```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           CFS
INFILTRATION         CURVE_NUMBER
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         ELEVATION
MIN_SLOPE            0
ALLOW_PONDING        NO
SKIP_STEADY_STATE    NO

START_DATE           09/17/2017
START_TIME           00:00:00
REPORT_START_DATE    09/17/2017
REPORT_START_TIME    00:00:00
END_DATE             09/20/2017
END_TIME             23:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:15:00
WET_STEP             00:05:00
DRY_STEP             01:00:00
ROUTING_STEP         0:00:05
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0.75
LENGTHENING_STEP     0
MIN_SURFAREA         12.557
MAX_TRIALS           8
HEAD_TOLERANCE       0.005
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
THREADS              1

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- ------ ------ ----------
RG-Huff          CUMULATIVE 1:00     1.0      TIMESERIES 024Huff3Q100_75
RG-100_75003     CUMULATIVE 0:07:30  1.0      TIMESERIES 003Huff1Q100_75
RG-100_75006     CUMULATIVE 0:15     1.0      TIMESERIES 006Huff2Q100_75
RG-100_75012     CUMULATIVE 0:30     1.0      TIMESERIES 012Huff2Q100_75
RG-100_75018     CUMULATIVE 0:45     1.0      TIMESERIES 018Huff2Q100_75
RG-100_75024     CUMULATIVE 1:00     1.0      TIMESERIES 024Huff3Q100_75
RG-100_75048     CUMULATIVE 2:00     1.0      TIMESERIES 048Huff4Q100_75
RG-100_75072     CUMULATIVE 3:00     1.0      TIMESERIES 072Huff4Q100_75
RG-100_75120     CUMULATIVE 5:00     1.0      TIMESERIES 120Huff4Q100_75
RG-100_75240     CUMULATIVE 10:00    1.0      TIMESERIES 240Huff4Q100_75
RG-2_75003       CUMULATIVE 0:07:30  1.0      TIMESERIES 003Huff1Q2_75
RG-2_75006       CUMULATIVE 0:15     1.0      TIMESERIES 006Huff2Q2_75
RG-2_75012       CUMULATIVE 0:30     1.0      TIMESERIES 012Huff2Q2_75
RG-2_75018       CUMULATIVE 0:45     1.0      TIMESERIES 018Huff2Q2_75
RG-2_75024       CUMULATIVE 1:00     1.0      TIMESERIES 024Huff3Q2_75
RG-2_75048       CUMULATIVE 2:00     1.0      TIMESERIES 048Huff4Q2_75
RG-2_75072       CUMULATIVE 3:00     1.0      TIMESERIES 072Huff4Q2_75
RG-2_75120       CUMULATIVE 5:00     1.0      TIMESERIES 120Huff4Q2_75
RG-2_75240       CUMULATIVE 10:00    1.0      TIMESERIES 240Huff4Q2_75

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack
;;-------------- ---------------- ---------------- -------- -------- -------- -------- -------- ----------------
H_SVSW           RG-Huff          N_SVSWS          11.05    0        1086.9   2.10     0
H_CNW            RG-Huff          N_CNWN           2.38     0        295.1    2.99     0
H_DW1            RG-Huff          N_DW1            6.08     0        352.7    2.66     0
H_DW2            RG-Huff          N_DW2            3.21     0        323.8    3.36     0
H_DE2            RG-Huff          N_CWLow          6.01     0        733.1    2.52     0
H_DE1            RG-Huff          N_CWLow          6.58     0        463.9    1.46     0
H_CNE            RG-Huff          N_OffNE          0.42     0        50.9     2.93     0
H_SVSE           RG-Huff          SP_SE            1.67     0        257.5    4.95     0
HP_SE            RG-Huff          SP_SE            4.81     0        1047.6   3.6      0
HP_B1            RG-Huff          N_CWLow          6.60     0        821.4    2        0
HP_B2            RG-Huff          SP_SE            2.65     0        1154.3   5        0
HP_B3            RG-Huff          SP_NE            0.83     0        361.5    5        0
HP_NE1           RG-Huff          SP_NE            3.29     0        716.6    1.3      0
HP_CW            RG-Huff          N_CWLow          14.03    0        3055.7   2.5      0
HE_WSE           RG-Huff          J_10D            1.03     0        224.3    2.8      0
HP_NE2           RG-Huff          SP_NE            1.58     0        344.1    1.3      0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
H_SVSW           0.02       0.4        0.05       0.05       25         OUTLET
H_CNW            0.02       0.24       0.05       0.05       25         OUTLET
H_DW1            0.02       0.4        0.05       0.05       25         OUTLET
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H_DW2	0.02	0.24	0.05	0.05	25	OUTLET
H_DE2	0.02	0.24	0.05	0.05	25	OUTLET
H_DE1	0.02	0.24	0.05	0.05	25	OUTLET
H_CNE	0.02	0.4	0.05	0.05	25	OUTLET
H_SVSE	0.02	0.4	0.05	0.05	25	OUTLET
HP_SE	0.02	0.24	0.05	0.05	25	OUTLET
HP_B1	0.02	0.24	0.05	0.05	25	OUTLET
HP_B2	0.02	0.24	0.05	0.05	25	OUTLET
HP_B3	0.02	0.24	0.05	0.05	25	OUTLET
HP_NE1	0.02	0.24	0.05	0.05	25	OUTLET
HP_CW	0.02	0.24	0.05	0.05	25	OUTLET
HE_WSE	0.02	0.24	0.05	0.05	25	OUTLET
HP_NE2	0.02	0.24	0.05	0.05	25	OUTLET

[INFILTRATION]

;;Subcatchment	Param1	Param2	Param3	Param4	Param5
H_SVSW	65.4	0.5	4	7	0
H_CNW	75.4	0.5	4	7	0
H_DW1	72.0	0.5	4	7	0
H_DW2	76.9	0.5	4	7	0
H_DE2	68.9	0.5	4	7	0
H_DE1	67.7	0.5	4	7	0
H_CNE	70.5	0.5	4	7	0
H_SVSE	67.8	0.5	4	7	0
HP_SE	80	0.5	4	7	0
HP_B1	74.4	0.5	4	7	0
HP_B2	74	0.5	4	7	0
HP_B3	74	0.5	4	7	0
HP_NE1	80	0.5	4	7	0
HP_CW	80	0.5	4	7	0
HE_WSE	67.2	0.5	4	7	0
HP_NE2	80	0.5	4	7	0

[JUNCTIONS]

;;Name	Elevation	MaxDepth	InitDepth	SurDepth	Aponded
N_SVSWN	735.15	5	0	0	0
N_DE2	739.87	6	0	0	0
N_DE1	740.29	5	0	0	0
N_CNWS	746.	5	0	0	0
J_10D	726.5	13	0	0	0
J_10G	726.83	6	0	0	0
N_SiteNE	744.5	3	0	0	0
N_OffNE	750	3	0	0	0
J_10R	729.7	8	0	0	0
NP_RD	732.5	5	0	0	0
STM_E10	744	6	0	0	0
STM_E9	743.2	7	0	0	0
STM_E8	742.7	7	0	0	0
S_SWL	742.5	3	0	0	0

[OUTFALLS]

;;Name	Elevation	Type	Stage Data	Gated	Route To
Out_SE	726	NORMAL		NO	
Out_NW	750	NORMAL		NO	

[STORAGE]

;;Name	Elev.	MaxDepth	InitDepth	Shape	Curve Name/Params	N/A	Fevap	Psi	Ksat	IMD
N_CNWN	747.67	5	0	TABULAR	S_CNW	0	0			
N_DW1	740.92	5	0	TABULAR	S_DW1	0	0			
N_DW2	740.63	5	0	TABULAR	S_DW2	0	0			
N_CWLow	729.75	7	0	TABULAR	SP_CW	0	0			
N_SVSWS	732.72	8	0	TABULAR	S_SVSW	0	0			
SP_NE	744	6	0	TABULAR	SP_NE	0	0			
SP_SE	731	6	0	TABULAR	SP_SE	0	0			

[CONDUITS]

;;Name	From Node	To Node	Length	Roughness	InOffset	OutOffset	InitFlow	MaxFlow
C_SVSW_12E	N_SVSWS	N_SVSWN	48	0.024	735.25	735.15	0	0
D_SVSW	N_SVSWN	N_CWLow	119	0.1	735.15	734.5	0	0
C_DW2	N_DW2	N_DE2	20	0.024	740.63	739.87	0	0
D_DE2	N_DE2	N_CWLow	370	0.1	739.87	736	0	0
C_DW1	N_DW1	N_DE1	20	0.024	740.92	740.29	0	0
D_DE1	N_DE1	N_CWLow	410	0.1	740.29	737	0	0
C_CNW	N_CNWN	N_CNWS	27	0.024	747.67	746.57	0	0
D_CNW	N_CNWS	N_CWLow	430	0.1	746	737	0	0
C_10G2	N_CWLow	J_10G	998	0.015	730.05	726.83	0	0
C_10G1	J_10G	J_10D	75	0.015	726.83	726.5	0	0
D_OutSE	J_10D	Out_SE	60	0.08	726.5	726	0	0
C_10R1	J_10R	J_10G	858	0.015	729.7	729.08	0	0
D_SiteNE	N_SiteNE	J_10D	706	0.1	744.5	726	0	0
D_CNE	N_OffNE	N_SiteNE	166	0.1	750	745	0	0
C_SVSW_12W	N_SVSWS	N_SVSWN	20	0.024	736.11	735.85	0	0
OF_SVSW	N_SVSWS	N_SVSWN	24	0.025	737.6	737.55	0	0
C_SVSW_6	N_SVSWS	J_10R	786	0.015	732.72	729.7	0	0
C_10R2	N_CWLow	J_10R	20	0.015	729.75	729.7	0	0
OF_DW2	N_DW2	N_DE2	20	0.025	743	742.95	0	0
OF_DW1	N_DW1	N_DE1	20	0.025	743	742.95	0	0
OF_CNWW	N_CNWN	Out_NW	44	0.1	750.2	750	0	0
OF_CNW	N_CNWN	N_CNWS	24	0.025	751.1	751.05	0	0
CP_W36	NP_RD	SP_SE	176	0.013	732.5	731.5	0	0
P_E10	STM_E10	STM_E9	79	0.013	744.0	743.6	0	0

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P_E9             STM_E9           STM_E8           116        0.013      743.2      742.7      0          0
P_E8             STM_E8           S_SWL            34         0.013      742.7      742.5      0          0
S_Swale          S_SWL            SP_SE            130        0.03       742.5      737.5      0          0

[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- ----------
RP_RD            N_CWLow          NP_RD            SIDE         733.5      0.61       NO       0
RP2_Out          SP_SE            J_10D            SIDE         732.0      0.61       NO       0
RP_NE            SP_NE            STM_E10          SIDE         744        0.61       NO       0
RP100_Out        SP_SE            J_10D            SIDE         732.75     0.61       NO       0

[WEIRS]
;;Name           From Node        To Node          Type         CrestHt    Qcoeff     Gated    EndCon   EndCoeff   Surcharge  RoadWidth  RoadSurf
Coeff. Curve
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- -------- ---------- ---------- ---------- ----------
----------------
WP_RD            N_CWLow          NP_RD            TRANSVERSE   735.5      2.7        NO       0        0          YES

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
C_SVSW_12E       CIRCULAR     1                0          0          0          1
D_SVSW           TRAPEZOIDAL  4                5          6          6          1
C_DW2            CIRCULAR     1                0          0          0          1
D_DE2            IRREGULAR    D_XDE2           0          0          0          1
C_DW1            CIRCULAR     1                0          0          0          1
D_DE1            IRREGULAR    D_XDE1           0          0          0          1
C_CNW            CIRCULAR     1                0          0          0          1
D_CNW            TRAPEZOIDAL  3                10         6          6          1
C_10G2           CIRCULAR     0.83             0          0          0          1
C_10G1           CIRCULAR     0.83             0          0          0          1
D_OutSE          TRAPEZOIDAL  4                3          3          3          1
C_10R1           CIRCULAR     0.83             0          0          0          1
D_SiteNE         IRREGULAR    D_XDE2           0          0          0          1
D_CNE            TRAPEZOIDAL  2                3          6          6          1
C_SVSW_12W       CIRCULAR     1                0          0          0          1
OF_SVSW          TRIANGULAR   0.4              135        0          0          1
C_SVSW_6         CIRCULAR     0.5              0          0          0          1
C_10R2           CIRCULAR     0.83             0          0          0          1
OF_DW2           TRIANGULAR   0.5              150        0          0          1
OF_DW1           TRIANGULAR   1                85         0          0          1
OF_CNWW          IRREGULAR    OF_XCNW          0          0          0          1
OF_CNW           TRIANGULAR   0.2              110        0          0          1
CP_W36           CIRCULAR     2                0          0          0          1
P_E10            CIRCULAR     1                0          0          0          1
P_E9             CIRCULAR     1                0          0          0          1
P_E8             CIRCULAR     1                0          0          0          1
S_Swale          TRAPEZOIDAL  2                2          4          3          1
RP_RD            CIRCULAR     1.5              0          0          0
RP2_Out          CIRCULAR     0.5              0          0          0
RP_NE            CIRCULAR     0.45             0          0          0
RP100_Out        CIRCULAR     0.75             0          0          0
WP_RD            RECT_OPEN    1.0              6          0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.025    0.1      0.1
X1 OF_XCNW           7        12.      28.      0.0      0.0      0.0      0.0      0.0
GR 753      0        751.2    0.1      750.8    12       750.2    22       750.3    28
GR 751      43       752      68
;
NC 0.1      0.1      0.1
X1 D_XDE1            5        -35      37       0.0      0.0      0.0      0.0      0.0
GR 742      -35.1    741      -35      740      0        741      37       742      37.1
;
NC 0.1      0.1      0.1
X1 D_XDE2            5        -39      48       0.0      0.0      0.0      0.0      0.0
GR 741      -56      740      -39      739      0        740      48       741      70

[LOSSES]
;;Link           Kentry     Kexit      Kavg       Flap Gate  Seepage
;;-------------- ---------- ---------- ---------- ---------- ----------
C_SVSW_12E       0.5        0.8        0          NO         0
C_DW2            0.5        0.8        0          NO         0
C_DW1            0.5        0.8        0          NO         0
C_CNW            0.5        0.8        0          NO         0
C_10G2           0.5        0.2        0          NO         0
C_10G1           0.3        0.5        0          NO         0
C_10R1           0.2        0.8        0          NO         0
C_SVSW_12W       0.5        0.8        0          NO         0
C_SVSW_6         0.5        1.0        0          NO         0
C_10R2           0.5        0.8        0          NO         0
CP_W36           0.5        0.8        0          NO         0
P_E10            0.1        0.3        0          NO         0
P_E9             0.2        0.5        0          NO         0
P_E8             0.2        1.0        0          NO         0

[CURVES]
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
S_CNW            Storage    0          100
S_CNW                       1.33       945.23
S_CNW                       2.33       7604.33
S_CNW                       3.33       16786.86
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S_CNW                      4.33       24925.33
;
S_DW1            Storage   0          100
S_DW1                      1.08       553.64
S_DW1                      2.08       5327.2
S_DW1                      3.08       29350.38
;
S_DW2            Storage   0          100
S_DW2                      2.37       6800.97
S_DW2                      3.37       14047.6
;
S_SVSW           Storage   0          10
S_SVSW                     1.75       10
S_SVSW                     1.78       2003.45
S_SVSW                     2.28       30880.18
S_SVSW                     2.53       39547.405
S_SVSW                     3.28       65549.08
S_SVSW                     4.28       80968.51
S_SVSW                     5.28       101926.96
;
S_CP             Storage   0          10
S_CP                       1.8        10
S_CP                       1.85       100
S_CP                       2.25       12099.3
S_CP                       3.25       44419.43
S_CP                       4.25       94221.01
S_CP                       5.25       155461.26
S_CP                       6.25       237121.1
S_CP                       7.25       335851.03
;
SP_WN            Storage   0          3311.86
SP_WN                      1          6209.3
SP_WN                      2          10346.33
SP_WN                      3          15972.02
SP_WN                      4          18784.865
;
SP_NE            Storage   0          12678
SP_NE                      1          14528
SP_NE                      2          16461
SP_NE                      3          18494
SP_NE                      4          20627
SP_NE                      5          22862
SP_NE                      5.5        24016
;
SP_SE            Storage   0          2424
SP_SE                      0.5        16327
SP_SE                      1          39282
SP_SE                      2          45200
SP_SE                      3          51339
SP_SE                      4          57701
SP_SE                      5          64152
SP_SE                      5.2        65462
;
SP_ES            Storage   0          3088.42
SP_ES                      1          4695.46
SP_ES                      2          6611.57
SP_ES                      3          8700.83
SP_ES                      4          9745.46
;
SP_CW            Storage   0          10
SP_CW                      1.2        10
SP_CW                      1.25       27051
SP_CW                      1.75       51186
SP_CW                      2.25       87698
SP_CW                      3.25       131180
SP_CW                      3.75       150000
SP_CW                      4.25       170256
SP_CW                      5.25       203992
SP_CW                      6.25       244995
SP_CW                      6.75       245000

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
;First Quartile Huff distribution for 3-hour storm - 100-year, Bulletin 75 NE IL values
003Huff1Q100_75              00:00:00   0.0000
003Huff1Q100_75              00:07:30   0.4590
003Huff1Q100_75              00:15:00   0.9734
003Huff1Q100_75              00:22:30   1.5432
003Huff1Q100_75              00:30:00   2.1043
003Huff1Q100_75              00:37:30   2.6050
003Huff1Q100_75              00:45:00   3.0470
003Huff1Q100_75              00:52:30   3.4175
003Huff1Q100_75              01:00:00   3.6904
003Huff1Q100_75              01:07:30   3.8880
003Huff1Q100_75              01:15:00   4.0719
003Huff1Q100_75              01:22:30   4.2257
003Huff1Q100_75              01:30:00   4.3816
003Huff1Q100_75              01:37:30   4.5320
003Huff1Q100_75              01:45:00   4.6764
003Huff1Q100_75              01:52:30   4.7983
003Huff1Q100_75              02:00:00   4.9119
003Huff1Q100_75              02:07:30   5.0052
003Huff1Q100_75              02:15:00   5.0892
003Huff1Q100_75              02:22:30   5.1622
003Huff1Q100_75              02:30:00   5.2353
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003Huff1Q100_75             02:37:30   5.3011
003Huff1Q100_75             02:45:00   5.3659
003Huff1Q100_75             02:52:30   5.4269
003Huff1Q100_75             03:00:00   5.4900
;
;Second Quartile Huff distribution for 6-hour storm - 100-year, Bulletin 75 NE IL values
006Huff2Q100_75             00:00      0.0000
006Huff2Q100_75             00:15      0.1472
006Huff2Q100_75             00:30      0.3099
006Huff2Q100_75             00:45      0.5003
006Huff2Q100_75             01:00      0.7285
006Huff2Q100_75             01:15      1.0153
006Huff2Q100_75             01:30      1.3754
006Huff2Q100_75             01:45      1.8268
006Huff2Q100_75             02:00      2.3431
006Huff2Q100_75             02:15      2.9121
006Huff2Q100_75             02:30      3.4947
006Huff2Q100_75             02:45      4.0110
006Huff2Q100_75             03:00      4.4856
006Huff2Q100_75             03:15      4.8534
006Huff2Q100_75             03:30      5.1684
006Huff2Q100_75             03:45      5.4462
006Huff2Q100_75             04:00      5.6462
006Huff2Q100_75             04:15      5.8011
006Huff2Q100_75             04:30      5.9265
006Huff2Q100_75             04:45      6.0320
006Huff2Q100_75             05:00      6.1271
006Huff2Q100_75             05:15      6.2095
006Huff2Q100_75             05:30      6.2847
006Huff2Q100_75             05:45      6.3554
006Huff2Q100_75             06:00      6.4300
;
;Second Quartile Huff distribution for 12-hour storm - 100-year, Bulletin 75 NE IL values
012Huff2Q100_75             00:00      0.0000
012Huff2Q100_75             00:30      0.1708
012Huff2Q100_75             01:00      0.3596
012Huff2Q100_75             01:30      0.5804
012Huff2Q100_75             02:00      0.8452
012Huff2Q100_75             02:30      1.1779
012Huff2Q100_75             03:00      1.5957
012Huff2Q100_75             03:30      2.1194
012Huff2Q100_75             04:00      2.7184
012Huff2Q100_75             04:30      3.3786
012Huff2Q100_75             05:00      4.0545
012Huff2Q100_75             05:30      4.6535
012Huff2Q100_75             06:00      5.2041
012Huff2Q100_75             06:30      5.6308
