

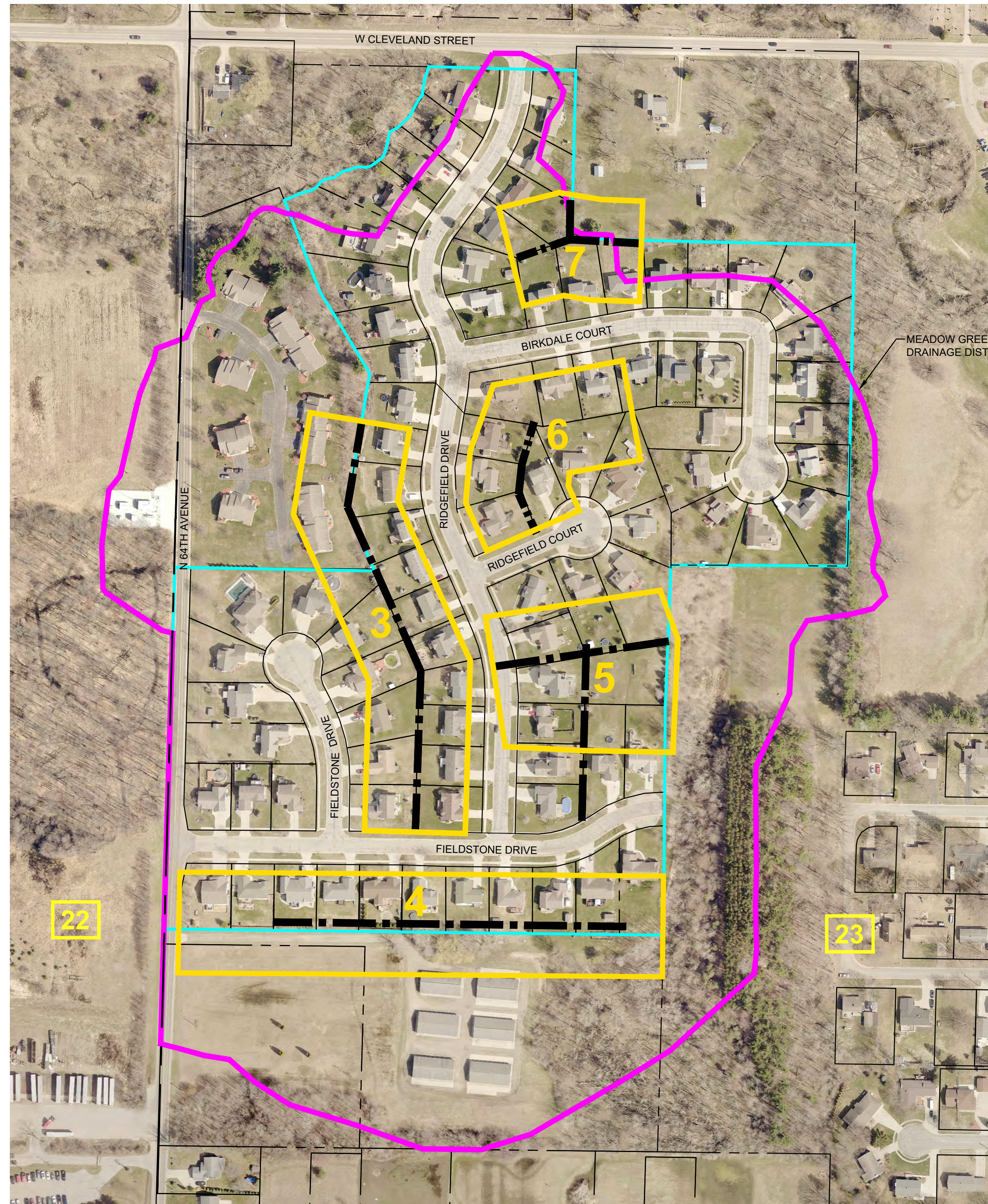
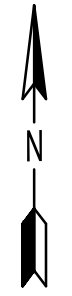
MEADOW GREEN ESTATES NO. 3 DRAIN DRAINAGE DISTRICT

SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER



LOCATION MAP
NO SCALE



LIST OF DRAWINGS

- 1 COVER SHEET
- 2 DRAINAGE DISTRICT BOUNDARY AND ROUTE & COURSE EXHIBIT
- 3 PLAN AND PROFILE #1 - RIDGEFIELD DRIVE
- 4 PLAN AND PROFILE #2 - FIELDSTONE DRIVE
- 5 PLAN AND PROFILE #3 - RIDGEFIELD DRIVE
- 6 PLAN AND PROFILE #4 - RIDGEFIELD DRIVE
- 7 PLAN AND PROFILE #5 - RIDGEFIELD DRIVE AND BIRKDALE CT
- 8 DETAILS & SOIL EROSION & SEDIMENTATION CONTROL MEASURES

LIST OF CONTACTS

OWNER
JOE BUSH
WATER RESOURCES COMMISSIONER
12220 FILLMORE STREET
WEST OLIVE, MI 49460
PHONE: (616) 994-4530
FAX: (616) 994-4529
waterresourcescommissioner@miottawa.org

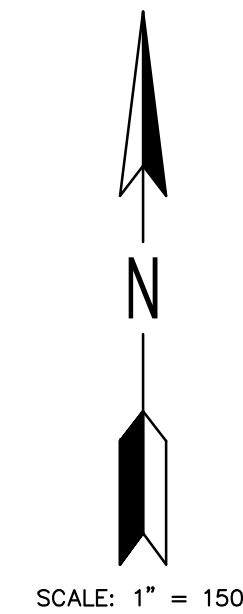
OTTAWA COUNTY ROAD COMMISSION
JERRY OLMAN
14110 LAKESHORE DRIVE
PO BOX 739
GRAND HAVEN, MI 49417
PHONE: (616)-850-7215
jolman@ottawacorc.com

ENGINEER
RYAN C. McENHILL, PE
ENG., INC.
4063 GRAND OAK DRIVE, STE A109
LANSING, MI 48911
PHONE: (517) 887-1100
FAX: (517) 887-6335
mcenhillr@engdot.com

AT & T
SANDRA TAYLOR
955 36th STREET SE
GRAND RAPIDS, MI 49509
PH:

CABLE
COMCAST CABLE
ATTN: JIM STITZEL
OFFICE - (810)-217-8773
3500 PATTERSON AVE SE, SUITE A
GRAND RAPIDS, MI 49512

ELECTRIC
CONSUMERS ENERGY
ATTN: RICHARD HOULTEMAN
(231)-323-2622
4000 CLAY AVENUE SW
GRAND RAPIDS, MI 49548



LEGEND

- MEADOW GREEN ESTATES NO. 3 DRAIN DRAINAGE DISTRICT BOUNDARY
- MEADOW GREEN ESTATES NO. 3 DRAIN CENTERLINE
- PARCEL LINE
- SHEET LOCATION
- SECTION LINE
- SECTION NUMBER

NO.	REVISIONS	DATE	BY	DATE	BY

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

18930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070

engdot.com



JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER

MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

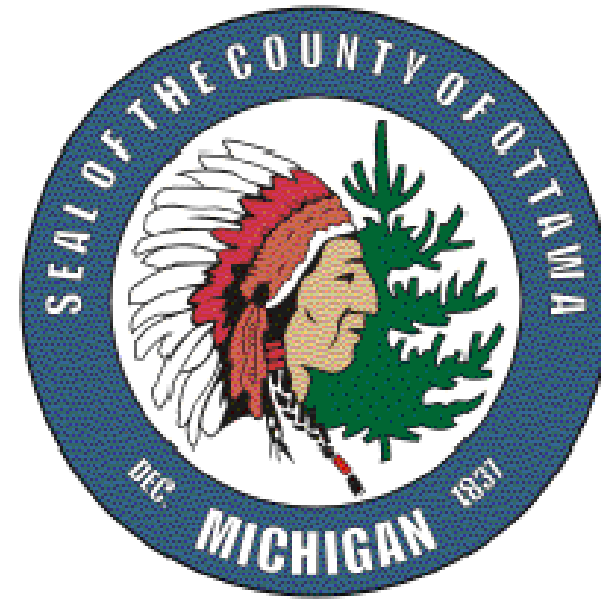
SHEET NO.
1 OF 8

RYAN C McENHILL, P.E. #56096

DATE

COVER SHEET

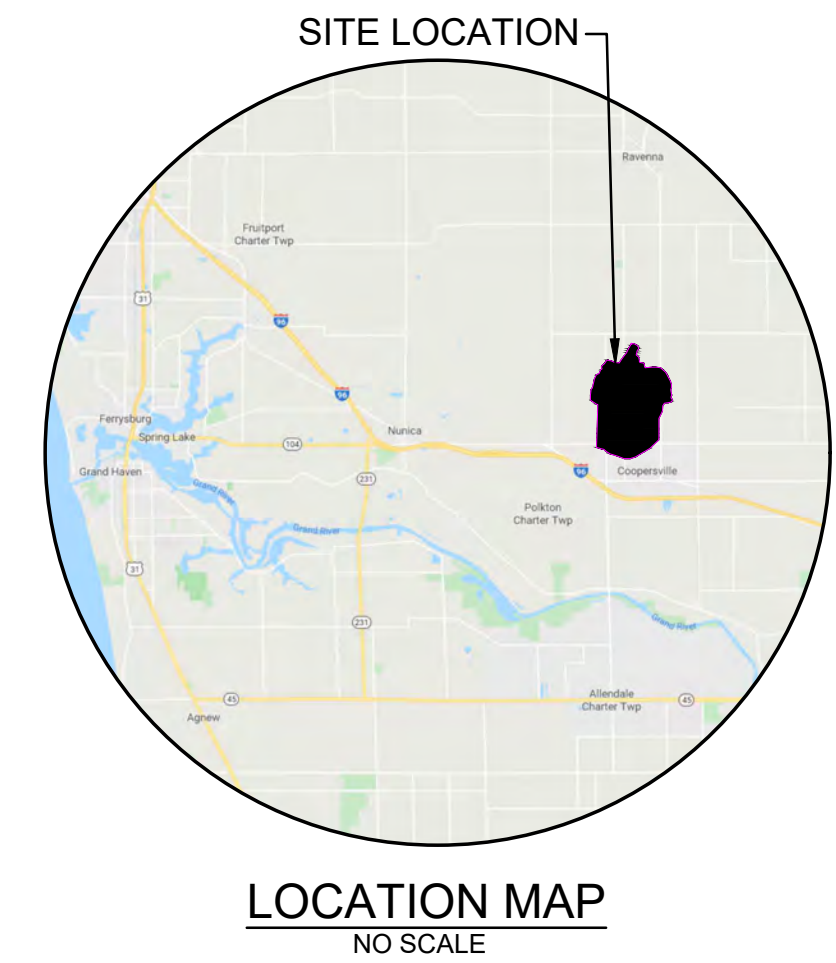
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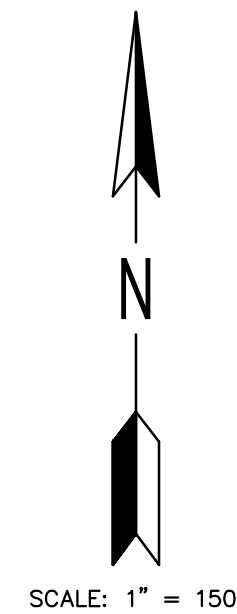
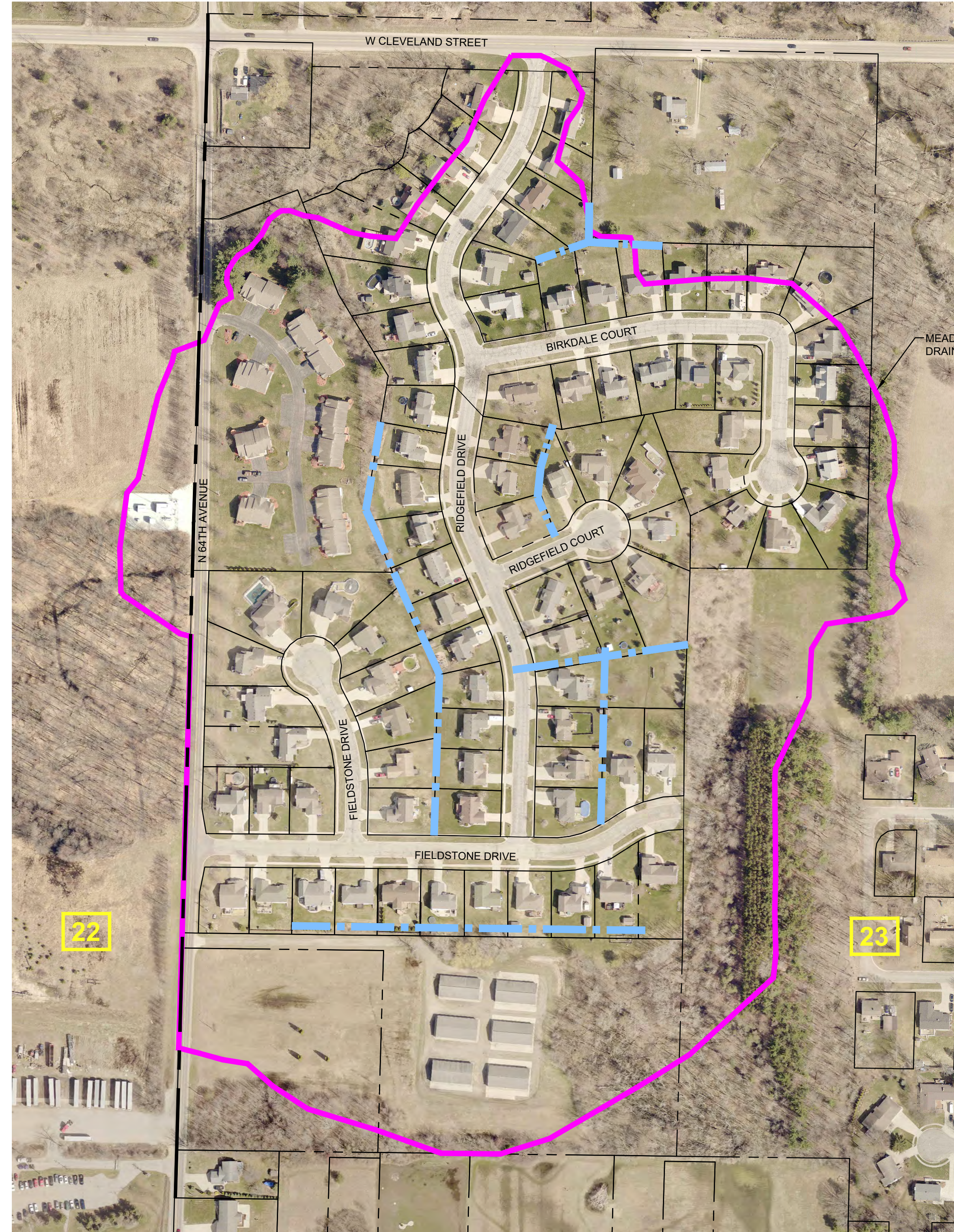
MEADOW GREEN ESTATES NO. 3 DRAIN DRAINAGE DISTRICT

SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER



NO.	REVISIONS	DATE	BY	DATE	BY



DRAINAGE DISTRICT BOUNDARY DESCRIPTION

THAT PART OF SECTIONS 22 & 23, TOWNSHIP 8 NORTH, RANGE 14 WEST, CITY OF COOPERSVILLE, OTTAWA COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS:

BEGINNING AT A POINT ON THE WEST LINE OF SAID SECTION 23 A DISTANCE OF 597 FEET SOUTH FROM THE NORTHWEST CORNER OF SAID SECTION 23, THENCE N 69°11' E 10 FEET, THENCE N 22°52' E 78 FEET, THENCE N 60°51' E 27 FEET, THENCE N 7°28' W 15 FEET, THENCE N 24°55' W 17 FEET, THENCE N 3°34' E 20 FEET, THENCE N 29°45' E 22 FEET, THENCE N 37°31' E 18 FEET, THENCE N 57°51' E 28 FEET, THENCE N 40°34' E 34 FEET, THENCE N 27°19' E 34 FEET, THENCE N 52°29' E 22 FEET, THENCE N 60°46' E 7 FEET, THENCE N 89°8' E 17 FEET, THENCE S 70°22' E 30 FEET, THENCE S 81°13' E 28 FEET, THENCE S 66°26' E 73 FEET, THENCE S 78°42' E 37 FEET, THENCE S 84°46' E 53 FEET, THENCE N 31°55' E 78 FEET, THENCE N 36°47' E 86 FEET, THENCE N 38°53' E 74 FEET, THENCE N 23°21' E 89 FEET, THENCE N 31°34' E 103 FEET, THENCE S 89°42' E 58 FEET, THENCE S 65°34' E 17 FEET, THENCE S 62°18' E 44 FEET, THENCE S 30°49' E 55 FEET, THENCE S 14°23' W 23 FEET, THENCE S 34°31' W 44 FEET, THENCE S 14°35' W 78 FEET, THENCE S 47°25' E 65 FEET, THENCE S 11°4' E 67 FEET, THENCE S 2°26' E 26 FEET, THENCE S 61°50' E 27 FEET, THENCE S 88°27' E 45 FEET, THENCE S 84°10' E 14 FEET, THENCE S 21°56' E 23 FEET, THENCE S 3°49' E 47 FEET, THENCE S 35°53' E 29 FEET, THENCE N 85°10' E 123 FEET, THENCE N 89°8' E 80 FEET, THENCE S 83°19' E 89 FEET, THENCE S 48°33' E 126 FEET, THENCE S 31°5' E 64 FEET, THENCE S 26°46' E 118 FEET, THENCE S 17°32' E 72 FEET, THENCE S 1°11' E 63 FEET, THENCE S 14°10' W 47 FEET, THENCE S 5°26' E 37 FEET, THENCE S 14°17' E 58 FEET, THENCE S 16°3' W 42 FEET, THENCE S 2°48' E 22 FEET, THENCE S 36°16' E 26 FEET, THENCE S 16°48' E 29 FEET, THENCE S 44°12' W 35 FEET, THENCE S 76°11' W 47 FEET, THENCE S 81°36' W 86 FEET, THENCE S 30°59' W 57 FEET, THENCE S 3°20' W 96 FEET, THENCE S 24°1' W 50 FEET, THENCE S 25°14' W 107 FEET, THENCE S 3°49' W 21 FEET, THENCE S 0°30' E 163 FEET, THENCE S 0°0' W 36 FEET, THENCE S 1°16' W 63 FEET, THENCE S 1°24' E 85 FEET, THENCE S 6°3' W 46 FEET, THENCE S 47°30' W 225 FEET, THENCE S 58°2' W 122 FEET, THENCE S 59°38' W 202 FEET, THENCE S 72°42' W 101 FEET, THENCE N 89°17' W 117 FEET, THENCE N 70°19' W 136 FEET, THENCE N 72°50' W 142 FEET, THENCE N 56°59' W 83 FEET, THENCE N 48°29' W 67 FEET, THENCE N 80°49' W 50 FEET, THENCE N 74°29' W 47 FEET, THENCE N 75°37' W 43 FEET, THENCE N 1°40' E 198 FEET, THENCE N 1°41' E 617 FEET, THENCE N 75°1' W 22 FEET, THENCE N 55°54' W 134 FEET, THENCE N 35°33' W 10 FEET, THENCE N 1°22' W 87 FEET, THENCE N 7°20' E 109 FEET, THENCE N 38°4' E 36 FEET, THENCE N 13°19' E 136 FEET, THENCE N 14°20' E 33 FEET, THENCE N 22°31' E 73 FEET, THENCE N 13°12' E 21 FEET, THENCE EAST A DISTANCE OF 52 FEET MORE OR LESS TO THE POINT OF BEGINNING.

CONTAINING 51.4 ACRES MORE OR LESS.

THE BASIS OF THIS DESCRIPTION WAS THE OTTAWA COUNTY GIS MAPPING SYSTEM AND IS SUBJECT TO ITS ACCURACY.

PREPARED BY: ENG., INC.
DATED: 1/15/20

ROUTE & COURSE DESCRIPTION

BEGINNING AT A POINT 253 FEET EAST AND 292 FEET SOUTH OF THE NORTHWEST CORNER OF SAID SECTION 23, TOWNSHIP 8 NORTH, RANGE 14 WEST, CITY OF COOPERSVILLE, OTTAWA COUNTY, MICHIGAN, THENCE S 64°56' E 219 FEET, THENCE S 66°14' E 36 FEET, THENCE S 12°12' W 88 FEET, THENCE S 19°18' E 23 FEET, THENCE S 21°22' E 135 FEET, THENCE S 6°50' W 181 FEET, THENCE S 1°7' W 106 FEET, THENCE S 20°36' E 157 FEET, THENCE S 21°22' E 123 FEET, THENCE S 16°44' E 67 FEET, THENCE S 0°41' W 361 FEET TO THE POINT OF ENDING.



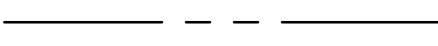


AND ALSO INCLUDING:

COMMENCING AT A POINT 14 FEET EAST AND 540 FEET SOUTH OF THE NORTHWEST CORNER OF SAID SECTION 23, THENCE S 57°50' E 176 FEET, THENCE S 10°13' E 89 FEET, THENCE S 1°24' E 268 FEET, THENCE S 1°6' E 50 FEET, THENCE S 0°8' E 161 FEET, THENCE S 29°30' E 87 FEET, THENCE S 16°34' E 179 FEET, THENCE S 2°26' E 156 FEET TO THE POINT OF ENDING.

THE BASIS OF THIS DESCRIPTION WAS THE OTTAWA COUNTY GIS MAPPING SYSTEM AND IS SUBJECT TO ITS ACCURACY.

PREPARED BY: ENG., INC.
DATED: 1/23/20

LEGEND

-  MEADOW GREEN ESTATES NO. 3 DRAIN DRAINAGE DISTRICT BOUNDARY
-  MEADOW GREEN ESTATES NO. 3 DRAIN CENTERLINE
-  PARCEL LINE
-  SECTION LINE
-  SECTION NUMBER

DRAINAGE DISTRICT BOUNDARY AND ROUTE & COURSE EXHIBIT

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.867.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070
engdol.com



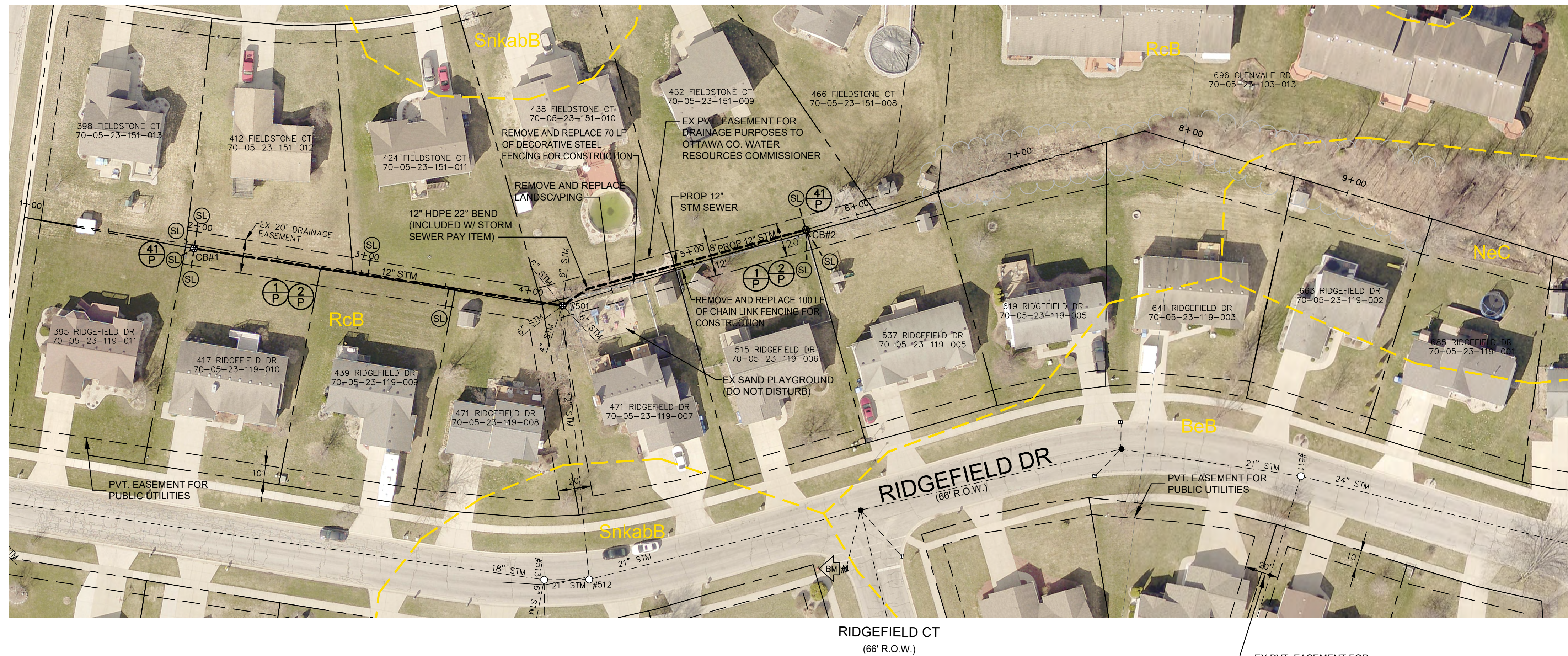
JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER

MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
2 OF 8

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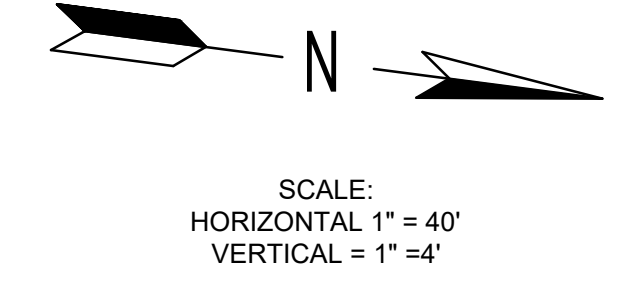
BENCHMARK #1: ELEV 647.76
 ENE FLANGE BOLT ON HYDRANT AT SE CORNER OF RIDGEFIELD DR AND RIDGEFIELD CT

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

LEGEND

- = PROPERTY LINE OR R.O.W. LINE
- = EDGE OF PAVEMENT
- X = FENCE
- = EXISTING GUARDRAIL
- = WETLANDS (AS MARKED BY OTHERS)
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = EDGE OF WOODS
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = BUSH
- = STUMP
- = EXISTING GAS LINE
- = EXISTING STORM SEWER
- = EXISTING SANITARY SEWER
- = EXISTING MANHOLE
- ⊕ = EXISTING STORM CATCH BASIN
- ⊙ = EXISTING WELL LOCATION
- ⊗ = EXISTING WATER VALVE
- ⊙ = EXISTING CURB STOP / METER
- ⊕ = EXISTING CATCH BASIN
- ⊕ = BENCH MARK LOCATION
- ⊕ = EXISTING SIGN
- ⊕ = EXISTING MAILBOX
- ⊕ = EXISTING LIGHT POLE
- ⊕ = EXISTING GUY ANCHOR
- ⊕ = EXISTING UTILITY POLE
- ⊕ = EXISTING TELEPHONE PEDESTAL
- ⊕ = EXISTING DRAIN
- = PROPOSED DRAIN
- = PROPOSED TOP OF BANK
- La = SOIL TYPE
- ⊕ = TEMPORARY SOIL EROSION CONTROL MEASURE
- ⊕ = PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
- = EXISTING DRAINAGE EASEMENT
- = PROPOSED DRAINAGE EASEMENT
- ⊕ = SUMP LEAD



- CONSTRUCTION NOTES:**
- SAW CUT AND REMOVE HMA ROADWAY AND DRIVEWAYS ONLY AT LIMITS OF CONSTRUCTION AS STAKED BY THE ENGINEER. PAVEMENT NOT SPECIFIED FOR REMOVAL AND DAMAGED BY WORK OPERATIONS SHALL BE REPAIRED AND COSTS BORNE BY THE CONTRACTOR.
 - VERIFY ELEVATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION OF STORM SEWER WHERE CONFLICTS MAY EXIST. CLEARING THAT INCLUDES CUTTING AN REMOVAL OF TREES BRUSH AND SHRUBS UP TO 6 INCHES AS MEASURED AT BREAST HEIGHT (DBH) SHALL BE CONSIDERED AS INCLUDED WITH OTHER RELATED PAY ITEMS.
 - THE SIZE, TYPE AND LOCATION OF THE EXISTING UTILITY INFORMATION SHOWN ON THIS DRAWING ARE FROM RECORD DRAWINGS MADE AVAILABLE TO ENG. THIS PLAN IS NOT INTENDED FROM THE PURPOSE OF FIELD LOCATING UTILITIES. NOTIFY MISS DIG FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES.
 - ALL SPOIL MATERIALS, INCLUDING HMA AND CONCRETE, SHALL BE REMOVED FROM THE SITE IMMEDIATELY. NO STOCKPILING OF SPOIL MATERIALS WILL BE ALLOWED UNLESS APPROVED IN WRITING BY THE ENGINEER.
 - ALL NEW CONNECTIONS INTO EXISTING STRUCTURES SHALL BE PROFESSIONALLY CORED.
 - REMOVAL AND REINSTALLATION OF LANDSCAPING ITEMS AS NOTED ON THE DRAWINGS SHALL BE CONSIDERED AS INCLUDED WITH THE PAY ITEM BEING INSTALLED.
 - EXISTING TREES AND SHRUBS SHOWN AS BEING REMOVED AND/OR SALVAGED ON THE DRAWINGS, SHALL BE COORDINATED WITH EACH HOMEOWNER. IF THE HOMEOWNER WISHES TO SALVAGE THE EXISTING TREE AND/OR SHRUBS, THE CONTRACTOR SHALL SALVAGE EACH FOR THE HOMEOWNERS REPLANTING OUTSIDE OF THE EASEMENT. IF THEY DO NOT WISH TO SALVAGE, THE CONTRACTOR SHALL DISPOSE OF THEM.

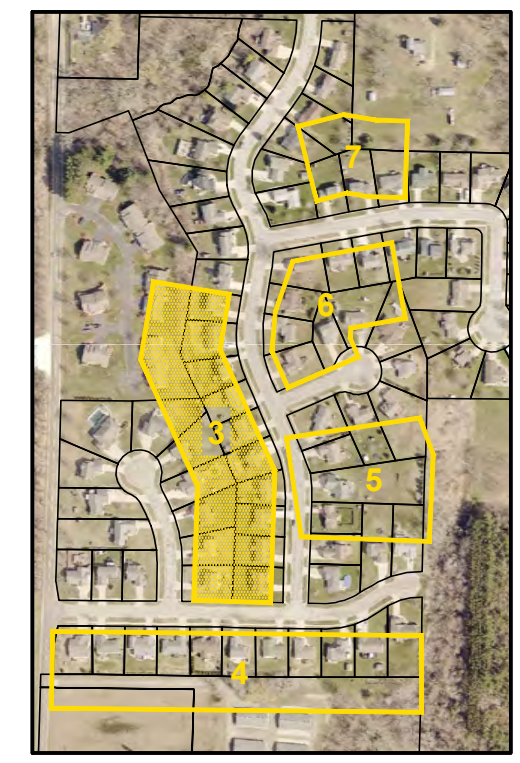
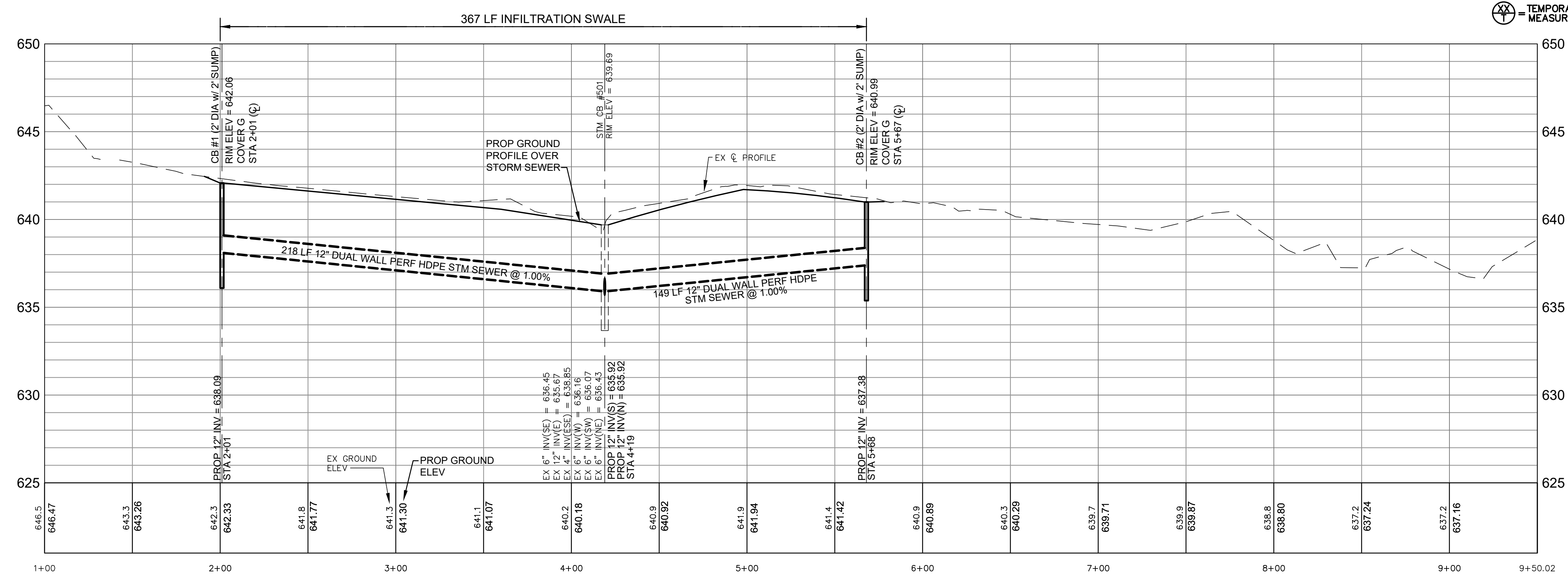
SOIL TYPES AND ABBREVIATIONS	
BeB	Belding sandy loam, 0 to 2 percent slopes
NeC	Onekema loam, Lake Michigan Lobe, 6 to 12 percent slopes
RcB	Richter sandy loam, 2 to 6 percent slopes
SnkabB	Spinks-Fern complex, 2 to 6 percent slopes

WORK ITEM	LOCATION	QUANTITY
FENCE REMOVAL & REPLACEMENT	SEE PLAN VIEW	170 LF
TREE REMOVAL, 6-18 INCH DIA.	WHERE NEEDED	2 EA
6-INCH SDR 26 PVC STORM SEWER	SEE PLAN VIEW	90 LF
12-INCH DUAL WALL PERF HDPE STORM SEWER	STA 2+01 TO 4+19 STA 4+19 TO 5+69	367 LF
2-FOOT DIA DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+01 STA 5+69	2 EA
DR STRUCTURE TAP, 12 INCH	STA 4+19	2 EA
INFILTRATION SWALE	STA 2+01 TO STA 5+69	367 LFT
SURFACE RESTORATION	EASEMENT LIMITS	900 SYD

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

1	SEEDING	When bare soil is exposed, temporarily or permanently, to erode forces from wind and/or water on flat areas, mild slopes, graded embankments and ditches, borrow and stockpile areas, and spoil piles.
2	MULCH	On flat areas, mild slopes, graded embankments and ditches, diversion ditches and dikes, borrow and stockpile areas, and spoil piles where areas are subject to rindrop impact, and erode forces from wind or water.
15	Staking	Protects areas which cannot otherwise be protected, but increases runoff volume and velocity. Irregular surface will help slow velocity.
16	Curb and Gutter	Keeps high velocity runoff on paved areas from leaving paved surface. Collects and conducts runoff to enclosed drainage system or prepared drainage.
41	CATCH BASIN	Where surface water accumulates and needs an outlet or an open drain discharges to a stream or drain at erode velocities. Within an enclosed drain system to provide an inlet and a sump.
56	Street Sweeping	Remove sediment from pavement minimizing non-point source pollution.
61	SILT FENCE	As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.

