SIDE ELEVATION

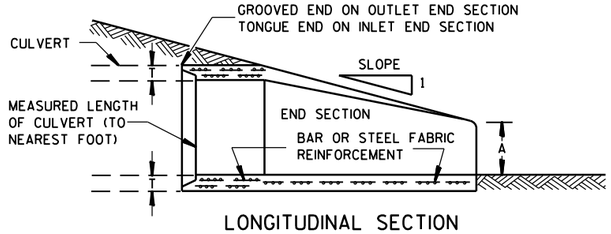
## METAL ENDWALLS




PLAN

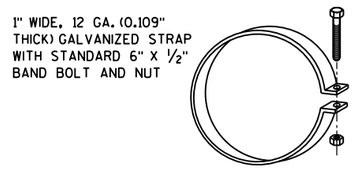



END VIEW



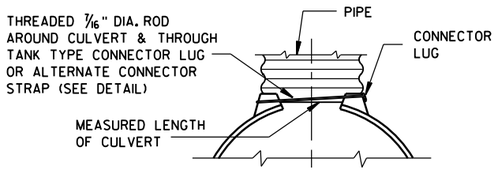

LONGITUDINAL SECTION

## CONCRETE ENDWALLS

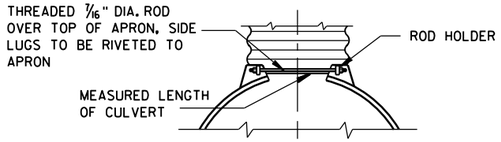



ALTERNATE FOR TYPE 1 CONNECTION

## END SECTION CONNECTOR STRAP



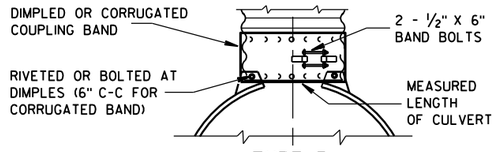

TYPE 1
FOR 12" THRU 24" CORR. PIPE




TYPE 2
FOR 30" THRU 96" CORR. PIPE




TYPE 3
FOR 42" THRU 96" CORR. PIPE




TYPE 5
ALTERNATE FOR:
ALL SIZES CORRUGATED CIRCULAR PIPE

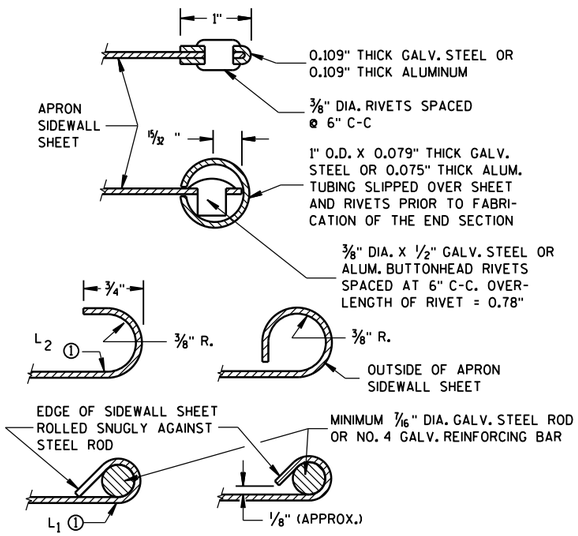
NOTE: DIMPLED BAND FITS OVER OUTSIDE OF ENDWALL, AND CORRUGATED BAND FITS INSIDE ENDWALL. DIMPLED BAND MAY BE USED WITH HELICALLY CORRUGATED PIPE.

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




## SECTION A-A

## 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/ Rory L. Rhinesmith
CHIEF ROADWAY DEVELOPMENT ENGINEER

FHWA

6

S.D.D. 8 F 1-11

Version 11 | **Standard Detail Drawing 8f1** | *July 28, 2011*

*Apron Endwalls for Culvert Pipe*

**References:**

FDM 19-15-70
FDM 13-1-15
FDM 13-1-17

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 520.1000 - 1199 | Apron Endwalls for Culvert Pipe (size) | EACH |
| 521.1000 - 1199 | Apron Endwalls for Culvert Pipe Steel (size) | EACH |
| 522.1000 - 1199 | Apron Endwalls for Culvert Pipe Reinforced Concrete (size) | EACH |
| 525.0300 - 0399 | Apron Endwalls for Culvert Pipe Aluminum (size) | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|

SPV.0060 if non-standard size is specified.

**Other SDDs associated with this drawing:**

SDD 8F4 Joint Ties for Concrete Pipe

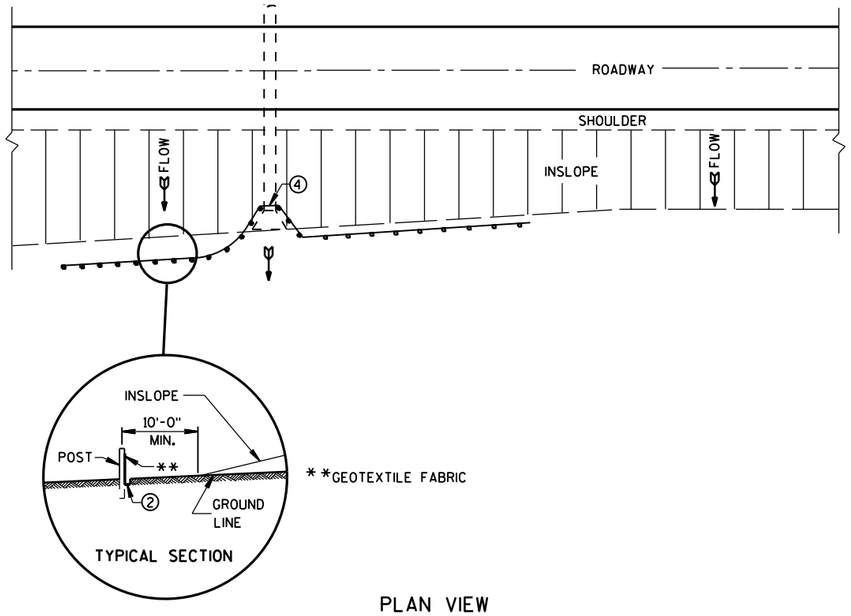
**Design Notes:**

Joint ties are required for the apron endwall and the last 2 sections of culvert and storm sewer pipe installations. See Standard Specifications.

**Contact Person:**

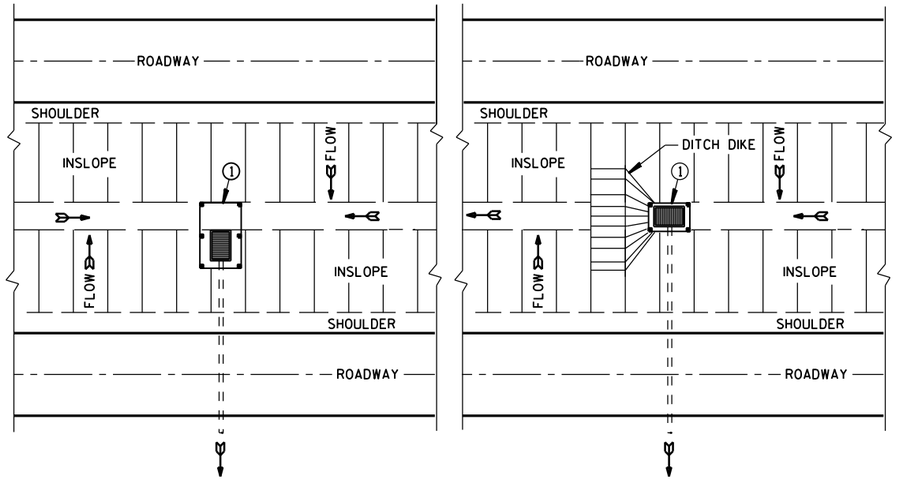
Ed Lilla (608) 266-2312

# SDD 8e9 Silt Fence




PLAN VIEW

## TYPICAL APPLICATION OF SILT FENCE




PLAN VIEW

## SILT FENCE AT MEDIAN SURFACE DRAINS

## GENERAL NOTES

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

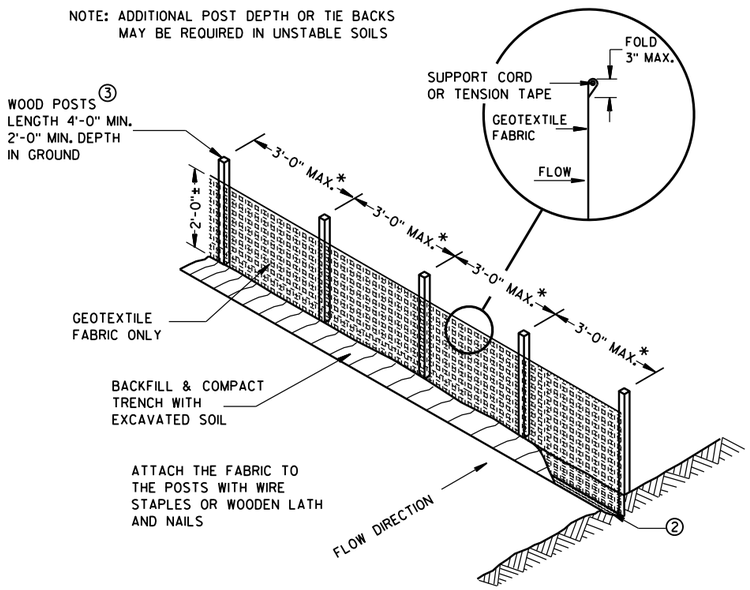
① HORIZONTAL BRACE REQUIRED WITH 2" X 4" WOODEN FRAME OR EQUIVALENT AT TOP OF POSTS.

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 1⅛" X 1⅛" OF OAK OR HICKORY.

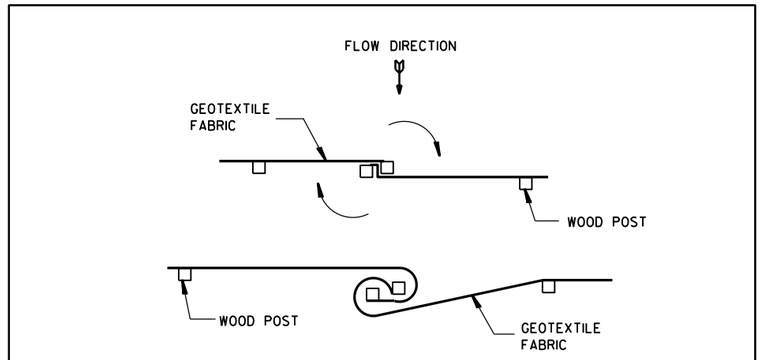
④ SILT FENCE TO EXTEND ACROSS THE TOP OF THE PIPE.

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.

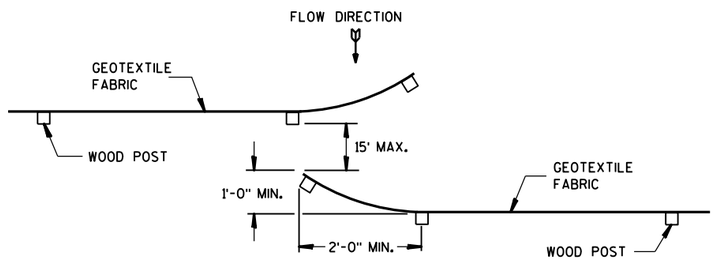



*NOTE: 8'-0" POST SPACING ALLOWED IF A WOVEN GEOTEXTILE FABRIC IS USED.

## SILT FENCE

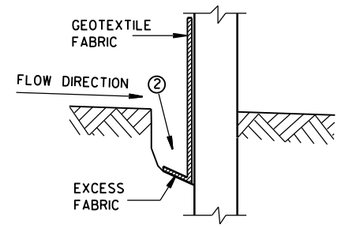



TWIST METHOD

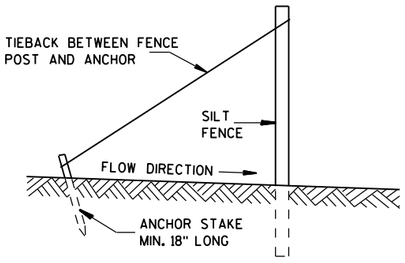



HOOK METHOD

## JOINING TWO LENGTHS OF SILT FENCE ⑤




## TRENCH DETAIL




## SILT FENCE TIE BACK

(WHEN REQUIRED BY THE ENGINEER)

**SILT FENCE**

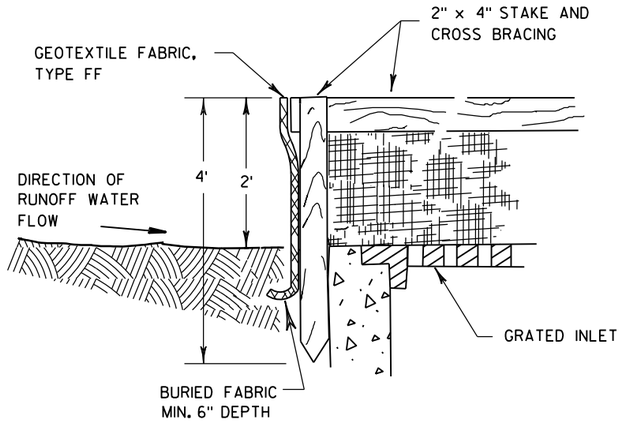
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

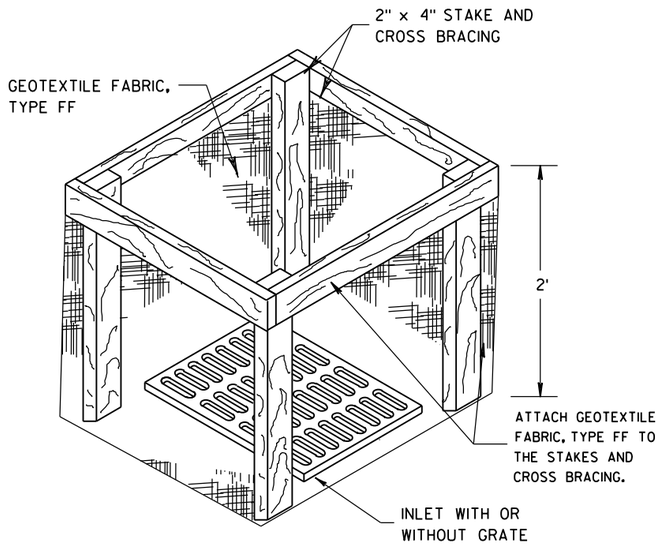
APPROVED
4-29-05 DATE
/S/ Beth Cannestra
CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

