STORM WATER MINOR IMPROVEMENTS
AREA MAP

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DWGS PRINTED ON 11"X17" PAPER ARE TO HALF SCALE.
NTS

GENERAL NOTES:

1. CONTRACTOR SHALL, AT HIS EXPENSE, SET & MAINTAIN ALL LINE & GRADE STAKES.
2. CONTRACTOR SHALL, AT HIS EXPENSE, GRADE ALL EXISTING STREETS, ALLEYS, & DRIVES TO MEET NEW CONSTRUCTION.
3. CONTRACTOR SHALL FIELD VERIFY ALL UTILITY LOCATIONS BEFORE BEGINNING NEW CONSTRUCTION.
4. ALL WORK SHALL CONFORM TO THE CITY OF JOPLIN STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED.
5. ALL WORK SHALL BE IN ACCORDANCE WITH THE WORK ZONE SAFETY GUIDELINES OF PART VI OF THE MUTCD & WITH THE BARRICADING SECTION OF THE CITY OF JOPLIN SAFETY MANUAL.
6. ALL PEDESTRIAN FACILITIES SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF THE ADA.
7. CONTRACTOR SHALL, AT HIS EXPENSE, PROVIDE ACCESS TO PRIVATE PROPERTY AT ALL TIMES.
8. CONTRACTOR SHALL, AT HIS EXPENSE, RETAIN THE SERVICES OF A PLS LICENSED IN MISSOURI, WHO SHALL BE RESPONSIBLE FOR RESTORING ANY INCIDENTALLY DAMAGED SURVEY MONUMENTS NOT SCHEDULED FOR REMOVAL AS PART OF THE PROJECT. CONTRACTOR SHALL NOTIFY THE CITY OF JOPLIN OF ANY MONUMENTS DAMAGED BY ANY OUTSIDE PARTY.

UTILITY NOTE

UTILITIES ARE LOCATED ON DRAWINGS BASED UPON AVAILABLE INFORMATION. THE NUMBER & LOCATION OF UTILITIES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL CONTACT ALL UTILITIES & MISSOURI DIG RITE AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION & SHALL BE RESPONSIBLE FOR THE EXACT LOCATION & PRESERVATION OF ALL BURIED OR OVERHEAD UTILITY LINES.

MISSOURI ONE CALL SYSTEM, INC. 1-800-344-7483 STOP CALL BEFORE YOU DIG!

CITY OF Joplin

CITY OF JOPLIN, MISSOURI
PUBLIC WORKS DEPARTMENT
DIVISION OF ENGINEERING

ADDRESS: 602 S MAIN ST 64801
PH NO: 417-624-0820 EXT 530
FAX NO: 417-625-4738
E-M: DHERTZBE@JOPLINMO.ORG

REV DATE:	REVISION:
00/2020	PROJECT CHECK

SVYD BY:	N/A
PNT FILE:	N/A
SVY DATE:	N/A
ENGINEER:	HERTZBERG

ACAD DWG FILE & PATH NAME: STORM WATER\2020 M.S.W.I.
SCALES: NTS

DWN BY:	STAFF
CKD BY:	MARTINEZ
APD BY:	JOHNSON
DATE:	10/2020

PROJECT
STORM WATER MINOR IMPROVEMENTS
COVER SHEET

PLAN NO: 8532
SHEET
01

NOTE:
BANK STABILIZATION TO BE ENDED
15' SOUTH EAST OF EXIST. CULVERT

E. 5TH ST.

NOTE:
ADDITIONAL AGGREGATE @ SE CORNER
OF 4TH AND MURPHY

STOCKPILED LARGE AGGREGATE
FOR BANK STABILIZATION ADDITIONAL ROCK
IS AVAILABLE IF NEEDED.