⊕ = TEMPORARY MEASURE ⊕ = PERMANENT MEASURE



PLAN AND PROFILE #1 - RIDGEFIELD DRIVE

4063 Grand Oak Drive Suite A109
 Lansing, MI 48911
 517.887.1100

16930 Robbins Road Suite 105
 Grand Haven, MI 49417
 616.743.7070
 engdol.com

Eng
 Engineering & Surveying

JOE BUSH
 OTTAWA COUNTY WATER RESOURCES COMMISSIONER

MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
 SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
3 OF 8

BENCHMARK #2: ELEV 646.84

NNW FLANGE BOLT ON HYDRANT AT NE CORNER OF RIDGEFIELD DR AND FIELDSTONE DR

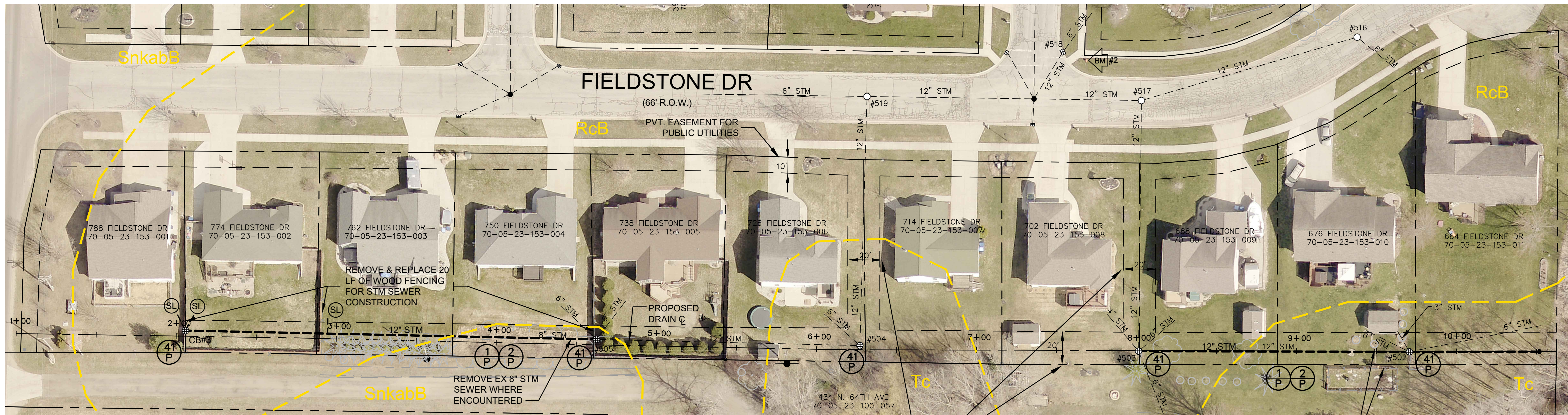


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- ⊕ = EXISTING MAILBOX
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- ⊕ = EXISTING GUY ANCHOR
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- ⊕ = EXISTING TELEPHONE PEDESTAL
- = EXISTING DRAIN Ⓢ
- = PROPOSED TOP OF BANK
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- ⊕ = PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
- = EXISTING DRAINAGE EASEMENT
- = PROPOSED DRAINAGE EASEMENT
- ⊕ = SUMP LEAD



- CONSTRUCTION NOTES:**
- SAW CUT AND REMOVE HMA ROADWAY AND DRIVEWAYS ONLY AT LIMITS OF CONSTRUCTION AS STAKED BY THE ENGINEER. PAVEMENT NOT SPECIFIED FOR REMOVAL AND DAMAGED BY WORK OPERATIONS SHALL BE REPAIRED AND COSTS BORNE BY THE CONTRACTOR.
 - VERIFY ELEVATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION OF STORM SEWER WHERE CONFLICTS MAY EXIST. CLEARING THAT INCLUDES CUTTING AN REMOVAL OF TREES BRUSH AND SHRUBS UP TO 6 INCHES AS MEASURED AT BREAST HEIGHT (DBH) SHALL BE CONSIDERED AS INCLUDED WITH OTHER RELATED PAY ITEMS.
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 - ALL SPOIL MATERIALS, INCLUDING HMA AND CONCRETE, SHALL BE REMOVED FROM THE SITE IMMEDIATELY. NO STOCKPILING OF SPOIL MATERIALS WILL BE ALLOWED UNLESS APPROVED IN WRITING BY THE ENGINEER.
 - ALL NEW CONNECTIONS INTO EXISTING STRUCTURES SHALL BE PROFESSIONALLY CORED.
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 - EXISTING TREES AND SHRUBS SHOWN AS BEING REMOVED AND/OR SALVAGED ON THE DRAWINGS, SHALL BE COORDINATED WITH EACH HOMEOWNER. IF THE HOMEOWNER WISHES TO SALVAGE THE EXISTING TREE AND/OR SHRUBS, THE CONTRACTOR SHALL SALVAGE EACH FOR THE HOMEOWNERS REPLANTING OUTSIDE OF THE EASEMENT. IF THEY DO NOT WISH TO SALVAGE, THE CONTRACTOR SHALL DISPOSE OF THEM.

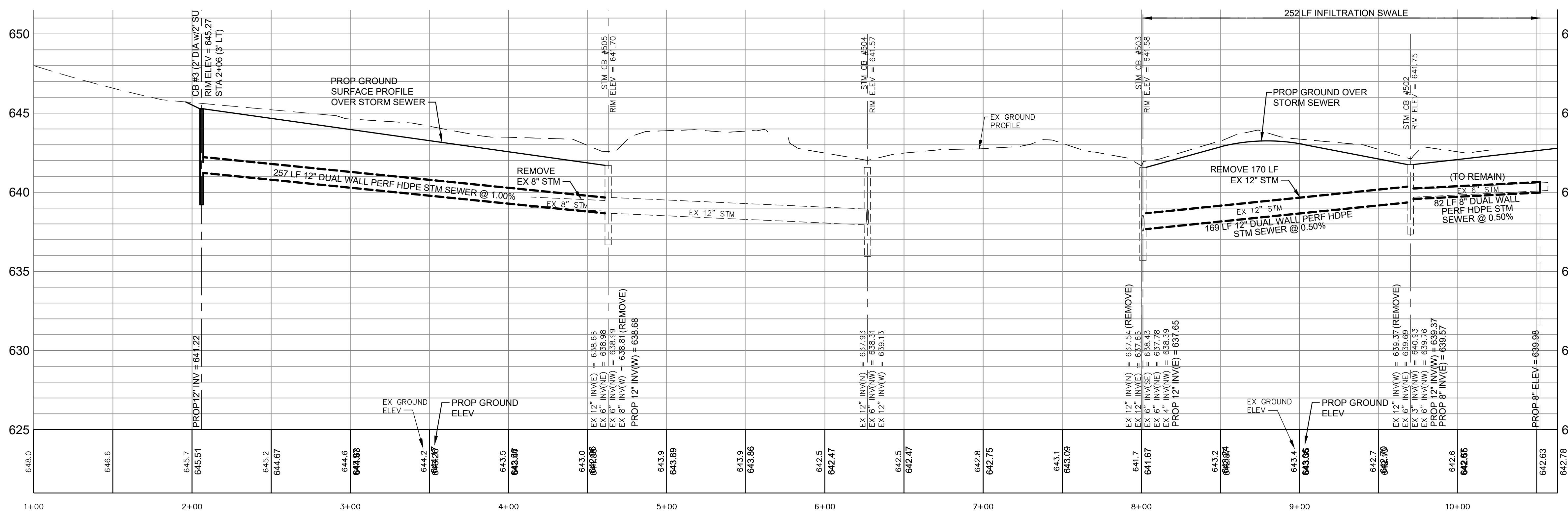
SOIL TYPES AND ABBREVIATIONS	
RcB	Richter sandy loam, 2 to 6 percent slopes
SnkabB	Spinks-Fern complex, 2 to 6 percent slopes
Tc	Toledo silty clay loam

WORK ITEM	LOCATION	QUANTITY
STORM SEWER REMOVAL, LESS THAN 36"	WHERE ENCOUNTERED	230 LF
FENCE REMOVAL & REPLACEMENT	SEE PLAN VIEW	60 LF
TREE REMOVAL, 6-18 INCH DIA.	WHERE NEEDED	2 EA
6-INCH SDR26 PVC STORM SEWER	SEE PLAN VIEW	30 LF
8-INCH DUAL WALL PERF HDPE STORM SEWER	STA 9+70 TO 10+52	80 LF
12-INCH DUAL WALL PERF HDPE STORM SEWER	STA 2+06 TO 4+63 STA 8+01 TO 9+70	426 LF
2-FOOT DIA DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+06	1 EA
DRAINAGE STRUCTURE TAP, 8 INCH	STA 9+70	1 EA
DRAINAGE STRUCTURE TAP, 12 INCH	STA 4+63	1 EA
INFILTRATION SWALE	STA 2+06 TO 4+63 STA 8+01 TO 10+57	509 LF
SURFACE RESTORATION	EASEMENT LIMITS	1000 SYD

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

- | | | |
|----|-------------------|---|
| 1 | SEEDING | When bare soil is exposed, temporarily or permanently, to erosion forces from wind and/or water on flat areas, mild slopes, grassed waterways and spillways, driveway ditches and dikes, borrow and stockpile areas, and spoil piles. |
| 2 | MULCH | On flat areas, mild slopes, grassed waterways and spillways, driveway ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to raindrop impact, and erosive forces from wind or water. |
| 15 | Paving | Protects areas which cannot otherwise be protected, but increases runoff volume and velocity. Irregular surface will help slow velocity. |
| 16 | Curbs and Gutters | Keeps high velocity runoff on paved areas from leaving paved surface. Controls and conducts runoff to enclosed drainage system or prepared drainage. |
| 41 | CATCH BASIN | Where surface water accumulates and needs an outlet or an open drain discharged to a stream or drain at engine velocities. With an enclosed drain system to provide an inlet and a sump. |
| 56 | Sewer Sweeping | Remove sediment from pavement minimizing non-point source pollution. |
| 61 | SILT FENCE | As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected areas. |

⊕ = TEMPORARY MEASURE
⊕ = PERMANENT MEASURE



SCALE:
HORIZONTAL 1" = 40'
VERTICAL 1" = 4'



PLAN AND PROFILE #2 -
FIELDSTONE DRIVE

NO.	REVISIONS	DATE	BY

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.887.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070

engdol.com



JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER

MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
4 OF 8



SCALE: 1" = 40'

PVT. EASEMENT FOR PUBLIC UTILITIES

CONSTRUCTION NOTES:

1. SAW CUT AND REMOVE HMA ROADWAY AND DRIVEWAYS ONLY AT LIMITS OF CONSTRUCTION AS STAKED BY THE ENGINEER. PAVEMENT NOT SPECIFIED FOR REMOVAL AND DAMAGED BY WORK OPERATIONS SHALL BE REPAIRED AND COSTS BORNE BY THE CONTRACTOR.
2. VERIFY ELEVATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION OF STORM SEWER WHERE CONFLICTS MAY EXIST. CLEARING THAT INCLUDES CUTTING AN REMOVAL OF TREES, BRUSH AND SHRUBS UP TO 6 INCHES AS MEASURED AT BREAST HEIGHT (DBH) SHALL BE CONSIDERED AS INCLUDED WITH OTHER RELATED PAY ITEMS.
3. THE SIZE, TYPE AND LOCATION OF THE EXISTING UTILITY INFORMATION SHOWN ON THIS DRAWING ARE FROM RECORD DRAWINGS MADE AVAILABLE TO ENG. THIS PLAN IS NOT INTENDED FROM THE PURPOSE OF FIELD LOCATING UTILITIES. NOTIFY MISS DIG FOR ACTUAL FIELD LOCATIONS OF UNDERGROUND UTILITIES.
4. ALL SPOIL MATERIALS, INCLUDING HMA AND CONCRETE, SHALL BE REMOVED FROM THE SITE IMMEDIATELY. NO STOCKPILING OF SPOIL MATERIALS WILL BE ALLOWED UNLESS APPROVED IN WRITING BY THE ENGINEER.
5. ALL NEW CONNECTIONS INTO EXISTING STRUCTURES SHALL BE PROFESSIONALLY CORED.
6. REMOVAL AND REINSTALLATION OF LANDSCAPING ITEMS AS NOTED ON THE DRAWINGS SHALL BE CONSIDERED AS INCLUDED WITH THE PAY ITEM BEING INSTALLED.
7. EXISTING TREES AND SHRUBS SHOWN AS BEING REMOVED AND/OR SALVAGED ON THE DRAWINGS, SHALL BE COORDINATED WITH EACH HOMEOWNER. IF THE HOMEOWNER WISHES TO SALVAGE THE EXISTING TREE AND/OR SHRUBS, THE CONTRACTOR SHALL SALVAGE EACH FOR THE HOMEOWNERS REPLANTING OUTSIDE OF THE EASEMENT. IF THEY DO NOT WISH TO SALVAGE, THE CONTRACTOR SHALL DISPOSE OF THEM.