012Huff2Q100_75             07:00      5.9963
012Huff2Q100_75             07:30      6.3186
012Huff2Q100_75             08:00      6.5506
012Huff2Q100_75             08:30      6.7304
012Huff2Q100_75             09:00      6.8759
012Huff2Q100_75             09:30      6.9982
012Huff2Q100_75             10:00      7.1086
012Huff2Q100_75             10:30      7.2041
012Huff2Q100_75             11:00      7.2914
012Huff2Q100_75             11:30      7.3735
012Huff2Q100_75             12:00      7.4600
;
;Second Quartile Huff distribution for 18-hour storm - 100-year, Bulletin 75 NE IL values
018Huff2Q100_75             00:00      0.0000
018Huff2Q100_75             00:45      0.1846
018Huff2Q100_75             01:30      0.3885
018Huff2Q100_75             02:15      0.6271
018Huff2Q100_75             03:00      0.9132
018Huff2Q100_75             03:45      1.2727
018Huff2Q100_75             04:30      1.7240
018Huff2Q100_75             05:15      2.2898
018Huff2Q100_75             06:00      2.9371
018Huff2Q100_75             06:45      3.6504
018Huff2Q100_75             07:30      4.3806
018Huff2Q100_75             08:15      5.0278
018Huff2Q100_75             09:00      5.6227
018Huff2Q100_75             09:45      6.0837
018Huff2Q100_75             10:30      6.4786
018Huff2Q100_75             11:15      6.8268
018Huff2Q100_75             12:00      7.0775
018Huff2Q100_75             12:45      7.2717
018Huff2Q100_75             13:30      7.4289
018Huff2Q100_75             14:15      7.5611
018Huff2Q100_75             15:00      7.6804
018Huff2Q100_75             15:45      7.7835
018Huff2Q100_75             16:30      7.8778
018Huff2Q100_75             17:15      7.9665
018Huff2Q100_75             18:00      8.0600
;
;Third Quartile Huff distribution for 24-hour storm - 100-year, Bulletin 75 NE IL values
024Huff3Q100_75             00:00      0.0000
024Huff3Q100_75             01:00      0.1757
024Huff3Q100_75             02:00      0.3694
024Huff3Q100_75             03:00      0.5716
024Huff3Q100_75             04:00      0.7816
024Huff3Q100_75             05:00      1.0035
024Huff3Q100_75             06:00      1.2307
024Huff3Q100_75             07:00      1.4492
024Huff3Q100_75             08:00      1.6831
```

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024Huff3Q100_75             09:00      1.9522
024Huff3Q100_75             10:00      2.2565
024Huff3Q100_75             11:00      2.6507
024Huff3Q100_75             12:00      3.1152
024Huff3Q100_75             13:00      3.7639
024Huff3Q100_75             14:00      4.4658
024Huff3Q100_75             15:00      5.2294
024Huff3Q100_75             16:00      5.9896
024Huff3Q100_75             17:00      6.7009
024Huff3Q100_75             18:00      7.2776
024Huff3Q100_75             19:00      7.6907
024Huff3Q100_75             20:00      7.9795
024Huff3Q100_75             21:00      8.1706
024Huff3Q100_75             22:00      8.3180
024Huff3Q100_75             23:00      8.4466
024Huff3Q100_75             24:00      8.5700
;
;Fourth Quartile Huff distribution for 48-hour storm - 100-year, Bulletin 75 NE IL values
048Huff4Q100_75             00:00      0.0000
048Huff4Q100_75             02:00      0.2144
048Huff4Q100_75             04:00      0.4445
048Huff4Q100_75             06:00      0.6607
048Huff4Q100_75             08:00      0.9076
048Huff4Q100_75             10:00      1.1628
048Huff4Q100_75             12:00      1.4133
048Huff4Q100_75             14:00      1.6620
048Huff4Q100_75             16:00      1.8866
048Huff4Q100_75             18:00      2.1186
048Huff4Q100_75             20:00      2.3580
048Huff4Q100_75             22:00      2.6309
048Huff4Q100_75             24:00      2.9000
048Huff4Q100_75             26:00      3.1459
048Huff4Q100_75             28:00      3.3714
048Huff4Q100_75             30:00      3.5830
048Huff4Q100_75             32:00      3.8271
048Huff4Q100_75             34:00      4.1834
048Huff4Q100_75             36:00      4.7597
048Huff4Q100_75             38:00      5.5040
048Huff4Q100_75             40:00      6.4208
048Huff4Q100_75             42:00      7.4286
048Huff4Q100_75             44:00      8.3251
048Huff4Q100_75             46:00      8.9125
048Huff4Q100_75             48:00      9.2800
;
;Fourth Quartile Huff distribution for 72-hour storm - 100-year, Bulletin 75 NE IL values
072Huff4Q100_75             00:00      0.0000
072Huff4Q100_75             03:00      0.2275
072Huff4Q100_75             06:00      0.4718
072Huff4Q100_75             09:00      0.7013
072Huff4Q100_75             12:00      0.9633
072Huff4Q100_75             15:00      1.2342
072Huff4Q100_75             18:00      1.5002
072Huff4Q100_75             21:00      1.7641
072Huff4Q100_75             24:00      2.0025
072Huff4Q100_75             27:00      2.2488
072Huff4Q100_75             30:00      2.5029
072Huff4Q100_75             33:00      2.7925
072Huff4Q100_75             36:00      3.0781
072Huff4Q100_75             39:00      3.3392
072Huff4Q100_75             42:00      3.5785
072Huff4Q100_75             45:00      3.8031
072Huff4Q100_75             48:00      4.0621
072Huff4Q100_75             51:00      4.4404
072Huff4Q100_75             54:00      5.0521
072Huff4Q100_75             57:00      5.8420
072Huff4Q100_75             60:00      6.8152
072Huff4Q100_75             63:00      7.8849
072Huff4Q100_75             66:00      8.8364
072Huff4Q100_75             69:00      9.4599
072Huff4Q100_75             72:00      9.8500
;
;Fourth Quartile Huff distribution for 120-hour storm - 100-year, Bulletin 75 NE IL values
120Huff4Q100_75             00:00      0.0000
120Huff4Q100_75             05:00      0.2462
120Huff4Q100_75             10:00      0.5106
120Huff4Q100_75             15:00      0.7590
120Huff4Q100_75             20:00      1.0425
120Huff4Q100_75             25:00      1.3357
120Huff4Q100_75             30:00      1.6235
120Huff4Q100_75             35:00      1.9092
120Huff4Q100_75             40:00      2.1672
120Huff4Q100_75             45:00      2.4337
120Huff4Q100_75             50:00      2.7087
120Huff4Q100_75             55:00      3.0221
120Huff4Q100_75             60:00      3.3313
120Huff4Q100_75             65:00      3.6137
120Huff4Q100_75             70:00      3.8728
120Huff4Q100_75             75:00      4.1158
120Huff4Q100_75             80:00      4.3962
120Huff4Q100_75             85:00      4.8055
120Huff4Q100_75             90:00      5.4675
120Huff4Q100_75             95:00      6.3224
120Huff4Q100_75             100:00     7.3757
120Huff4Q100_75             105:00     8.5333
120Huff4Q100_75             110:00     9.5631
120Huff4Q100_75             115:00     10.2379
```

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120Huff4Q100_75             120:00     10.6600
;
;Fourth Quartile Huff distribution for 240-hour storm - 100-year, Bulletin 75 NE IL values
240Huff4Q100_75             00:00      0.0000
240Huff4Q100_75             10:00      0.2922
240Huff4Q100_75             20:00      0.6059
240Huff4Q100_75             30:00      0.9007
240Huff4Q100_75             40:00      1.2372
240Huff4Q100_75             50:00      1.5850
240Huff4Q100_75             60:00      1.9266
240Huff4Q100_75             70:00      2.2656
240Huff4Q100_75             80:00      2.5717
240Huff4Q100_75             90:00      2.8880
240Huff4Q100_75             100:00     3.2144
240Huff4Q100_75             110:00     3.5863
240Huff4Q100_75             120:00     3.9531
240Huff4Q100_75             130:00     4.2884
240Huff4Q100_75             140:00     4.5957
240Huff4Q100_75             150:00     4.8842
240Huff4Q100_75             160:00     5.2169
240Huff4Q100_75             170:00     5.7026
240Huff4Q100_75             180:00     6.4882
240Huff4Q100_75             190:00     7.5027
240Huff4Q100_75             200:00     8.7525
240Huff4Q100_75             210:00     10.1263
240Huff4Q100_75             220:00     11.3483
240Huff4Q100_75             230:00     12.1491
240Huff4Q100_75             240:00     12.6500
;
;First Quartile Huff distribution for 3-hour storm - 2-year, Bulletin 75 NE IL values
003Huff1Q2_75               00:00:00   0.0000
003Huff1Q2_75               00:07:30   0.1789
003Huff1Q2_75               00:15:00   0.3794
003Huff1Q2_75               00:22:30   0.6016
003Huff1Q2_75               00:30:00   0.8203
003Huff1Q2_75               00:37:30   1.0154
003Huff1Q2_75               00:45:00   1.1877
003Huff1Q2_75               00:52:30   1.3322
003Huff1Q2_75               01:00:00   1.4385
003Huff1Q2_75               01:07:30   1.5155
003Huff1Q2_75               01:15:00   1.5872
003Huff1Q2_75               01:22:30   1.6472
003Huff1Q2_75               01:30:00   1.7079
003Huff1Q2_75               01:37:30   1.7666
003Huff1Q2_75               01:45:00   1.8229
003Huff1Q2_75               01:52:30   1.8704
003Huff1Q2_75               02:00:00   1.9147
003Huff1Q2_75               02:07:30   1.9510
003Huff1Q2_75               02:15:00   1.9838
003Huff1Q2_75               02:22:30   2.0122
003Huff1Q2_75               02:30:00   2.0407
003Huff1Q2_75               02:37:30   2.0664
003Huff1Q2_75               02:45:00   2.0916
003Huff1Q2_75               02:52:30   2.1154
003Huff1Q2_75               03:00:00   2.1400
;
;Second Quartile Huff distribution for 6-hour storm - 2-year, Bulletin 75 NE IL values
006Huff2Q2_75               00:00      0.0000
006Huff2Q2_75               00:15      0.0575
006Huff2Q2_75               00:30      0.1210
006Huff2Q2_75               00:45      0.1953
006Huff2Q2_75               01:00      0.2844
006Huff2Q2_75               01:15      0.3963
006Huff2Q2_75               01:30      0.5369
006Huff2Q2_75               01:45      0.7131
006Huff2Q2_75               02:00      0.9146
006Huff2Q2_75               02:15      1.1368
006Huff2Q2_75               02:30      1.3642
006Huff2Q2_75               02:45      1.5657
006Huff2Q2_75               03:00      1.7510
006Huff2Q2_75               03:15      1.8945
006Huff2Q2_75               03:30      2.0175
006Huff2Q2_75               03:45      2.1260
006Huff2Q2_75               04:00      2.2040
006Huff2Q2_75               04:15      2.2645
006Huff2Q2_75               04:30      2.3135
006Huff2Q2_75               04:45      2.3546
006Huff2Q2_75               05:00      2.3918
006Huff2Q2_75               05:15      2.4239
006Huff2Q2_75               05:30      2.4533
006Huff2Q2_75               05:45      2.4809
006Huff2Q2_75               06:00      2.5100
;
;Second Quartile Huff distribution for 12-hour storm - 2-year, Bulletin 75 NE IL values
012Huff2Q2_75               00:00      0.0000
012Huff2Q2_75               00:30      0.0666
012Huff2Q2_75               01:00      0.1403
012Huff2Q2_75               01:30      0.2264
012Huff2Q2_75               02:00      0.3297
012Huff2Q2_75               02:30      0.4595
012Huff2Q2_75               03:00      0.6224
012Huff2Q2_75               03:30      0.8267
012Huff2Q2_75               04:00      1.0604
012Huff2Q2_75               04:30      1.3179
012Huff2Q2_75               05:00      1.5816
012Huff2Q2_75               05:30      1.8153
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012Huff2Q2_75               06:00      2.0300
012Huff2Q2_75               06:30      2.1965
012Huff2Q2_75               07:00      2.3391
012Huff2Q2_75               07:30      2.4648
012Huff2Q2_75               08:00      2.5553
012Huff2Q2_75               08:30      2.6254
012Huff2Q2_75               09:00      2.6821
012Huff2Q2_75               09:30      2.7299
012Huff2Q2_75               10:00      2.7729
012Huff2Q2_75               10:30      2.8102
012Huff2Q2_75               11:00      2.8442
012Huff2Q2_75               11:30      2.8762
012Huff2Q2_75               12:00      2.9100
;
;Second Quartile Huff distribution for 18-hour storm - 2-year, Bulletin 75 NE IL values
018Huff2Q2_75               00:00      0.0000
018Huff2Q2_75               00:45      0.0719
018Huff2Q2_75               01:30      0.1513
018Huff2Q2_75               02:15      0.2443
018Huff2Q2_75               03:00      0.3558
018Huff2Q2_75               03:45      0.4958
018Huff2Q2_75               04:30      0.6716
018Huff2Q2_75               05:15      0.8921
018Huff2Q2_75               06:00      1.1442
018Huff2Q2_75               06:45      1.4221
018Huff2Q2_75               07:30      1.7066
018Huff2Q2_75               08:15      1.9587
018Huff2Q2_75               09:00      2.1905
018Huff2Q2_75               09:45      2.3701
018Huff2Q2_75               10:30      2.5239
018Huff2Q2_75               11:15      2.6596
018Huff2Q2_75               12:00      2.7572
018Huff2Q2_75               12:45      2.8329
018Huff2Q2_75               13:30      2.8941
018Huff2Q2_75               14:15      2.9456
018Huff2Q2_75               15:00      2.9921
018Huff2Q2_75               15:45      3.0323
018Huff2Q2_75               16:30      3.0690
018Huff2Q2_75               17:15      3.1036
018Huff2Q2_75               18:00      3.1400
;
;Third Quartile Huff distribution for 24-hour storm - 2-year, Bulletin 75 NE IL values
024Huff3Q2_75               00:00      0.0000
024Huff3Q2_75               01:00      0.0685
024Huff3Q2_75               02:00      0.1440
024Huff3Q2_75               03:00      0.2228
024Huff3Q2_75               04:00      0.3046
024Huff3Q2_75               05:00      0.3911
024Huff3Q2_75               06:00      0.4796
024Huff3Q2_75               07:00      0.5648
024Huff3Q2_75               08:00      0.6560
024Huff3Q2_75               09:00      0.7609
024Huff3Q2_75               10:00      0.8794
024Huff3Q2_75               11:00      1.0331
024Huff3Q2_75               12:00      1.2141
024Huff3Q2_75               13:00      1.4669
024Huff3Q2_75               14:00      1.7405
024Huff3Q2_75               15:00      2.0381
024Huff3Q2_75               16:00      2.3343
024Huff3Q2_75               17:00      2.6115
024Huff3Q2_75               18:00      2.8363
024Huff3Q2_75               19:00      2.9973
024Huff3Q2_75               20:00      3.1099
024Huff3Q2_75               21:00      3.1844
024Huff3Q2_75               22:00      3.2418
024Huff3Q2_75               23:00      3.2919
024Huff3Q2_75               24:00      3.3400
;
;Fourth Quartile Huff distribution for 48-hour storm - 2-year, Bulletin 75 NE IL values
048Huff4Q2_75               00:00      0.0000
048Huff4Q2_75               02:00      0.0845
048Huff4Q2_75               04:00      0.1753
048Huff4Q2_75               06:00      0.2606
048Huff4Q2_75               08:00      0.3579
048Huff4Q2_75               10:00      0.4586
048Huff4Q2_75               12:00      0.5574
048Huff4Q2_75               14:00      0.6555
048Huff4Q2_75               16:00      0.7441
048Huff4Q2_75               18:00      0.8356
048Huff4Q2_75               20:00      0.9300
048Huff4Q2_75               22:00      1.0376
048Huff4Q2_75               24:00      1.1438
048Huff4Q2_75               26:00      1.2407
048Huff4Q2_75               28:00      1.3297
048Huff4Q2_75               30:00      1.4131
048Huff4Q2_75               32:00      1.5094
048Huff4Q2_75               34:00      1.6499
048Huff4Q2_75               36:00      1.8772
048Huff4Q2_75               38:00      2.1707
048Huff4Q2_75               40:00      2.5324
048Huff4Q2_75               42:00      2.9298
048Huff4Q2_75               44:00      3.2834
048Huff4Q2_75               46:00      3.5151
048Huff4Q2_75               48:00      3.6600
;
;Fourth Quartile Huff distribution for 72-hour storm - 2-year, Bulletin 75 NE IL values
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072Huff4Q2_75               00:00      0.0000
072Huff4Q2_75               03:00      0.0917
072Huff4Q2_75               06:00      0.1902
072Huff4Q2_75               09:00      0.2827
072Huff4Q2_75               12:00      0.3883
072Huff4Q2_75               15:00      0.4974
072Huff4Q2_75               18:00      0.6046
072Huff4Q2_75               21:00      0.7110
072Huff4Q2_75               24:00      0.8071
072Huff4Q2_75               27:00      0.9064
072Huff4Q2_75               30:00      1.0088
072Huff4Q2_75               33:00      1.1255
072Huff4Q2_75               36:00      1.2406
072Huff4Q2_75               39:00      1.3458
072Huff4Q2_75               42:00      1.4423
072Huff4Q2_75               45:00      1.5328
072Huff4Q2_75               48:00      1.6372
072Huff4Q2_75               51:00      1.7897
072Huff4Q2_75               54:00      2.0362
072Huff4Q2_75               57:00      2.3546
072Huff4Q2_75               60:00      2.7468
072Huff4Q2_75               63:00      3.1780
072Huff4Q2_75               66:00      3.5615
072Huff4Q2_75               69:00      3.8128
072Huff4Q2_75               72:00      3.9700
;
;Fourth Quartile Huff distribution for 120-hour storm - 2-year, Bulletin 75 NE IL values
120Huff4Q2_75               00:00      0.0000
120Huff4Q2_75               05:00      0.1021
120Huff4Q2_75               10:00      0.2117
120Huff4Q2_75               15:00      0.3147
120Huff4Q2_75               20:00      0.4323
120Huff4Q2_75               25:00      0.5538
120Huff4Q2_75               30:00      0.6732
120Huff4Q2_75               35:00      0.7916
120Huff4Q2_75               40:00      0.8986
120Huff4Q2_75               45:00      1.0091
120Huff4Q2_75               50:00      1.1231
120Huff4Q2_75               55:00      1.2531
120Huff4Q2_75               60:00      1.3813
120Huff4Q2_75               65:00      1.4984
120Huff4Q2_75               70:00      1.6058
120Huff4Q2_75               75:00      1.7066
120Huff4Q2_75               80:00      1.8228
120Huff4Q2_75               85:00      1.9925
120Huff4Q2_75               90:00      2.2670
120Huff4Q2_75               95:00      2.6215
120Huff4Q2_75               100:00     3.0582
120Huff4Q2_75               105:00     3.5382
120Huff4Q2_75               110:00     3.9652
120Huff4Q2_75               115:00     4.2450
120Huff4Q2_75               120:00     4.4200
;
;Fourth Quartile Huff distribution for 240-hour storm - 2-year, Bulletin 75 NE IL values
240Huff4Q2_75               00:00      0.0000
240Huff4Q2_75               10:00      0.1294
240Huff4Q2_75               20:00      0.2682
240Huff4Q2_75               30:00      0.3987
240Huff4Q2_75               40:00      0.5477
240Huff4Q2_75               50:00      0.7017
240Huff4Q2_75               60:00      0.8529
240Huff4Q2_75               70:00      1.0030
240Huff4Q2_75               80:00      1.1385
240Huff4Q2_75               90:00      1.2785
240Huff4Q2_75               100:00     1.4230
240Huff4Q2_75               110:00     1.5876
240Huff4Q2_75               120:00     1.7500
240Huff4Q2_75               130:00     1.8984
240Huff4Q2_75               140:00     2.0345
240Huff4Q2_75               150:00     2.1622
240Huff4Q2_75               160:00     2.3094
240Huff4Q2_75               170:00     2.5245
240Huff4Q2_75               180:00     2.8722
240Huff4Q2_75               190:00     3.3214