ADD CONC. & ROCK DITCH LINER FOR EROSION CONTROL
APPROXIMATELY 450 SQ. YDS

THE NEW SHALL MEET THE EXIST. BANK STABILIZATION
FROM THE RECENT WORK DONE NOT SHOWN
IN THIS AERIAL

S. SCHOOL AVE.

EXIST. GROUND
3:1 MAX SLOPE

12" (MIN.) THICK GROUTED RIPRAP
SEE PLAN FOR LIMITS

1:1 MAX SLOPE

12" GROUTED RIPRAP SHALL
CONSIST OF 12" STONE AND
3000 PSI AIR ENTRAINED
CONCRETE. DO NOT COVER
ROCKS COMPLETELY, GROUT
THE VOIDS AROUND THE
ROCKS WITH CONCRETE

MATCH CHANNEL FLOW LINE
ELEVATION

EXIST. CHANNEL BOTTOM

TURN DOWN INTO TRENCH BOTTOM 2'

2' (MIN.) CONC. TOE WALL

EWERT PARK

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SVYD BY:	N/A
PNT FILE:	N/A
SVY DATE:	N/A
ENGINEER:	HERTZBERG

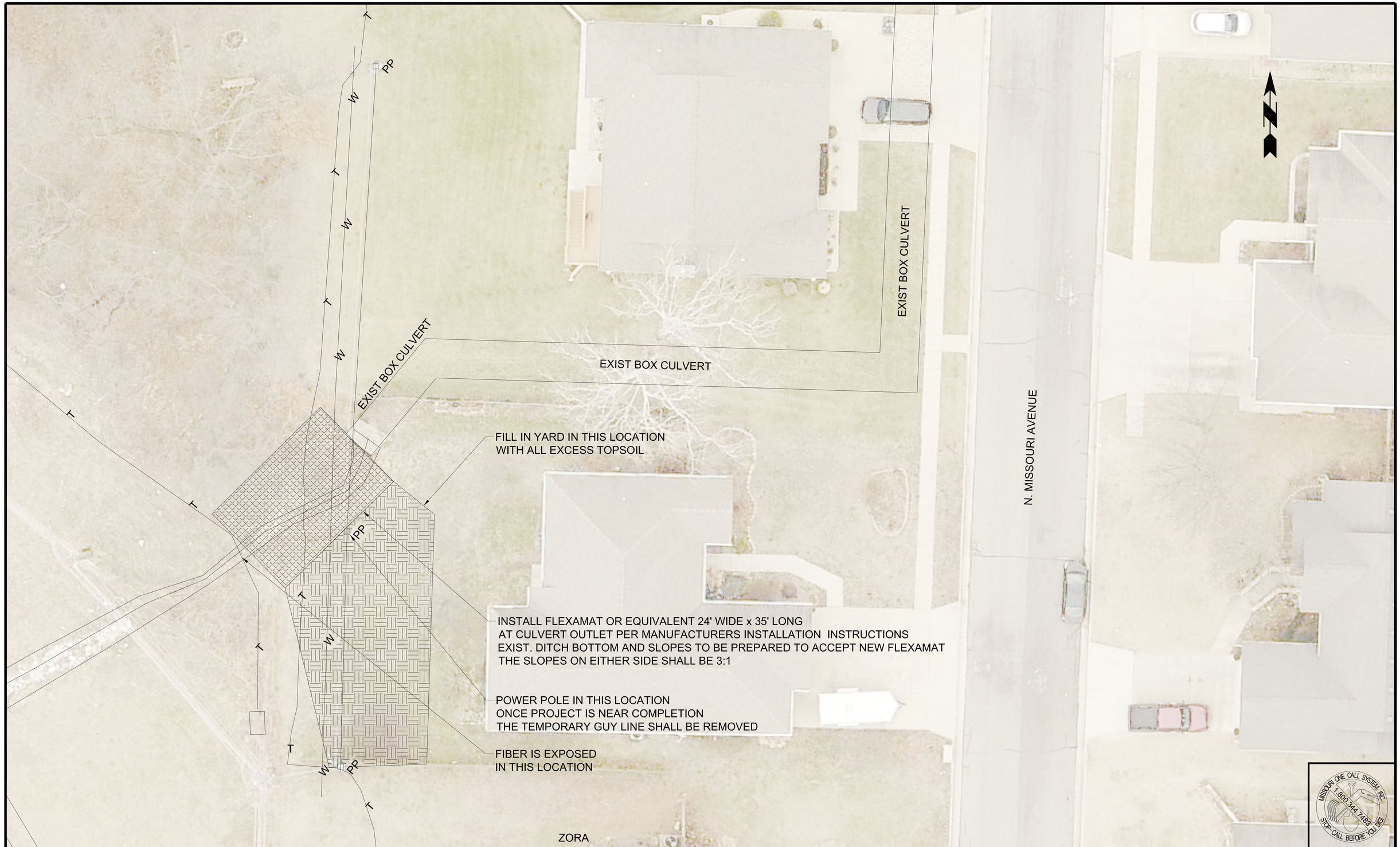
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STORM WATER\2020 M.S.W.I.