6

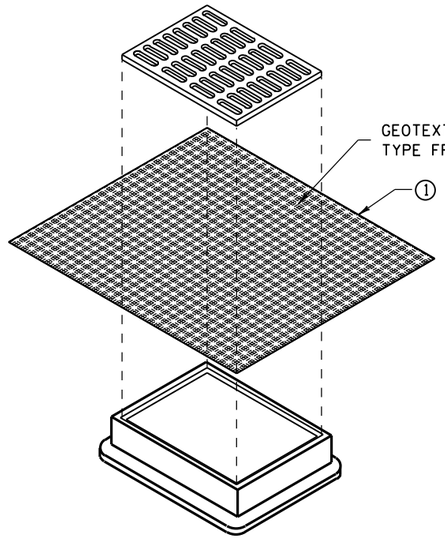
S.D.D. 8 E 9-6

# SDD 8e10 Inlet Protection Type A, B, C and D



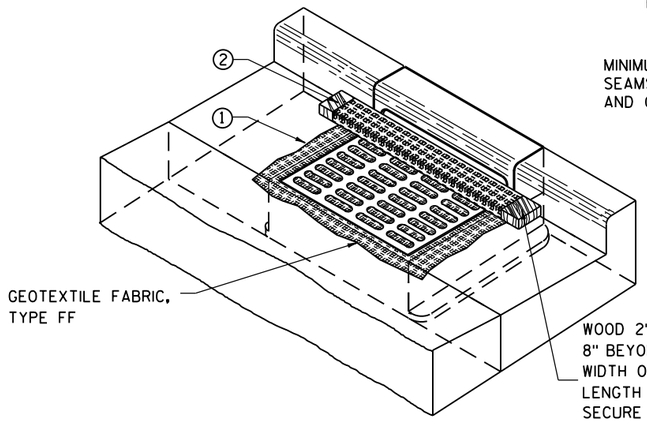




## INLET PROTECTION, TYPE A

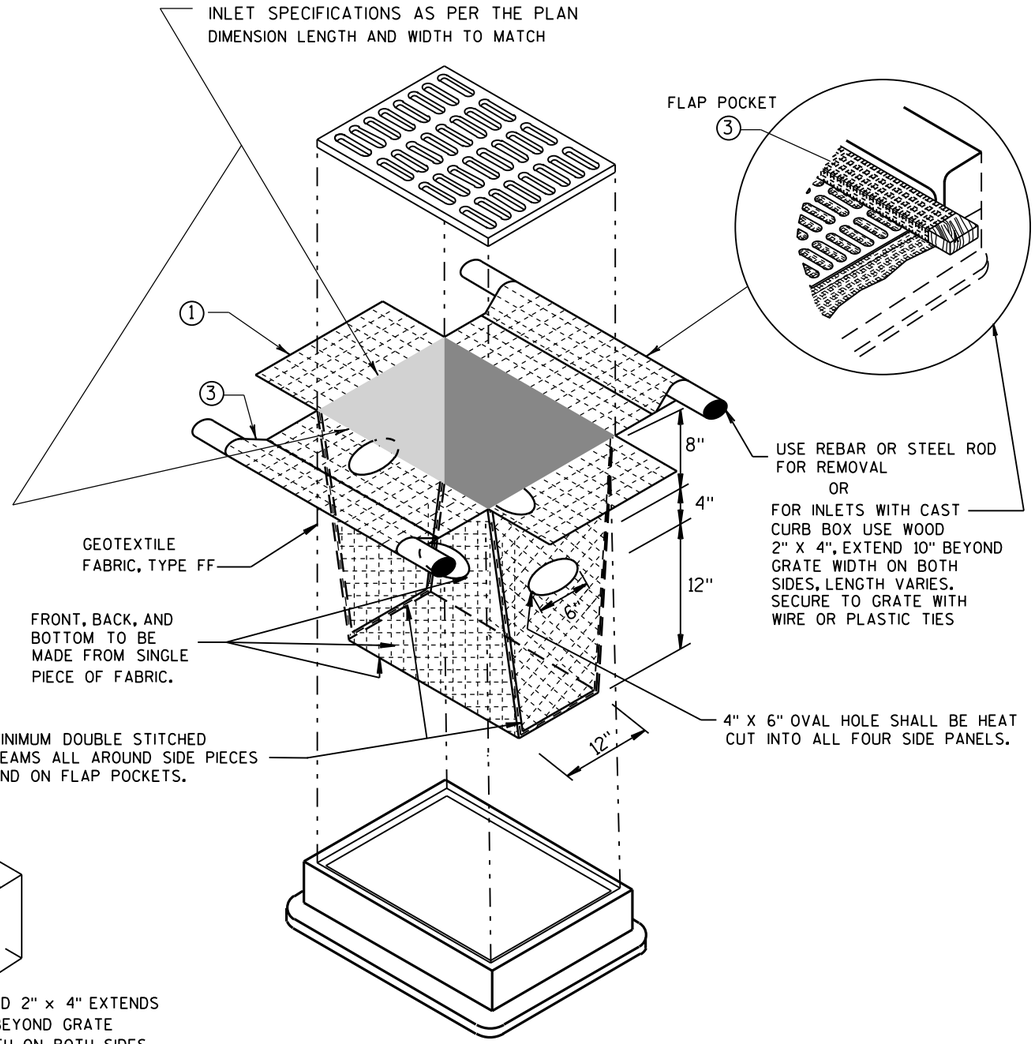



## INLET PROTECTION, TYPE B (WITHOUT CURB BOX)

(CAN BE INSTALLED IN ANY INLET WITHOUT A CURB BOX)




## INLET PROTECTION, TYPE C (WITH CURB BOX)




## INLET PROTECTION, TYPE D

(CAN BE INSTALLED IN ANY INLET TYPE WITH OR WITHOUT A CURB BOX AS PER NOTE ② )

## 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 — DATE
/S/ Beth Cannestra — CHIEF ROADWAY DEVELOPMENT ENGINEER
FHWA

# *Inlet Protection Type A, B, C and D*

**References:**

FDM 10-10-27

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 628.7005 | Inlet Protection Type A | EACH |
| 628.7010 | Inlet Protection Type B | EACH |
| 628.7015 | Inlet Protection Type C | EACH |
| 628.7020 | Inlet Protection Type D | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

See Wisconsin Department of Transportation's Product Acceptability List (PAL) for other inlet protection devices available. A copy of the PAL is available at http://www.dot.wisconsin.gov/business/engrserv/docs/pal.pdf.

Use inlet protection Type A where the wooden posts can be placed around the inlet box. Examples of such locations include median inlets, field inlets, yard drains, or curb inlet locations prior to the placement of curb and gutter.

Inlet protection Type B or C may be used only after the inlet castings are in place. Most urban projects, with curb inlets will require both the bid item or inlet protection Type A and inlet protection Type C, at each inlet location, as the project progresses.

Inlet protection Type D is intended for locations where street flooding could pose safety hazards. Projects without parking lanes and locations where the inlets are on the low side of curves or the low points of vertical profiles should be evaluated for Type D inlet protection.

**Contact Person:**

Robert Armstrong (608) 267-3147

| Version 6 | **Standard Detail Drawing 8e9** | *July 5, 2005* |
|---|---|---|

*Silt Fence*

**References:**

FDM 10-10-23

**Bid items associated with this drawing:**

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 628.1504 | Silt Fence | LF |
| 628.1520 | Silt Fence Maintenance | LF |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SSDs associated with this drawing:**

NONE

**Design Notes:**

Silt Fence is not recommended for channel applications.

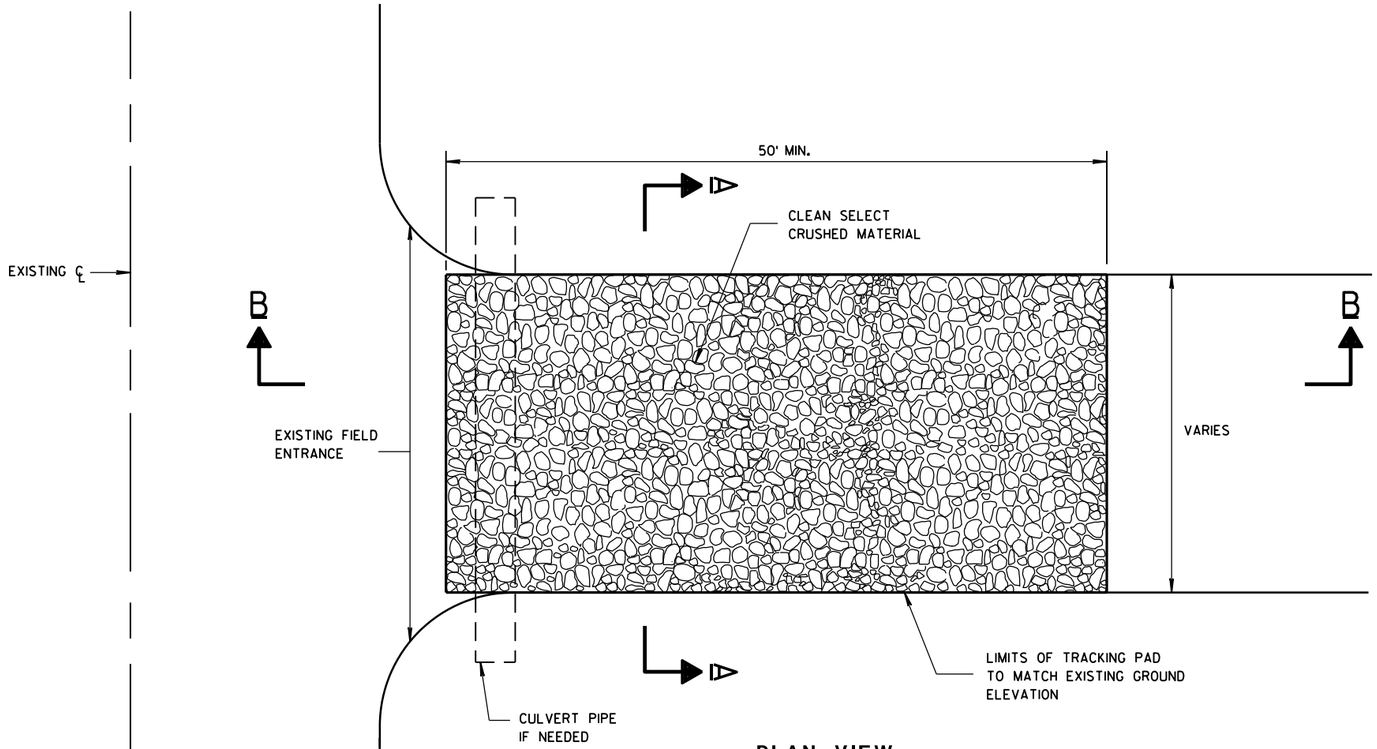
Increase the calculated need for silt fence by 25% and list this quantity as "undistributed" on the miscellaneous quantities sheet.

Silt Fence is neither biodegradable, recyclable, nor reusable and, therefore is recommended only when other erosion control best management practices are not practical.

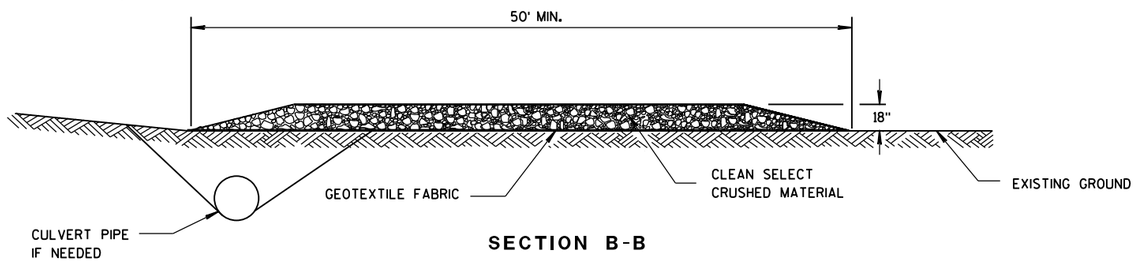
**Contact Person:**

Robert Armstrong (608) 267-3147

# SDD 8e14 Tracking Pad




PLAN VIEW




SECTION B-B

## 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.

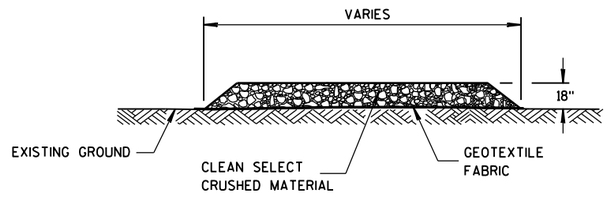
TRACKING PAD TO BE REMOVED AFTER CONSTRUCTION IS COMPLETED.

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.




SECTION A-A

# TRACKING PAD

TRACKING PAD

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

APPROVED
3-24-2011 — DATE
/S/ Jerry H. Zogg — ROADWAY STANDARDS DEVELOPMENT ENGINEER
FHWA

6

S.D.D. 8 E 14-1

6

S.D.D. 8 E 14-1

| Version 1 | **Standard Detail Drawing 8e14** | *April 27, 2011* |
|---|---|---|

*Tracking Pad*

**References:**

FDM 10-10-42

**Bid items associated with this drawing:**

Bid items for tracking pad are encoded as follows:

| ITEM NUMBER | DESCRIPTION | UNIT |
|---|---|---|
| 628.7560 | Tracking Pad | EACH |

**Standardized Special Provisions associated with this drawing:**

| STSP NUMBER | TITLE |
|---|---|
| NONE | |

**Other SDDs associated with this drawing:**

NONE

**Design Notes:**

1. Tracking pads are to be used at egress points from the project, borrow and/or waste site locations, where construction vehicles enter live traffic.
2. One tracking pad per selected site.
3. Practices used to divert flow away from, under, or around tracking pads are incidental to the bid item.