240Huff4Q2_75               200:00     3.8746
240Huff4Q2_75               210:00     4.4828
240Huff4Q2_75               220:00     5.0238
240Huff4Q2_75               230:00     5.3782
240Huff4Q2_75               240:00     5.6000

[REPORT]
;;Reporting Options
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]

[MAP]
DIMENSIONS -2579.657 0.000 12579.657 10000.000
Units      None

[COORDINATES]
;;Node           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
N_SVSWN          4058.434           2787.223
```

```
N_DE2            2141.746           3488.203
N_DE1            2148.519           5973.802
N_CNWS           2856.366           8128.400
J_10D            8702.894           3681.948
J_10G            8531.444           3986.272
N_SiteNE         8934.790           5840.730
N_OffNE          8925.224           6750.900
J_10R            4344.802           4752.448
NP_RD            6994.870           4489.106
STM_E10          7944.121           6016.045
STM_E9           7908.368           5671.922
STM_E8           7944.121           4956.860
S_SWL            7841.331           4889.823
Out_SE           9071.512           3210.461
Out_NW           991.166            8446.720
N_CNWN           2856.271           8378.128
N_DW1            1992.745           5970.415
N_DW2            1982.586           3491.589
N_CWLow          4238.303           4820.457
N_SVSWS          4061.820           2536.631
SP_NE            8125.734           6159.949
SP_SE            7948.440           4185.388

[VERTICES]
;;Link            X-Coord            Y-Coord
;;--------------- ------------------ ------------------
D_SVSW           4163.412           2976.860
D_SVSW           4251.457           3146.179
D_SVSW           4261.616           3461.112
D_SVSW           4197.275           3667.681
D_SVSW           4024.570           3840.386
D_SVSW           3946.684           4080.818
D_SVSW           4000.866           4412.683
D_SVSW           4160.025           4693.752
D_DE2            2219.632           3522.066
D_DE2            2290.746           3640.590
D_DE2            2426.201           3874.249
D_DE2            2632.770           4043.568
D_DE2            2768.225           4165.478
D_DE2            2937.544           4246.751
D_DE2            3089.931           4328.024
D_DE2            3161.045           4466.865
D_DE2            3357.454           4592.161
D_DE2            3543.705           4666.661
D_DE2            3692.705           4791.957
D_DE2            3811.229           4825.821
D_DE2            3973.775           4819.048
D_DE1            2500.702           6055.075
D_DE1            2565.043           6138.041
D_DE1            2629.384           6221.007
D_DE1            2714.043           6407.258
D_DE1            2787.679           6580.744
D_DE1            2951.089           6674.781
D_DE1            3252.477           6742.509
D_DE1            3448.886           6708.645
D_DE1            3612.865           6561.847
D_DE1            3786.091           6325.630
D_DE1            3823.981           5115.893
D_CNW            2912.170           7942.481
D_CNW            2882.166           7813.894
D_CNW            2929.315           7638.158
D_CNW            2980.750           7466.708
D_CNW            3036.471           7299.544
D_CNW            3165.059           7166.670
D_CNW            3452.237           6965.216
D_CNW            3602.256           6909.495
D_CNW            3717.985           6922.354
D_CNW            3798.826           6805.421
D_CNW            3861.712           5141.048
C_10G2           4558.090           4792.087
C_10G2           4900.990           4817.805
C_10G2           5381.050           4942.106
C_10G2           5758.240           4980.682
C_10G2           6002.556           4950.679
C_10G2           6336.884           4822.091
C_10G2           6624.063           4676.358
C_10G2           7035.543           4582.061
C_10G2           7275.573           4556.343
C_10G2           7515.603           4547.771
C_10G2           7768.492           4509.195
C_10G2           8059.957           4342.031
C_10R1           4463.792           4732.080
C_10R1           4892.417           4762.083
C_10R1           5329.615           4959.251
C_10R1           5732.523           5036.404
C_10R1           6083.995           4984.969
C_10R1           6465.471           4826.377
C_10R1           6645.494           4727.793
C_10R1           6988.394           4620.637
C_10R1           7382.729           4590.633
C_10R1           7725.629           4564.916
C_10R1           7837.072           4573.488
C_10R1           8042.812           4496.336
C_10R1           8342.849           4299.168
C_10R1           8535.730           4127.718
D_SiteNE         9033.858           5785.692
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D_SiteNE         9215.483           5460.969
D_SiteNE         9413.619           5015.163
D_SiteNE         9523.695           4618.890
D_SiteNE         9512.687           4250.137
D_SiteNE         9410.125           3964.841
D_SiteNE         9211.099           3764.962
D_SiteNE         9036.997           3667.029
C_SVSW_12W       3930.681           2664.846
OF_SVSW          4183.114           2664.846
C_SVSW_6         4205.658           2873.229
C_SVSW_6         4298.150           3188.790
C_SVSW_6         4314.472           3618.605
C_SVSW_6         4162.133           3988.572
C_SVSW_6         4162.133           4412.946
C_SVSW_6         4276.387           4652.337
OF_DW2           2060.183           3387.790
OF_DW1           2067.737           5858.706
OF_CNW           2971.579           8278.058
RP2_Out          8264.539           3878.653
RP100_Out        8370.571           4044.704
WP_RD            6876.354           4247.135

[Polygons]
;;Subcatchment   X-Coord            Y-Coord
;;-------------- ------------------ ------------------
H_SVSW           3563.656           2589.771
H_SVSW           3563.656           2589.771
H_SVSW           3813.928           2622.416
H_SVSW           4836.779           2535.365
H_SVSW           4891.186           1980.413
H_SVSW           4542.982           1229.597
H_SVSW           4096.844           794.342
H_SVSW           2889.010           391.730
H_SVSW           2334.059           1001.088
H_SVSW           2029.380           1643.090
H_SVSW           2616.975           2361.262
H_SVSW           3585.419           2589.771
H_CNW            2388.466           9445.049
H_CNW            2932.535           9303.591
H_CNW            3879.217           8911.861
H_CNW            3824.810           8454.842
H_CNW            1354.733           8476.605
H_CNW            1376.496           8705.114
H_CNW            2116.431           9412.405
H_DW1            1974.973           6877.040
H_DW1            1942.329           4722.524
H_DW1            1746.464           4559.304
H_DW1            886.834            4287.269
H_DW1            701.850            4940.152
H_DW1            -375.408           4972.797
H_DW1            -952.122           5353.645
H_DW1            -734.494           5788.901
H_DW1            223.069            6430.903
H_DW1            1866.159           6877.040
H_DW2            963.003            4145.811
H_DW2            1964.091           4483.134
H_DW2            2007.617           2676.823
H_DW2            1735.582           2361.262
H_DW2            593.036            1762.786
H_DW2            364.527            2709.467
H_DW2            680.087            3297.062
H_DW2            865.071            4113.166
H_DE2            2225.245           4167.573
H_DE2            2181.719           4929.271
H_DE2            2682.263           5451.578
H_DE2            3552.775           5429.815
H_DE2            3618.063           4385.201
H_DE2            3672.470           2742.111
H_DE2            2225.245           2698.585
H_DE2            2225.245           4167.573
H_DE1            2149.075           5201.306
H_DE1            2159.956           6420.022
H_DE1            2170.838           8226.333
H_DE1            4782.372           8226.333
H_DE1            4804.135           8128.400
H_DE1            4630.033           7747.552
H_DE1            3824.810           7747.552
H_DE1            3531.012           7421.110
H_DE1            3585.419           5723.613
H_DE1            3346.028           5723.613
H_DE1            2780.196           5647.443
H_DE1            2181.719           5146.899
H_CNE            8928.183           8106.638
H_CNE            8939.064           6931.447
H_CNE            9352.557           8161.045
H_SVSE           5620.239           2796.518
H_SVSE           8155.604           2796.518
H_SVSE           8025.027           2557.127
H_SVSE           6926.007           1969.532
H_SVSE           6207.835           1447.225
H_SVSE           5620.239           2600.653
HP_SE            6150.442           3590.358
HP_SE            7044.252           3896.525
HP_SE            7187.459           4168.124
HP_SE            7271.408           3610.110
HP_SE            7380.048           3042.220
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HP_SE            7592.390           3037.282
HP_SE            7592.390           2815.064
HP_SE            5814.647           2829.879
HP_SE            5814.647           3575.543
HP_B1            3927.941           5070.811
HP_B1            6654.136           5027.367
HP_B1            6664.013           4518.735
HP_B1            5022.589           4546.470
HP_B1            4392.452           3516.285
HP_B1            3923.326           3516.285
HP_B1            3922.955           5080.784
HP_B2            7276.346           4222.444
HP_B2            7829.422           4153.310
HP_B2            7947.938           3254.562
HP_B2            7454.121           3249.624
HP_B3            8829.010           6534.465
HP_B3            8815.603           6150.119
HP_B3            7877.084           6221.625
HP_B3            7903.899           6588.094
HP_NE1           7716.195           7960.119
HP_NE1           7515.084           6132.243
HP_NE1           7282.689           5989.230
HP_NE1           6576.565           6011.576
HP_NE1           6545.496           6854.491
HP_NE1           6180.072           6869.306
HP_NE1           6175.133           7175.473
HP_NE1           5868.967           7990.272
HP_CW            5740.574           7985.333
HP_CW            6086.246           7160.658
HP_CW            6076.370           6780.419
HP_CW            6436.857           6750.790
HP_CW            6481.300           5876.733
HP_CW            7271.408           5852.042
HP_CW            7508.441           5955.744
HP_CW            7518.317           4894.036
HP_CW            7305.975           4671.818
HP_CW            6713.394           4824.901
HP_CW            6693.642           5096.501
HP_CW            6170.195           5086.625
HP_CW            5864.028           5269.337
HP_CW            4089.744           5358.311
HP_CW            4061.877           7596.958
HP_CW            4721.396           7606.247
HP_CW            4953.620           8033.540
HE_WSE           8491.137           3906.401
HE_WSE           8639.283           2879.261
HE_WSE           8244.229           2864.446
HE_WSE           8045.891           3976.565
HP_NE2           8855.825           7888.613
HP_NE2           8815.603           6597.033
HP_NE2           7841.331           6664.070
HP_NE2           7769.825           5904.317
HP_NE2           7586.590           5926.662
HP_NE2           7662.565           6673.008
HP_NE2           7792.170           7951.181

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
RG-Huff          2000.000           9500.000


[BACKDROP]
FILE       "G:\N_Drive\aenon\projects\2017\17004-Cross\E14-CanterburyPark\Final_Models\SWMM_P220625\1291_county 1ft topo GIS_BOUNDARY_2017-09-
13.JPG"
DIMENSIONS -77.000 430.000 12423.000 10430.000

[PROFILES]
;;Name           Links
;;-------------- ----------
"Green           " C_CNW D_CNW C_10G2 C_10G1 12
```

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EPA STORM WATER MANAGEMENT MODEL - VERSION 5.1 (Build 5.1.015)
--------------------------------------------------------------

WARNING 03: negative offset ignored for Link D_SiteNE
WARNING 02: maximum depth increased for Node N_CNWS

**********************************************************
NOTE: The summary statistics displayed in this report are
based on results found at every computational time step,
not just on results from each reporting time step.
**********************************************************

***************
Analysis Options
***************
Flow Units ............... CFS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
  Ponding Allowed ........ NO
  Water Quality .......... NO
Infiltration Method ...... CURVE_NUMBER
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 09/17/2017 00:00:00
Ending Date .............. 09/20/2017 23:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:15:00
Wet Time Step ............ 00:05:00
Dry Time Step ............ 01:00:00
Routing Time Step ........ 5.00 sec
Variable Time Step ....... YES
Maximum Trials ........... 8
Number of Threads ........ 1
Head Tolerance ........... 0.005000 ft


*************************        Volume         Depth
Runoff Quantity Continuity     acre-feet        inches
*************************     ---------       -------
Total Precipitation ......        51.577         8.570
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........        15.741         2.616
Surface Runoff ...........        35.540         5.905
Final Storage ............         0.297         0.049
Continuity Error (%) .....        -0.002


*************************        Volume        Volume
Flow Routing Continuity        acre-feet      10^6 gal
*************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......        35.539        11.581
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........        34.995        11.404
Flooding Loss ............         0.000         0.000
Evaporation Loss .........         0.000         0.000
Exfiltration Loss ........         0.000         0.000
Initial Stored Volume ....         0.000         0.000
Final Stored Volume ......         0.544         0.177
Continuity Error (%) .....         0.002


*************************
Highest Continuity Errors
*************************
Node N_SiteNE (-4.24%)


**************************
Time-Step Critical Elements
**************************
Link C_DW1 (35.96%)
Link P_E8 (13.98%)
Link C_10G1 (4.84%)
Link C_DW2 (4.05%)
Link C_10R2 (2.62%)


********************************
Highest Flow Instability Indexes
********************************
All links are stable.


************************
Routing Time Step Summary
************************
Minimum Time Step           :     0.22 sec
Average Time Step           :     3.57 sec
```

```
Maximum Time Step           :     5.00 sec
Percent in Steady State     :    -0.00
Average Iterations per Step :     2.00
Percent Not Converging      :     0.00
Time Step Frequencies       :
    5.000 -  3.155 sec      :    60.41 %
    3.155 -  1.991 sec      :    17.37 %
    1.991 -  1.256 sec      :    21.67 %
    1.256 -  0.792 sec      :     0.33 %
    0.792 -  0.500 sec      :     0.23 %
```

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip in	Total Runon in	Total Evap in	Total Infil in	Imperv Runoff in	Perv Runoff in	Total Runoff in	Total Runoff 10^6 gal	Peak Runoff CFS	Runoff Coeff
H_SVSW	8.57	0.00	0.00	3.40	0.00	5.12	5.12	1.54	6.29	0.597
H_CNW	8.57	0.00	0.00	2.42	0.00	6.10	6.10	0.39	1.58	0.712
H_DW1	8.57	0.00	0.00	2.82	0.00	5.70	5.70	0.94	3.72	0.665
H_DW2	8.57	0.00	0.00	2.28	0.00	6.24	6.24	0.54	2.16	0.728
H_DE2	8.57	0.00	0.00	3.03	0.00	5.49	5.49	0.90	3.68	0.641
H_DE1	8.57	0.00	0.00	3.19	0.00	5.33	5.33	0.95	3.86	0.622
H_CNE	8.57	0.00	0.00	2.90	0.00	5.62	5.62	0.06	0.26	0.655
H_SVSE	8.57	0.00	0.00	3.13	0.00	5.39	5.39	0.24	1.01	0.629
HP_SE	8.57	0.00	0.00	1.97	0.00	6.55	6.55	0.86	3.35	0.765
HP_B1	8.57	0.00	0.00	2.52	0.00	6.00	6.00	1.08	4.31	0.700
HP_B2	8.57	0.00	0.00	2.52	0.00	6.00	6.00	0.43	1.75	0.701
HP_B3	8.57	0.00	0.00	2.52	0.00	6.00	6.00	0.14	0.55	0.701
HP_NE1	8.57	0.00	0.00	1.98	0.00	6.54	6.54	0.58	2.28	0.763
HP_CW	8.57	0.00	0.00	1.97	0.00	6.55	6.55	2.50	9.76	0.764
HE_WSE	8.57	0.00	0.00	3.16	0.00	5.36	5.36	0.15	0.62	0.625
HP_NE2	8.57	0.00	0.00	1.98	0.00	6.54	6.54	0.28	1.10	0.763

****
Node Depth Summary
****

Node	Type	Average Depth Feet	Maximum Depth Feet	Maximum HGL Feet	Time of Max Occurrence days hr:min	Reported Max Depth Feet
N_SVSWN	JUNCTION	0.25	0.93	736.08	1 01:16	0.93
N_DE2	JUNCTION	0.16	0.48	740.35	0 17:11	0.48
N_DE1	JUNCTION	0.22	0.66	740.95	0 18:10	0.66
N_CNWS	JUNCTION	0.08	0.31	746.31	0 17:04	0.31
J_10D	JUNCTION	0.76	1.07	727.57	1 01:02	1.07
J_10G	JUNCTION	2.07	3.07	729.90	1 01:12	3.07
N_SiteNE	JUNCTION	0.04	0.12	744.62	0 18:01	0.12
N_OffNE	JUNCTION	0.05	0.19	750.19	0 17:03	0.19
J_10R	JUNCTION	3.81	6.11	735.81	1 01:17	6.11
NP_RD	JUNCTION	1.32	3.54	736.04	1 01:21	3.54
STM_E10	JUNCTION	0.27	0.58	744.58	0 21:09	0.58
STM_E9	JUNCTION	0.28	0.61	743.81	0 21:09	0.61
STM_E8	JUNCTION	0.33	0.70	743.40	0 21:10	0.70
S_SWL	JUNCTION	0.09	0.20	742.70	0 21:10	0.20
Out_SE	OUTFALL	0.76	1.07	727.07	1 01:02	1.07
Out_NW	OUTFALL	0.00	0.00	750.00	0 00:00	0.00
N_CNWN	STORAGE	0.13	0.50	748.17	0 17:00	0.50
N_DW1	STORAGE	0.29	1.43	742.35	0 18:02	1.43
N_DW2	STORAGE	0.17	0.65	741.28	0 17:01	0.65
N_CWLow	STORAGE	3.90	6.31	736.06	1 01:20	6.31
N_SVSWS	STORAGE	2.44	3.98	736.70	0 20:45	3.98
SP_NE	STORAGE	1.39	4.29	748.29	0 21:09	4.29
SP_SE	STORAGE	2.62	4.97	735.97	1 01:22	4.97

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow CFS	Maximum Total Inflow CFS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 gal	Total Inflow Volume 10^6 gal	Flow Balance Error Percent
N_SVSWN	JUNCTION	0.00	3.32	0 20:50	0	1.11	0.107
N_DE2	JUNCTION	0.00	2.15	0 17:01	0	0.544	0.012
N_DE1	JUNCTION	0.00	3.70	0 18:02	0	0.941	0.008
N_CNWS	JUNCTION	0.00	1.58	0 17:00	0	0.394	-0.001
J_10D	JUNCTION	0.62	8.70	1 01:00	0.15	11.4	0.032
J_10G	JUNCTION	0.00	3.03	1 02:40	0	5.88	-0.002
N_SiteNE	JUNCTION	0.00	0.26	0 17:03	0	0.0641	-4.069
N_OffNE	JUNCTION	0.26	0.26	0 17:00	0.0641	0.0641	-0.002
J_10R	JUNCTION	0.00	1.59	0 19:30	0	2.84	0.003
NP_RD	JUNCTION	0.00	4.83	0 20:40	0	2.96	-0.007
STM_E10	JUNCTION	0.00	1.50	0 21:09	0	0.998	0.000
STM_E9	JUNCTION	0.00	1.50	0 21:09	0	0.998	0.000
STM_E8	JUNCTION	0.00	1.50	0 21:10	0	0.998	0.000

S_SWL	JUNCTION	0.00	1.50	0	21:10	0	0.998	0.001	
Out_SE	OUTFALL	0.00	8.69	1	01:02	0	11.4	0.000	
Out_NW	OUTFALL	0.00	0.00	0	00:00	0	0	0.000	gal
N_CNWN	STORAGE	1.58	1.58	0	17:00	0.394	0.394	-0.000	
N_DW1	STORAGE	3.72	3.72	0	18:00	0.941	0.941	-0.000	
N_DW2	STORAGE	2.16	2.16	0	17:00	0.544	0.544	-0.000	
N_CWLow	STORAGE	21.62	30.52	0	17:59	5.42	8.41	-0.006	
N_SVSWS	STORAGE	6.29	6.29	0	18:00	1.54	1.54	0.002	
SP_NE	STORAGE	3.93	3.93	0	17:00	1	1	0.000	
SP_SE	STORAGE	6.10	11.45	0	17:58	1.53	5.49	0.009	

****
Node Surcharge Summary
****

Surcharging occurs when water rises above the top of the highest conduit.