BENCHMARK #1: ELEV 647.76
ENE FLANGE BOLT ON HYDRANT AT SE CORNER OF RIDGEFIELD DR AND RIDGEFIELD CT

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

LEGEND

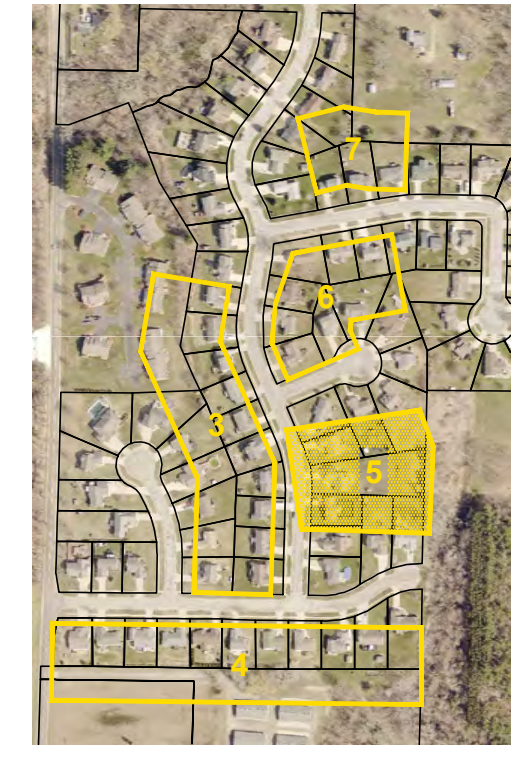
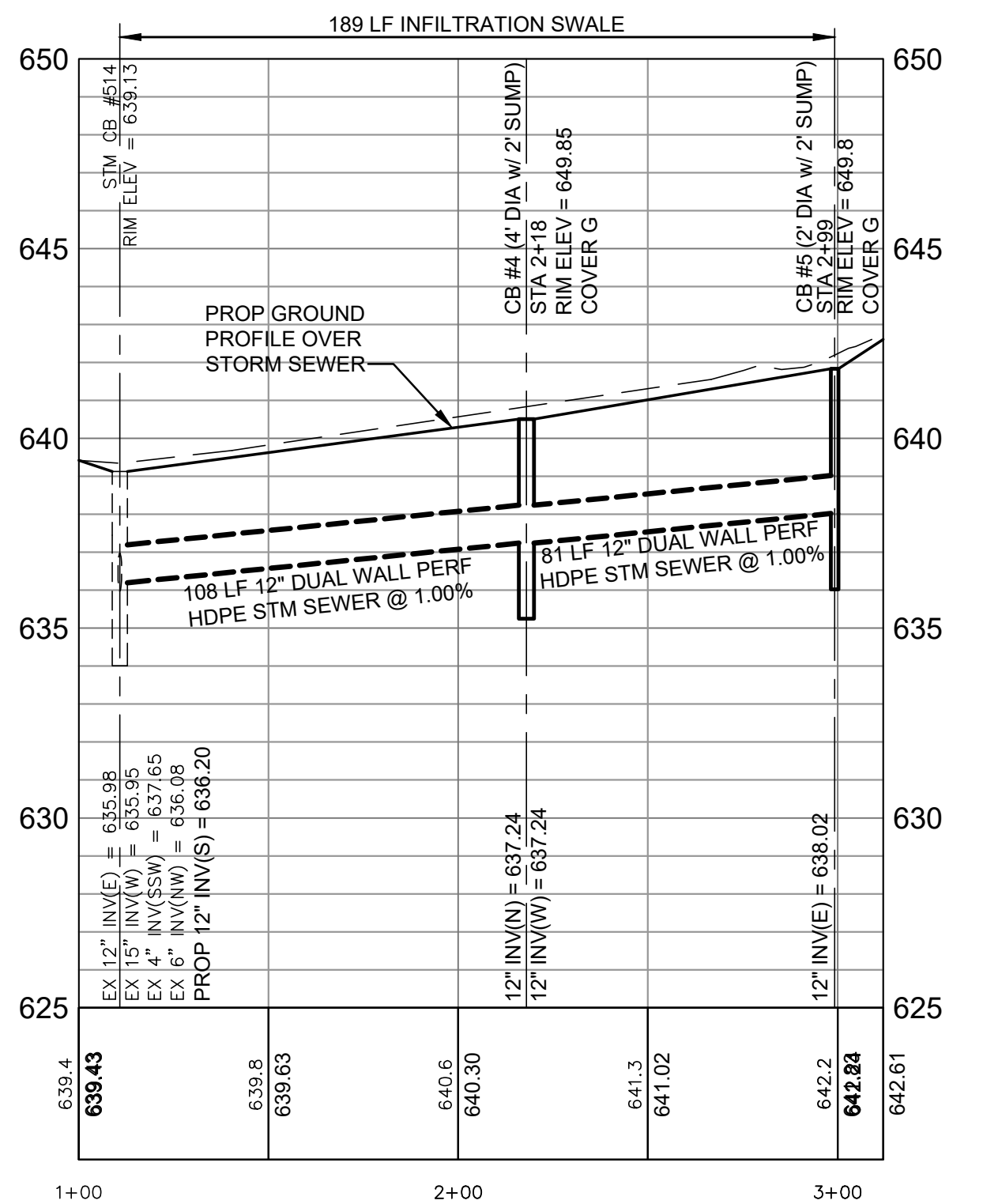
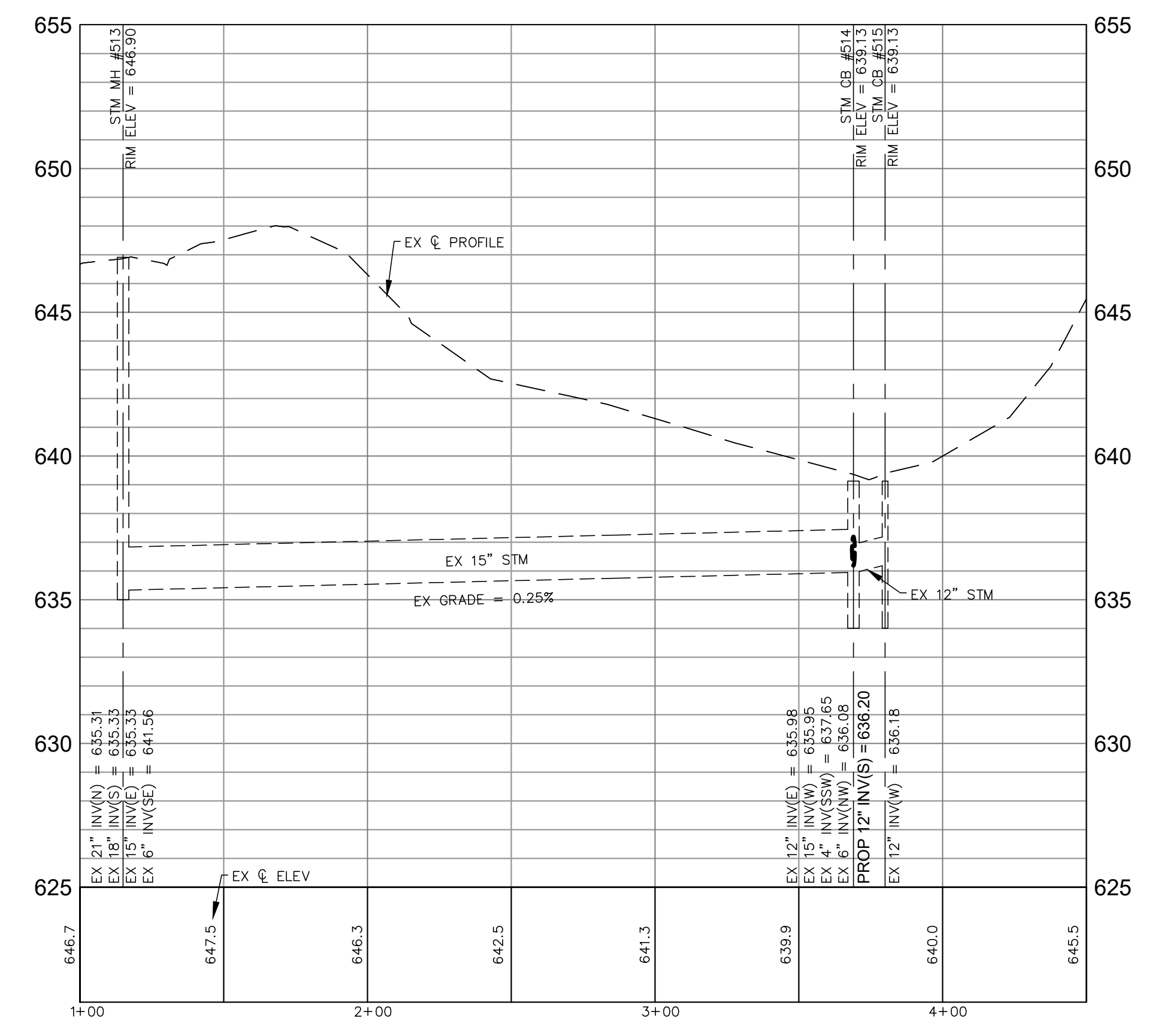
- = PROPERTY LINE OR R.O.W. LINE
- = EDGE OF PAVEMENT
- X — = FENCE
- = EXISTING GUARDRAIL
- = WETLANDS (AS MARKED BY OTHERS)
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = EDGE OF WOODS
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = BUSH
- = STUMP
- = EXISTING GAS LINE
- = EXISTING STORM SEWER
- = EXISTING SANITARY SEWER
- = EXISTING MANHOLE
- ⊕ = EXISTING STORM CATCH BASIN
- ⊙ = EXISTING WELL LOCATION
- ⊗ = EXISTING WATER VALVE
- ⊙ = EXISTING CURB STOP / METER
- ⊕ = EXISTING CATCH BASIN
- ⊕ = BENCH MARK LOCATION
- ⊕ = EXISTING SIGN
- ⊕ = EXISTING MAILBOX
- ⊕ = EXISTING LIGHT POLE
- ⊕ = EXISTING GUY ANCHOR
- ⊕ = EXISTING UTILITY POLE
- ⊕ = EXISTING TELEPHONE PEDESTAL
- = EXISTING DRAIN
- = PROPOSED DRAIN
- = PROPOSED TOP OF BANK
- La — = SOIL TYPE
- ⊕ = TEMPORARY SOIL EROSION CONTROL MEASURE
- ⊕ = PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
- = EXISTING DRAINAGE EASEMENT
- = PROPOSED DRAINAGE EASEMENT
- = EXISTING DRAINAGE EASEMENT
- = PROPOSED DRAINAGE EASEMENT
- SL = SUMP LEAD

SOIL TYPES AND ABBREVIATIONS	
BeB	Belding sandy loam, 2 to 6 percent slopes
Rcb	Richter sandy loam, 2 to 6 percent slopes
SnkabB	Spinks-Fern complex, 2 to 6 percent slopes

WORK ITEM	LOCATION	QUANTITY
STORM SEWER REMOVAL, LESS THAN 36"	WHERE ENCOUNTERED	110 LF
12-INCH DUAL WALL PERF HDPE STORM SEWER	STA 1+10 TO 2+99	189 LF
2-FOOT DIA. DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+99	1 EA
4-FOOT DIA. DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+18	1 EA
DRAINAGE STRUCTURE TAP, 12 INCH	STA 1+10	1 EA
INFILTRATION SWALE	STA 1+10 TO STA 2+99	189 LF
6-INCH SDR-26 PVC STORM SEWER	SEE PLAN VIEW	30 LF
SURFACE RESTORATION	EASEMENT LIMITS	400 SYD

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

- | | | |
|----|-----------------|--|
| 1 | SEEDING | When bare soil is exposed, temporarily or permanently, to erode forces from wind and/or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spot sites when areas are subject to rainfall impact, and erode forces from wind or water. |
| 2 | MULCH | On flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spot sites when areas are subject to rainfall impact, and erode forces from wind or water. |
| 15 | Posting | Protects areas which cannot otherwise be protected, but increases runoff volume and velocity. Irregular surface will help slow velocity. |
| 16 | Curb and Gutter | Keeps high velocity runoff on paved areas from leaving paved surface. Collects and conducts runoff to enclosed drainage system or prepared abutment. |
| 41 | CATCH BASIN | Where surface water accumulates and needs an outlet or an open drain discharges to a stream or drain of equal velocities. Within an enclosed drain system to provide an inlet and a sump. |
| 56 | Street Sweeping | Remove sediment from pavement minimizing non-point source pollution. |
| 61 | SILT FENCE | As a temporary measure used to capture sediment from sheet flow. May use sheet small volumes of sheet flow to protect outlets. |
- ⊕ = TEMPORARY MEASURE
⊕ = PERMANENT MEASURE



PLAN AND PROFILE #3 - RIDGEFIELD DRIVE

Eng
Engineering & Surveying

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Lansing, MI 48911
517.867.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070
engdol.com

NO.	REVISIONS	DATE	BY

JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER

MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
5 OF 8

BENCHMARK #1: ELEV 647.76
 ENR FLANGE BOLT ON HYDRANT AT
 SE CORNER OF RIDGEFIELD DR AND
 RIDGEFIELD CT



Know what's below.
 Call before you dig.