SCALES: NTS

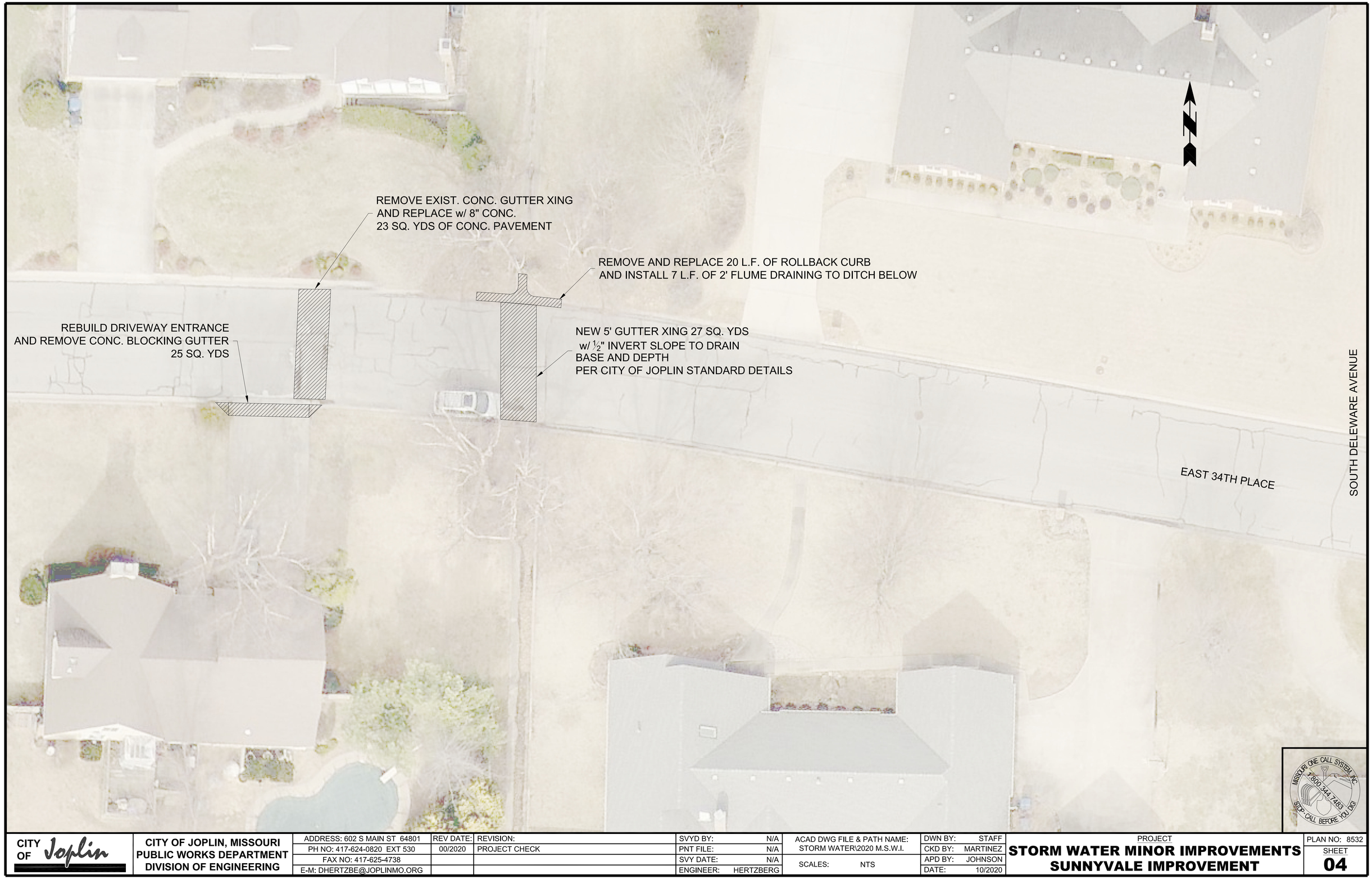
DWN BY:	STAFF
CKD BY:	MARTINEZ
APD BY:	JOHNSON
DATE:	10/2020