Node	Type	Hours Surcharged	Max. Height Above Crown Feet	Min. Depth Below Rim Feet
J_10R	JUNCTION	87.81	5.279	1.891

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 ft3	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 ft3	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow CFS
N_CNWN	0.028	0	0	0	0.128	0	0 17:00	1.58
N_DW1	0.101	0	0	0	0.847	1	0 18:02	3.70
N_DW2	0.127	0	0	0	0.659	1	0 17:01	2.15
N_CWLow	322.132	35	0	0	741.457	81	1 01:20	7.67
N_SVSWS	36.358	6	0	0	106.483	18	0 20:45	3.51
SP_NE	21.867	20	0	0	72.259	65	0 21:09	1.50
SP_SE	97.954	34	0	0	222.746	76	1 01:22	5.50

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow CFS	Max Flow CFS	Total Volume 10^6 gal
Out_SE	97.17	5.06	8.69	11.403
Out_NW	0.00	0.00	0.00	0.000
System	48.59	5.06	8.69	11.403

****
Link Flow Summary
****

Link	Type	Maximum |Flow| CFS	Time of Max Occurrence days hr:min	Maximum |Veloc| ft/sec	Max/ Full Flow	Max/ Full Depth
C_SVSW_12E	CONDUIT	2.18	0 21:00	3.12	2.47	0.96
D_SVSW	CONDUIT	3.30	0 20:51	0.62	0.02	0.31
C_DW2	CONDUIT	2.15	0 17:01	4.73	0.57	0.56
D_DE2	CHANNEL	2.14	0 17:11	0.47	0.01	0.16
C_DW1	CONDUIT	3.70	0 18:02	5.31	1.08	0.83
D_DE1	CHANNEL	3.68	0 18:10	0.52	0.02	0.22
C_CNW	CONDUIT	1.58	0 17:00	4.35	0.40	0.47
D_CNW	CONDUIT	1.57	0 17:04	0.70	0.01	0.07
C_10G2	CONDUIT	1.47	1 01:21	2.71	1.37	1.00
C_10G1	CONDUIT	3.03	1 02:43	5.60	2.43	1.00
D_OutSE	CONDUIT	8.69	1 01:02	1.31	0.05	0.27
C_10R1	CONDUIT	1.59	0 19:30	3.07	3.15	1.00
D_SiteNE	CHANNEL	0.26	0 18:01	0.02	0.00	0.29
D_CNE	CONDUIT	0.26	0 17:03	0.57	0.00	0.06
C_SVSW_12W	CONDUIT	1.15	0 20:45	2.77	0.52	0.52
OF_SVSW	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
C_SVSW_6	CONDUIT	0.31	0 07:10	1.59	1.04	1.00
C_10R2	CONDUIT	1.46	1 06:56	2.70	1.55	1.00
OF_DW2	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
OF_DW1	CONDUIT	0.00	0 00:00	0.00	0.00	0.00
OF_CNWW	CHANNEL	0.00	0 00:00	0.00	0.00	0.00
OF_CNW	CONDUIT	0.00	0 00:00	0.00	0.00	0.00

CP_W36	CONDUIT	4.83	0	20:40	1.54	0.28	1.00
P_E10	CONDUIT	1.50	0	21:09	3.40	0.59	0.55
P_E9	CONDUIT	1.50	0	21:10	2.74	0.64	0.66
P_E8	CONDUIT	1.50	0	21:10	4.37	0.55	0.45
S_Swale	CONDUIT	1.50	0	21:10	2.81	0.01	0.10
RP_RD	ORIFICE	4.24	0	17:58			1.00
RP2_Out	ORIFICE	1.85	1	01:22			1.00
RP_NE	ORIFICE	1.50	0	21:09			1.00
RP100_Out	ORIFICE	3.65	1	01:22			1.00
WP_RD	WEIR	2.40	0	22:23			0.56

****
Flow Classification Summary
****

	Adjusted	Fraction of Time in Flow Class								
Conduit	/Actual Length	Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl
C_SVSW_12E	1.00	0.29	0.12	0.00	0.59	0.00	0.00	0.00	0.37	0.00
D_SVSW	1.00	0.29	0.00	0.00	0.37	0.00	0.00	0.00	0.34	0.11	0.00
C_DW2	1.00	0.02	0.46	0.00	0.11	0.40	0.00	0.00	0.00	0.73	0.00
D_DE2	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C_DW1	1.00	0.03	0.42	0.00	0.32	0.24	0.00	0.00	0.00	0.72	0.00
D_DE1	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
C_CNW	1.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
D_CNW	1.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.75	0.00	0.00
C_10G2	1.00	0.02	0.02	0.00	0.96	0.00	0.00	0.00	0.04	0.00
C_10G1	1.00	0.02	0.00	0.00	0.95	0.02	0.00	0.00	0.02	0.00
D_OutSE	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
C_10R1	1.00	0.02	0.00	0.00	0.25	0.00	0.00	0.73	0.00	0.00
D_SiteNE	1.00	0.02	0.01	0.00	0.97	0.00	0.00	0.00	0.96	0.00
D_CNE	1.00	0.45	0.00	0.00	0.00	0.00	0.00	0.55	0.00	0.00
C_SVSW_12W	1.00	0.75	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00
OF_SVSW	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C_SVSW_6	1.00	0.02	0.01	0.00	0.97	0.00	0.00	0.00	0.19	0.00
C_10R2	1.00	0.02	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00
OF_DW2	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OF_DW1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OF_CNWW	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
OF_CNW	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CP_W36	1.00	0.06	0.26	0.00	0.67	0.00	0.00	0.00	0.28	0.00
P_E10	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00
P_E9	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.70	0.00
P_E8	1.00	0.03	0.00	0.00	0.00	0.97	0.00	0.00	0.00	0.00
S_Swale	1.00	0.03	0.00	0.00	0.00	0.00	0.00	0.97	0.00	0.00

****
Conduit Surcharge Summary
****

	Hours Full			Hours Above Full	Hours Capacity
Conduit	Both Ends	Upstream	Dnstream	Normal Flow	Limited
C_SVSW_12E	0.01	11.57	0.01	16.94	0.01
C_DW1	0.01	4.01	0.01	2.63	0.01
C_10G2	87.41	87.41	87.63	83.74	84.36
C_10G1	38.48	87.63	38.48	87.85	38.48
C_10R1	0.01	87.81	0.01	87.91	0.01
C_SVSW_6	72.87	72.87	88.91	3.00	3.59
C_10R2	87.77	87.77	87.81	46.51	81.27
CP_W36	27.83	27.83	39.19	0.01	0.01

Analysis begun on: Tue Oct 11 00:54:50 2022
Analysis ended on: Tue Oct 11 00:54:53 2022
Total elapsed time: 00:00:03

Appendix A

Wetland Delineation Report

(Partial)

WETLAND DELINEATION REPORT

PREPARED FOR:

Joe Rizza Enterprises Inc.
8150 W. 159th Street
Orland Park, IL 60462

SUBJECT SITE:

~~Canterbury Park~~
3699 Canterbury Drive
Long Grove, Lake County Illinois
Latitude 42.181047 Longitude -88.026801

May 20, 2017
Updated November 6, 2020

MIDWEST ECOLOGICAL
PO BOX 321 | GILBERTS, ILLINOIS 60136 | 847-514-5476

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WETLAND DELINEATION REPORT

EXECUTIVE SUMMARY

In response to the request of Cross Engineering, Midwest Ecological, Inc. (MEI) has performed and completed a Wetland Delineation for the 35 acre parcel located off of Cuba Road, Long Grove, Lake County Illinois. The study area is located within Section 26, Township 43 North, Range 10 East of the Third Principal Meridian within Ela Township, Lake County, Illinois. Utilizing the methods and criteria established by the U.S. Army Corps of Engineers (COE) in their Corps of Engineers Wetlands Delineation Manual (1987), Midwest Regional Supplement (2008), United States Department of Agriculture/Natural Resource Conservation Service, in their Wetland Mapping Conventions – NRCS, Illinois (1998) a wetland investigation of the property was performed. Based on the on-site investigation using the information obtained from the field samples Midwest Ecological, Inc. (MEI) identified one (1) wetland area totaling **0.37 acres** in size.

Site	On-site Acreage	Native Mean Conservatism	Floristic Quality Index	Anticipated Regulatory Agency	ADID (Y/N)
Wetland A	0.37 acres	2.44	15.21	USACE	Y

Please Note: Wetland A is larger than identified within this report. Wetland A is part of a large wetland complex located to the East. Wetland A is jurisdictionally connected to Buffalo Creek. The acreages & quality of the wetlands noted within this report only pertain to the areas found within the property boundary.

It should be noted that under the current guidelines, any disturbance of a wetland area requires a permit through the US Army Corps of Engineers and/or Lake County Stormwater Management Commission. However, mitigation may or may not be required, depending on the overall impact (> 0.10) to the wetland, Waters of the United States or Isolated Wetland of Lake County. This jurisdiction of the identified wetland is at the discretion of the ACOE.

PURPOSE OF VISIT

The purpose of the site visit is to determine if any Wetlands (various types), Open water pockets, Creeks or Rivers exist on-site and to determine their approximate size, location, quality and jurisdiction. Wetlands encountered were delineated using standard methods sanctioned by the United States Army Corps of Engineers in their Corps of Engineers Wetlands Delineation Manual (1987), Regional Supplement (2008) and Wetland Mapping Conventions – NRCS, Illinois (1998).

DEFINITION OF A WETLAND

The U.S. Army Corps of Engineers (ACOE) and the U.S. Environmental Protections Agency (EPA) define wetlands as:

> "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions..." (33 CFR 328.3[b], 1977).

Although not defined by regulation, "normal circumstances" are interpreted by both the ACOE and the Natural Resources Conservation Service to be "the soil and hydrologic conditions that are normally present, without regard to whether the vegetation has been removed" (7 CFR 12.31[b][2][*i*]).

METHODOLOGY

Prior to visiting the site, Midwest Ecological, Inc. (MEI) performed a review of the aforementioned National Wetland Inventory map, Lake County Soil Survey map and aerial photograph in order to determine existing site conditions. Site visits were then conducted by an Environmental Wetland Specialist from MEI on November 16, 2016, September 21 & 25, 2020. The USACE Wetland Delineation Manual, dated January 1987, identifies the mandatory technical criteria for wetland identification. The three essential characteristics of a wetland are: 1) hydrophytic vegetation; 2) hydric soils; and 3) wetland hydrology. These characteristics are described below:

Hydrophytic Vegetation: The hydrophytic vegetation criterion is based on a separation of plants into five basic groups:

1) Obligate wetland plants (OBL) almost always occur (estimated probability >99%) in wetlands under natural conditions;
2) Facultative wetland plants (FACW) usually occur in wetlands (estimated probability 67-99%), but occasionally are found in non-wetlands;
3) Facultative plants (FAC) are equally likely to occur in wetland or non-wetlands (estimated probability 34-66%);
4) Facultative upland plants (FACU) usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands (estimated probability 1-33%); and
5) Obligate upland plants (UPL) almost always occur (estimated probability >99%) in non-wetlands under natural conditions.

Within each data point, vegetation is sampled in plots of varying size based on the type of vegetation being sampled. The following plot sizes are recommended by the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Midwest Region:

Trees	- 30-ft radius
Saplings/Shrubs	- 15-ft radius
Herbaceous Plants	- 1 m2 plot
Woody vines	- 30-ft radius

If greater than 50% of the plants present in each stratum or layer of the plant community are FAC (with the exception of FAC-), FACW, or OBL the subject area is considered a wetland in terms

of vegetation (Dominance Test). If the vegetation does not meet the requirements of the Dominance Test, the Prevalence Index (PI) should be utilized.

The PI evaluates the coverage, on a weighted basis of coverage over all strata, of the vegetation within the plot. The PI ranges between 1.0 and 5.0, with a 3.0 or less indicating hydrophytic vegetation is present. If the PI is greater than 3.0, the dominance test is failed, but there are still hydric soil and wetland hydrology presence, the observation of morphological adaptations by vegetation can be used to indicate that the hydrophytic vegetation criteria is met. Morphological adaptations are changes in the structure of vegetation in response to conditions outside the normal character of the plant. These adaptations include adventitious roots, multi-stemmed trunks, shallow root systems developed at or near the surface, and buttressing in tree species. To meet this indicator, more than 50% of the individuals of FACU species must exhibit the morphological adaptations. Care must be given that the adaptations observed are due wetter conditions that the species is used to as opposed to other factors such as shallow roots present because of erosion of the surface.

Hydric Soils: Hydric soils are defined in the manual as "soils that are saturated, flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper part." Hydric soil indicators are distinctive characteristics that persist in the soil during both wet and dry periods, and are used to identify hydric soils in the field. Field indicators include color, mottling, gleying, and sulfidic odor. A specific set of indicators has been developed by the USDA Natural Resource Conservation Service (Field Indicators of Hydric Soils in the United States) which provides a detailed description of how to identify the indicators in during a site visit. A soil meets the definition of a hydric soil if it exhibits at least one of these indicators.

Wetland Hydrology: Indicators of hydric soil and hydrophytic vegetation typically reflect the middle and long-term conditions of a site, but not the short term conditions. The wetland hydrology criterion is often the most difficult to determine because of climatological variation. Typically, the presence of water for a week or more during the growing season creates anaerobic conditions indicative of wetland hydrology. Anaerobic conditions lead to the prevalence of wetland plants. The 2010 USACE Regional Supplement for the Midwest Region provides specific indicators in four different groups for wetland hydrology: Observation of Surface Water or Saturated Soils, Evidence of Recent Inundation, Evidence of Current or Recent Soil Saturation, and Evidence from Other Site Conditions or Data. If a site exhibits 1 primary indicator or 2 secondary indicators, then it meets the hydrology criteria for a wetland.

REFERENCE MATERIALS

The following materials were reviewed and utilized to assist in the field reconnaissance and completion of this report. See Appendix A for the Reference Materials (Exhibits 1 through 7).

Location

The site is located at common address 3699 Canterbury Drive, Long Grove Illinois. Geographically, the site can be located in Section 26, Township 43 North, Range 10 East of the

Third Principal Meridian within Ela Township, Lake County, Illinois (Latitude 42.181047 Longitude -88.026801).

National & Lake County Advanced Identification Wetland Inventory Maps

The National & Lake County Advanced Identification Wetland Maps were reviewed to determine the location of wetland areas on the subject site. It should be noted that these maps are only large scale guides, actual wetland locations and types may vary. Ultimate qualification occurs during field reconnaissance.

Per our review of the NWI map, the study area contains one wetland area:

PEMF: Palustrine, Emergent, Semi-permanent

Per our review of the Lake County Advanced Identification Map, The study area does contain one High Quality Aquatic Wetland (ADID 180) area.

Based on onsite investigation the site does not conform to the ADID wetland map. MEI did not identify any wetland area within the center or western portion of the property.

Lake County Soil Survey Map

The Soil Survey of Lake County, Illinois was investigated to determine the location of hydric soils on the subject site. Mapped hydric soils can indicate wetland areas. The following soils were found to be present on the subject site during our investigation.

232 A – Ashkum silty clay loam, 0-2% slopes (**poorly drained, hydric**)
330 A – Peotone silty clay loam, 0-2% slopes (**very poorly drained**)
370 B – Saylesville silt loam, 2-4% slopes (moderately well drained)
530 D3 – Ozaukee silt loam, 6-12% slopes (moderately well drained)
696 C2 – Zurich silt loam, 4-6% slopes (moderately well drained)
840 C2 – Zurich and Ozaukee silt loams, 4-6% slopes (moderately well drained)
1107 A – Sawmill silty clay loam, 0-2% slopes (**poorly drained**)

United States Geological Survey Map

The United States Geological Survey Map & Hydrological Atlas (HA-208) as illustrated on the Lake Zurich Quad U.S.G.S. Map and Hydrological Atlas. These maps were reviewed to determine the historical local drainage patterns.

All drainage noted (surface and subsurface) on-site is conveyed to the East into Wetland A. A series of draintiles are found within the center of the property conveying water to the East. Wetland A is part of a larger wetland complex that continues to the South and West. Wetland A is directly connected to Buffalo Creek.

Flood Insurance Rate Map

The Flood Insurance Rate Maps (F.I.R.M.), for Lake County, Illinois, Community Panel No. 17097C0242 L effective date September 18, 2013 was reviewed to determine the location of regulatory floodplains and floodways within the subject site. Mapped floodplains can be indicative of wetland hydrology.

Based on the F.I.R.M. Maps, the study area does contain a Zone AE flood plain. The flood plain is found within Wetlands A and Buffalo Creek to the East.

WETLAND FIELD DELINEATION

An on-site wetland delineation of the property was conducted on November 16, 2016, September 21 & 25, 2020. Wetland boundaries were determined using the ACOE guidelines and the United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) guidelines, as stated previously. The routine method of wetland delineation was used, incorporating information on vegetation, hydrology and soils. The full width of the property was traversed and when a suspected wetland was encountered, the plant species present were determined by making several random passes through the area. If wetland plant species were found to be comprised of 50% or more of plant cover (i.e., wetland vegetation was dominant), the suspected wetland was further examined for the necessary field indicators of hydric soil and hydrology. The wetland boundaries were then defined and all observed plant species were recorded.

The plant taxonomic nomenclature and the Natural Area Index (NAI) used in this report follow's the Chicago Region FQA Index (2017). A more detailed survey would be necessary for a more complete plant list and while more species might be obtained from additional surveys, this would not change the areas delineated as wetlands.

Study Area: The 35 acre study area and consists of primarily vacant land with one estate style single family home. The site consists of rolling terrain from grasslands to scattered woodlands. Common buckthorn and other volunteer woody species were being removed at the time of our investigation. The tree removal process consists of cutting at the base and mulching the tree. According to the Lake County ADID wetland map, ADID 180 comprises of approximately 25% of the site. MEI investigated this area and did not identify a wetland where the ADID map identifies a wetland. A wetland was noted at the SE corner of the site and is connected to the large wetland complex of Buffalo Creek, however a wetland was not found within the center of the property. A series of draintiles, ranging from 4"-10" in size, have been identified that could be drawing down the ground water within this area. The draintiles discharge into the off-site wetland complex. The ADID wetland location appears to be a mapping error.

Wetland A: Wetland A is a scrub shrub/marsh wetland that is found at the southeast corner of the study area. The wetland is part of the larger Buffalo Creek wetland Complex. Wetland A is characterized by data point 1A & 3A and is **0.37 acres** in size. The flagged wetland is a lowland area surrounded by steep slopes that continues to the east. The Lake County Advanced Identification Map shows this area as High Quality Aquatic Resource # 180. A draintile outfall

was observed within the woody area prior to discharge off the site. The dominant vegetation (within this area) was determined to be Common cattail (*Typha latifolia*), Narrow-leaved Cattails (*Typha angustifolia*), Reed Canary Grass (*Phalaris arundinacea*), Common Buckthorn (*Rhamnus cathartica*) & Orange Jewel Weed (*Impatiens capensis*). During our investigation positive wetland hydrology is met with the primary indicators of Surface Water (A1), Saturation (A3) & Inundation visible on aerial imagery (B7). The mapped soil profile for this wetland is identified as Sawmill silty clay loam (1107A) which is a very poorly drained hydric soil. Primary soil indicators of thick dark surface (A12) was noted within the flagged boundary.