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NO.	DATE	BY	REVISIONS

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 Lansing, MI 48911
 517.887.1100

16930 Robbins Road Suite 105
 Grand Haven, MI 49417
 616.743.7070

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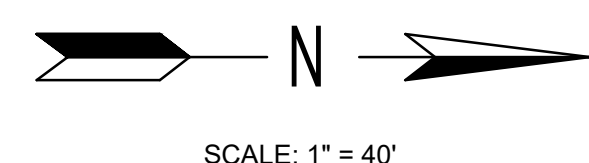
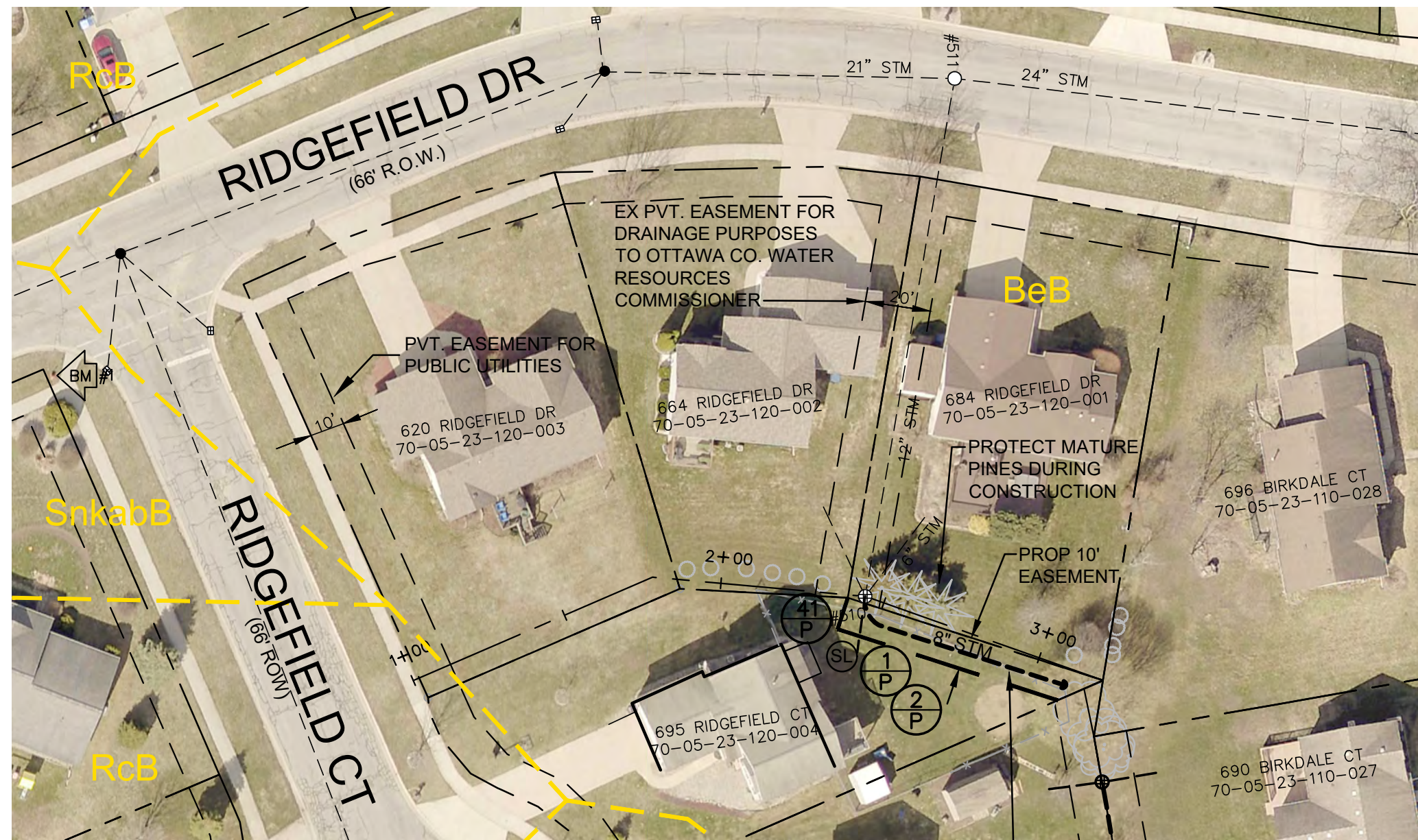


JOE BUSH
 OTTAWA COUNTY WATER RESOURCES COMMISSIONER

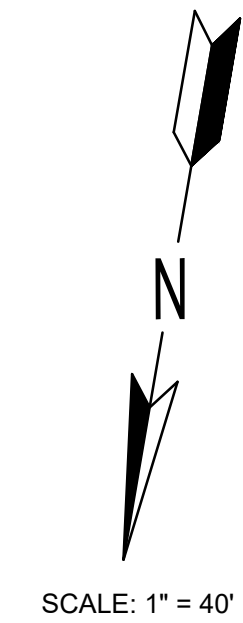
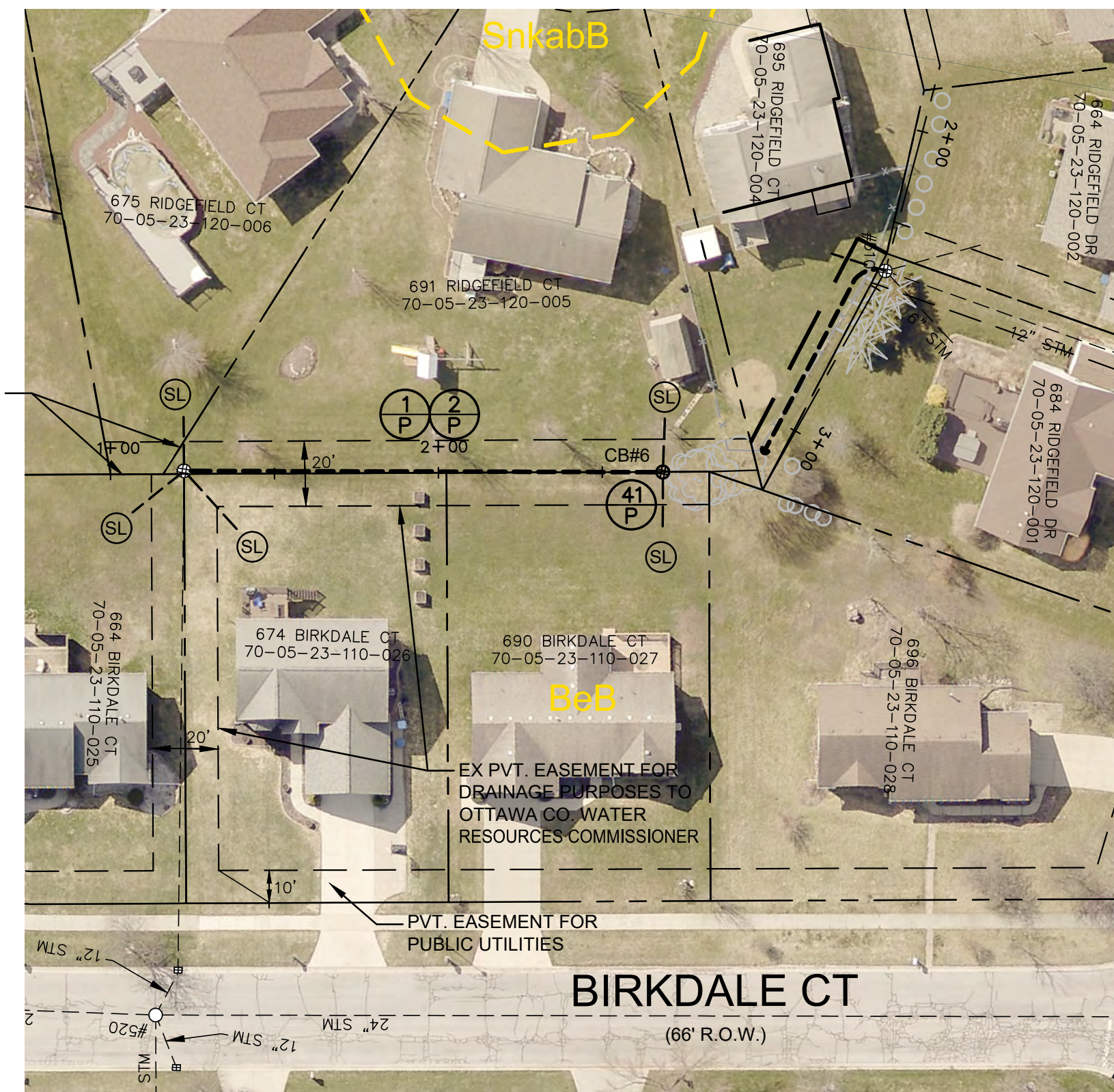
MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
 SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
6 OF 8



REMOVE AND REPLACE FENCING FOR CONSTRUCTION



LEGEND	
	= PROPERTY LINE OR R.O.W. LINE
	= EDGE OF PAVEMENT
	= FENCE
	= EXISTING GUARDRAIL
	= WETLANDS (AS MARKED BY OTHERS)
	= EXISTING SPOT ELEVATION
	= EXISTING CONTOUR ELEVATION
	= EDGE OF WOODS
	= DECIDUOUS TREE
	= CONIFEROUS TREE
	= BUSH
	= STUMP
	= EXISTING GAS LINE
	= EXISTING STORM SEWER
	= EXISTING SANITARY SEWER
	= EXISTING MANHOLE
	= EXISTING STORM CATCH BASIN
	= EXISTING WELL LOCATION
	= EXISTING WATER VALVE
	= EXISTING CURB STOP / METER
	= EXISTING CATCH BASIN
	= BENCH MARK LOCATION
	= EXISTING SIGN
	= EXISTING MAILBOX
	= EXISTING LIGHT POLE
	= EXISTING GUY ANCHOR
	= EXISTING UTILITY POLE
	= EXISTING TELEPHONE PEDESTAL
	= EXISTING DRAIN
	= PROPOSED DRAIN
	= PROPOSED TOP OF BANK
	= SOIL TYPE
	= TEMPORARY SOIL EROSION CONTROL MEASURE
	= PERMANENT SOIL EROSION CONTROL MEASURE OR RESTORATION DETAIL
	= EXISTING DRAINAGE EASEMENT
	= PROPOSED DRAINAGE EASEMENT
	= EXISTING DRAINAGE EASEMENT
	= PROPOSED DRAINAGE EASEMENT
	= SUMP LEAD

CONSTRUCTION NOTES:

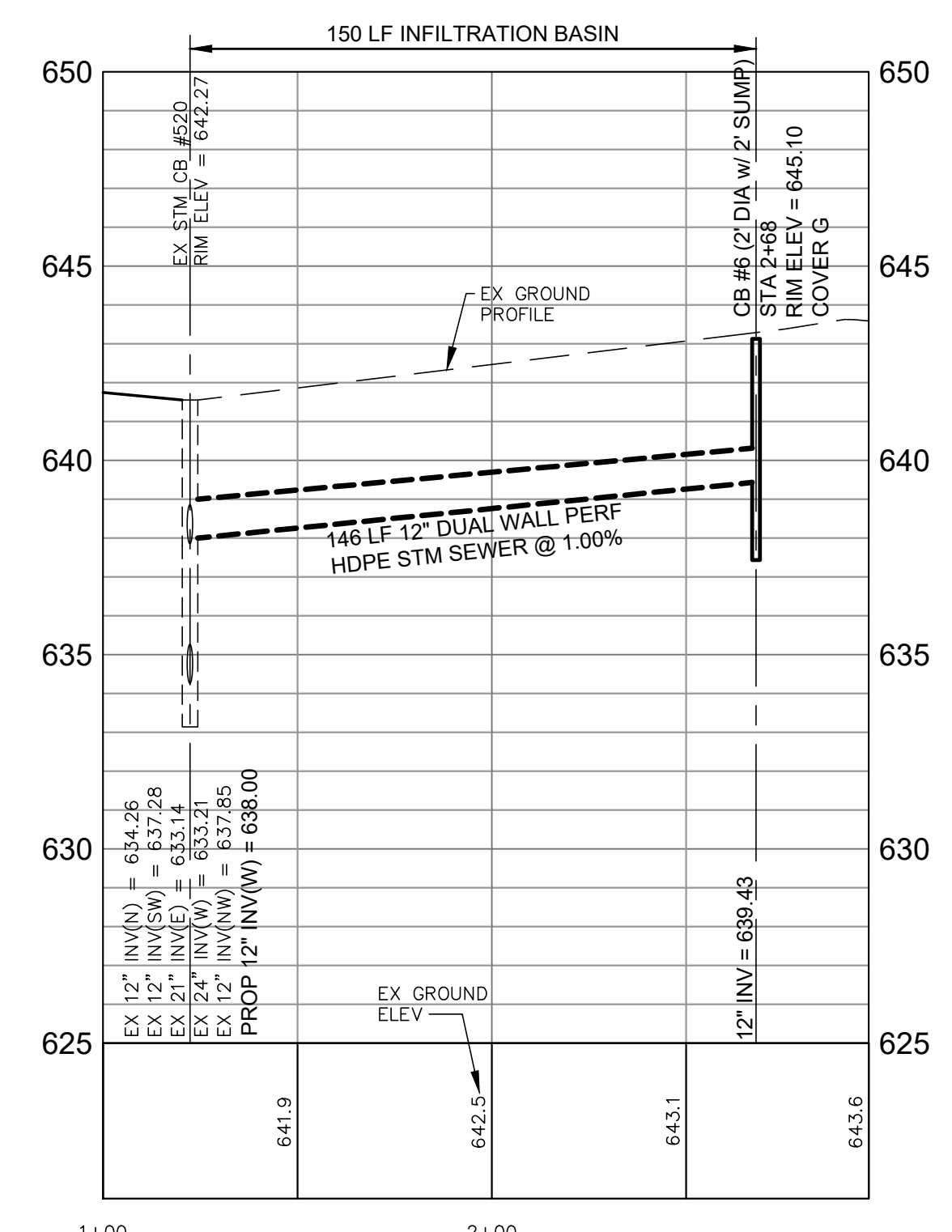
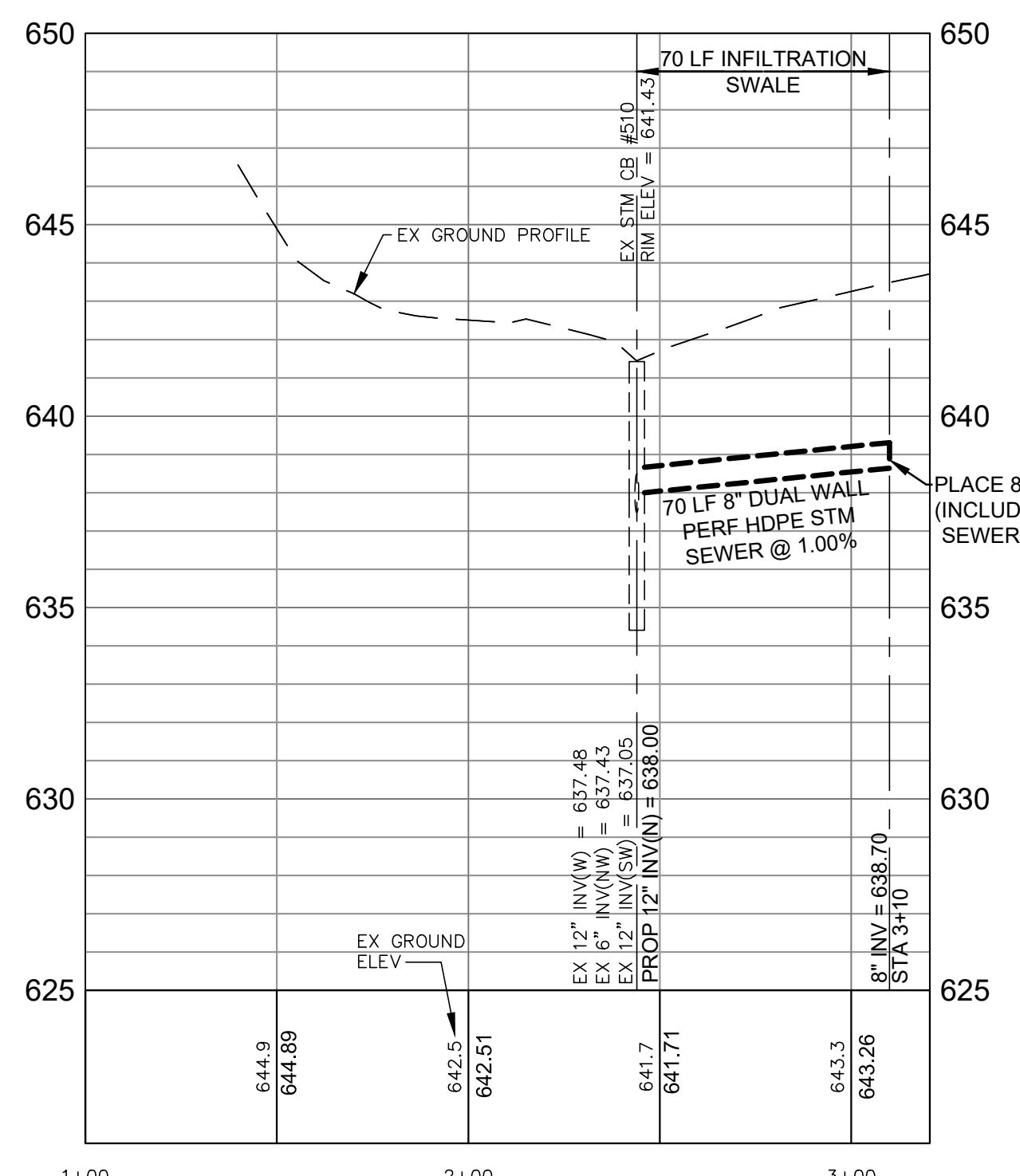
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SOIL TYPES AND ABBREVIATIONS	
BeB	Belding sandy loam, 2 to 6 percent slopes
RcB	Richter sandy loam, 2 to 6 percent slopes
SnkabB	Spinks-Fern complex, 2 to 6 percent slopes

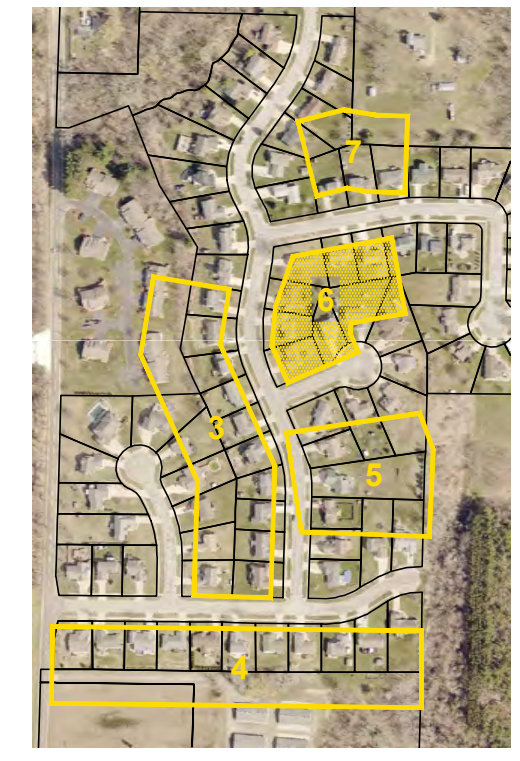
SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

1	SEEDING	When bare soil is exposed, temporarily or permanently, to erode forces from wind and/or water on flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles.
2	MULCH	On flat areas, mild slopes, grassed waterways and spillways, diversion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to rollover impact, and erosive forces from wind or water.
15	Paving	Protects areas which cannot otherwise be protected, but increases runoff volume and velocity.
16	Curb and Gutter	Keeps high velocity runoff on paved areas from leaving paved surface. Collects and conducts runoff to enclosed drainage system or prepared drainage way.
41	CATCH BASIN	Where surface water accumulates and needs an outlet or an open drain discharge to a stream or drain at erode velocities. Within an enclosed drain system to provide an inlet and a sump.
56	Sheet Piling	Remove sediment from pavement minimizing non-point source pollution.
61	SILT FENCE	As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.

= TEMPORARY MEASURE
 = PERMANENT MEASURE



WORK ITEM	LOCATION	QUANTITY
6-INCH SDR26 PVC STORM SEWER	SEE PLAN VIEW	70 LF
8-INCH DUAL WALL PERF HDPE STORM SEWER	STA 2+44 TO 3+10	70 LF
12-INCH DUAL WALL PERF HDPE STORM SEWER	STA 1+22 TO 2+68	146 LF
2-FOOT DIA. DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+68	1 EA
DRAINAGE STRUCTURE TAP, 8 INCH	STA 2+44	1 EA
DRAINAGE STRUCTURE TAP, 12 INCH	STA 1+22 TO 2+68	1 EA
INFILTRATION SWALE	STA 2+44 TO 3+10	220 LF
SURFACE RESTORATION	EASEMENT LIMITS	450 SYD
FENCE REMOVAL AND REPLACEMENT	STA 2+44 TO 3+10	70 LF



KEY PLAN
 NO SCALE

PLAN AND PROFILE #4 -
 RIDGEFIELD DRIVE &
 BIRKDALE COURT

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BENCHMARK #3: ELEV 645.40

NE FLANGE BOLT ON HYDRANT AT NE CORNER OF BIRKDALE CT AND RIDGEFIELD DR



Know what's below.
Call before you dig.

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DATE	BY	REVISIONS
JUR		
Date		
2/29/21		
Approved By		
Date		

4063 Grand Oak Drive Suite A109
Lansing, MI 48911
517.867.1100

16930 Robbins Road Suite 105
Grand Haven, MI 49417
616.743.7070
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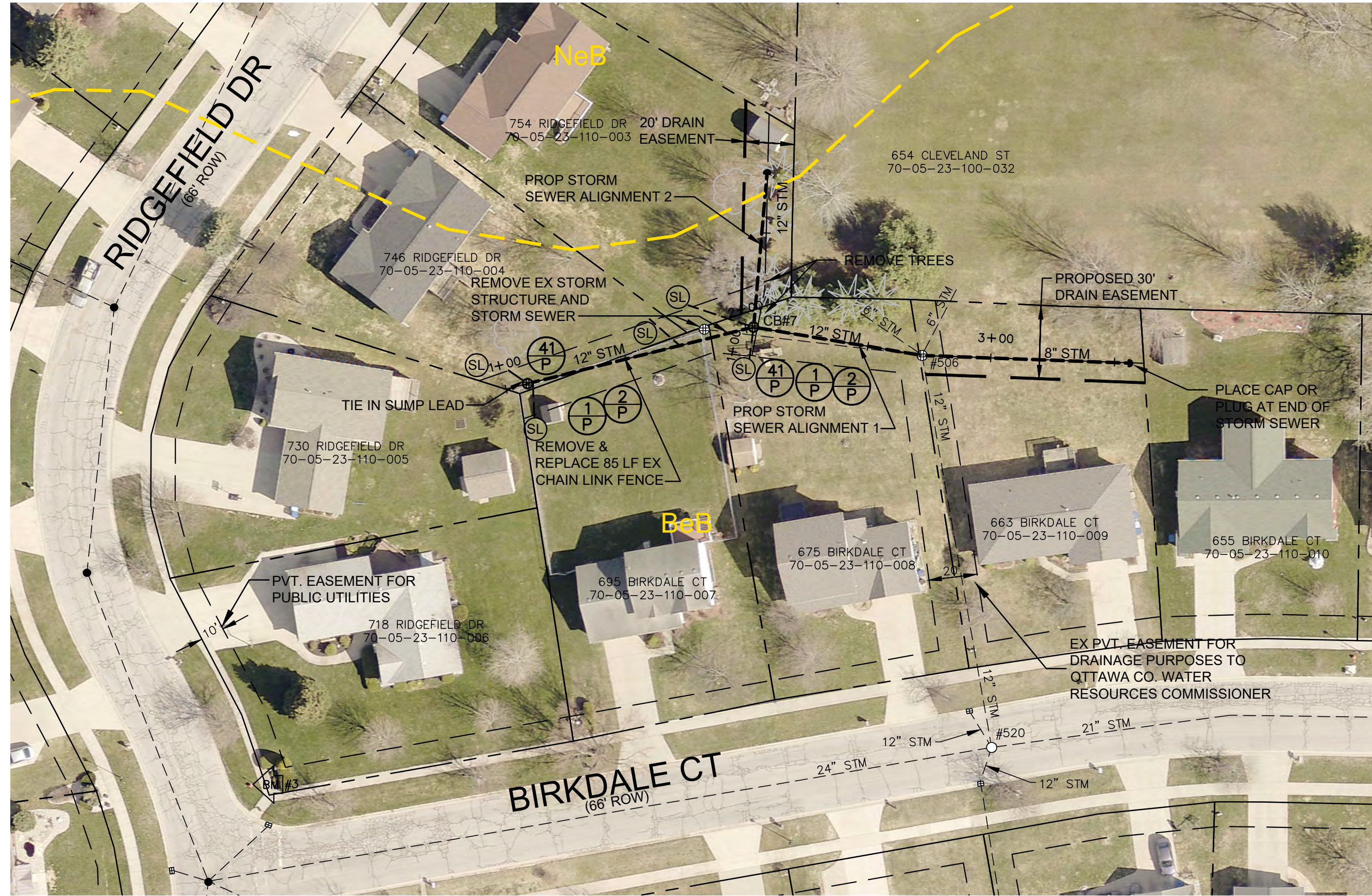