PROJECT
STORM WATER MINOR IMPROVEMENTS
BANK STABILIZATION AT EWERT PARK

PLAN NO: 8532
SHEET
02



CITY OF Joplin	CITY OF JOPLIN, MISSOURI PUBLIC WORKS DEPARTMENT DIVISION OF ENGINEERING	ADDRESS: 602 S MAIN ST 64801 PH NO: 417-624-0820 EXT 530 FAX NO: 417-625-4738 E-M: DHERTZBE@JOPLINMO.ORG	REV DATE: 00/2020	REVISION: PROJECT CHECK	SVYD BY: N/A PNT FILE: N/A SVY DATE: N/A ENGINEER: HERTZBERG	ACAD DWG FILE & PATH NAME: STORM WATER\2020 M.S.W.I. SCALES: NTS	DWN BY: STAFF CKD BY: MARTINEZ APD BY: JOHNSON DATE: 10/2020	PROJECT **STORM WATER MINOR IMPROVEMENTS AT 2728 N. MISSOURI AVENUE**	PLAN NO: 8532 SHEET **03**



CITY OF Joplin	CITY OF JOPLIN, MISSOURI PUBLIC WORKS DEPARTMENT DIVISION OF ENGINEERING	ADDRESS: 602 S MAIN ST 64801 PH NO: 417-624-0820 EXT 530 FAX NO: 417-625-4738 E-M: DHERTZBE@JOPLINMO.ORG	REV DATE: 00/2020	REVISION: PROJECT CHECK	SVYD BY: N/A PNT FILE: N/A SVY DATE: N/A ENGINEER: HERTZBERG	ACAD DWG FILE & PATH NAME: STORM WATER\2020 M.S.W.I. SCALES: NTS	DWN BY: STAFF CKD BY: MARTINEZ APD BY: JOHNSON DATE: 10/2020	PROJECT **STORM WATER MINOR IMPROVEMENTS** **SUNNYVALE IMPROVEMENT**	PLAN NO: 8532 SHEET **04**

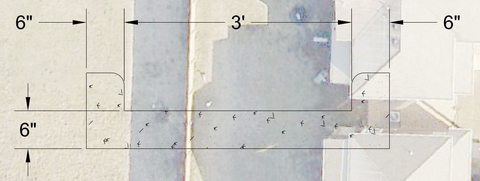
20TH STREET

SOUTH DELEWARE AVENUE

NOTE: INSTALL OVER 8" GRANULAR BASE

NOTE: 1.5" DEPTH SAWCUT 10' C.C.