Said vegetation soils and hydrology information noted above can be found in the datasheets section of this report. Please note data sheets 1A-3A reference wetland A.

Study Information

Site: Canterbury Park

Locale: Wetland A

By: Robert Vanni

Conservatism-Based Metrics		Additional Metrics	
Mean C (native species)	2.44	Species Richness (all)	51.00
Mean C (all species)	1.86	Species Richness (native)	39.00
Mean C (native trees)	3.20	% Non-native	0.24
Mean C (native shrubs)	1.33	Wet Indicator (all)	-0.37
Mean C (native herbaceous)	2.52	Wet Indicator (native)	-0.56
FQAI (native species)	15.21	% hydrophyte (Midwest)	0.73
FQAI (all species)	13.30	% native perennial	0.65
Adjusted FQAI	21.30	% native annual	0.08
% C value 0	0.31	% annual	0.08
% C Value 1-3	0.47	% perennial	0.86
% C value 4-6	0.20		
% C value 7-10	0.02		

Species Acronym	Species Name (NWPL/Mohlenbrock)	Common Name	C Value	Midwest WET indicator	WET indicator (numeric)	Habit	Duration	Nativity
aceneg	*Acer negundo*	Ash-Leaf Maple	0	FAC	0	Tree	Perennial	Native
agrgy	*Agrimonia gryposepala*	Tall Hairy Grooveburr	2	FACU	1	Forb	Perennial	Native
agralb	*Agrostis gigantea*	Black Bent	0	FACW	-1	Grass	Perennial	Adventive
allpet	*Alliaria petiolata*	Garlic-Mustard	0	FAC	0	Forb	Biennial	Adventive
apocan	*Apocynum cannabinum*	Indian-Hemp	2	FAC	0	Forb	Perennial	Native
asccne	*Asclepias incarnata*	Swamp Milkweed	4	OBL	-5	Forb	Perennial	Native
betnig	*Betula nigra*	River Birch	7	FACW	-1	Tree	Perennial	Native
bidfro	*Bidens frondosa*	Devil's-Pitchfork	1	FACW	-1	Forb	Annual	Native
boecyl	*Boehmeria cylindrica*	Small-Spike False Nettle	2	OBL	-5	Forb	Perennial	Native
exblan	*Carex blanda*	Eastern Woodland Sedge	1	FAC	0	Sedge	Perennial	Native
cexvulp	*Carex vulpinoidea*	Common Fox Sedge	2	FACW	-1	Sedge	Perennial	Native
celocc	*Celtis occidentalis*	Common Hackberry	3	FAC	0	Tree	Perennial	Native
cirarv	*Cirsium arvense*	Canadian Thistle	0	FACU	1	Forb	Perennial	Adventive
conarv	*Convolvulus arvensis*	Field Bindweed	0	UPL	5	Forb	Perennial	Adventive
corrac	*Cornus racemosa*	Gray Dogwood	1	FAC	0	Shrub	Perennial	Native
epicol	*Epilobium coloratum*	Purple-Leaf Willowherb	3	OBL	-5	Forb	Perennial	Native
eriann	*Erigeron annuus*	Eastern Daisy Fleabane	0	FACU	1	Forb	Biennial	Native
eutmac	*Eutrochium maculatum*	Spotted Trumpetweed	4	OBL	-5	Forb	Perennial	Native
geucan	*Geum canadense*	White Avens	1	FAC	0	Forb	Perennial	Native
hacvir	*Hackelia virginiana*	Beggar's-Lice	0	FACU	1	Forb	Biennial	Native
impcap	*Impatiens capensis*	Spotted Touch-Me-Not	3	FACW	-1	Forb	Annual	Native
irivir	*Iris virginica var. shrevei*	Virginia Blueflag	5	OBL	-5	Forb	Perennial	Native
lemmio	*Lemna minor*	Common Duckweed	5	OBL	-5	Forb	Annual	Native
lontat	*Lonicera tatarica*	Twinsisters	0	FACU	1	Shrub	Perennial	Adventive

moralb	*Morus alba*	White Mulberry	0	FAC	0	Tree	Perennial	Adventive
parins	*Parthenocissus inserta*	Thicket-Creeper	1	FACU	1	Vine	Perennial	Native
parqui	*Parthenocissus quinquefolia*	Virginia-Creeper	2	FACU	1	Vine	Perennial	Native
polhyd	*Persicaria hydropiper*	Mild Water-Pepper	2	OBL	-2	Forb	Annual	Native
phaaru	*Phalaris arundinacea*	Reed Canary Grass	0	FACW	-1	Grass	Perennial	Adventive
popdel	*Populus deltoides*	Eastern Cottonwood	2	FAC	0	Tree	Perennial	Native
rhacat	*Rhamnus cathartica*	European Buckthorn	0	FAC	0	Shrub	Perennial	Adventive
rosmul	*Rosa multiflora*	Rambler Rose	0	FACU	1	Shrub	Perennial	Adventive
rubocc	*Rubus occidentalis*	Black Raspberry	2	UPL	2	Shrub	Perennial	Native
rudlac	*Rudbeckia laciniata*	Green-Head Coneflower	5	FACW	-1	Forb	Perennial	Native
saglat	*Sagittaria latifolia*	Duck-Potato	1	OBL	-2	Forb	Perennial	Native
salnig	*Salix nigra*	Black Willow	4	OBL	-2	Tree	Perennial	Native
samcan	*Sambucus nigra ssp. canadensis*	Black Elder	1	FACW	-1	Shrub	Perennial	Native
fesela	*Schedonorus pratensis*	Meadow Fescue	0	FACU	1	Grass	Perennial	Adventive
solcar	*Solanum carolinense*	Carolina Horse-Nettle	0	FACU	1	Forb	Perennial	Adventive
solalt	*Solidago altissima*	Tall Goldenrod	1	FACU	1	Forb	Perennial	Native
solgig	*Solidago gigantea*	Late Goldenrod	4	FACW	-1	Forb	Perennial	Native
spapec	*Spartina pectinata*	Freshwater Cord Grass	4	FACW	-1	Grass	Perennial	Native
astsim	*Symphyotrichum lanceolatum*	White Panicled American-Aster	3	FAC	0	Forb	Perennial	Native
astnov	*Symphyotrichum novae-angliae*	New England American-Aster	4	FACW	-1	Forb	Perennial	Native
astpil	*Symphyotrichum pilosum*	White Oldfield American-Aster	0	FACU	1	Forb	Perennial	Native
rhurad	*Toxicodendron radicans*	Eastern Poison-Ivy	2	FAC	0	Vine	Perennial	Native
typang	*Typha angustifolia*	Narrow-Leaf Cat-Tail	0	OBL	-2	Forb	Perennial	Adventive
typlat	*Typha latifolia*	Broad-Leaf Cat-Tail	1	OBL	-2	Forb	Perennial	Native
urtdio	*Urtica dioica ssp. gracilis*	Tall Nettle	2	FACW	-1	Forb	Perennial	Native
viosor	*Viola sororia*	Hooded Blue Violet	3	FAC	0	Forb	Perennial	Native
vitrip	*Vitis riparia*	River-Bank Grape	2	FACW	-1	Vine	Perennial	Native

Wetland A Jurisdictional Determination Opinion: The Corps of Engineers has taken jurisdiction and concurred with the boundary of wetland A (LRC 2017-00690). The Jurisdictional Determination and boundary verification is valid until September 15, 2022.

CONCLUSIONS

The site was evaluated using U.S. Army Corps of Engineers and USDA guidelines for identifying wetlands. After evaluation of all data obtained, the site does contain one (1) ADID wetland areas totaling **0.37 acres** in size.

FEDERAL REGULATIONS

Jurisdictional Waters of the United States will be regulated under Section 404 of the Clean Water Act and the Section 401 Water Quality Certification requirements. Under Section 404, the United States Army Corps of Engineers regulates the discharge of dredged or fill material into jurisdictional Waters of the United States (WOUS).

Letter of No-Objection (LONO): The project may require a letter of No-Objection (LONO) from the Chicago District Army Corps of Engineers to facilitate the development. If the proposed project avoids impact to the wetlands or WOUS then a LONO can be petitioned.

Regional Permit 1 (RP1) authorizes the construction of residential, commercial and institutional developments and associated infrastructure, such as roads, utilities, detention areas, and recreation areas. Authorization under RP1 is subject to the following requirements which shall be addressed in writing and submitted with the notification:

a. The impact to waters of the U.S. shall not exceed 1.0 acre. For projects that impact over 0.10 acres of waters of the U.S., the permittee is required to provide compensatory mitigation.

b. Projects that impact no more than 0.5 acres of waters of the U.S., and do not impact ny high-quality aquatic resources, will be processed under Category I.
c. Projects that impact over 0.5 acres up to 1.0 acre of waters of the U.S., or impacts high-quality aquatic resources, will be processed under Category II.

The permittee shall establish and/or enhance an upland buffer of native plants (or other appropriate vegetation approved by the District) adjacent to all created, restored, enhanced or preserved waters of the U.S., including wetlands. Created buffers should be established on 6:1 (horizontal: vertical) or gentler slopes. The following buffer widths are required:

1) For any waters of the U.S. determined to be a high-quality aquatic resource, the buffer shall be a minimum of 100 feet.
2) For any waters of the U.S. that do not qualify as wetland (e.g. lakes, rivers, ponds, etc.), the buffer shall be a minimum of 50 feet from the Ordinary High Water Mark (OHWM).
3) For any jurisdictional wetland from 0.25 acres up to 0.50 acres in size, the buffer shall be a minimum of 30 feet.
4) For any jurisdictional wetland over 0.50 acres in size, the buffer shall be a minimum of 50 feet.

The District may allow buffer widths below the above-required minimums on a case by case basis. However, it is the responsibility of the applicant to provide supporting documentation as to why the buffer requirement could not be met. Stormwater retention/detention facilities and nature trails may be located within the outer 50% of the buffer. The District may allow Best Management Practices, small boat launches and piers/docks to be located in buffers.

Regional Permit 7 (RP7) authorizes temporary impacts to wetlands or WOUS to facilitate a project as long as the temporary impacts are restored to preconstruction conditions. Temporary structures and discharges necessary for construction activities including, access, temporary fill and dewatering devices are allowable under this permit.

Regional Permit 8 (RP8) authorizes the construction, maintenance and repair of utility line activities and associated facilities in waters of the United States. This includes trenching and backfilling activities for utility lines and fill activities for construction of substations and related appurtenances temporary and permanent access roads, construction pads, stormwater management facilities, fencing, parking lots, etc.), poles, pads, anchors, outfall structures, and foundations for overhead utility line towers, utility lines under (e.g., through directional drilling) or over navigable waters (regulated under Section 10 waters only), and outfalls and associated intakes which are authorized, conditionally authorized, specifically exempted, or are otherwise in compliance with the National Pollutant Discharge Elimination System program (Section 402 of the Clean Water Act).

LAKE COUNTY REGULATIONS

The four categories of wetland type regulated under the Lake County Unified Development ordinance (UDO), and Lake County Watershed Development Ordinance (WDO) are as follows:

(a) Category-I: Wetland impacts less than or equal to 1 acre and does not impact high-quality aquatic resources;
(b) Category-II: Wetland impacts greater than 1 acre and less than 2 acres and does not impact high-quality aquatic resources;
(c) Category-III: Wetland impacts greater than or equal to 2 acres or impacts high-quality aquatic resources; and
(d) Category-IV: Wetland impacts for the restoration, creation and enhancement of wetlands provided that there are net gains in aquatic resource function. Category-IV activities include shoreline and stream bank erosion restoration described in Article IV. Section C.2.d.3.

The WDO requires mitigation for wetland impacts greater than or equal to 0.10 acre of Isolated Wetlands of Lake County (IWLC). Mitigation shall provide replacement of the wetland environment lost to development at the following proportional rates (i.e., creation acreage to wetland impact acreage):

1) A minimum of 1.5:1 for wetland impacts under Categories I, II and III that are not high quality aquatic resources, except 1:1 for approved and fully certified wetland mitigation bank credits;
2) A minimum of 3:1 for wetland impacts that are high quality aquatic resources;
3) A minimum of 6:1 for wetland impacts that are forested wetlands.

Mitigation credit may also be obtained for enhancement. For example, the enhancement of farmed wetlands meeting the size criteria of the WDO may be used for up to 80% of the mitigation requirement. Enhancement of existing non-farmed wetlands may be credited up to 25% of the enhanced wetland acreage completed, provided the wetland impacted acreage created on-site is a minimum 1:1 ratio. Buffer width requirements for water bodies are as follows:

1) For all water bodies or wetlands with a total surface area greater than one third (1/3) acre but less than one (1) acre, a minimum buffer width of thirty (30) feet shall be established.
2) For all water bodies or wetlands with a total surface area greater than or equal to one (1) acre but less than two and one half (2 ½) acres, a minimum buffer width of forty (40) feet shall be established.
3) For all water bodies or wetlands with a total surface area greater than or equal to two and one half (2½) acres, a minimum buffer width of fifty (50) feet shall be established.
4) Non-linear high quality aquatic resources shall have a minimum buffer width of one hundred (100) feet.

Linear buffers shall be designated along both sides of all channels meeting the definition of Wetlands of Lake County. The buffer width shall be determined as follows:

1) When the channel has a watershed greater than 20-acres but less than one square mile, the minimum buffer shall be 50 feet on each side of the channel.
2) When the channel has a watershed greater than one square mile, the minimum buffer shall be 30 feet on each side of the channel.

3) Linear high quality aquatic resources and streams with an Index of Biotic Integrity (IBI) greater than 40 shall have a minimum buffer width of 100 feet on each side of the channel. (Initial IBI based on IEPA Illinois Water Quality Report, biannual. A site-specific IBI assessment may override this report.)

Should you have any questions, please do not hesitate to contact our office.