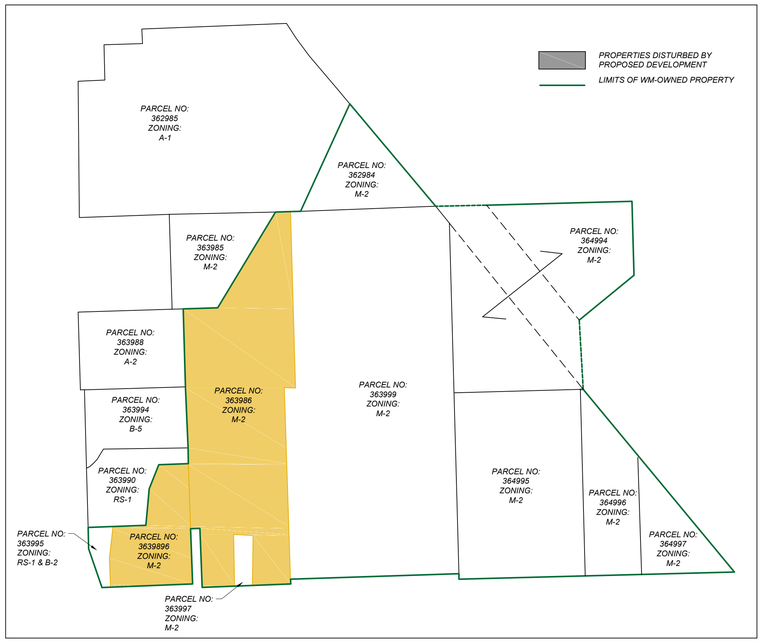
**Contact Person:**

Robert Armstrong (608) 267-3147

# PLANS FOR:

# WASTE MANAGEMENT TRUCK MAINTENANCE FACILITY

## N96 W13840 COUNTY LINE RD.
## GERMANTOWN, WI 53022




### ADJACENT PROPERTY ZONING MAP:
SCALE: 1" = 500'




### SITE MAP
SCALE: 1" = 200'

## PROJECT CONTACTS:

**CIVIL ENGINEER:**

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS

**DIVERSIFIED ENGINEERING INC.**
NICK BERNER, P.E.
175 RAY AVE NE
NEW PHILADELPHIA, OH 44663
PHONE: (330) 364-1631
EMAIL: nberner@div-eng.com

**OWNER:**

WM
WASTE MANAGEMENT

**WASTE MANAGEMENT OF WISCONSIN, INC.**
DONALD SMITH, P.E.
PO BOX 1450
CHICAGO, IL 60690-1450
PHONE: (262) 806-6039
EMAIL: dasmith@wm.com

## SITE INFORMATION:

| **PARCEL NO 1:** | | **PARCEL NO. 2:** | | **FEMA:** | |
|---|---|---|---|---|---|
| TAX KEY | GTNV_363996 | TAX KEY | GTNV_363986 | COMMUNITY NUMBER: | 550472 |
| ZONING | M2 | ZONING | M2 | PANEL #: | 0379 |
| TOTAL ACREAGE | 8.15 AC. | TOTAL ACREAGE | 35.63 AC. | SUFFIX: | D |
| | | | | DATE OF FIRM: | 11/20/2013 |
| | | | | FIRM ZONE: | A |
| | | | | BFE: | 769 FT. |

## BENCHMARKS:

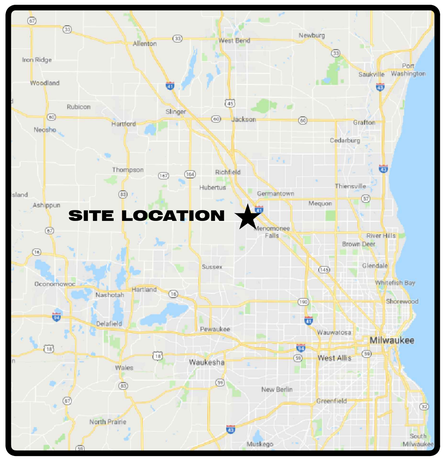
| | |
|---|---|
| WASHINGTON COUNTY BENCH MARK NO. | 102 |
| DATUM: | NATIONAL GEODETIC VERTICAL DATUM OF 1929 |
| ELEVATION: | 766.809 |
| DETAILED DESCRIPTION: | BENCHMARK 102 IS A CHISELED SQUARE SET IN THE TOP OF THE EASTERLY 60-INCH-DIAMETER CONCRETE CULVERT PIPE |

## LEGAL DESCRIPTION:

**PARCEL NO. 1:** (363996)
LOT 2 - CSM4247 V28 P30 PT OF SW SW V1013 P676 SEC 36-9-20 8.15 AC.

**PARCEL NO. 2:** (363986)
PT NW SW V747 P264 EXC PT SOLD SEC 36-9-20

*NOTE: LOTS TO BE COMBINED PRIOR TO PERMIT.*







## DRAWING INDEX:

| | | | |
|---|---|---|---|
| **GENERAL** | | **LANDSCAPING** | |
| G1.0 | COVER | L1.0 | SITE LANDSCAPING PLAN |
| **CIVIL** | | **EXHIBITS** | |
| C1.0 | SYMBOLS LEGEND & GENERAL NOTES | X1.0 | SITE PHOTOMETRIC PLAN |
| C1.1 | EXISTING CONDITIONS PLAN | | |
| C1.2 | SITE DEMOLITION PLAN | | |
| C1.3 | SITE ZONING MAP | | |
| C1.4 | SITE IMPROVEMENT PLAN | | |
| C1.5 | ENLARGED SITE IMPROVEMENT PLAN | | |
| C1.6 | SITE GRADING PLAN | | |
| C1.7 | ENLARGED SITE GRADING PLAN | | |
| C1.8 | STORM WATER MANAGEMENT PLAN | | |
| C1.9 | SITE UTILITY PLAN | | |
| C1.10 | HARD SURFACE KEY PLAN | | |

**ISSUED FOR REVIEW 01/04/2019**

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## ABBREVIATIONS

| | |
|---|---|
| R/W | - Right-of-Way |
| P/L | - Adjoiner Property Line |
| ℄ | - Centerline |
| P.O.B. | - Place/Point of Beginning |
| P.O.C. | - Place/Point of Commencement |
| Rad | - Radius |
| Arc | - Arc Length |
| Δ | - Delta Angle |
| ChL | - Chord Length |
| ChB | - Chord Bearing |
| Calc. | - Calculated |
| Msd. | - Measured |
| Dd. | - Deed |
| (Record) | - Actual |
| N.R.D. | - No Recorded Distance |
| F.F.E. | - Finished Floor Elevation |
| CMP | - Corrugated Metal Pipe |
| DI | - Ductile Iron |
| HDPE | - High Density Polyethylene |
| PVC | - Polyvinyl Chloride |
| RCP | - Reinforced Concrete Pipe |
| VCP | - Vitrified Clay Pipe |

## LINEWORK

- Guardrail
- Fence (As Noted)
- Wood Fence (As Noted)
- Steel Fence (As Noted)
- Sanitary Sewer
- Storm Sewer
- Water Line
- Underground Gas Pipeline
- Underground Electric
- Underground Lighting
- Underground Telephone
- Underground Cable T.V.
- Underground Fiberoptics
- Overhead Utilities
- Field Tile
- Gravel Area
- Concrete Area
- No Parking Area
- Building Area
- 1' Elevation Contour
- 5' Elevation Contour

## STANDARD/ROADWAY

- Iron Pin Set
- Drill Hole or Railroad Spike Set
- Iron Pin Found
- Iron Pipe Found
- Monument Found as Noted
- Stone Monument Found
- Monument Box
- Sign
- Air Condition Unit
- Monitoring Well
- Bollard Post
- Parking Meter
- Air Pump
- Bollard Light / Ground Light
- Grease Trap
- Ground Light
- Mail Box
- Basketball Hoop
- Gate Entry Key Pad
- Flag Pole
- Interstate Highway
- United States Highway
- State Highway
- County Highway
- Autumn Blaze Red Maple
- Moonglow Juniper
- Endless Summer Hydrangeas
- Pasture Rose

## UTILITIES

- Manhole
- Storm Manhole
- Curb Inlet Basin w/ Grate
- Catch Basin
- Storm Vault
- Cleanout
- Sanitary Manhole
- Sanitary Vault
- Water Stand Pipe
- Fire Hydrant
- Post Indicator Valve
- Water Valve
- Water Meter
- Water Manhole
- Water Backflow Preventer
- Water Vault
- Water Curb Box
- Gas Meter
- Gas Valve
- Gas Curb Box
- Fiberoptic Manhole
- Cable T.V. Pedestal
- Electric Meter
- Electric Transformer
- Electric Manhole
- Electric Vault
- Telephone Pedestal
- Telephone Manhole
- Telephone Booth
- Telephone Vault
- Traffic Vault
- Signal Pull Box
- Power Pole
- Traffic Pole
- Telephone Pole
- Flag Pole
- Light Pole
- Guy Wire
- Utility Vault
- Underground Utility Marker
- Vacuum
- Unknown Valve

## ALTA/MISC

- Encroachment
- Easement Circle
- Easement Alt. 1
- Easement Alt. 1
- Label 1
- Label 2
- Regular Parking Count
- Handicap Parking Count
- Handicap Space

## GENERAL PLAN NOTES:

1. All necessary preventative measures will be taken to keep damage from occurring to adjacent structures such as utilities, tree, poles, structures, and private property during the progress of this work. Any and all damages that occur due to construction activities shall be repaired or replaced by the contractor at no expense to the owner.
2. All material excavated or used in the laying of the pipe will be located and stockpiled in a way not to endanger the public, the personnel on the job, or block natural drainage patterns.
3. DEWATERING:
   Contractor is responsible for any and all necessary dewatering activities for any excavation.
4. ROOF DRAIN NOTE:
   Roof drains, foundation drains, and other clean water connections to sanitary sewer system are strictly prohibited.
5. NOTIFICATION:
   Any time utilities are involved, other than city water and sewer, notify Wisconsin One Call at 1-800-242-8511 three (3) working days prior to excavation.
6. EROSION CONTROL:
   Contractor to allow no silt or erosion to enter existing/proposed storm sewer system or water courses during construction phase. Contractor shall use erosion control measures such as inlet filters and ditch check dams in accordance with Wisconsin D.O.T. Specifications.
7. All grass areas to be disturbed shall have topsoil removed and stockpiled prior to excavation. Upon completion of construction, a 6" minimum of topsoil shall be replaced, then seeded and mulched (in accordance with the Wisconsin D.O.T. Specifications). All disturbed areas are to be graded to have positive drainage.
8. Underground utilities were plotted from records and field observations and actual locations may deviate from the plans. Contractor shall be responsible for verifying location of all underground utilities within the project area.
9. Contractor shall exercise caution within and adjacent to his work areas so as not to damage existing facilities. Any facilities that are damaged due to the contractors operations shall be repaired or replaced by the contractor to original or better condition at no expense to the owner.
11. TRACKING OF MUD UPON PUBLIC WAYS
    It shall be the duty of the contractor to supervise the handling of all traffic entering and leaving the work area to prevent mud or debris of any nature from being tracked onto the sidewalks and streets of the city.
12. MATERIAL DISPOSAL
    The contractor shall not dump any waste materials on the Owner's property without the written permission of the Owner, or another property without the written permission of the owner or lessor thereof. When such permission is granted, dumping shall be subject to regulations prescribed by the Engineer.
13. PROTECTION OF TREES
    All trees within the construction area not specified for removal are to be protected by the contractor. Care shall be taken to insure the the roots are not cut. The contractor shall be responsible for replacing any damaged trees of the same size and kind as damaged. Damaged tree branches shall be properly trimmed immediately after damage.
14. CONCRETE PROTECTIONS
    The contractor shall protect the finish of all freshly placed concrete from vandalism until the concrete has taken its initial set. The contractor shall be responsible for any damage to the concrete finish caused by vandals due to his failure to protect the concrete.

## MAINTENANCE OF TRAFFIC:

1. Contractor shall submit a maintenance of traffic plan to Waste Management, Maintenance Supervisor and Diversified Engineering for review and approval 15 days prior to start of work.
2. Contractors maintenance of traffic plan shall be in accordance with Wisconsin D.O.T. Specifications.
3. The contractor shall furnish and maintain all necessary safeguards such as barricades, satisfactory barriers, lighting, flaggers, and such other traffic control devices as provided in Wisconsin D.O.T. Specifications.
4. All construction traffic control signs used for the project shall conform to the current "Manual of Uniform Traffic Control Devices" and shall be provided, erected, and maintained by the contractor.