NOTE: INSTALL 4' x 6" x 6" TOE WALL
FULL WIDTH CENTER & END



REMOVE EXIST. GUTTER FLUME
CENTER NEW GUTTER FLUME AND
GUTTER CROSSING BTWN. FENCES
EXTEND 4' FLUME 165'
TO THE WEST SLOPE TO DRAIN
76 SQ. YDS OF CONC. GUTTER FLUME
& BASE ROCK

NOTE: REMOVE ALL UNSUITABLE MATERIAL BENEATH
EXIST. GUTTER XING

REMOVE EXIST. GUTTER XING
AND REPLACE w/
15' GUTTER XING w/ ¾" INVERT
MIN. OF 10" THICK CONCRETE
CENTERED ON FLUME
50 SQ. YDS OF GUTTER XING
BASE ROCK PER C.O.J. STANDARD DETAIL

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CITY OF Joplin	CITY OF JOPLIN, MISSOURI PUBLIC WORKS DEPARTMENT DIVISION OF ENGINEERING	ADDRESS: 602 S MAIN ST 64801 PH NO: 417-624-0820 EXT 530 FAX NO: 417-625-4738 E-M: DHERTZBE@JOPLINMO.ORG	REV DATE: 00/2020	REVISION: PROJECT CHECK	SVYD BY: N/A PNT FILE: N/A SVY DATE: N/A ENGINEER: HERTZBERG	ACAD DWG FILE & PATH NAME: STORM WATER\2020 M.S.W.I. SCALES: NTS	DWN BY: STAFF CKD BY: MARTINEZ APD BY: JOHNSON DATE: 10/2020	PROJECT **STORM WATER MINOR IMPROVEMENTS AT DELAWARE**	PLAN NO: 8532 SHEET **05**



CITY OF Joplin

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PUBLIC WORKS DEPARTMENT
DIVISION OF ENGINEERING

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FAX NO: 417-625-4738
E-M: DHERTZBE@JOPLINMO.ORG

REV DATE:	REVISION:
00/2020	PROJECT CHECK

SVYD BY:	N/A
PNT FILE:	N/A
SVY DATE:	N/A
ENGINEER:	HERTZBERG

ACAD DWG FILE & PATH NAME: STORM SEWER\2020 M.S.W.I.