Sincerely,

Midwest Ecological, Inc. (MEI)

Robert L. Vanni
Wetland Specialist

Lake County Certified #C-059

APPENDIX A

Exhibits

Source: Pictometry Aerial Photograph (2019)

MIDWEST ECOLOGICAL

Final Wetland Location Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

N
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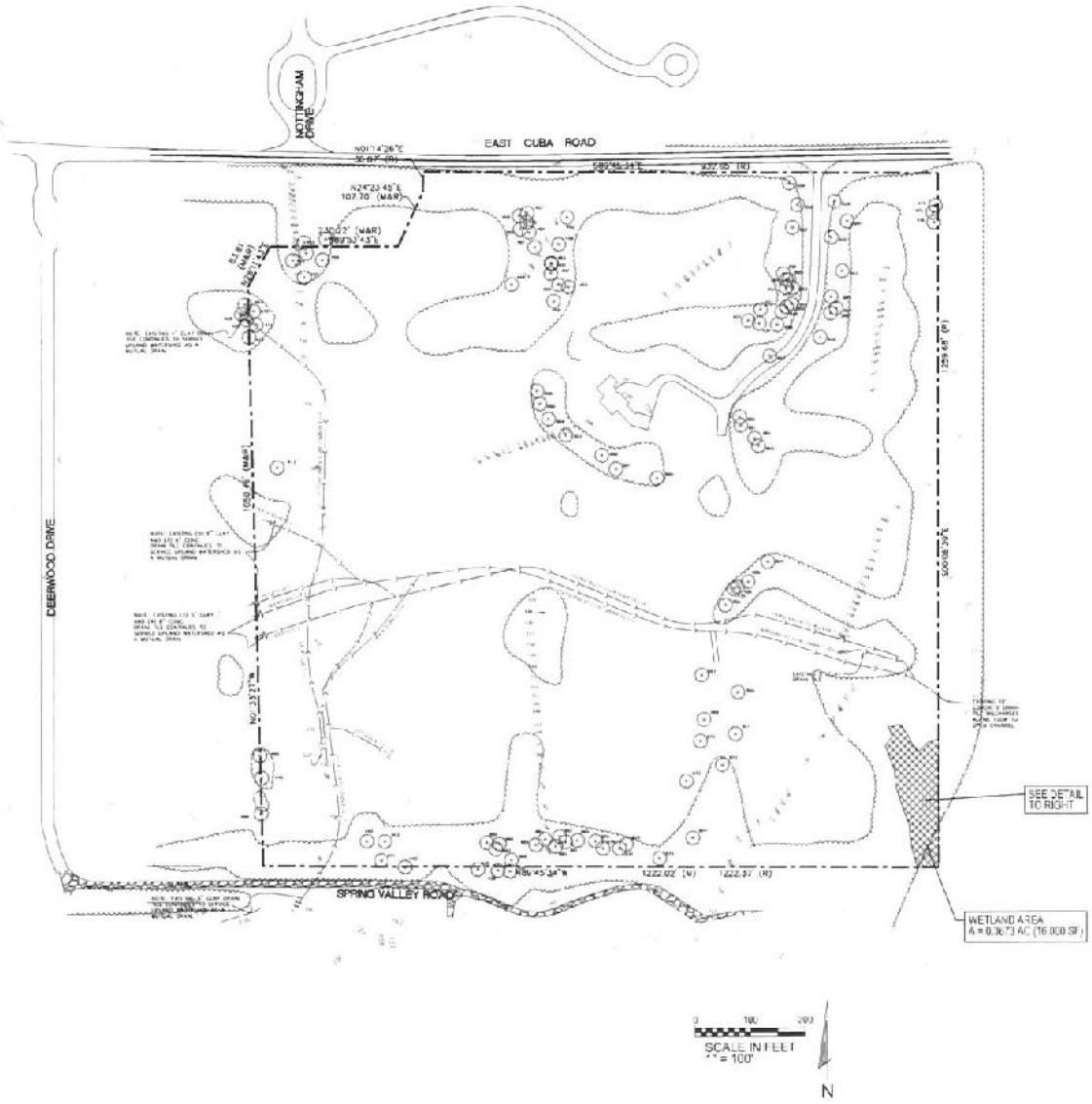
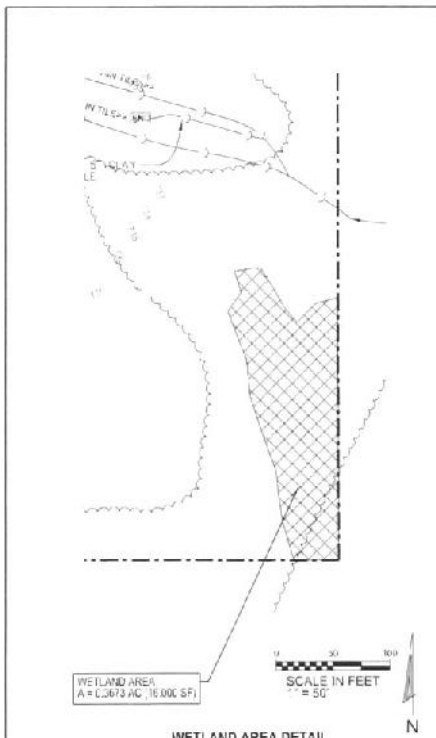




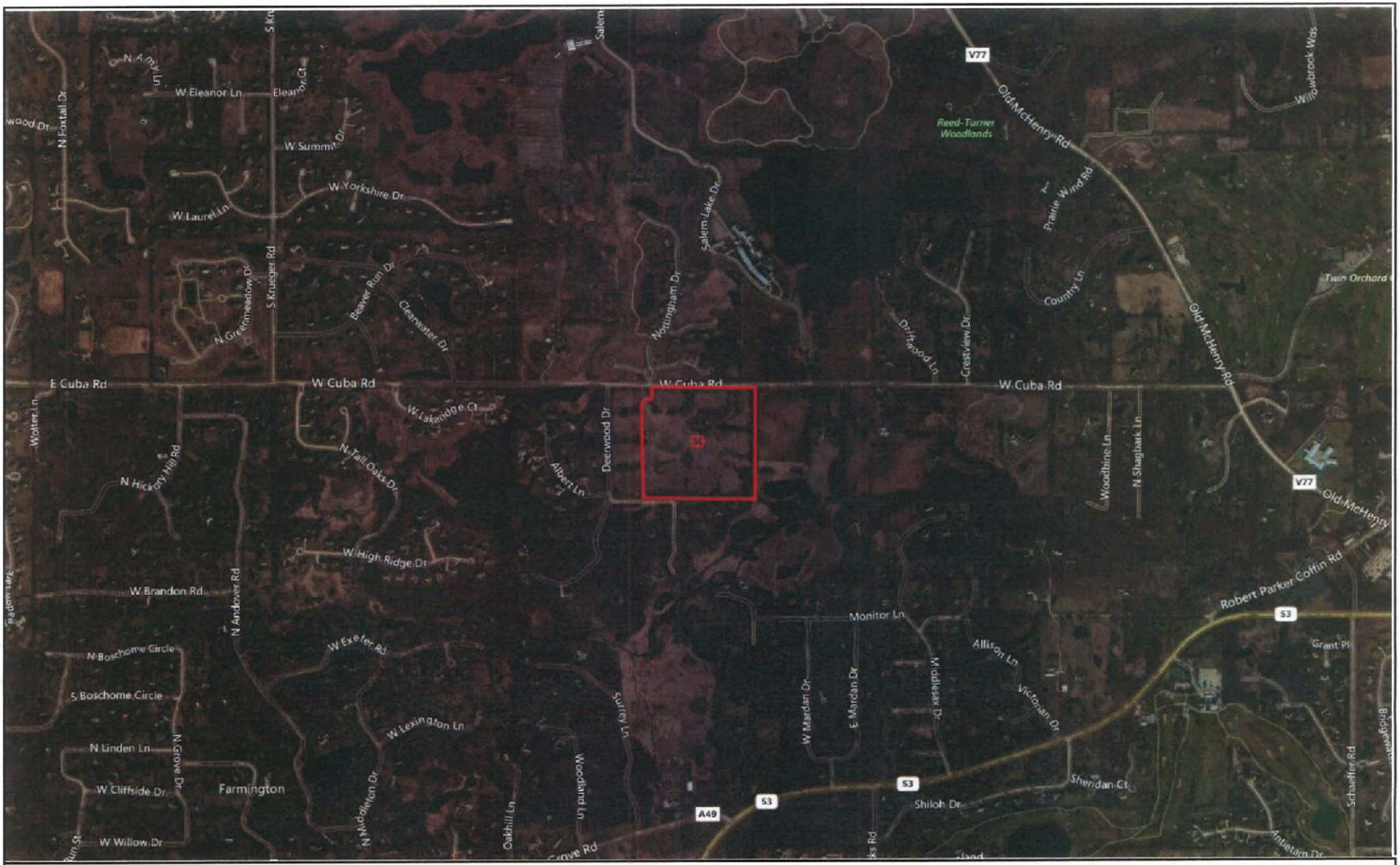
WETLAND AREA DETAIL

Cross

PROJECT:
PHILIP ESTATES SUBDIVISION
CUBA ROAD | LONG GROVE, IL

PREPARED FOR:
PHILIP ESTATES, LLC
818 W. 18TH STREET
CHICAGO, IL 60642

WETLAND EXHIBIT



Source: Bing Street Finder Map

MIDWEST ECOLOGICAL

Location Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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Source: Lake County Advanced Identification Wetland Map

MIDWEST ECOLOGICAL

ADID Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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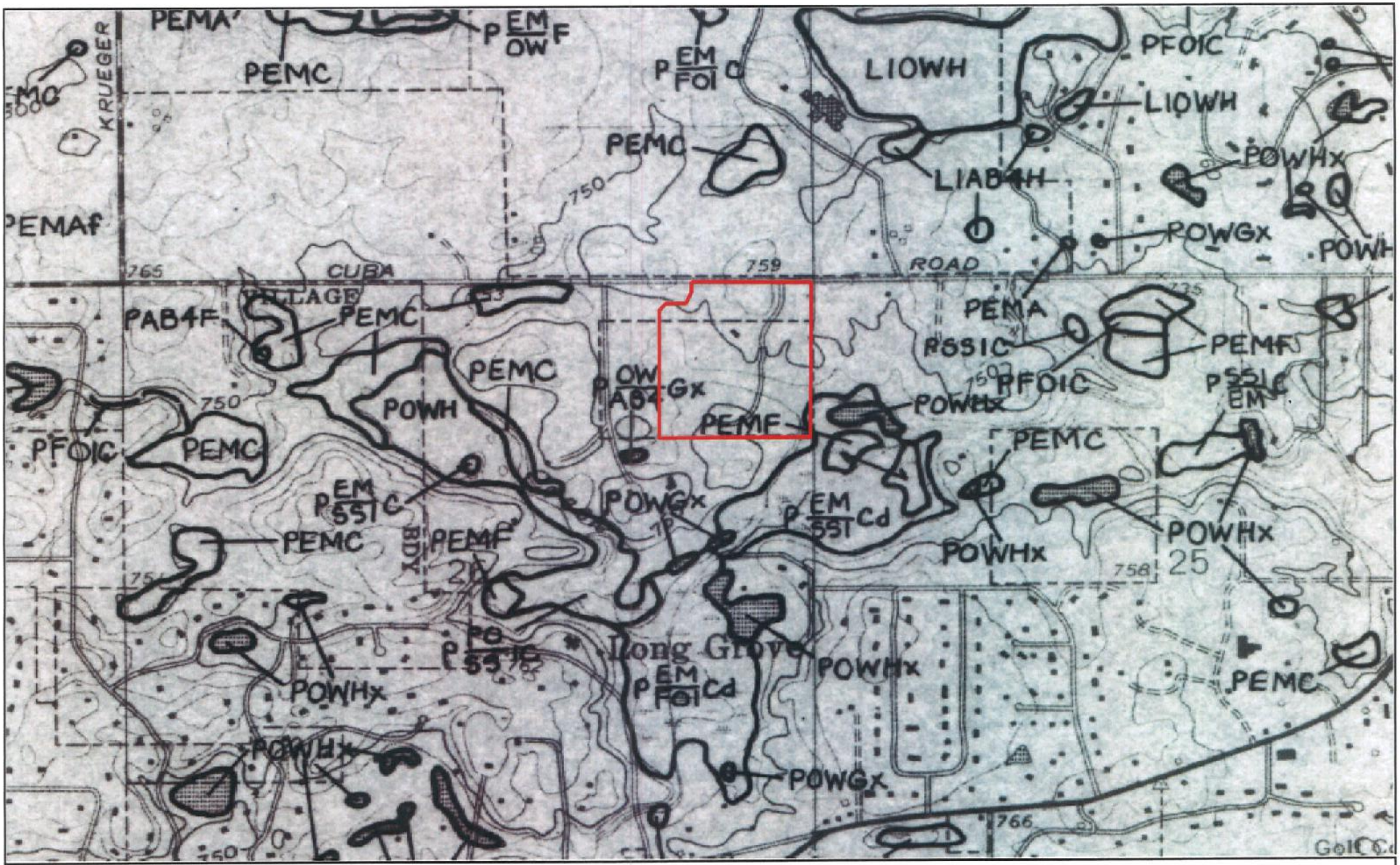

Source: National Wetland Inventory Map

MIDWEST ECOLOGICAL

N.W.I. Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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Source: Websoil Lake County Soil Survey, Drainage Class Map

MIDWEST ECOLOGICAL

Lake County Drainage Class Soils Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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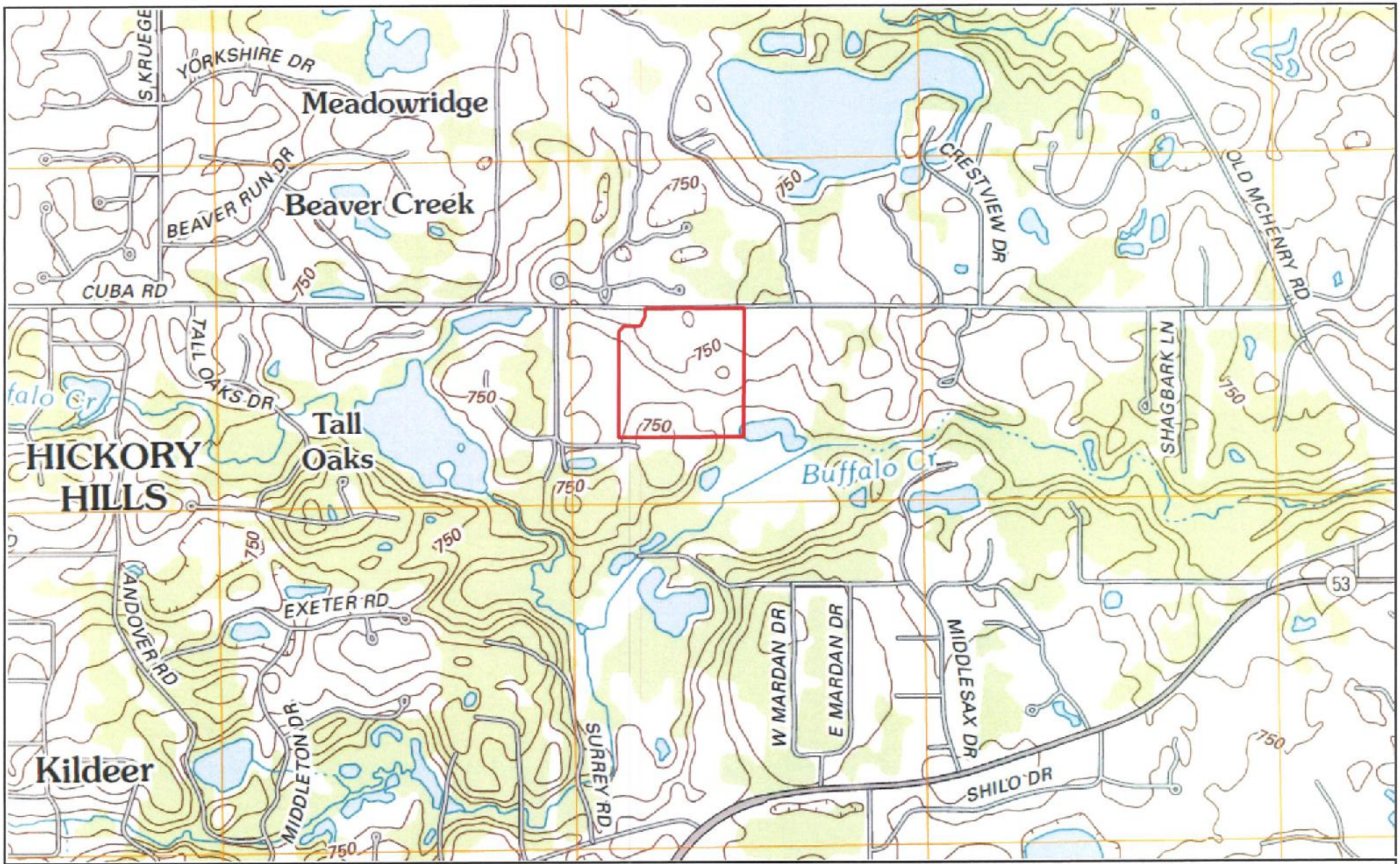

Source: United States Geological Survey Map (2012)

MIDWEST ECOLOGICAL

U.S.G.S. Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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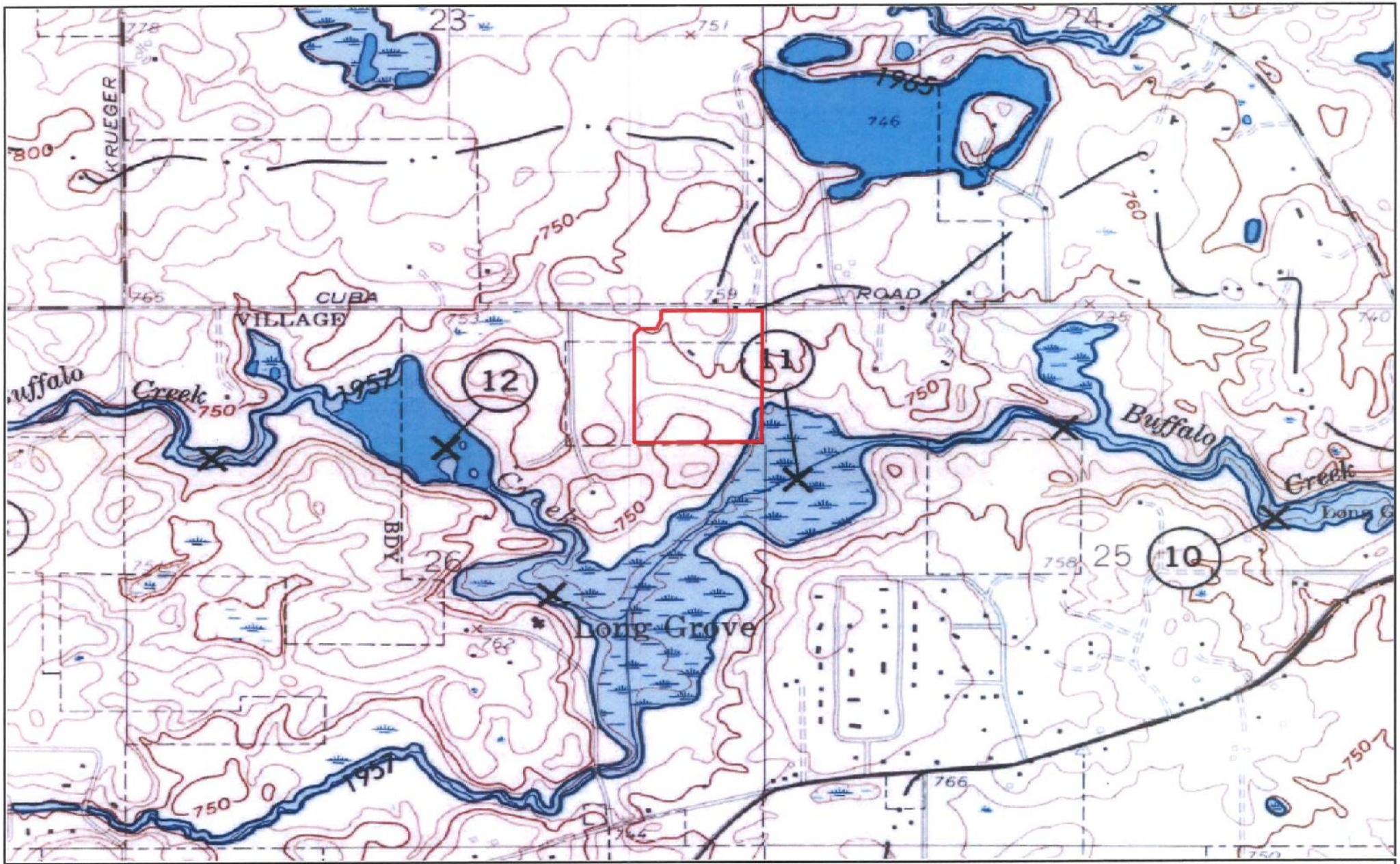

Source: United States Geological Survey, Hydrological Atlas Map (HA-208)

MIDWEST ECOLOGICAL

Hydrological Atlas Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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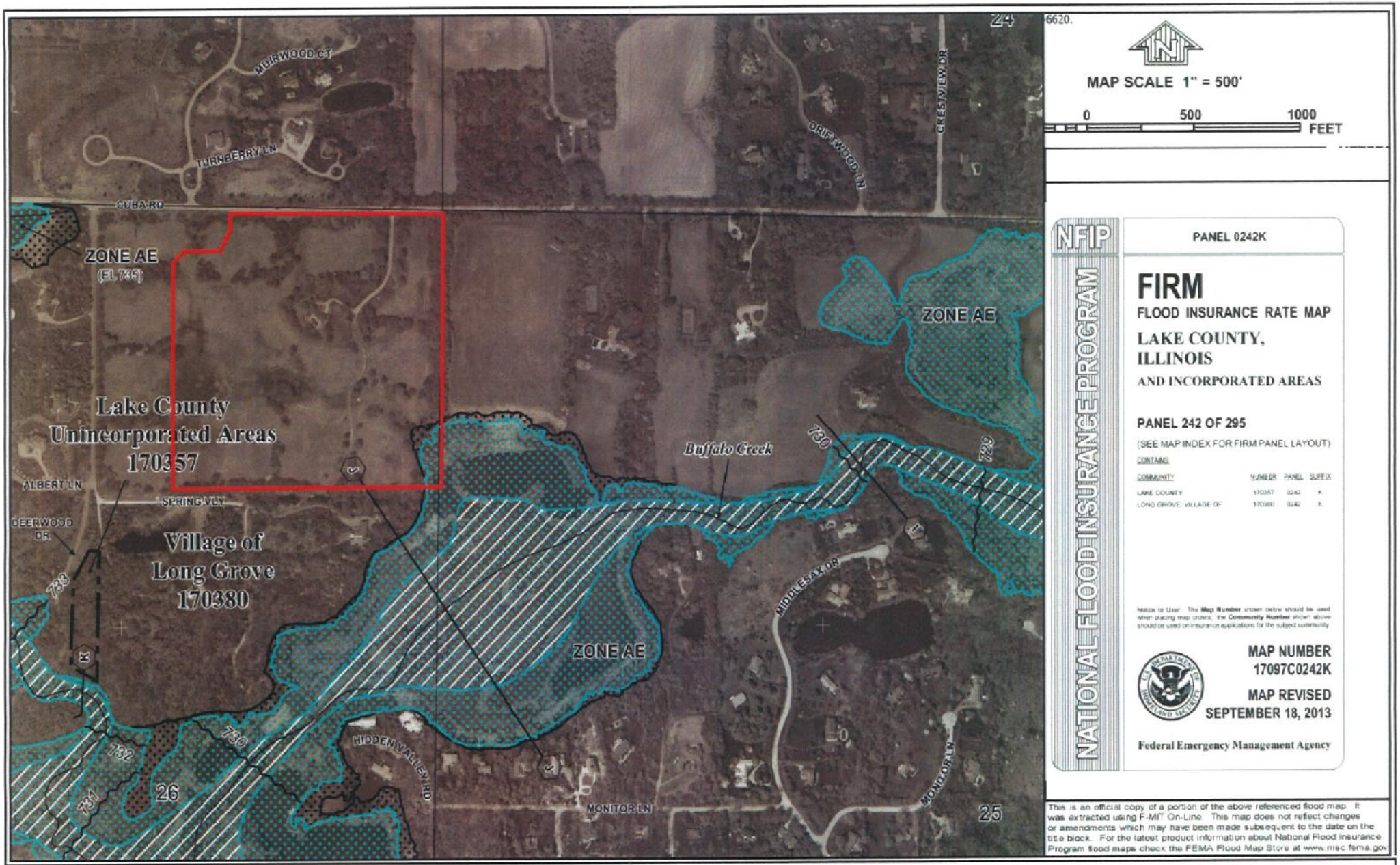

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Source: Flood Insurance Rate Map

MIDWEST ECOLOGICAL

F.I.R.M. Map

Client: Mr. Dan McMillan, Joe Rizza Enterprises, Inc.