**CALL BEFORE YOU DIG !**
WISCONSIN LAW REQUIRES EXCAVATORS TO NOTIFY THE PROTECTION SERVICE AT LEAST THREE (3) BUSINESS DAYS BUT NOT MORE THAN TEN (10) CALENDAR DAYS PRIOR TO EXCAVATION

**Wisconsin One Call Notification Center**
www.diggershotline.com
**811 or 1-800-242-8511**

ISSUE DATE 01/04/2018 | SCALE NO SCALE | CTR INT. -
SURVEYED BY COM | CHECKED BY KJB
DRAWN BY DSW | APPROVED BY MJS

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS
175 RAY AVENUE, N.E.
NEW PHILADELPHIA, OH 44663
Phone: (330) 364-6631
Fax: (330) 364-6651
e-mail: dei@dei-eng.com
Web: www.dei-eng.com

**WASTE MANAGEMENT**

PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: SYMBOLS LEGEND & GENERAL NOTES

SHEET NO: **C1.0**

JOB NO: ENG-1465

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## EXISTING CONDITIONS PLAN

*Scale: 1" = 100'*

## BOUNDARY NOTES:

- *Waste Management Parcels 363995, 363996, 363997, 363986 and the existing ~0.58ac. parcel "Public Right of Way" off of County Line Rd. to be combined to one contiguous parcel at a later date.*

## GENERAL NOTES:

A. *All existing utilities are shown herein as reference only and are based on record of the various utility companies and a field survey. Contractor is responsible for determining the exact locations of all utilities prior to any construction activities.*

B. *All existing conditions, topography, utilities, and property information are taken from a survey of land situated in the City of Sterling, county of Loudoun, State of Virginia, by surveyors: Construction Quality Management, Inc., 2679 Continental Drive, Green Bay, WI. 54311. ph: (920) 465-3911, fx: (920) 465-3913 and Diversified Engineering, Inc., 175 Ray Avenue, NE, New Philadelphia, OH. 44663. ph: (330) 364-1631, fx: (330) 364-4031.*

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |

ISSUE DATE 01/04/2018 | SCALE 1" = 100' | CTR INT. 2'
SURVEYED BY COM | CHECKED BY KJB
DRAWN BY DSW | APPROVED BY MJB

Diversified Engineering Inc.
CONSULTING ENGINEERS & SURVEYORS
175 RAY AVENUE, N.E.
NEW PHILADELPHIA, OH 44663
Phone: (330) 364-1631
FAX: (330) 364-4031
e-mail: dei@dei-eng.com
Web: www.dei-eng.com

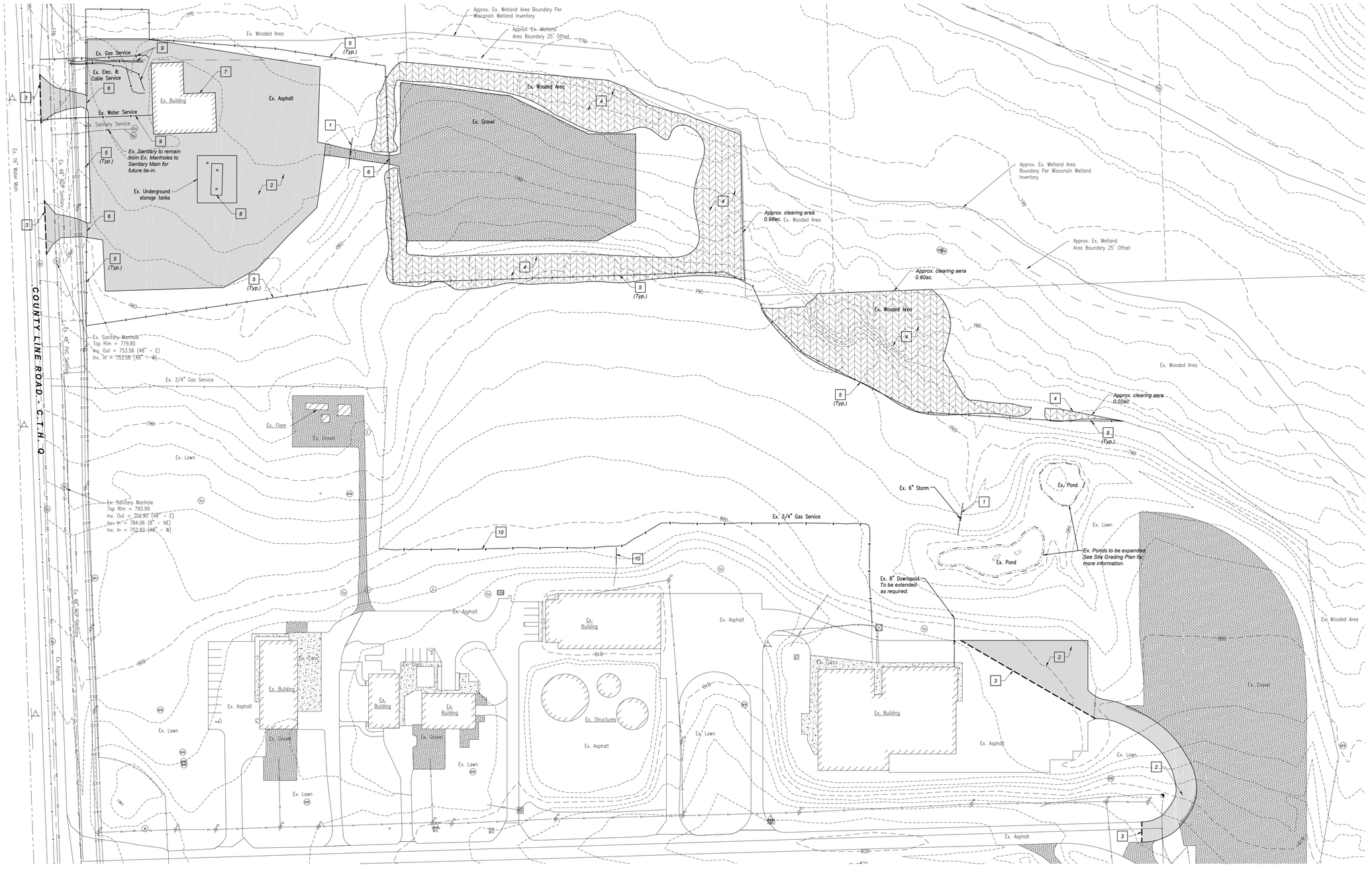
**PROJECT:** WASTE MANAGEMENT
TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

**SHEET TITLE:** EXISTING CONDITIONS PLAN

**SHEET NO:** C1.1

**JOB NO:** ENG-1465

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## SITE DEMOLITION PLAN

*Scale: 1" = 60'*

NORTH

*Scale: 1 in. = 60 ft.*

0' 60' 120' 180'

*Graphic Scale*

**LEGEND:**

- *Existing Asphalt to be Removed*
- *Existing Wooded area to be cleared*
- *Proposed Full-depth Saw Cut Line*

### KEYED NOTES:

1.) *Remove storm water pipe. Demolition debris shall be hauled off-site.*

2.) *Remove asphalt pavement section and base material. Demolition debris shall be hauled off-site.*

3.) *Full depth asphalt saw cut line.*

4.) *Clear, grub and completely remove stump.*

5.) *Remove fence and appurtenances. Demolition debris shall be hauled off-site.*

6.) *Remove gate and appurtenances. Coordinate any electrical disconnection with Electrical Contractor. Demolition debris shall be hauled off-site.*

7.) *Remove building. Coordinate any utility disconnection with associated trade. Demolition debris shall be hauled off-site.*

8.) *Remove underground storage tanks. Coordinate any utility disconnection with associated trade. Demolition debris shall be hauled off-site.*

9.) *Existing building utility services to be cut, capped and abandoned in place. Demolition debris shall be hauled off-site.*

10.) *Relocate 3/4" gas service to location show in drawings.*

### GENERAL NOTES:

A. *At start of project and prior to demolition of existing conditions, contractor shall be in contact with adjacent property owners, city representative, and site representative to coordinate demolition timing.*

B. *Contractor to remove and dispose of all debris and other materials resulting from demolition and construction operations, disposal will be in accordance with all local, state, and federal regulations governing such operations.*

C. *Contractor shall take all precautions necessary to avoid damage to adjacent properties during construction phases of this project. Contractor will be solely responsible for damage to neighboring properties occurring as a result of construction activities.*

D. *All existing utilities are shown herein as reference only and are based on record of the various utility companies. Contractor is responsible for determining the exact locations and depths of all utilities prior to demolition activities.*

E. *Contractor shall provide traffic control in accordance with the state manual on uniform traffic control devices.*

F. *Prior to starting demolition, it is the responsibility of the contractor to obtain all permits, tap fees, bond fees, and inspection fees required by local and state governmental agencies.*

G. *All landfill tipping fees shall be paid by the Contractor.*

H. *Utilities shall be removed and the trenches backfilled with approved backfill material. Backfill material shall be placed in maximum eight inch lifts and compacted in accordance with the geotechnical report or to a minimum of 95% of the maximum dry density as determined by ASTM D-1557 modified proctor method +/- 3% optimum moisture content.*

I. *Contractor shall not burn debris or use explosives.*

J. *Contractor shall be responsible for all phasing of demolition when the demolition may impact traffic, access, or utilities to neighbors or facilities to remain and other surrounding infrastructure or facilities.*

K. *Conduct demolition operations to ensure minimal interference with roads, sidewalks, and any other adjacent occupied facilities.*

L. *Do not close or obstruct roads, sidewalks, or any other occupied facilities without permission from the local authority having jurisdiction and/or property owners.*

M. *The contractor shall be responsible for ensuring the construction site and surrounding areas are free of accumulated debris.*

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
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**WASTE MANAGEMENT**

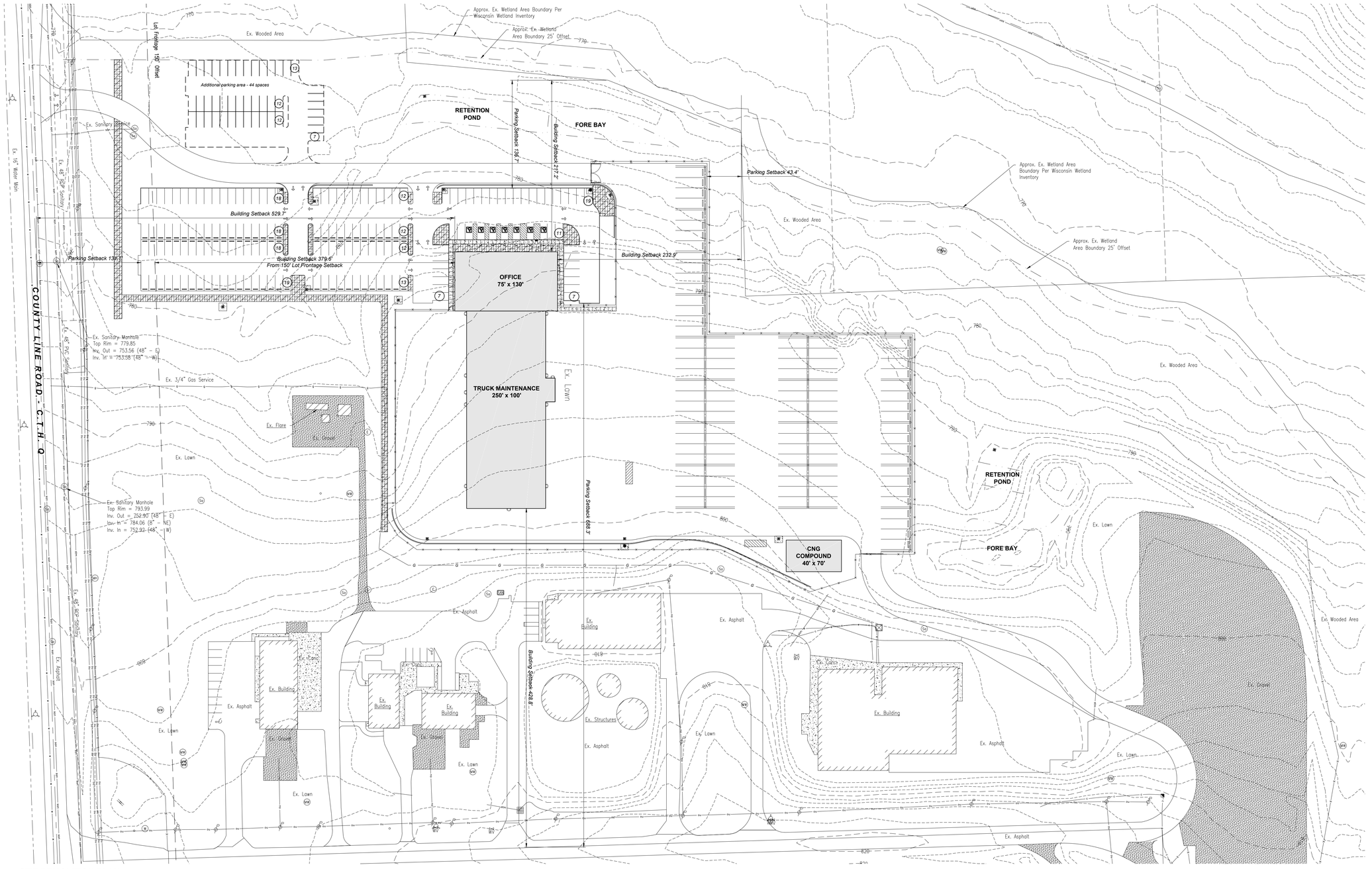
PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *SITE DEMOLITION PLAN*

SHEET NO: **C1.2**

JOB NO: ENG-1465

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## SITE DEMOLITION PLAN

*Scale: 1" = 60'*

## SETBACK NOTES:

| | |
|---|---|
| *Required Front yard Setback:* | *30'* |
| *Required Side yard Setback:* | *25'* |
| *Required Rear yard Setback:* | *25'* |
| *Required Lot Frontage Setback:* | *150'* |

## LOT COVERAGE NOTES:

| | |
|---|---|
| *Lot square footage total:* | *2,005,005 S.F.* |
| *Impervious surface percentage:* | *25.7%* |
| *Green space percentage:* | *74.3%* |
| *Percent permitted (over/under):* | *under 48.6%* |

**NOTE: Proposed Coverage includes existing development on the parcel where applicable.*

## PARKING CALCULATIONS:

*- Professional Office Space:*
*Office Area:* 9,750 S.F.
*Office Employees:* 128 Persons

*Required parking one space per 200 S.F. + 1/2 space per employee*
*- 9,750 S.F. / 200 S.F. = 49 Spaces*
*- 128 Persons / 2 = 64 Spaces*

*- Total Required Office Spaces = 113 Spaces*

*- Auto Repair Space:*
*Auto Repair Area:* 19,500 S.F.
*Auto Repair Employees:* 16 Persons