JOE BUSH
OTTAWA COUNTY WATER RESOURCES COMMISSIONER

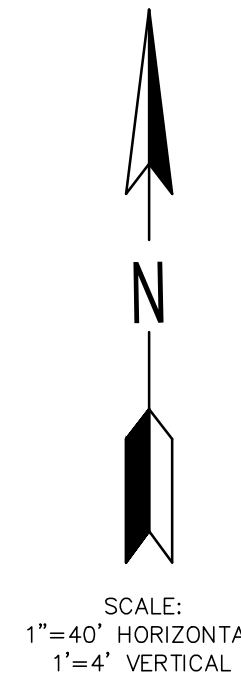
MEADOW GREEN ESTATES NO. 3 DRAIN DISTRICT
SECTIONS 22 & 23, CITY OF COOPERSVILLE, T8N, R14W, OTTAWA COUNTY, MICHIGAN

PROJECT NO.
19045

SHEET NO.
7 OF 8



- CONSTRUCTION NOTES:
1. SAW CUT AND REMOVE HMA ROADWAY AND DRIVEWAYS ONLY AT LIMITS OF CONSTRUCTION AS STAKED BY THE ENGINEER. PAVEMENT NOT SPECIFIED FOR REMOVAL AND DAMAGED BY WORK OPERATIONS SHALL BE REPAIRED AND COSTS BORNE BY THE CONTRACTOR.
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SOIL TYPES AND ABBREVIATIONS	
BeB	Belding sandy loam, 2 to 6 percent slopes
NeB	Perrinton loam, Lake Michigan Lobe, 2 to 6 percent slopes

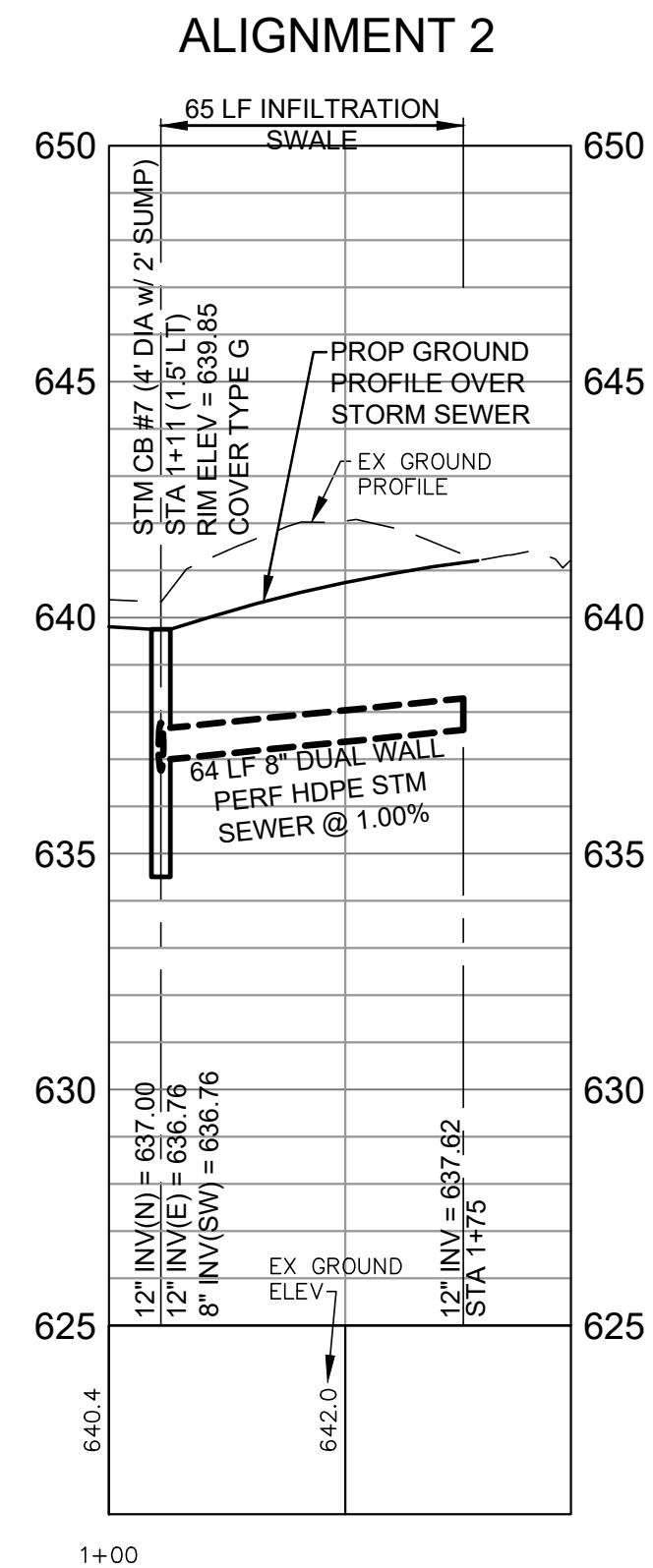
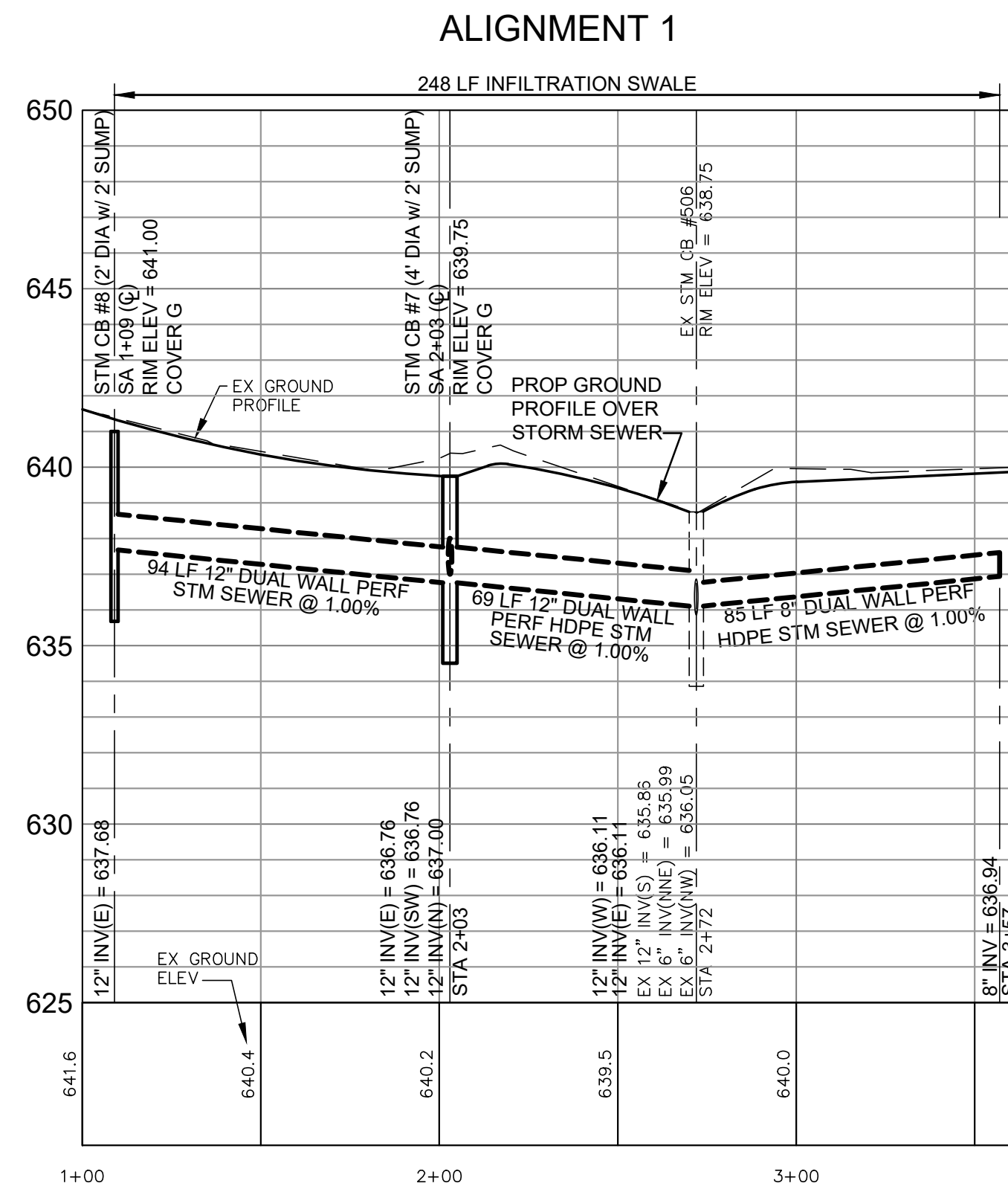
LEGEND	
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	EXISTING MANHOLE
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	EXISTING WATER VALVE
	EXISTING CURB STOP / METER
	EXISTING CATCH BASIN
	BENCH MARK LOCATION
	EXISTING SIGN
	EXISTING MAILBOX
	EXISTING LIGHT POLE
	EXISTING GUY ANCHOR
	EXISTING UTILITY POLE
	EXISTING TELEPHONE PEDESTAL
	EXISTING DRAIN C
	PROPOSED DRAIN C
	PROPOSED TOP OF BANK
	SOIL TYPE
	TEMPORARY SOIL EROSION CONTROL MEASURE
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	EXISTING DRAINAGE EASEMENT
	PROPOSED DRAINAGE EASEMENT
	EXISTING DRAINAGE EASEMENT
	PROPOSED DRAINAGE EASEMENT
	SUMP LEAD

WORK ITEM	LOCATION	QUANTITY
SEWER REMOVAL, LESS THAN 36"		88 LF
DRAINAGE STRUCTURE REMOVAL		1 EA
FENCE REMOVAL & REPLACEMENT	SEE PLAN VIEW	85 LF
TREE REMOVAL, 6-18 INCH DIA	WHERE NEEDED	5 EA
12-INCH DUAL WALL PERF HDPE STORM SEWER	STA 1+09 TO 3+57 STA 1+11 TO 1+75	163 LF
4-FOOT DIA. DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 2+03	1 EA
DR STRUCTURE TAP, 12 INCH	STA 2+72	1 EA
INFILTRATION SWALE	STA 1+09 TO 3+57 STA 1+11 TO 1+75	315 LF
2-FOOT DIA. DRAINAGE STRUCTURE (W/ 2' SUMP)	STA 1+09	1 EA
6-INCH SDR26 PVC STORM SEWER	SEE PLAN VIEW	50 LF
DR STRUCTURE TAP, 8 INCH	STA 2+72	1 EA
8-INCH DUAL WALL PERF HDPE STORM SEWER	STA 1+11 TO 1+75 STA 2+72 TO 3+57	149 LF
SURFACE RESTORATION	EASEMENT LIMITS	700 SYD

SOIL EROSION AND SEDIMENTATION CONTROL MEASURES

1	SEEDING	When bare soil is exposed, temporarily or permanently, to erode forces from wind and/or water on flat areas, mild slopes, graded waterways and spillways, erosion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to rainfall impact, and erode forces from wind or water.
2	MULCH	On flat areas, mild slopes, graded waterways and spillways, erosion ditches and dikes, borrow and stockpile areas, and spoil piles when areas are subject to rainfall impact, and erode forces from wind or water.
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16	Curb and Gutter	Keeps high velocity runoff on paved areas from leaving paved surface. Collects and conducts runoff to enclosed drainage system or prepared drainage.
41	CATCH BASIN	Where surface water accumulates and needs an outlet or an open drain discharges to a stream or drain at erodible velocities. Within an enclosed drain system to provide an inlet and a sump.
56	Street Sweeping	Remove sediment from pavement minimizing non-point source pollution.
61	SILT FENCE	As a temporary measure used to capture sediment from sheet flow. May also divert small volumes of sheet flow to protected outlets.

= TEMPORARY MEASURE
 = PERMANENT MEASURE



KEY PLAN
NO SCALE

PLAN AND PROFILE #4 -
RIDGEFIELD DRIVE AND
BIRKDALE COURT

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