8150 W. 159th Street
Orland Park, IL 60462

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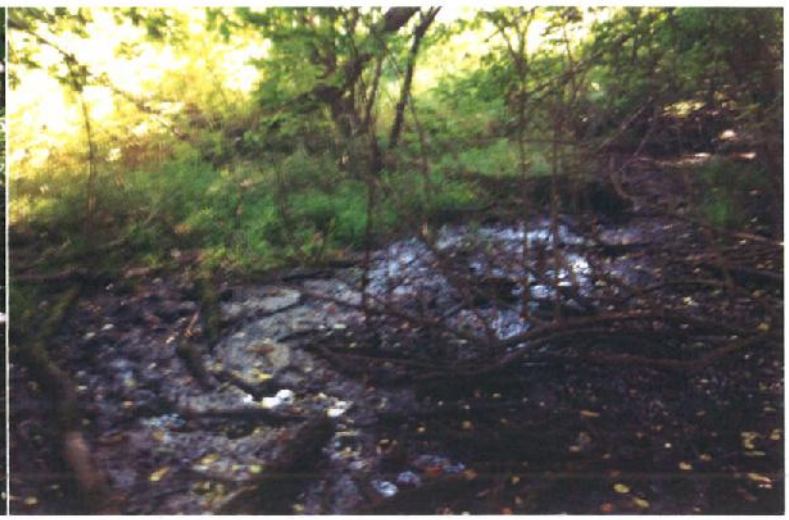
APPENDIX B

Photographs


Wetland A is a partial scrub/shrub marsh wetland area.
The wetland is found on the SE corner of the property.

Wetland A consists of saturated soils and inundation and is part of a larger wetland complex associated with Buffalo Creek. The wetland is under the jurisdiction of the Army Corps of Engineers.


The on-site portion of Wetland A is dominated by Common cattail (*Typha latifolia*), Narrow-leaved Cattails (*Typha angustifolia*), Reed Canary Grass (*Phalaris arundinacea*), Common Buckthorn (*Rhamnus cathartica*) & Orange Jewel Weed (*Impatiens capensis*).


Data point 1 was taken in a minor depression located in the center of the property. The data point revealed an upland field condition.


Data point 2 revealed an upland field condition.


Data point 3 revealed an upland field condition.

Data point 4 revealed an upland field condition.

Data point 5 revealed an upland field condition.

APPENDIX C

Data Sheets

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 11-16-2016

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: 1A

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 42.179347 Long: -88.024007 Datum: _____

Soil Map Unit Name: Sawmill silty clay loam, undrained (1107 A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	25	Yes	FACW
2.			
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. *Rhamnus cathartica*	10	No	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Impatiens capensis*	15	No	FACW
3. *Urtica dioica*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	65 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	90	x 2 = 180
FAC species	10	x 3 = 30
FACU species	0	x 4 = 0
UPL species	0	x 5 = 0
Column Totals:	100 (A)	210 (B)

Prevalence Index = B/A = 2.10

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was noted within the sample point.

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 2/1	100			C	M	SiCL	
12-22"	5Y 2.5/1	95	10 YR 4/2	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soils were noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes X No ___ Depth (inches): 10"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 2"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 11-16-2016

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: 2A

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 42.179612 Long: -88.024279 Datum: _____

Soil Map Unit Name: Zurich silt loam (696 C2) NWI or WWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

The data point was taken on a downhill drainage area. This area is not considered part of the delineated wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	25	Yes	FACW
2.			
3.			
4.			
5.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. *Rhamnus cathartica*	10	No	FAC
2. *Rosa multiflora*	20	Yes	FACU
3. *Lonicera tatarica*	15	No	FACU
4.			
5.			
	45 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Shedonorus pratensis*	20	Yes	FACU
2. *Parthenocissus inserta*	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	25	x 2 = 50
FAC species	10	x 3 = 30
FACU species	65	x 4 = 260
UPL species	0	x 5 = 0
Column Totals:	100 (A)	340 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was not noted within the sample point.

SOIL

Sampling Point: 2A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10 YR 3/2	100			C	M	SiCL	
12-20"	5Y 3/2	80	2.5 Y 5/3	20	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soils were not noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >20"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 11-16-2016

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: 3A

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 42.179627 Long: -88.024003 Datum: _____

Soil Map Unit Name: Sawmill silty clay loam, undrained (1107 A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

A draintile was noted within the area of the data point.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	25	Yes	FACW
2. *Populus deltoides*	20	Yes	FAC
3.			
4.			
5.			
	45 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. *Rhamnus cathartica*	10	No	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Phalaris arundinacea*	25	Yes	FACW
2. *Carex vulpinoidea*	10	No	OBL
3. *Urtica dioica*	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	60	x 2 =	120
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		220 (B)

Prevalence Index = B/A = 2.20

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was noted within the sample point.

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10"	10 YR 2/1	100			C	M	SiCL	
10-14"	10 YR 2/1	90	5Y 2.5/1	10	C	M	SiCL	
14-18"	5Y 3/1	95	5YR 5/6	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soils were noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 6"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 9-21-2020

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: DP 1

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): 2-4 Lat: 42.180574 Long: -88.026451 Datum: _____

Soil Map Unit Name: Peotone silty clay loam (330A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

A series of large draintiles are noted within this area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Phalaris arundinacea*	90	Yes	FACW
2. *Urtica dioica*	10	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was noted within the sample point.

SOIL

Sampling Point: DP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8"	10 YR 2/1	100			C	M	SiCL	
8-16"	10 YR 3/2	100			C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil was not noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >16"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 9-21-2020

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: DP 2

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): concave

Slope (%): 0-2 Lat: 42.180558 Long: -88.027756 Datum: _____

Soil Map Unit Name: Peotone silty clay loam (330A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

The data point was taken within a small depression where a series of draintiles were found. This area is not considered part of the delineated wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Phalaris arundinacea*	50	Yes	FACW
2. *Asclepias syriaca*	35	Yes	FACU
3. *Cirsium arvense*	15	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	50	x 4 =	200
UPL species	0	x 5 =	0
Column Totals:	100 (A)		300 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was noted within the sample point.

SOIL

Sampling Point: DP 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3"	10 YR 3/2	100			C	M	SiCL	
3-18"	10 YR 2/1	100			C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soils were not noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >18"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park | City/County: Long Grove, Lake | Sampling Date: 9-21-2020

Applicant/Owner: Joe Rizza Enterprises, Inc. | State: Illinois | Sampling Point: DP 3

Investigator(s): Robert Vanni | Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): | Local relief (concave, convex, none): concave

Slope (%): 0-2 | Lat: 42.170342 | Long: -88.027920 | Datum:

Soil Map Unit Name: Peotone silty clay loam (330A) | NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:

The data point was taken within a small depression where a series of draintiles converge. This area is not considered part of the delineated wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ____)			
1. *Phalaris arundinacea*	50	Yes	FACW
2. *Asclepias syriaca*	30	Yes	FACU
3. *Cirsium arvense*	15	No	FACU
4. *Solanum elaeagnifolium*	5	No	UPL
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	45	x 4 =	180
UPL species	5	x 5 =	25
Column Totals:	100 (A)		305 (B)

Prevalence Index = B/A = 3.05

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was not noted within the sample point.

SOIL

Sampling Point: DP 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-21"	10 YR 2/1	100			C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil was noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >20"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 9-21-2020

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: DP 4

Investigator(s): Robert Vanni Section, Township, Range: Sec 26, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): 0-2 Lat: 42.181527 Long: -88.027979 Datum: _____

Soil Map Unit Name: Peotone silty clay loam (330A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes _____ No X	

Remarks:

The data point was taken within a small depression where a series of draintiles were found. This area is not considered part of the delineated wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Phalaris arundinacea*	70	Yes	FACW
2. *Asclepias syriaca*	30	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	0	x 1 = 0
FACW species	70	x 2 = 140
FAC species	0	x 3 = 0
FACU species	30	x 4 = 120
UPL species	0	x 5 = 0
Column Totals:	100 (A)	260 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

X Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was noted within the sample point.

SOIL

Sampling Point: DP 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16"	10 YR 2/1	100			C	M	SiCL	
16-22"	10 YR 3/1	95	10 YR 4/2	5	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Hydric soil was noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): >22"

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

Reset Form | Print Form

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Canterbury Park City/County: Long Grove, Lake Sampling Date: 9-21-2020

Applicant/Owner: Joe Rizza Enterprises, Inc. State: Illinois Sampling Point: DP 5

Investigator(s): Robert Vanni Section, Township, Range: Sec 28, T43N, R 10E

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____

Slope (%): 0-2 Lat: 42.180799 Long: -88.027997 Datum: _____

Soil Map Unit Name: Peotone silty clay loam (330A) NWI or WWI classification: Yes

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

The data point was taken within a small depression where a series of draintiles converge. This area is not considered part of the delineated wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: _____)			
1. *Asclepias syriaca*	75	Yes	FACU
2. *Solanum elaeagnifolium*	5	No	UPL
3. *Cirsium arvense*	10	No	FACU
4. *Phalaris arundinacea*	10	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	85	x 4 =	340
UPL species	5	x 5 =	25
Column Totals:	100 (A)		385 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No X

Remarks: (Include photo numbers here or on a separate sheet.)

Hydrophytic vegetation was not noted within the sample point.

SOIL

Sampling Point: DP 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6"	10 YR 3/2	100			C	M	SiCL	
6-18"	10 YR 2/1	100			C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Hydric soil was not noted within the sample point.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): >18"

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Wetland hydrology was not present during our on-site investigation.

APPENDIX D

Huddleston McBride Draintile Evaluation

AGRICULTURAL EXISTING DRAIN TILE INVESTIGATION PLAN

CANTERBURY PARK

PREPARED FOR JOE RIZZA ENTERPRISES

SECTION NO. 26, ELA TWP., LAKE CO., IL.

RECORD DRAWING

EXISTING SUBSURFACE AGRICULTURAL DRAIN TILE INVESTIGATION REPORT

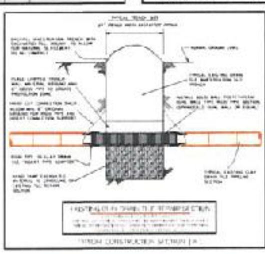
CANTERBURY PARK

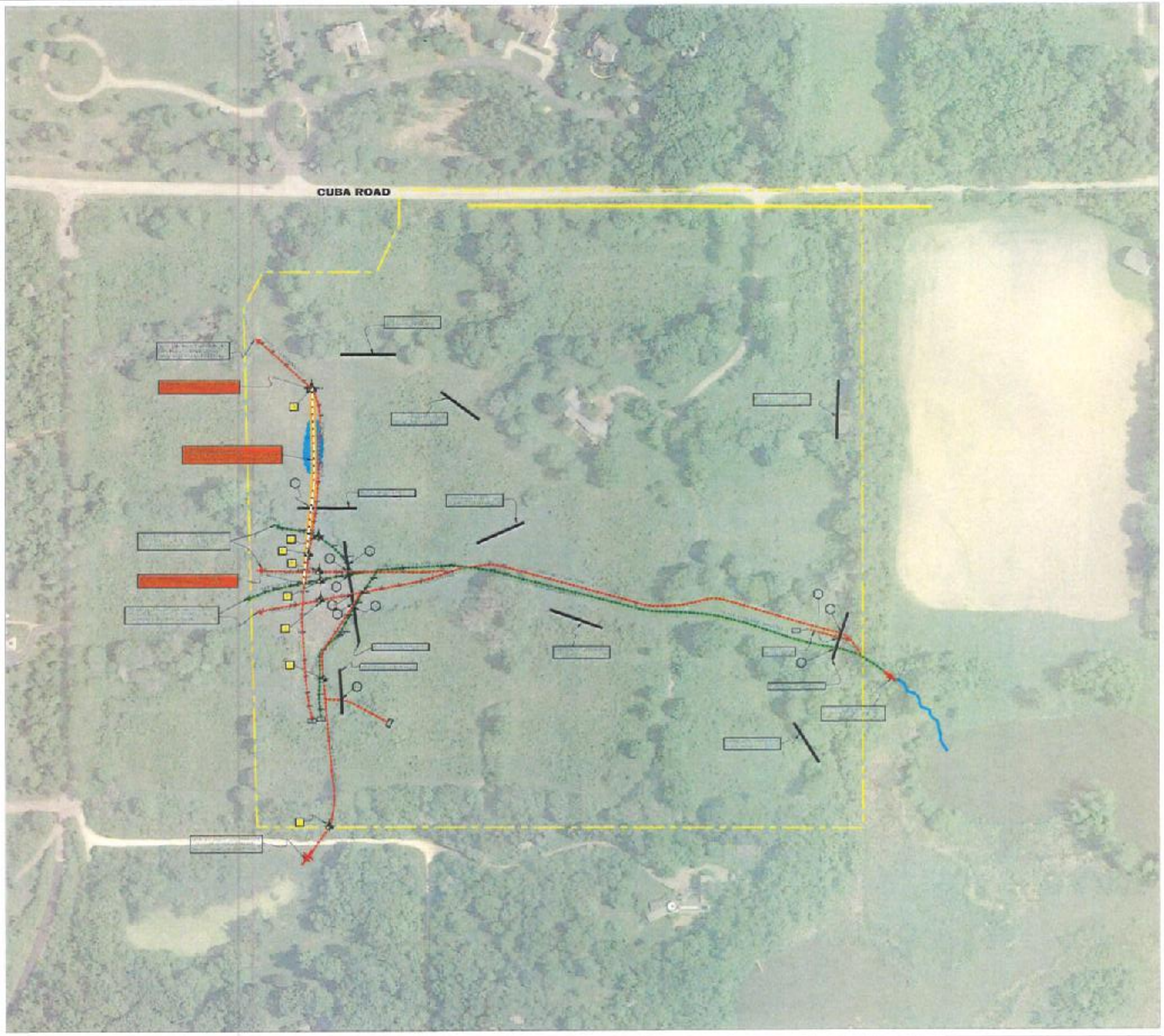
JOE RIZZA ENTERPRISES

MAP LEGEND

REPORT LEGEND

SPECIAL NOTES





JOE RIZZA ENTERPRISES

CATHY MILLER , PROJECT MANAGER
8450 WEST 159TH STREET, ORLAND PARK, IL., 60462

APPROVED BY AND DATE: TOM HUDDLESTON 9/29/2006	PROJECT DATE: 9/29/2006		
	FIELD FILE NO.: 10-6-25		
DRAWN BY AND DATE: TOM HUDDLESTON 9/29/2006	DRAWING NO.: 10-6-25	WEATHER CONDITIONS: SUNNY/WARM - 50s	DRAWING SCALE: 1" TO 100'
			SHEET NO.: ONE OF ONE

NORTH

CANTERBURY PARK

HUDDLESTON McBRIDE
PROFESSIONAL LAND DRAINAGE SERVICES

APPENDIX E

Corps of Engineers Jurisdictional Determination Letter

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, CORPS OF ENGINEERS
231 SOUTH LA SALLE STREET
CHICAGO, ILLINOIS 60604-1437

REPLY TO
ATTENTION OF

September 15, 2017

Technical Services Division
Regulatory Branch
LRC-2017-00690

SUBJECT: Jurisdictional Determination for the Property Located at 3699 Canterbury Drive in Long Grove, Lake County, Illinois (Latitude 42.181047, Longitude -88.02801)

Joe Rizza
Joe Rizza Enterprises, Inc.
8150 West 159th Street
Orland Park, Illinois 60462

Dear Mr. Rizza:

This is in response to your request that the U.S. Army Corps of Engineers complete a jurisdictional determination for the above-referenced site submitted on your behalf by Midwest Ecological. The subject project has been assigned number LRC-2017-00690. Please reference this number in all future correspondence concerning this project.

Following a review of the information you submitted, this office has determined that the subject property contains "waters of the United States".

Wetland A has been determined to be under the jurisdiction of this office and therefore, subject to Federal regulation.

This office concurs with the submitted wetland delineation, and wetland boundaries at the subject site. This confirmation is valid for a period of five years from the date of this letter unless new information warrants revision of the delineation prior to the expiration date.

For a detailed description of our determination please refer to the enclosed decision document. This determination covers only your project as depicted in the Wetland Delineation Report dated May 20, 2017, prepared by Midwest Ecological.

This determination is valid for a period of five (5) years from the date of the letter, unless new information warrants revision of the determination before the expiration date or a District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

This letter is considered an approved jurisdictional determination for your subject site. If you object to this determination, you may appeal, according to 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and a Request for Appeal (RFA) form. If you request to appeal the above determination, you must submit a completed RFA form to the Great Lakes/Ohio River Division Office at the following address:

Jacob Siegrist
Appeal Review Officer
Great Lakes and Ohio River Division
CELRD-PD-REG
550 Main Street, Room 10032
Cincinnati, Ohio 45202-3222
Phone: (513) 684-2699 Fax: (513) 684-2460

In order to be accepted, your RFA must be complete, meet the criteria for appeal and be received by the Division Office within sixty (60) days of the date of the NAP. If you concur with the determination in this letter, submittal of the RFA form to the Division office is not necessary.

This determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is your responsibility to obtain any required state, county, or local approvals for impacts to wetland areas not under the Department of the Army jurisdiction. For projects in unincorporated areas of Lake County, please contact Lake County Planning, Building and Development at (847) 377-2600. For projects in incorporated areas of Lake County, please contact the Lake County Stormwater Management Commission at (847) 377-7700.

Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States, including wetlands. A Department of the Army permit is required for any proposed work involving the discharge of dredged or fill material within the jurisdiction of this office. To initiate the permit process, please submit a joint permit application form along with detailed plans of the proposed work. Information concerning our program, including the application form and an application checklist, can be found at and downloaded from our website:
http://www.lrc.usace.army.mil/Missions/Regulatory.aspx

If you have any questions, please contact Mr. Michael J. Machalek of my staff by telephone at (312) 846-5534 or email at Mike.J.Machalek@usace.army.mil.

Sincerely,

CHERNICH.KATHLEEN.G.1230365616
Digitally signed by CHERNICH.KATHLEEN.G.1230365616
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=CHERNICH.KATHLEEN.G.1230365616
Date: 2017.09.22 10:28:35 -05'00'

Kathleen G. Chernich
Chief, East Section
Regulatory Branch

Enclosures

Copy Furnished w/out Enclosures

Lake County Stormwater Management Commission (Kurt Woolford)
Lake County Planning, Building and Development Department (Matthew Meyers)
Midwest Ecological (Rob Vanni)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Joe Rizza, Joe Rizza Enterprises Inc.	File Number: LRC-2017-00690	Date: September 15, 2017

Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A. INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district commander. Your objections must be received by the district commander within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district commander will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district commander will send you a proffered permit for your reconsideration, as indicated in Section B below.

B. PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit or a Letter of Permission (LOP), you may sign the permit document and return it to the district commander for final authorization. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

C. PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

D. APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division commander. This form must be received by the division commander within 60 days of the date of this notice.

E. PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Regulatory Branch
Chicago District Corps of Engineers
231 South LaSalle Street, Suite 1500
Chicago, IL 60604-1437
Phone: (312) 846-5530
Fax: (312) 353-4110

If you only have questions regarding the appeal process you may also contact:

Jacob Siegrist
Appeal Review Officer
Great Lakes and Ohio River Division
CELRD-PD-REG
550 Main Street, Room 10032
Cincinnati, Ohio 45202-3222
Phone: (513) 684-2699 Fax: (513) 684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Commanders personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation, and will have the opportunity to participate in all site investigations.

	Date:	Telephone number:
_____ Signature of appellant or agent.		

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): September 15, 2017

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Chicago District, Joe Rizza Enterprises, Inc., LRC-2017-690

C. PROJECT LOCATION AND BACKGROUND INFORMATION: 3699 Canterbury Drive
State: Illinois County/parish/borough: **Lake** City: Long Grove
Center coordinates of site (lat/long in degree decimal format): Lat. 42.181047°N, Long. -88.02801° W.
Universal Transverse Mercator: Zone 16
Name of nearest waterbody: Buffalo Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **Des Plaines River**
Name of watershed or Hydrologic Unit Code (HUC): **Des Plaines (07120004)**
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: September 15, 2017
☒ Field Determination. Date(s): September 11, 2017

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: Defined in People of State of Ill. ex rel. Scott v. Hoffman, No. P-CIV-76-45, slip op. at 7 (S.D.Ill. Jan. 20, 1979).