*Required parking one space per 250 S.F. + 1 space per employee*
*- 19,500 S.F. / 250 S.F. = 78 Spaces*
*- 16 Persons = 16 Spaces*

*- Total Required Auto Repair Spaces = 94 Spaces*

*Required Spaces:*
*Total required spaces = 207 Spaces per code*

*Provided Spaces:*
*159 Standard Spaces*
*7 Accessible Spaces*
*166 Total Spaces Provided*

**NOTE: Additional parking area if required for future tenant = 44 spaces. bringing total available spaces to 210 parking spaces, meeting required parking spaces per code.*

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**WASTE MANAGEMENT**

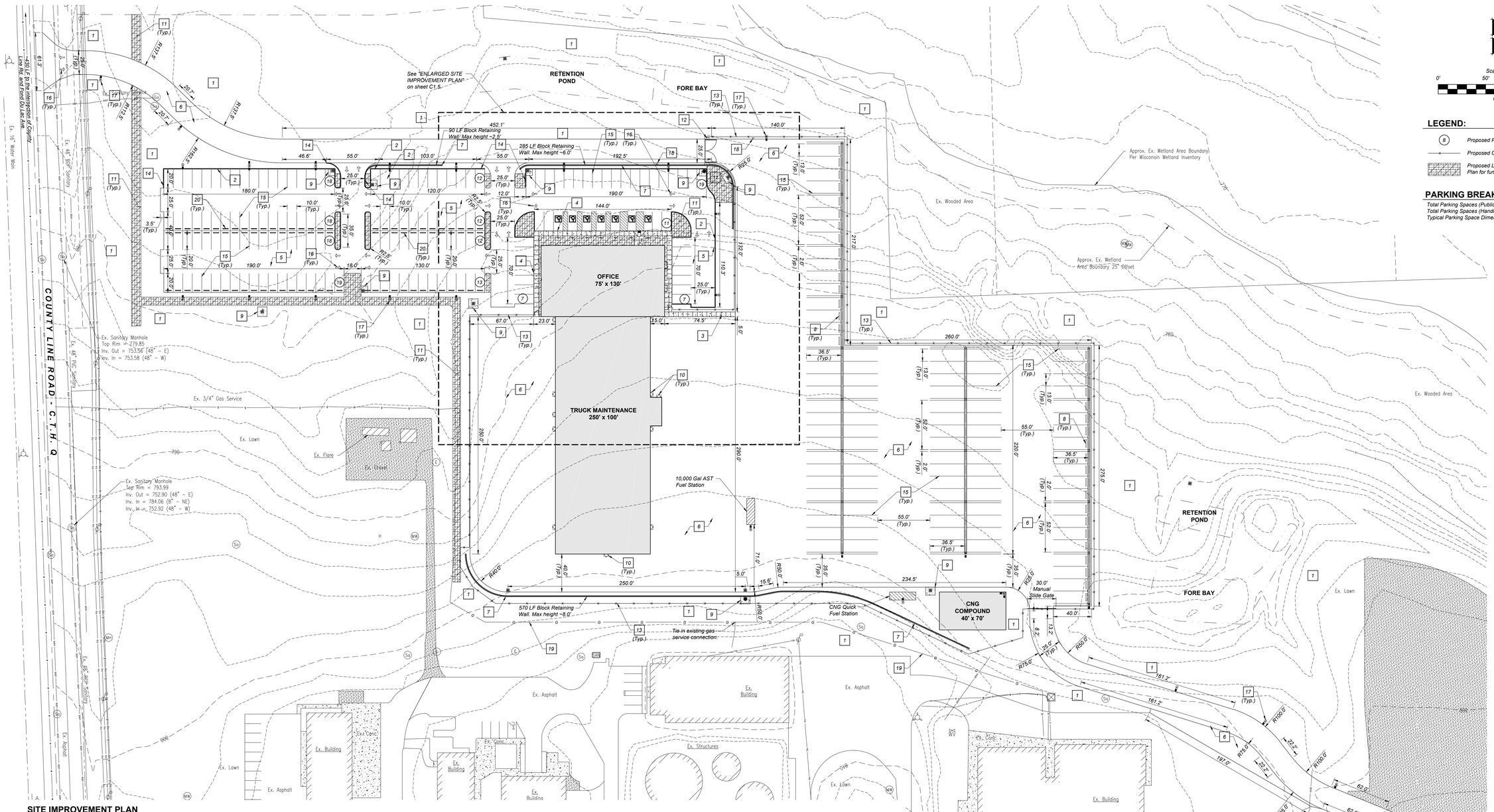
PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *SITE ZONING MAP*

SHEET NO: **C1.3**

JOB NO: ENG-1465

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## SITE IMPROVEMENT PLAN

*Scale: 1" = 50'*

## KEYED NOTES:

1.) *Grass area (slope to drain). Re-seed existing lawn where disturbed by new construction and construction activities.*

2.) *6" concrete curb.*

3.) *4" concrete sidewalk.*

4.) *Integral concrete curb and walk.*

5.) *Proposed light-duty asphalt pavement.*

6.) *Proposed heavy-duty concrete pavement.*

7.) *Block Retaining Wall.*

8.) *Concrete truck wheel stop.*

9.) *Reinforced Concrete Apron.*

10.) *Frost footing at man doors.*

11.) *Proposed Landscaping: (Shown for reference). See Sheet L1.0 "Site Landscaping Plan".*

12.) *Swing Gate Operator & Concrete Pad provided & installed by G.C., equal to "LiftMaster Elite Series" Model CSW24U, 120V (Conduits & Wire by E.C.).*

13.) *6' high chain link security fence / access gate.*

14.) *Taper curb.*

15.) *Pavement painting: 4" wide yellow striping.*

16.) *Pavement marking: Yellow directional arrow.*

17.) *Proposed site lighting: By E.C. (shown for reference). See site electrical plan.*

18.) *Pedestal for gate operator access control key pad, furnished and installed by G.C. Conduit to pedestal by E.C., wiring by Access Control installer.*

19.) *Proposed relocated 3/4" gas service line location.*

20.) *Concrete parking bumper.*

**NOTE: See "SITE PLAN REVIEW SUBMITTAL PACKET" for typical construction details.*

## GENERAL NOTES:

A. *Provide smooth transition from newly paved areas to existing paved area as necessary. The existing edge of pavement shall be free of all loose debris at all areas where proposed pavement meets existing pavement. The edge of existing asphalt pavement shall be properly sealed with a tack coat material in all areas where new asphalt pavement is indicated to join existing.*

B. *Contractor is responsible for locating and verifying all existing underground utilities prior to construction, and is responsible for any damage to them during construction.*

C. *All dimensions to face of curb or edge of concrete unless otherwise noted.*

D. *All pavement markings depicting parking spaces, accessible parking spaces, access aisles and no parking signage shall be applied with mechanical equipment and templates at the locations and lengths shown on the plans (two coats all locations). Paint shall be yellow in color (unless otherwise specified) and shall meet all applicable requirements of state department of highway specifications, unless otherwise specified.*

E. *Contractor shall be solely responsible for and take all precautions necessary to avoid damage to adjacent properties during the construction phases of this project.*

F. *All construction methods and materials must conform to current standards and specifications of the federal, state, county, city or local requirements, whichever has jurisdiction.*

G. *All excavated and/or disturbed areas indicated as "grass area" (per keyed note #1), are to be seeded with a locally adaptive turf seed mix after finish grading unless otherwise noted. All newly seeded areas shall have a minimum of 6" of topsoil. Hold soil down 1" from pavement elevation. Contractor to supply straw mulch where grass seed has been planted.*

H. *All radii indicated on plans shall be constructed as circular.*

I. *Resurface or reconstruct at least to original conditions all areas where traffic by contractors, subcontractors or suppliers have damaged existing pavement, lawns or other improvements during construction, after construction work is complete.*

J. *The contractor shall verify all dimensions and elevations in the field prior to the start of construction. The contractor shall be responsible for all field dimensions and elevations during the entire construction schedule. If any discrepancies are found in these plans from actual field dimensions, the contractor shall contact the engineer immediately.*

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**WASTE MANAGEMENT**

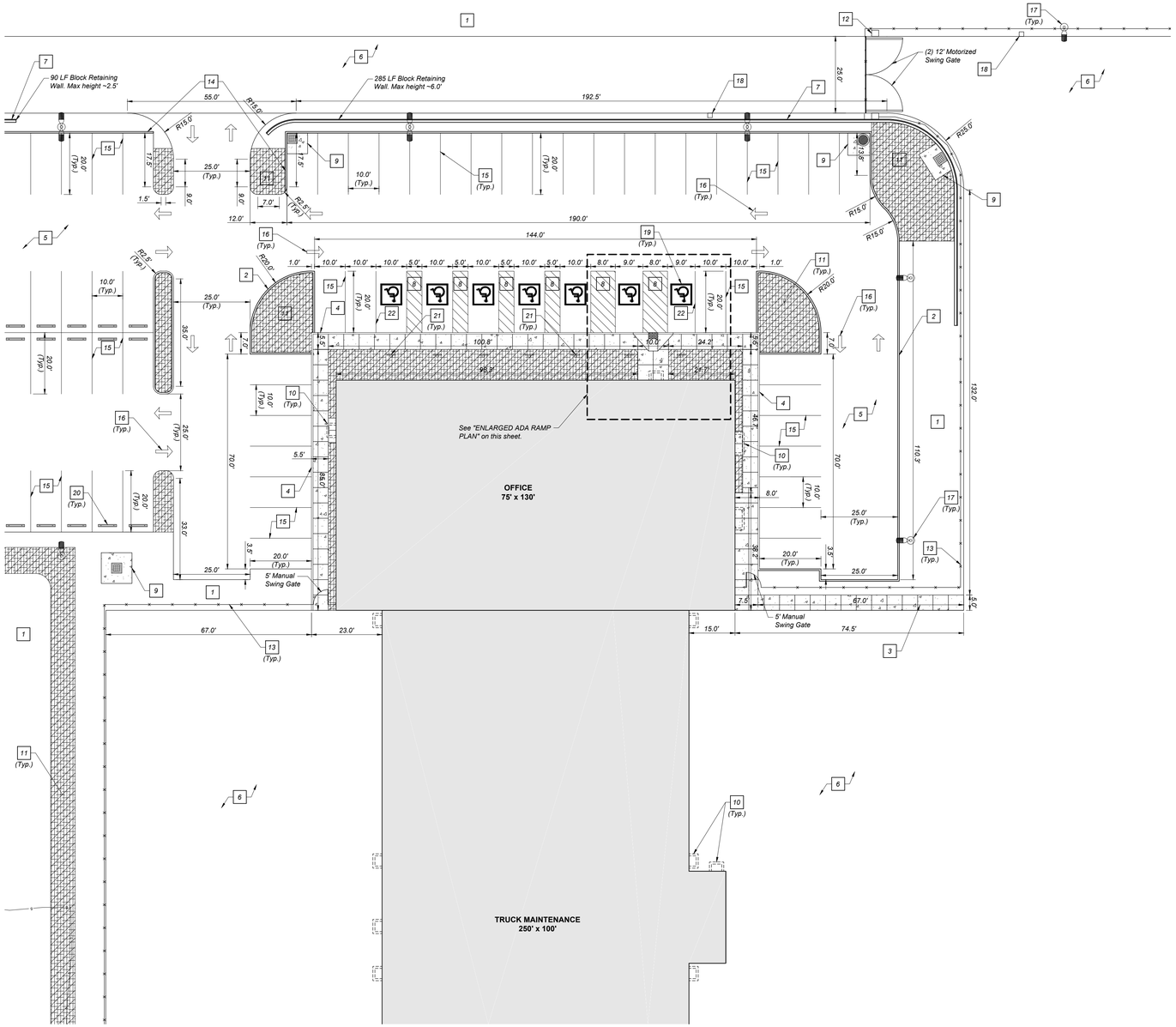
PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *SITE IMPROVEMENT PLAN*

SHEET NO: **C1.4**

JOB NO: ENG-1465

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## ENLARGED SITE IMPROVEMENT PLAN

*Scale: 1" = 20'*

## KEYED NOTES:

1.) *Grass area (slope to drain). Re-seed existing lawn where disturbed by new construction and construction activities.*

2.) *6" concrete curb.*

3.) *4" concrete sidewalk.*

4.) *Integral concrete curb and walk.*

5.) *Proposed light-duty asphalt pavement.*

6.) *Proposed heavy-duty concrete pavement.*

7.) *Block Retaining Wall.*

8.) *Accessible parking design to meet all governing codes. Quantity as required by I.A.C. & A.D.A. - accessible parking spaces and their access aisles shall be 1:20 running-slope and 1:48 cross-slope. Accessible route delineation shall be 4" wide blue outline w/ 4" blue cross hatching.*

9.) *Reinforced Concrete Apron.*

10.) *Frost footing at man doors.*

11.) *Proposed Landscaping: (Shown for reference). See Sheet L1.0 "Site Landscaping Plan".*

12.) *Swing Gate Operator & Concrete Pad provided & installed by G.C., equal to "LiftMaster Elite Series" Model CSW24U, 120V (Conduits & Wire by E.C.).*

13.) *6' high chain link security fence / access gate.*

14.) *Taper curb.*

15.) *Pavement painting: 4" wide yellow striping.*

16.) *Pavement marking: Yellow directional arrow.*

17.) *Proposed site lighting: By E.C. (shown for reference). See site electrical plan.*

18.) *Pedestal for gate operator access control key pad, furnished and installed by G.C. Conduit to pedestal by E.C., wiring by Access Control installer.*

19.) *Pavement painting: "Universal Symbol", blue painted field w/ white painted wheelchair and border.*

20.) *Concrete parking bumper.*

21.) *Accessible parking sign (post-mounted).*

22.) *Pavement painting: 4" wide blue paint striping at accessible parking space.*