SCALES: NTS

DWN BY:	STAFF
CKD BY:	MARTINEZ
APD BY:	JOHNSON
DATE:	10/2020

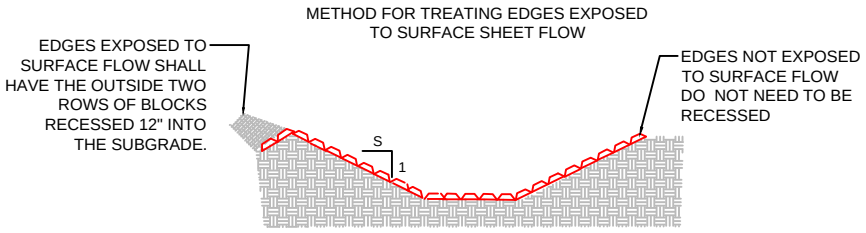
PROJECT

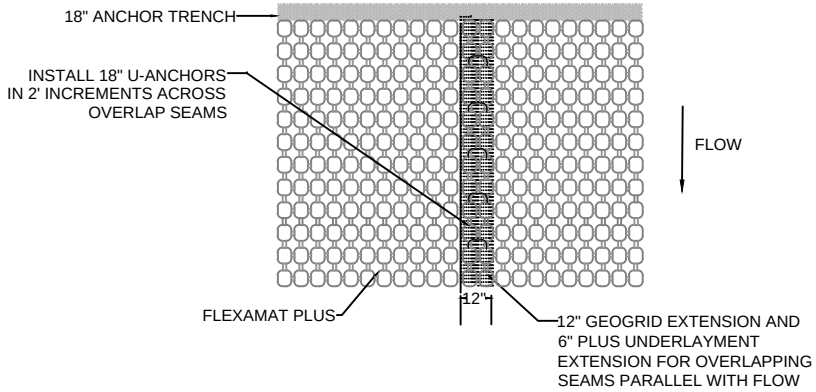
STORM WATER MINOR IMPROVEMENTS AT 23RD AND MEADOWS

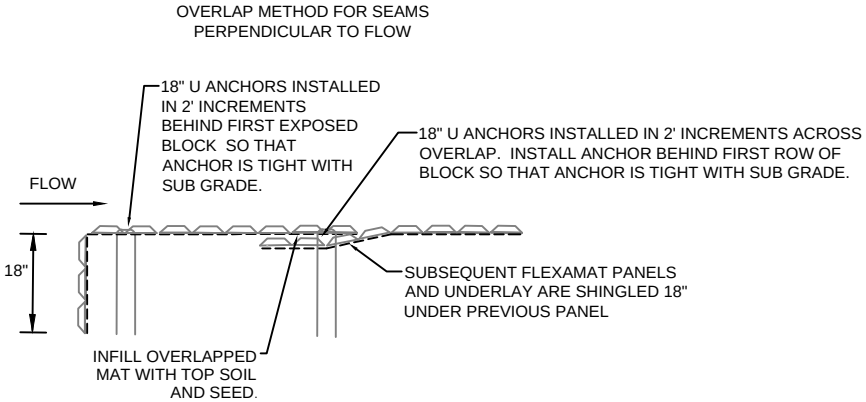
PLAN NO: 8532

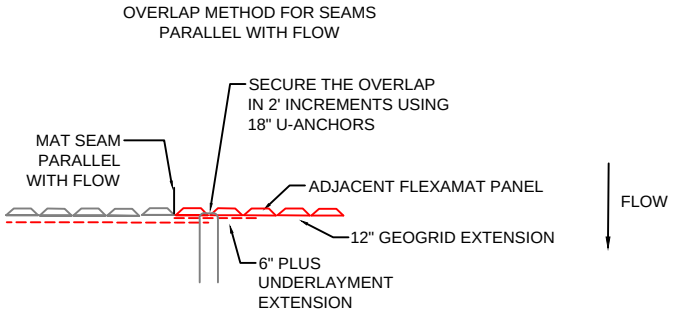
SHEET

06









CONSTRUCTION NOTES:

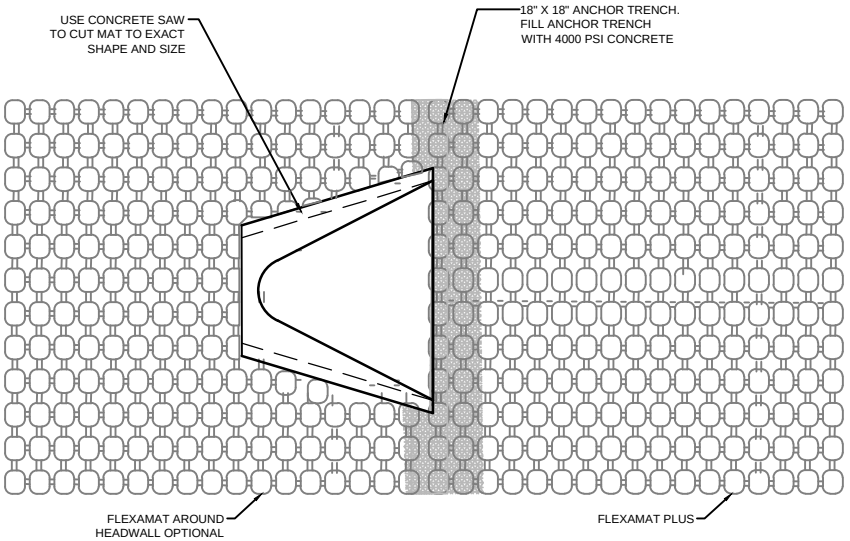
1. AN ENGINEER OR MANUFACTURES REPRESENTATIVE SHALL BE ONSITE FOR THE START OF THE INSTALLATION.
2. GRADE THE SITES SO THAT WATER WILL NOT FLOW ABOVE, BELOW, 0R AROUND THE OUTSIDE OF THE AREA PROTECTED WITH FLEXAMAT. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND.
3. INSTALL FLEXAMAT ROLLS, USING THE WIDEST ROLLS POSSIBLE TO AVOID SEAMS.
   - 3.1. FOR CHANNELS THAT ARE WIDER THAN 16', INSTALL FLEXAMAT ROLLS THAT INCLUDE 15" GEOGRID EXTENSIONS WITH A 6" PLUS UNDERLAYMENT EXTENSIONS. THESE SEAMS PARALLEL WITH FLOW WILL HAVE THE ADJACENT MAT INSTALLED OVER THE EXTENSIONS.
   - 3.2. SECURE THE OVERLAPS PARALLEL WITH FLOW BY INSTALLING 18" U-ANCHORS IN 2' INCREMENTS THROUGH THE EXTENSION OVERLAPS.
4. FOR ADDITIONAL SECTIONS OF MAT, SECURE SEAMS PERPENDICULAR WITH FLOW BY OVERLAPPING THE DOWNSTREAM SECTION 18" WITH UPSTREAM SECTION OF MAT. PRIOR TO INSTALLING OVERLAP, FLIP UPSTREAM MAT BACK 24". EXCAVATE 2.25" OF SOIL 18" FROM END OF UPSTREAM MAT. DOWNSTREAM SECTION IS LAID IN THE SHALLOW TRENCH. LIGHTLY SPREAD TOPSOIL AND SEED OVER INITIAL EDGE. FLIP END OF UPSTREAM MAT OVER THE SOIL COVERED INITIAL LEADING EDGE OF DOWNSTREAM MAT.
   - 4.1. SECURE OVERLAPS PERPENDICULAR TO FLOW BY INSTALLING 18" U-ANCHORS IN 2' INCREMENTS ACROSS THE MAT OVERLAP. INSTALL ANCHORS DIRECTLY BEHIND BLOCKS.
5. AT THE END OF THE ARMORED CHANNEL, EMBED THE MAT 18" IN A TERMINATION TRENCH. FILL AND COMPACT TERMINATION TRENCH WITH COHESIVE SOIL.

FLEXAMAT INFORMATION

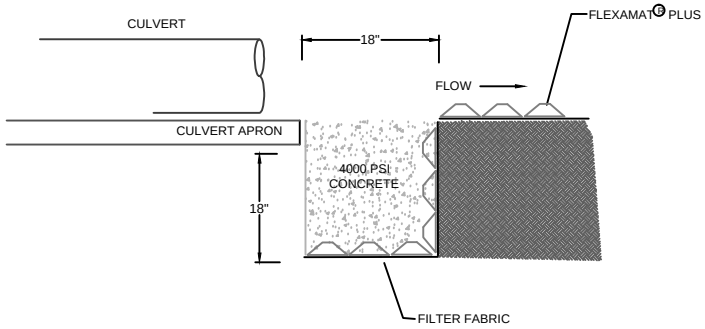
Manufacturer:	Motz Enterprises, Inc.
Product Name:	Flexamat
Address:	3153 Madison Road Cincinnati, OH 45209
Telephone:	513-772-6689
Email:	info@Flexamat.com
Website:	www.Flexamat.com