**NOTE: See "SITE PLAN REVIEW SUBMITTAL PACKET" for typical construction details.*

## GENERAL NOTES:

A. *Provide smooth transition from newly paved areas to existing paved area as necessary. The existing edge of pavement shall be free of all loose debris at all areas where proposed pavement meets existing pavement. The edge of existing asphalt pavement shall be properly sealed with a tack coat material in all areas where new asphalt pavement is indicated to join existing.*

B. *Contractor is responsible for locating and verifying all existing underground utilities prior to construction, and is responsible for any damage to them during construction.*

C. *All dimensions to face of curb or edge of concrete unless otherwise noted.*

D. *All pavement markings depicting parking spaces, accessible parking spaces, access aisles and no parking signage shall be applied with mechanical equipment and templates at the locations and lengths shown on the plans (two coats all locations). Paint shall be yellow in color (unless otherwise specified) and shall meet all applicable requirements of state department of highway specifications, unless otherwise specified.*

E. *Contractor shall be solely responsible for and take all precautions necessary to avoid damage to adjacent properties during the construction phases of this project.*

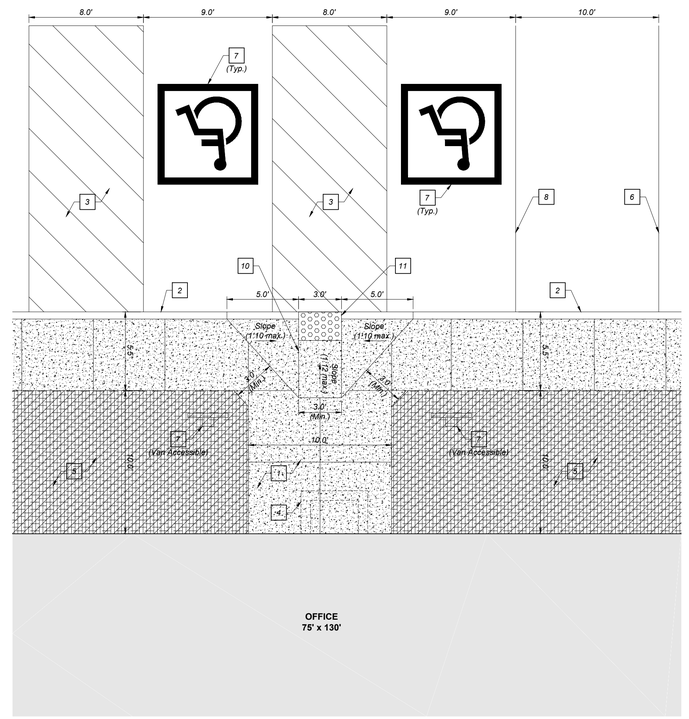
F. *All construction methods and materials must conform to current standards and specifications of the federal, state, county, city or local requirements, whichever has jurisdiction.*

G. *All excavated and/or disturbed areas indicated as "grass area" (per keyed note #1), are to be seeded with a locally adaptive turf seed mix after finish grading unless otherwise noted. All newly seeded areas shall have a minimum of 6" of topsoil. Hold soil down 1" from pavement elevation. Contractor to supply straw mulch where grass seed has been planted.*

H. *All radii indicated on plans shall be constructed as circular.*

I. *Resurface or reconstruct at least to original conditions all areas where traffic by contractors, subcontractors or suppliers have damaged existing pavement, lawns or other improvements during construction, after construction work is complete.*

J. *The contractor shall verify all dimensions and elevations in the field prior to the start of construction. The contractor shall be responsible for all field dimensions and elevations during the entire construction schedule. If any discrepancies are found in these plans from actual field dimensions, the contractor shall contact the engineer immediately.*




## ENLARGED ADA RAMP PLAN

*Scale: 1" = 5'*

## KEYED NOTES:

1.) *4" concrete sidewalk.*

2.) *Integral concrete curb and walk.*

3.) *Accessible parking design to meet all governing codes. Quantity as required by I.A.C. & A.D.A. - accessible parking spaces and their access aisles shall be 1:20 running-slope and 1:48 cross-slope. Accessible route delineation shall be 4" wide blue outline w/ 4" blue cross hatching.*

4.) *Frost footing at man doors.*

5.) *Proposed Landscaping: (Shown for reference). See Sheet L1.0 "Site Landscaping Plan".*

6.) *Pavement painting: 4" wide yellow striping.*

7.) *Pavement painting: "Universal Symbol", blue painted field w/ white painted wheelchair and border.*

8.) *Pavement painting: 4" wide blue paint striping at accessible parking space.*

9.) *Accessible parking sign (post-mounted).*

10.) *Curb ramp w/detectable warning mat.*

11.) *Detectable warning mat: (1) 2'x3' tile, cast-in-place w/truncated domes complying with ADA guidelines, brick red. Equal to Detectable Warning Systems - "EZ Set Tile".*

**NOTE: See "SITE PLAN REVIEW SUBMITTAL PACKET" for typical construction details.*

NORTH

Scale: 1 in. = 20 ft.

0' 20' 40' 60'

Graphic Scale

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WASTE MANAGEMENT

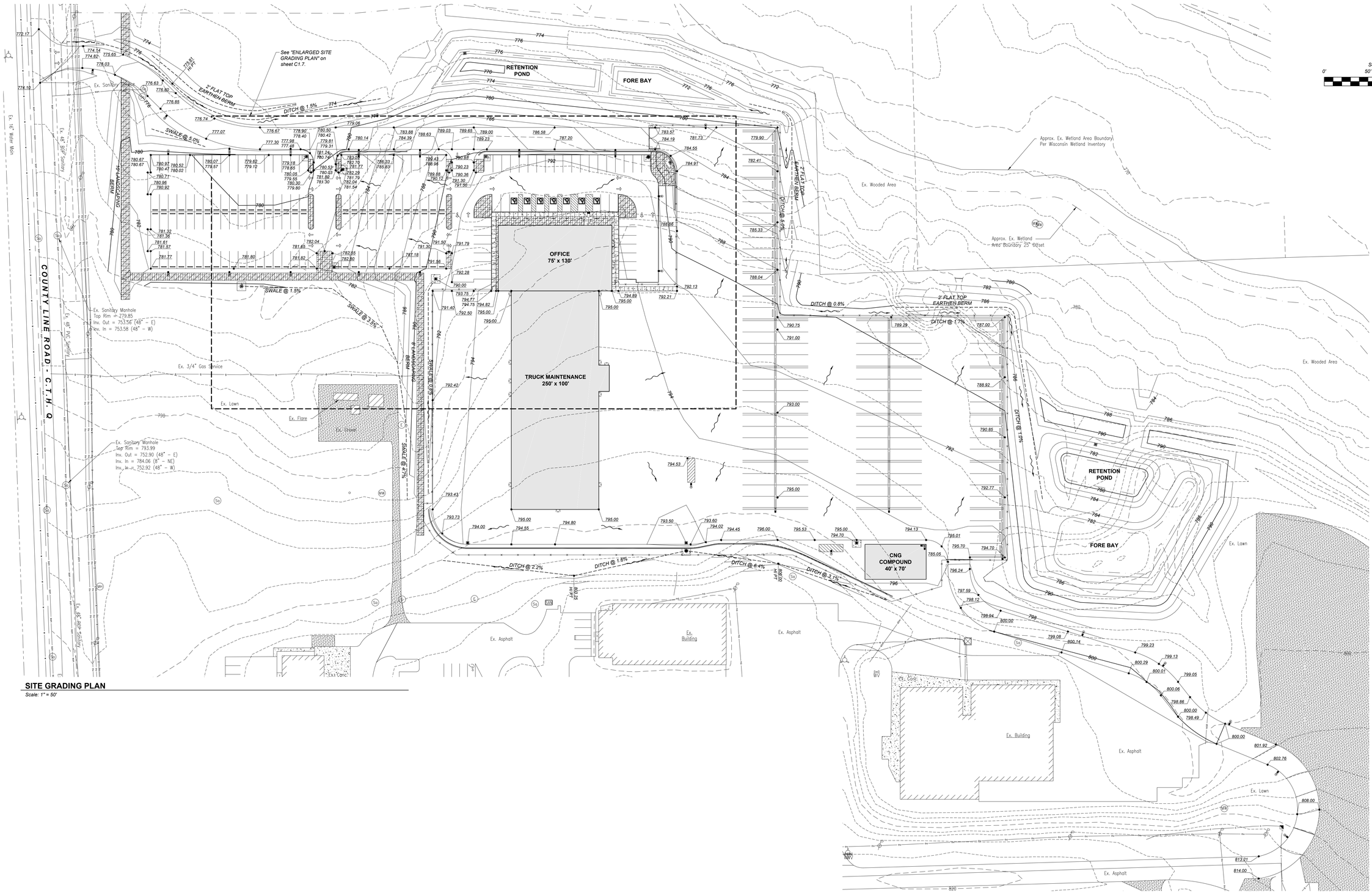
PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: ENLARGED SITE IMPROVEMENT PLAN

SHEET NO: C1.5

JOB NO: ENG-1465

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**SITE GRADING PLAN**

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**WASTE MANAGEMENT**

PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: SITE GRADING PLAN

SHEET NO: C1.6

JOB NO: ENG-1465

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NORTH

Scale: 1 in. = 20 ft.

0' 20' 40' 60'

Graphic Scale

OFFICE
75' x 130'

TRUCK MAINTENANCE
250' x 100'

SWALE @ 1.5%

SWALE @ 3.5%

SWALE @ 0.8%

8" LANDSCAPING BERM

Ex. Lawn

Ex. 3/4" Gas Service

## ENLARGED SITE GRADING PLAN

Scale: 1" = 20'

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# WASTE MANAGEMENT

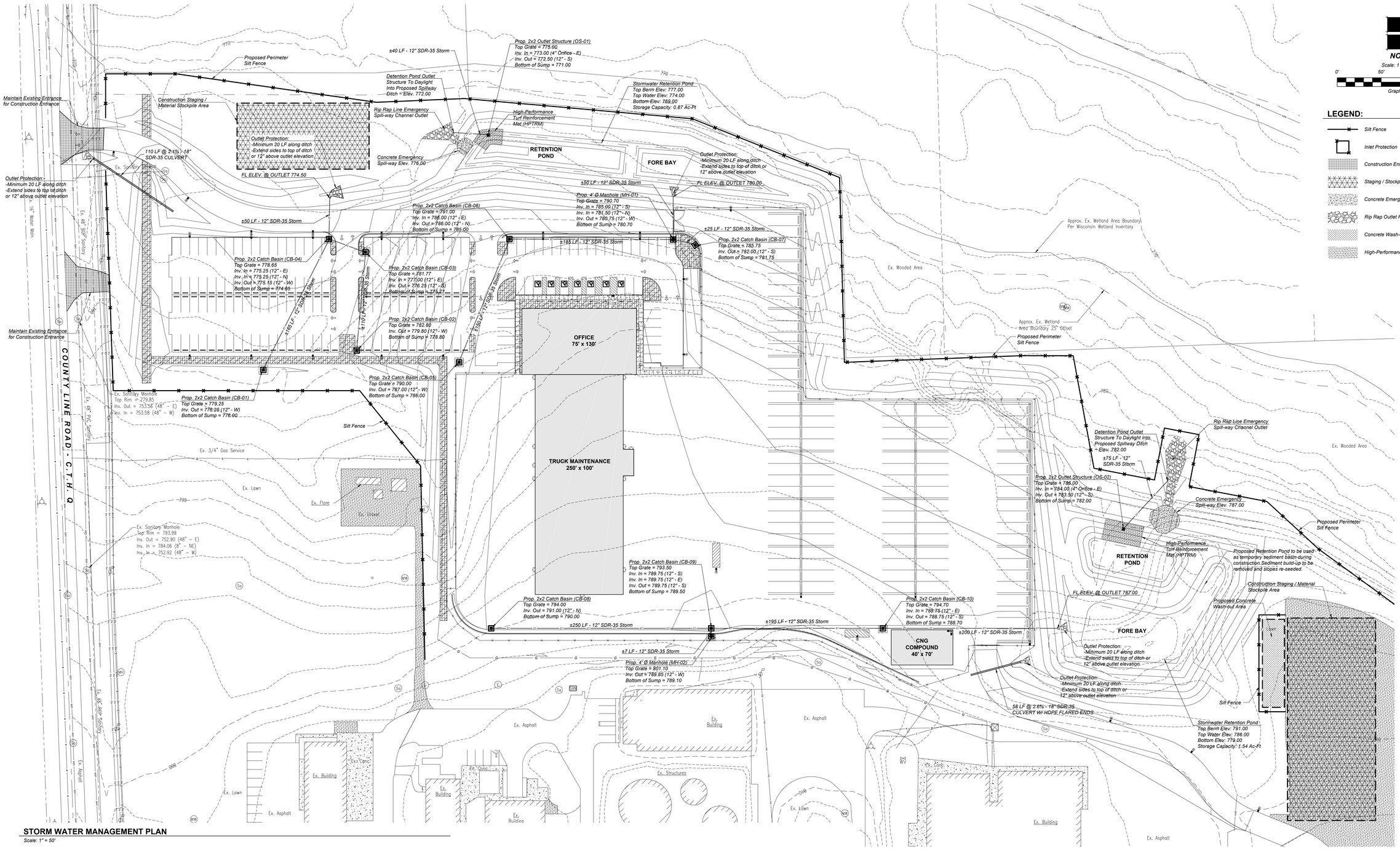
PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: ENLARGED SITE GRADING PLAN

SHEET NO: C1.7

JOB NO: ENG-1465


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## STORM WATER MANAGEMENT PLAN

Scale: 1" = 50'

## GENERAL NOTES:

A. *STREET SWEEPING: Streets directly adjacent to construction entrances and receiving traffic from the development area shall be cleaned daily to remove sediment tracked off-site.*

B. *INTERNAL INSPECTION AND MAINTENANCE: All controls on the development shall be inspected at least once every seven (7) calendar days and within 24 hours after any storm event greater than one-half (0.5) inch of rain per 24 hour period by the Owner.*

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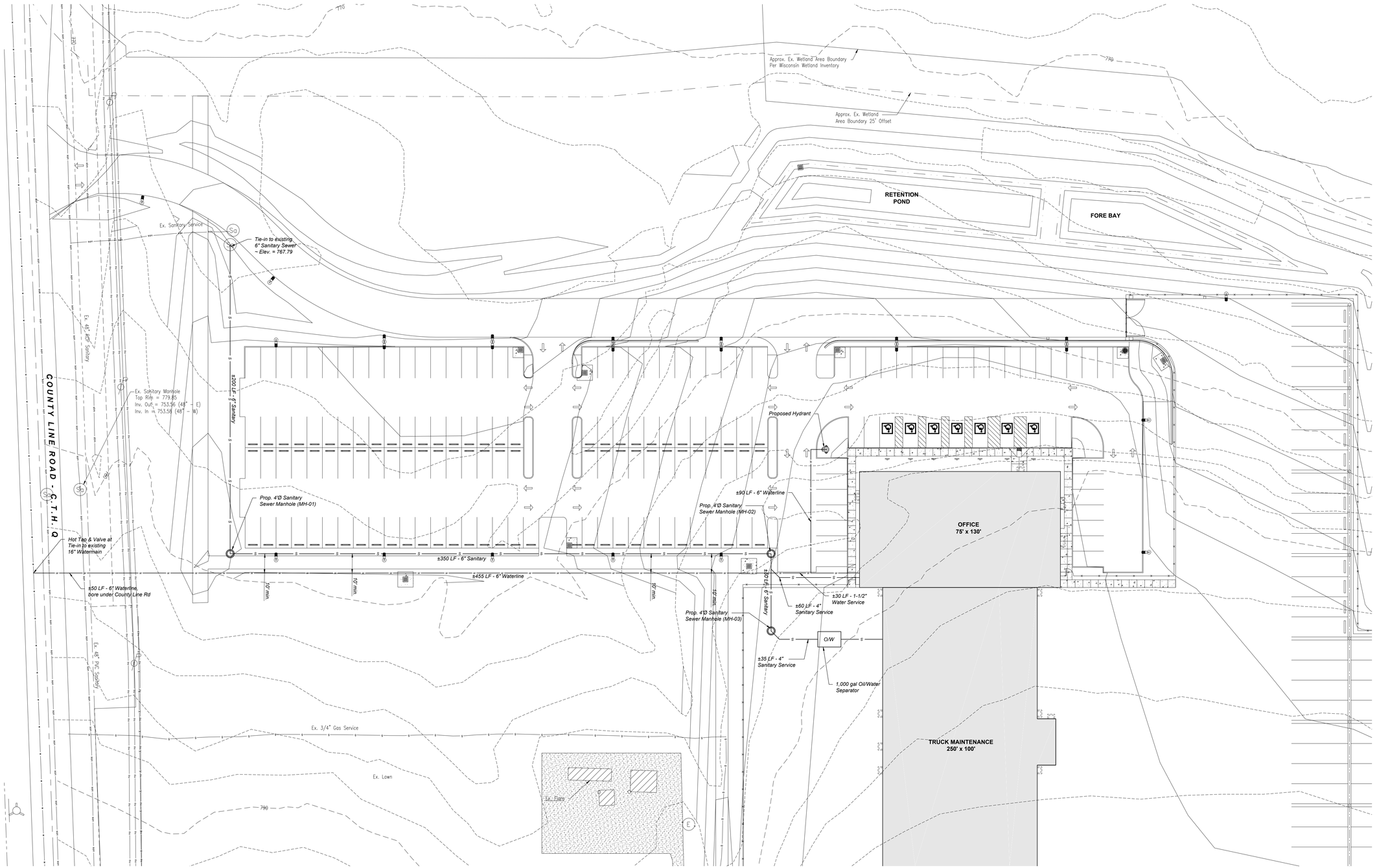
PROJECT: *TRUCK MAINTENANCE FACILITY GERMANTOWN, WI*

SHEET TITLE: *STORM WATER MANAGEMENT PLAN*

SHEET NO: **C1.8**

JOB NO: ENG-1465

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## SITE UTILITY PLAN

Scale: 1" = 30'

## GENERAL NOTES:

A. *All existing utilities are shown herein as reference only and are based on record of the various utility companies. Contractor is responsible for determining the exact locations and depths of all utilities prior to any construction activities.*

B. *The contractor shall field verify the elevations and pipe material of existing piping prior to ordering any pre-cast structure.*

C. *The contractor shall refer to architectural plans for exact location and size of downspouts.*

D. *The Site Contractor shall coordinate locations of utilities provided by other trades not shown on this plan.*

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WASTE MANAGEMENT

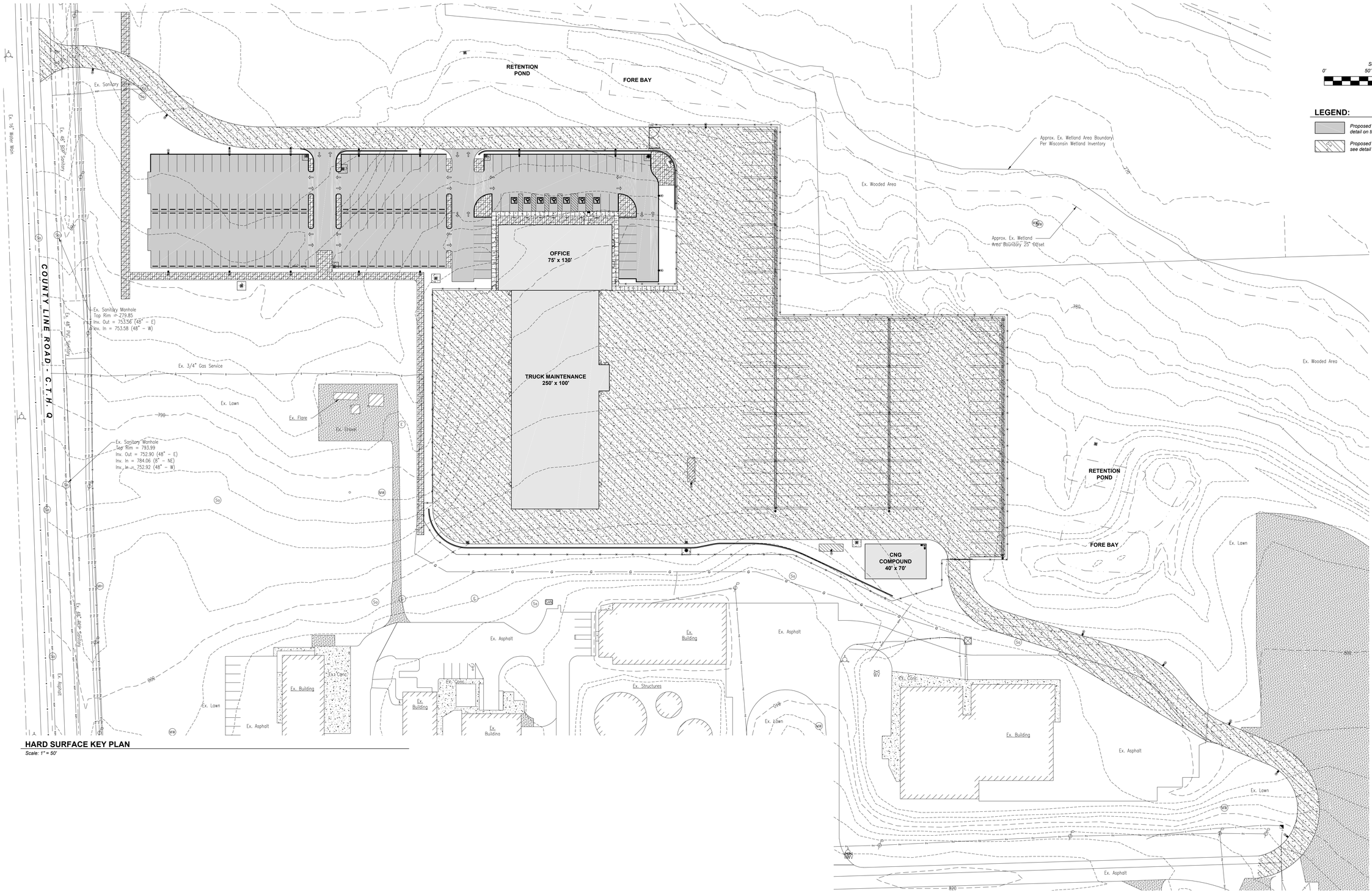
PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: SITE UTILITY PLAN

SHEET NO: C1.9

JOB NO: ENG-1465

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**HARD SURFACE KEY PLAN**

*Scale: 1" = 50'*

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**WASTE MANAGEMENT**

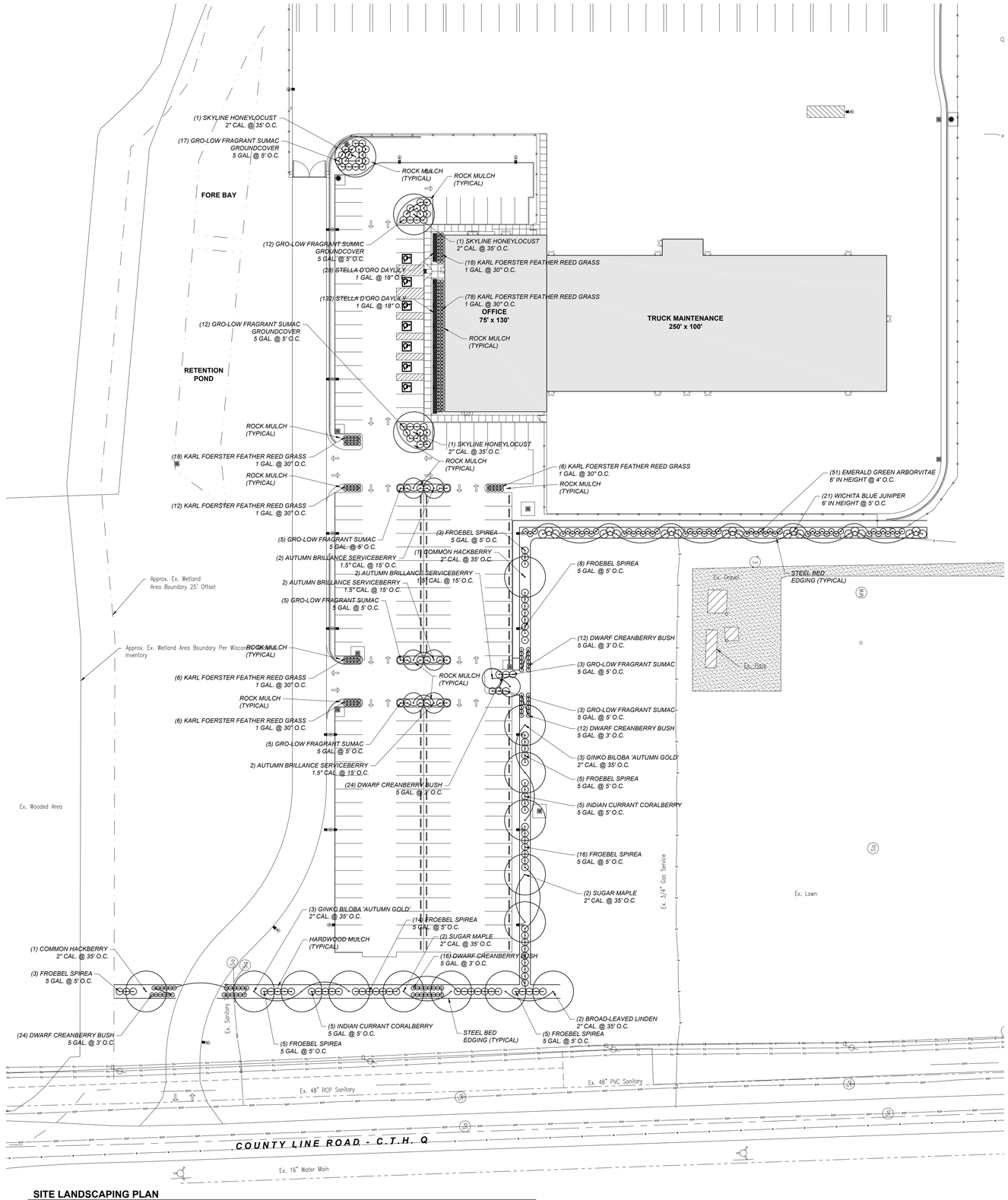
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SHEET TITLE: *HARD SURFACE KEY PLAN*

SHEET NO: **C1.10**

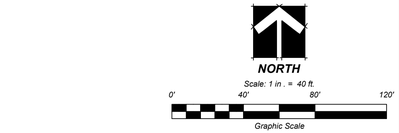
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## SITE LANDSCAPING PLAN