FLEXAMAT CHANNEL LINING DETAIL
MAT LAYOUT LONGITUDINAL WITH FLOW DIRECTION
NTS

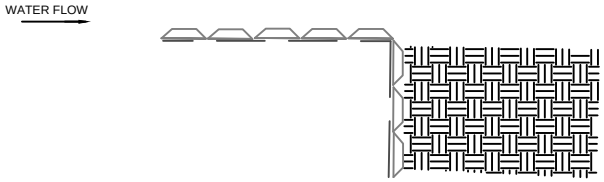
Flexamat

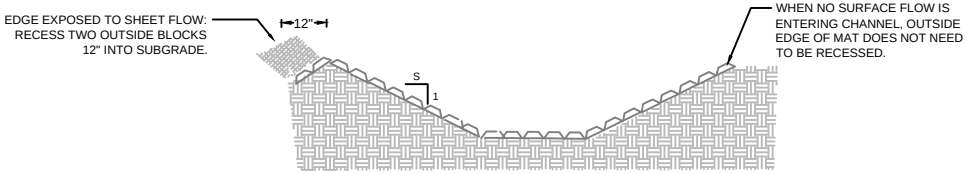


CONCRETE ABUTMENT ANCHOR TRENCH



18" TERMINATION TRENCH AT END OF ARMOR





GUIDANCE TABLE FOR STORMWATER OUTFALL PROTECTION			
PIPE DIAMETER	*DISCHARGE (CFS)	FLEXAMAT PROTECTION WIDTH	FLEXAMAT PROTECTION LENGTH (*MIN)
12"	8 CFS	5.5'	5'
18"	20 CFS	8'	8'
24"	30 CFS	8'	10'
36"	75 CFS	12'	16'
48"	100 CFS	16'	20'
60"	150 CFS	20'	25'

*LENGTH OF PROTECTION WILL VARY ON THE LENGTH OF THE SLOPE, DEGREE OF SLOPE, OR IF IT IS DISCHARGING ONTO A FLAT AREA. OUTFALLS DISCHARGING ONTO SLOPES, IT IS RECOMMENDED TO EXTEND FLEXAMAT THE LENGTH OF THE SLOPE AND 3' PAST THE TOE.

*CONSULT MANUFACTURER FOR GUIDANCE IF DESIGN DISCHARGE VARIES SIGNIFICANTLY FROM VALUES LISTED IN TABLE.

FLEXAMAT INFORMATION

Manufacturer:	Motz Enterprises, Inc.
Product Name:	Flexamat®
Address:	3153 Madison Road
	Cincinnati, Ohio 45209
Telephone:	513-772-MOTZ (6689)
Fax:	513-772-6690
Email:	Info@Flexamat.com
Website:	www.Flexamat.com

CONSTRUCTION NOTES:

1. GRADE CHANNEL SO THAT WATER WILL FLOW DOWN THE CENTER OF THE CHANNEL AND BE CONTAINED TO THE CHANNEL. ALL SUBGRADE SURFACES PREPARED FOR PLACEMENT OF MATS SHALL BE SMOOTH AND FREE OF ALL ROCKS, STICKS, ROOTS, OTHER PROTRUSIONS, OR DEBRIS OF ANY KIND. THE PREPARED SURFACE SHALL PROVIDE A FIRM UNYIELDING FOUNDATION FOR THE MATS.
2. WHEN VEGETATION IS DESIRED, APPLY SEED DIRECTLY TO THE PREPARED SOIL PRIOR TO FLEXAMAT INSTALLATION. USE SEED PER PROJECT SPECIFICATIONS.
3. INSTALL FLEXAMAT ROLLS. AVAILABLE WIDTHS ARE 4', 5.5', 8', 10', 12', & 16' AVAILABLE IN CUSTOM LENGTHS. .
4. AT THE BEGINNING OF CHANNEL, THE INITIAL LEADING EDGE OF FLEXAMAT EXPOSED TO CONCENTRATED FLOWS SHALL BE EMBEDDED 18" VERTICALLY INTO ANCHOR TRENCH. THE TRENCH SHALL BE FILLED WITH 4000 PSI CONCRETE.
5. AT THE END OF THE ARMORED CHANNEL, EMBED THE MAT 18" IN A TERMINATION TRENCH. FILL AND COMPACT TERMINATION TRENCH WITH COHESIVE FILL.

FLEXAMAT®
OUTLET DETAIL