*Scale: 1" = 40'*




## GENERAL NOTES:

1. *Verify all conditions and dimensions shown on the plans at the site prior to commencement of work. Notify landscape architect of an discrepancies. Contractor shall notify utility companies and verify the exact location of utility easements and all utilities in the field prior to commencement of excavation or construction activities.*
2. *All work shall conform to the City of Mason City and S.U.D.A.S. standards unless noted otherwise.*
3. *Underground utilities shown are for information only, locations have not been verified. Contractor shall contact Iowa One-Call and verify location of existing underground utilities before commencing any excavation to avoid damage. The contractor shall be responsible for repair of an damage caused by construction activities. Exercise extreme care in excavating and working around existing site features and utilities. Verify location and condition of all utilities. Field adjust plant locations so as to avoid conflicts with utilities.*
4. *Verify plant counts. If quantities in planting schedule vary from landscape plan graphic, graphic shall prevail.*
5. *Locate plant material by measuring off of the drawing to the nearest 6" and stake where trees will be located. The Landscape Architect will review prior to planting.*
6. *Align and equally space in all directions tree, shrub and perennials designated per these drawing and typical details.*
7. *Backfill soil (planting soil) for tree pits shall consist of a mixture of two parts top soil and one part compost. Remove soil excavated from tree planting area and dispose of off site.*
8. *Remove existing topsoil and stockpile on site; topsoil to be incorporated into soils at a later date.*
9. *Finish grade of planter areas shall be 3 inches below adjacent curb or structure to allow for 3" of mulch depth.*
10. *All landscape beds shall be edged with DURAEDGE 5"x$\frac{1}{4}$" steel lawn edging as manufacturing by the J.D. Russell Company (800-888-9709) or approved equal. Edging shall be hot rolled steel with an electrostatically applied powder coat surface paint, black in color.*
11. *New trees shall meet the minimum standards of ANSI Z60.1, Latest Edition. Plants shall be freshly dug or well-established in container as applicable; not root-bound in the container. Trees with broken or unidentifiable leader, broken or mushroomed balls, lopsided growth, or weak open structure (in the opinion of the landscape architect) will not be acceptable.*
12. *The contractor shall submit at least one nursery photograph of each type of tree species for approval by the landscape architect prior to shipping and installation. Most species are matched so the specimens must have consistent branching heights and habits within species. The landscape architect will use the submitted photographs as a standard of comparison for each tree species installed on site.*
13. *Wood mulch for tree rings and where indicated on the plan shall be 3" deep, composed of cedar or cypress wood of uniform color and long, fibrous nature (2-4 inches in length). Do not use walnut. Do not use chips. Apply pre-emergence herbicide over the top of all wood mulch. Mulch rings around new trees shall be minimum 6' in diameter. Thoroughly water mulched areas, rake to a smooth finished surface.*
14. *Planting beds next to the building and parking lot islands shall be 3" deep washed river rock mulch over weed barrier fabric. Fabric shall be a woven polypropylene, 3.5 to 4.0 ounce products. Apply pre-emergence herbicide over the top of all rock mulch.*
15. *All plants shall be maintained and watered by the contractor through substantial completion.*
16. *No trees, bushes, or vegetation existing on site to remain.*

## PLANTING SCHEDULE

| | QTY | COMMON NAME | BOTANICAL NAME | TYPE | CAL (IN.) | CONT |
|---|---|---|---|---|---|---|
| *TREES* | | | | | | |
| | 3 | THORNLESS HONEYLOCUST "SKYLINE" | GLEDITSIA TRIACANTHOS VAR. INERMIS | DECIDUOUS SHADE TREE | 0'-2" | B&B |
| | 2 | COMMON HACKBERRY | CELTIS OCCIDENTALIS | DECIDUOUS SHADE TREE | 0'-2" | B&B |
| | 6 | GINKO BILOBA 'AUTUMN GOLD' | GINKO BILOBA 'AUTUMN GOLD' | DECIDUOUS SHADE TREE | 0'-2" | B&B |
| | 4 | SUGAR MAPLE | ACER SACCHARUM | DECIDUOUS SHADE TREE | 0'-2" | B&B |
| | 2 | BROAD-LEAVED LINDEN | TILIA PLATYPHYLLOS | DECIDUOUS SHADE TREE | 0'-2" | B&B |
| | 8 | AUTUMN BRILLIANCE SERVICEBERRY | AMERLANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' | DECIDUOUS ORNAMENTAL TREE | 0'-2" | B&B |
| *SHRUBS* | | | | | | |
| | 51 | EMERALD GREEN ARBOVITAE | THUJA OCCIENTALIS 'SMARAGD' | EVERGREEN SHRUB | | 6' HEIGHT |
| | 21 | WICHITA BLUE JUNIPER | JUNIPERUS SCOPULORUM 'WICHITA BLUE' | EVERGREEN SHRUB | | 6' HEIGHT |
| | 65 | GRO-LOW FRAGRANT SUMAC | RHUS AROMATICA 'GRO-LOW' | DECIDUOUS SHRUB | | 5 GAL |
| | 59 | SEA GREEN JUNIPER | JUNIPERUS X PFITZERIANA 'SEA GREEN' | EVERGREEN SHRUB | | 5 GAL |
| | 10 | INDIAN CURRANT CORALBERRY | SYMPHORICARPOS ORBICULATUS | DECIDUOUS SHRUB | | 5 GAL |
| | 64 | DWARF CRANBERRY BUSH | VIBURNUM OPULUS 'NANUM' | DECIDUOUS SHRUB | | 5 GAL |
| *PERENNIALS* | | | | | | |
| | 154 | KARL FOERSTER FEATHER REED GRASS | CALAMAGROSTIS X ACULTIFLORA 'KARL FOERSTER' | PERENNIAL GRASS | | 1 GAL |
| | 160 | STELLA D'ORO DAYLILY | HEMEROCALLIS 'STELLA DE ORO' | PERENNIAL FLOWER | | 6' HEIGHT |

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |

ISSUE DATE 01/04/2018 | SCALE 1" = 40' | CTR INT: 1
SURVEYED BY COM | CHECKED BY KJB
DRAWN BY LSB | APPROVED BY MJS

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**WASTE MANAGEMENT**

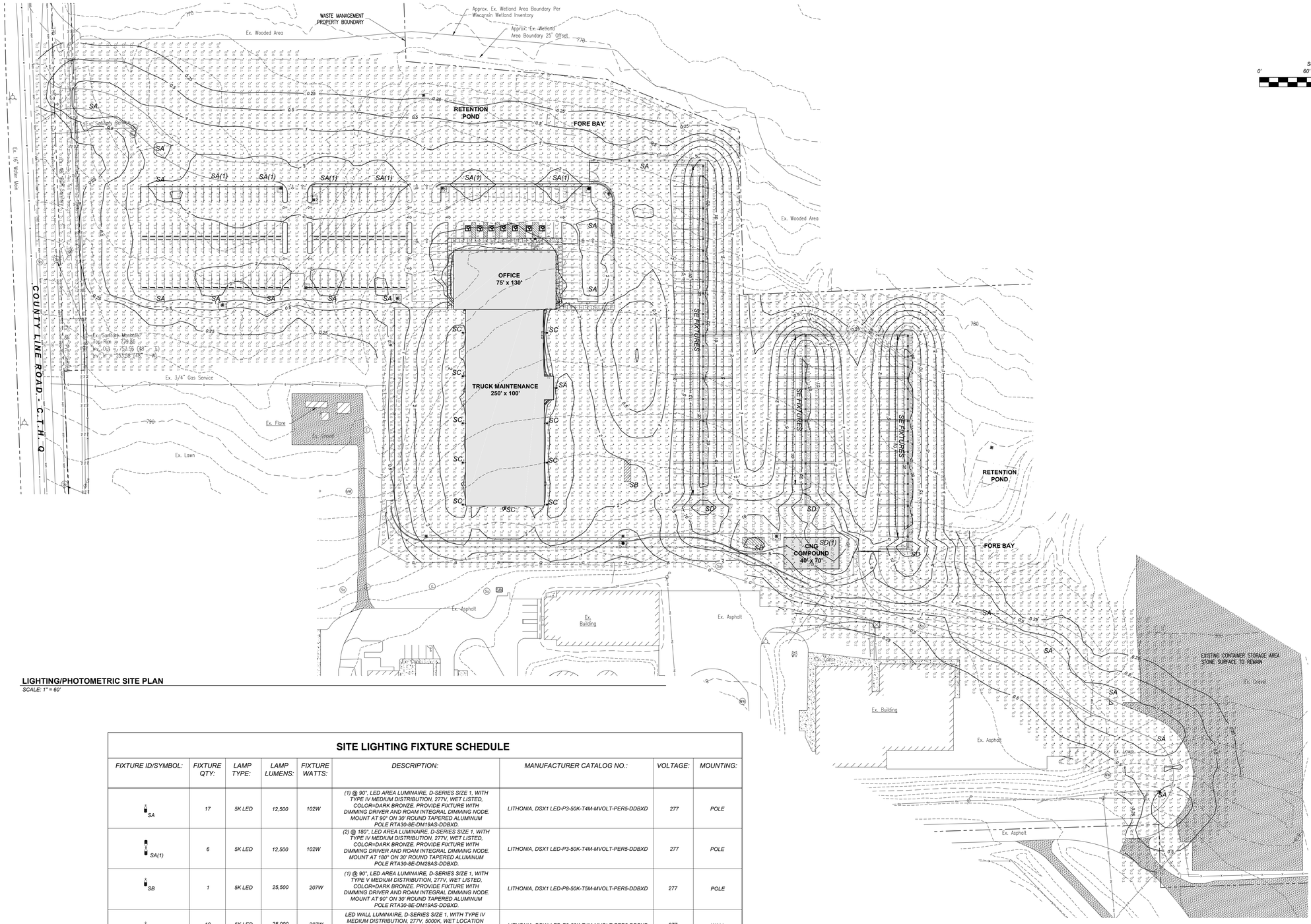
PROJECT: *TRUCK MAINTENANCE FACILITY*
*GERMANTOWN, WI*

SHEET TITLE: *SITE LANDSCAPING PLAN*

SHEET NO: **L1.0**

JOB NO: ENG-1465

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**LIGHTING/PHOTOMETRIC SITE PLAN**

*SCALE: 1" = 60'*

## SITE LIGHTING FIXTURE SCHEDULE

| FIXTURE ID/SYMBOL: | FIXTURE QTY: | LAMP TYPE: | LAMP LUMENS: | FIXTURE WATTS: | DESCRIPTION: | MANUFACTURER CATALOG NO.: | VOLTAGE: | MOUNTING: |
|---|---|---|---|---|---|---|---|---|
| SA | 17 | 5K LED | 12,500 | 102W | (1) @ 90°, LED AREA LUMINAIRE, D-SERIES SIZE 1, WITH TYPE IV MEDIUM DISTRIBUTION, 277V, WET LISTED, COLOR=DARK BRONZE. PROVIDE FIXTURE WITH DIMMING DRIVER AND ROAM INTEGRAL DIMMING NODE. MOUNT AT 90° ON 30' ROUND TAPERED ALUMINUM POLE RTA30-8E-DM19AS-DDBXD. | LITHONIA, DSX1 LED-P3-50K-T4M-MVOLT-PER5-DDBXD | 277 | POLE |
| SA(1) | 6 | 5K LED | 12,500 | 102W | (2) @ 180°, LED AREA LUMINAIRE, D-SERIES SIZE 1, WITH TYPE IV MEDIUM DISTRIBUTION, 277V, WET LISTED, COLOR=DARK BRONZE. PROVIDE FIXTURE WITH DIMMING DRIVER AND ROAM INTEGRAL DIMMING NODE. MOUNT AT 180° ON 30' ROUND TAPERED ALUMINUM POLE RTA30-8E-DM28AS-DDBXD. | LITHONIA, DSX1 LED-P3-50K-T4M-MVOLT-PER5-DDBXD | 277 | POLE |
| SB | 1 | 5K LED | 25,500 | 207W | (1) @ 90°, LED AREA LUMINAIRE, D-SERIES SIZE 1, WITH TYPE V MEDIUM DISTRIBUTION, 277V, WET LISTED, COLOR=DARK BRONZE. PROVIDE FIXTURE WITH DIMMING DRIVER AND ROAM INTEGRAL DIMMING NODE. MOUNT AT 90° ON 30' ROUND TAPERED ALUMINUM POLE RTA30-8E-DM19AS-DDBXD. | LITHONIA, DSX1 LED-P8-50K-T5M-MVOLT-PER5-DDBXD | 277 | POLE |
| SC | 10 | 5K LED | 25,000 | 207W | LED WALL LUMINAIRE, D-SERIES SIZE 1, WITH TYPE IV MEDIUM DISTRIBUTION, 277V, 5000K, WET LOCATION LISTED, COLOR = DARK BRONZE. PROVIDE FIXTURE WITH DIMMING DRIVE AND ROAM INTEGRAL DIMMING NODE. | LITHONIA, DSX1 LED-P8-50K-T4M-MVOLT-PER5-DDBXD | 277 | WALL |
| SD | 4 | 5K LED | 57,300 | 545W | (1) @ 90°, LED AREA LUMINAIRE, LSI XLCL SERIES, WITH FT (FORWARD THROW) DISTRIBUTION, 277V, WET LISTED, COLOR=BLACK. MOUNT AT 90° ON 30' ROUND TAPERED ALUMINUM POLE RTA30-8E-DM19AS-DDBXD. | LSI, XLCL-FT-LED-HO-CW-UE | 277 | POLE |
| SD(1) | 1 | 5K LED | 57,300 | 545W | (2) @ 90°, LED AREA LUMINAIRE, LSI XLCL SERIES, WITH FT (FORWARD THROW) DISTRIBUTION, 277V, WET LISTED, COLOR=BLACK. MOUNT AT 90° ON 30' ROUND TAPERED ALUMINUM POLE RTA30-8E-DM19AS-DDBXD. | LSI, XLCL-FT-LED-HO-CW-UE | 277 | POLE |
| SE | 68 | 5K LED | 10,500 | 74W | LED SURFACE MOUNT, STANDARD SYMMETRIC DISTRIBUTION, 277V, 5000K, WET LOCATION LISTED, COLOR = WHITE | LSI, CRUS SM-SC-LED-LW-50-UE-WHT-DFL | 277 | SURFACE MOUNT ON TRUSS |

ISSUE DATE 01/04/2018 | SCALE 1" = 60' | CTR INT. 2'
SURVEYED BY | COM | CHECKED BY | KJB
DRAWN BY | EWS | APPROVED BY | MJB

| REV | DATE | DESCRIPTION | DWN BY | DES BY | CHK BY | APP BY |
|---|---|---|---|---|---|---|
| | | | | | | |

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**WASTE MANAGEMENT**

PROJECT: TRUCK MAINTENANCE FACILITY
GERMANTOWN, WI

SHEET TITLE: CONDITIONAL USE PERMIT
PROPOSED LIGHTING/PHOTOMETRIC PLAN

SHEET NO: X1.0

JOB NO: ENG-1465

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