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0.48 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Midwest Supplement**
      Elevation of established OHWM (if known): .

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: **Pick List**.
   Summarize rationale supporting determination: As defined in People of State of Ill. ex rel. Scott v. Hoffman, No. P-CIV-76-45, slip op. at 7 (S.D.Ill. Jan. 20, 1979).

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft). Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Buffalo Creek flows year-round being 15-20 feet wide and 3 feet deep; and is shown as a solid blue-line stream on the USGS maps.
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

     Provide estimates for jurisdictional waters in the review area (check all that apply):
     - ☐ Tributary waters: linear feet width (ft).
     - ☐ Other non-wetland waters: acres.
       Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   - ☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
     - ☒ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Wetland A is a sloped wetland/tributary that runs directly into and spreads out where it abuts Buffalo Creek.**

     - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: **0.48** acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. **Data reviewed for JD (check all that apply** - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Midwest Ecological Wetland Delineation Report dated May 20, 2017.
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☒ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☒ U.S. Geological Survey Hydrologic Atlas: Lake Zurich HA 208, 1966, .
  - ☐ USGS NHD data.
  - ☒ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: Lake Zurich 7.5", 1993, Pick List, Pick List, .
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Soil Survey of Lake County, Illinois (2005).
- ☒ National wetlands inventory map(s). Cite name: Lake Zurich, .
- ☒ State/Local wetland inventory map(s): Lake County ADID, Pick List. .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
  or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Applicable/supporting case law: People of State of Ill. ex rel. Scott v. Hoffman, No. P-CIV-76-45, (S.D.Ill. Jan. 20, 1979)
- ☐ Applicable/supporting scientific literature: .
- ☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: Site visit on September 11, 2017 to walk wetland boundary to confirm flagging and verify jurisdictional status.

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
CUBA ROAD

SECTION 26 TOWNSHIP 43 NORTH RANGE 10 EAST
LONG GROVE, ILLINOIS
LAKE COUNTY

OWNER:
Philip Estates, LLC
8150 159th Street
Orland Park, IL 60462

PREPARED BY:
Haeger Engineering LLC
Illinois Prof. Design Firm #184-003152
100 E. State Parkway
Schaumburg, IL 60173
Tel: 847-394-6600
Fax: 847-394-6608
www.haegerengineering.com

VILLAGE OF LONG GROVE
3110 Old McHenry Road, Long Grove, IL 60047
Tel: 847-634-9440
Fax: 847-634-9408

BENCHMARKS:

Source Benchmark:

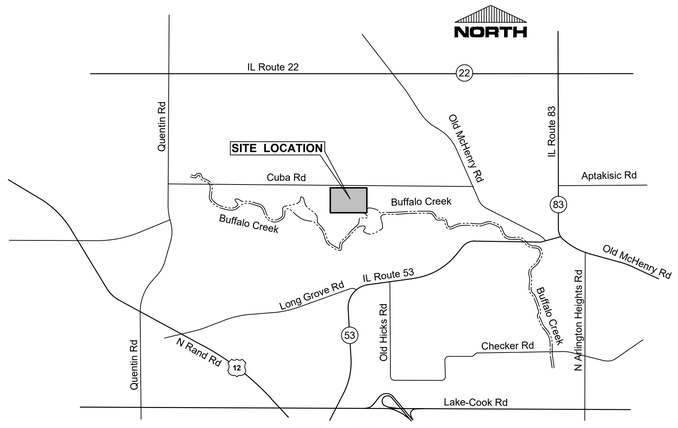
Lake County Benchmark 6-20a, Being A Chiseled Square On Top Of The East End Of A Culvert Located At The Northeast Corner Of A Driveway And East Cuba Road Approximately 1.4 Miles West Of Old Mchenry Road. Measured NAVD 1988 Datum Elevation = 740.41
(Record NGVD 1929 Datum Elevation = 740.46)

Lake County Benchmark 6-20, Being A Railroad Spike In The North Face Of A Utility Pole On South Side Of Cuba Road Approximately 1.05 Miles West Of Old Mchenry Road And Being The First Utility Pole West Of Canterbury Drive. Measured NAVD 1988 Datum Elevation = 756.38
(Record NGDV 1929 Datum Elevation = 756.66)

Site Benchmark:

BM #1: (Same As Source Bm 6-21 Above.)
NAVD 1988 Elevation = 756.38

BM #2: Railroad Spike In Fourth Utility Pole
West Of Canterbury Drive On The South Side
Of East Cuba Road.
NAVD 1988 Elevation = 755.36



LOCATION MAP
Not To Scale

INDEX TO SHEETS

NO.	DESCRIPTION
C1.0	TITLE SHEET
C2.0	GENERAL NOTES AND SPECIFICATIONS
C2.1	GENERAL NOTES AND SPECIFICATIONS
C3.0	EXISTING CONDITIONS AND DEMOLITION PLAN-OVERALL
C3.1	EXISTING CONDITIONS AND DEMOLITION PLAN-NW
C3.2	EXISTING CONDITIONS AND DEMOLITION PLAN-NE
C3.3	EXISTING CONDITIONS AND DEMOLITION PLAN-SE
C3.4	EXISTING CONDITIONS AND DEMOLITION PLAN-SW
C4.0	GEOMETRIC AND PAVING PLAN-OVERALL
C4.1	GEOMETRIC AND PAVING PLAN-NW
C4.2	GEOMETRIC AND PAVING PLAN-NE
C4.3	GEOMETRIC AND PAVING PLAN-SE
C4.4	GEOMETRIC AND PAVING PLAN-SW
C5.0	GRADING PLAN-OVERALL
C5.1	GRADING PLAN-NW
C5.2	GRADING PLAN-NE
C5.3	GRADING PLAN-SE
C5.4	GRADING PLAN-SW
C7.0	UTILITY PLAN-OVERALL
C7.1	UTILITY PLAN-NW
C7.2	UTILITY PLAN-NE
C7.3	UTILITY PLAN-SE
C7.4	UTILITY PLAN-SW
C8.0	PLAN AND PROFILE - PHILIP DRIVE STA. 10+00 - STA. 17+50
C8.1	PLAN AND PROFILE - PHILIP DRIVE STA. 17+50 - STA. 23.63
C8.2	PLAN AND PROFILE - PHILIP COURT
C8.3	8 INCH CONCRETE DRAINTILE PROFILE
C8.4	5 INCH CLAY DRAINTILE PROFILE
C9.0	STANDARD DETAILS
C9.1	STANDARD DETAILS

INDEX TO STORMWATER POLLUTION PREVENTION PLAN SHEETS

NO.	DESCRIPTION
EC-1	SWPPP TITLE SHEET
EC-2	SWPPP GENERAL NOTES AND SPECIFICATIONS
EC-3	STORMWATER POLLUTION PREVENTION PLAN (SWPPP)
EC-4	SWPPP DETAILS

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

Note:
Call 811 at least 48 hours, excluding weekends and holidays, before you dig.

LEGEND

Existing Symbol	Description	Proposed Symbol
	Storm Sewer Manhole	
	Catch Basin	
	Inlet	
	Flared End Section	
	Headwall	
	Area Drain	
	Sanitary Sewer Manhole	
C.O.	Clean Out	C.O.
	Storm Sewer	
	Storm Sewer Service	
	Perforated Underdrain	
	Sanitary Sewer	
	Sanitary Sewer Service	
	Combined Sewer	
FM	Force Main	FM
W	Water Main	W
	Water Main Service	
	Fire Hydrant	
	Valve Vault	
	Valve Box	
	B-Box	
	Well Head	
	Light Pole	
	Light Pole With Mast Arm	
	Traffic Signal	
	Traffic Signal With Mast Arm	
H	Hand Hole	H
	Fence	
	Guardrail	
	Pipe Bollard	
	Sign	
G	Gas Valve	G
G	Gas Line	G
E	Electric Line	E
OHW	Overhead Utility Line	OHW
FO	Fiber Optic Line	FO
E	Electrical Pedestal	E
E	Electric Manhole	E
	Guy Wire	
	Utility Pole	
T	Telephone Pedestal	T
T	Telephone Manhole	T
T	Telephone Line	T
CATV	Cable TV Line	CATV
C	Cable TV Pedestal	C
	Flagpole	
M	Mailbox	M
	Handicapped Parking Stall	
X	Number of Parking Stalls	X
	Curb & Gutter	
	Reverse Pitch Curb & Gutter	
	Depressed Curb	
	Retaining Wall	
C XXX.XX	Curb Elevation and	C XXX.XX
G/P XXX.XX	Gutter/Pavement Elevation	G XXX.XX
XXX.XX	Pavement Elevation	P XXX.XX
XXX.XX	Sidewalk Elevation	W XXX.XX
XXX.X +	Ground Elevation	XXX.X
T/W XXX.XX	Top of Wall Elevation	T/W XXX.XX
B/W XXX.XX	Bottom of Wall Elevation	B/W XXX.XX
	Open Lid Frame & Grate	Gr XXX.XX
	Closed Lid Frame & Lid	Rim XXX.XX
	Swale	
	Hardscape Flow	
	Softscape Flow	
XXX	Contour Line	XXX
	Wetland	
	Wetland Buffer	
	Normal Water Level	
	High Water Level	
	Flood Plain	
	Flood Way	
	Deciduous Tree	
	Coniferous Tree	
	Bush	
	Brushline	
B-1	Soil Boring	B-1
	Over Land Flow Route	
	Recommended Garage Hand With Driveway Slope	X.X%

KIMBERLY M. LAU
062-054034
LICENSED PROFESSIONAL ENGINEER
OF THE STATE OF ILLINOIS
EXPIRES 11-30-23

No.	Date	
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION
		Revision

HAEGER ENGINEERING
consulting engineers • land surveyors
100 East State Parkway, Schaumburg, IL 60173 • tel: 847.394.6600 Fax: 847.394.6608
Illinois Professional Design Firm License No. 184.003152
www.haegerengineering.com

TITLE SHEET

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C1.0/C9

Plot Date: Mar 24, 2023 - 9:30am Plotted By: gkr
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Title Sheet and Details.dwg

GENERAL NOTES

1. Definition of Terms:
   a. "Owner" shall mean the person or entity with which Haeger Engineering, LLC has been contracted with to prepare the Plans and Specifications.
   b. "Engineer" shall mean Haeger Engineering, LLC.
   c. "Contractor" shall mean the persons or entities responsible for performing and constructing the work described in the Plans, Specifications and other Construction Documents including but not limited to furnishing all labor, materials, tools, equipments, and other incidentals necessary.
   d. "Plans and Specifications" shall mean the Engineering Drawings and any Specifications prepared by Haeger Engineering, LLC, the Engineer.
   e. "Jurisdictional Agency" shall mean any local, municipal, county, township, state or federal entity of government or other entity having jurisdiction of some aspect of the project from whom approval, permit and/or review and approval was required.
2. The Specifications governing this project are as follows:
   a. All applicable Village/City and other applicable Jurisdictional Agency Ordinances, Codes, Regulations, Requirements, Policies, Specifications, Standards, etc.
   b. Roadway and Earthwork construction shall conform to the Illinois Department of Transportation (IDOT) "Standard Specifications for Road and Bridge Construction", latest edition and any subsequent "Supplemental Specifications and Recurring Special Provisions" as well as any applicable IDOT Highway Standards. Hereafter these items shall be collectively be referred to as the IDOT Standard Specifications.
   c. Water Main, Storm Sewer, and Sanitary Sewer construction shall conform to the "Standard Specifications for Water and Sewer Construction in Illinois", latest edition.
   d. Soil Erosion and Sedimentation Control shall conform to the Illinois Environmental Protection Agency (IEPA) "Illinois Urban Manual" (IUM), latest edition and "Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control", latest edition.
   e. Traffic Control shall conform to the "Manual of Uniform Traffic Control Devices" (MUTCD), latest edition, as well as the latest edition of the "Illinois Supplement to the MUTCD", and IDOT "Quality Standard for Work Zone Traffic Control Devices", latest edition.
   f. All handicap accessibility items shall conform to the Illinois Accessibility Code (IAC), latest edition.
   g. General Notes and Specifications contained herein or elsewhere as a separate document.

   If a conflict, contradiction, or discrepancy occurs between any of the above Specifications the more stringent requirement shall apply, unless directed otherwise by the applicable Jurisdictional Agency.
3. Contract Documents:
   a. The Engineer's Plans and Specifications shall be included as part of the Contract Documents.
   b. All Contractors shall carefully examine the Plans and Specifications, and other Contract Documents prepared for the work. They shall visit the site of the work and acquaint themselves with all local conditions, codes, and requirements affecting the contract. If awarded the contract, they shall not be allowed extra compensation by reason of any unforeseen difficulties or obstacles which the Contractor could have discovered or reasonably anticipated or inferred prior to bidding or start of construction.
   c. Should it appear that the work covered by the Plans and Specifications or other Contract Documents is not sufficiently detailed or explained, a Request For Information (RFI) Form shall be submitted to the Engineer for further explanations and drawings as may be necessary to clarify the point in question prior to the contract award. It is the intention of the Contract Documents to provide a job complete in every respect. Incidental items or accessories necessary to complete the work may not be specifically noted or shown but that are necessary to complete the project shall be considered incidental to the Contract. The Contractor is responsible for this result and to turn over the project in complete operating condition, irrespective of whether the contract documents cover every individual item in minute detail.
   d. The Contractor shall review the subsurface exploration and geotechnical report (a.k.a. soil boring report) prepared by ____________________ dated ___________________, to become familiar with the subsurface soil conditions for the site. Copies of all such soil boring reports for the property can be obtained from the Owner. If any additional soils data is needed to confirm the Contractor's opinions of the subsurface conditions, this shall be done at the Contractor's expense. The Contractor shall obtain the Owner's written authorization to access the site to conduct a supplemental soils investigation. The Owner and Engineer make no representation or warranty regarding the number, location, spacing or depth of borings taken, nor of the accuracy or reliability of the information given in the results thereof. Furthermore, the Owner and Engineer assume no responsibility for the possibility that during construction, the soil and groundwater conditions may vary between borings or are different than previously indicated. Any bracing, sheeting, dewatering or special construction methods deemed necessary by the Contractor in order to install the proposed improvements shall be considered incidental to the Contract and no additional compensation will be allowed.
4. Should any apparent errors, omissions, discrepancies or conflicts be discovered on the Plans, Specifications, Quantities or other Contract Documents by the Contractor, whether prior to or after the award of the contract, the Engineer's attention shall be called to the same before work is begun thereon, so that proper clarification can be provided or revision made. If any work is done without contacting the Engineer, it shall be considered that the Contractor has proceeded at their own risk and expense.
5. Whenever the performance of work is indicated on the Plans, and no specific item is included in the Contract for payment, the work shall be considered incidental to the Contract and no additional compensation will be allowed. The Contractor shall provide all necessary labor, material, equipment, etc. necessary to perform all the work required for construction of the proposed improvements.
6. The base plan/drawing for the Engineering Plans (existing conditions, site topography, utilities, rights-of-way, etc.) was obtained from the topographic survey prepared by:

   Edward J. Molloy & Associates,Inc
   1236 Mark Street Bensenville, IL 60106
   Tel: (630) 595-2600
   Job Number
   Date

7. The Owner shall obtain the necessary approvals from the following Jurisdictional Agencies:
   a. Village of Long Grove, Illinois
   b. Illinois Environmental Protection Agency (IEPA) - Water and Sewer Division
   c. Illinois Environmental Protection Agency (IEPA) - Notice of Intent (NOI) General Permit to Discharge Storm Water from Construction Site Activities
   d. Illinois Department of Natural Resources/Office of Water Resources (IDNR/OWR)
   e. (County) Stormwater Management Commission
   f. (County) Soil & Water Conservation District
   g. (Local, County or State) Health Department
8. The Contractor, unless otherwise agreed upon in writing with the Owner prior to the start of Construction, shall at his own expense, obtain all other approvals including permits, licenses, etc., as may be required for the execution of this work as well as provide all necessary notices, pay all fees required, post bonds, obtain all necessary insurance, and comply with all laws, ordinances, rules, and regulations relating to the work and to the preservation of public health and safety. The Contractor shall also provide all required insurance and/or bonds as may be required by the Jurisdictional Agencies. In addition, the Contractor shall meet all of the requirements of any permits as might be issued for this work by other Agencies, and shall pay for at their sole expense any surety, insurance or bonds as may be required by the Jurisdictional Agencies.
9. No work shall proceed until the appropriate permit or permits have been obtained for the item or items to be constructed. If any work does proceed without the appropriate permits or approvals, it is being done without the permission or consent of the Engineer. The Contractor and Party authorizing the work to proceed shall be assumed to be proceeding at their own risk and the Engineer shall not be held liable or responsible for any work being performed without a permit.
10. The Contractor shall indemnify and hold harmless the Owner, Engineer, Village/City, and other Jurisdictional Agencies as well as all of their respective officers, employees, agents, and Engineers from and against all losses, claims, demands, payments, suits, actions, recoveries, and judgment of every nature and description brought or recovered against them, by reason of any act, error or omission of said Contractor, their agents or employees in the execution of the work or in the guarding of it.
11. The construction shall be under the general inspection and observation of the designated individual authorized by the Village/City or other applicable Jurisdictional Agencies. The Village/City, Jurisdictional Agencies, Owner, and Engineer shall be notified at least two working days prior to the commencement of work.
12. The location of existing underground utilities such as water mains, sewers, gas lines, electric lines, cable TV lines, fiber optic lines, etc., as shown on the Plans, has been determined from the best available information and has been provided for the convenience of the Contractor. However, the Owner and Engineer do not assume responsibility in the event that during construction, utilities other than those shown may be encountered and that the actual location of those which are shown may be different from the location as shown on the Plans. The Contractor is to verify the location of all utilities prior to the start of work and is responsible for damage to the same. The Contractor shall contact J.U.L.I.E. or Digger by dialing 811 (Outside the City of Chicago - J.U.L.I.E.: 1-800-892-0123 or within the City of Chicago - Digger: 312-744-7000) and the Village/City Public Works Department for utility locates at least 48 hours, excluding weekends and holidays, before digging. For any utility companies which are not members of JULIE or DIGGER, the Contractor shall contact the Owners of each respective utility directly for utility locates at least 48 hours, excluding weekends and holidays, before digging.
13. In some instances, the existing utilities are shown on the Plans according to information obtained from the utility companies (atlas information) and/or surveys performed By Others. The Owner and Engineer do not guarantee the accuracy or completeness of this information. The Contractor shall be aware of potential conflicts with existing or other proposed utilities as indicated on the Plans or that become apparent as the result of field locates By Others. The Contractor shall make their own investigations as necessary to determine the existence, nature, and location of all utility lines and related appurtenances within the limits or adjacent to the proposed improvements. The Contractor shall locate all utilities far enough in advance to avoid all conflicts between existing utilities and proposed improvements and make the Engineer aware of any such conflicts. If the Contractor encounters a conflict between the proposed improvements and existing utility that was not located in advance by the Contractor, then the Contractor shall at no cost to Owner, relocate the proposed improvements and/or utility to avoid the conflict.
14. The Contractor will be required to cooperate with all utility companies involved in connection with the removal, temporary relocation, construction, reconstruction or abandonment by these companies of any and all services or facilities owned or operated by them within the limits or general vicinity of the proposed improvements. Further, at the direction of the Owner and Utility Companies the Contractor shall coordinate the location and install PVC sleeves as necessary under the proposed pavement, curbs, walks, etc. for utility companies to run their proposed utility lines.
15. Before doing any work which will damage, disturb or leave unsupported, or unprotected any utility lines or related appurtenances encountered, the Contractor shall notify the respective Owner thereof, who will make all arrangements for relocating, adjusting, bracing, or otherwise maintaining or abandoning service on lines that fall within the limits of the proposed construction without cost to the Contractor, including the removal of all cables, manhole covers and other related appurtenances which the Owner desires to salvage. After such arrangements have been made, the Contractor will proceed with the work as directed by the Engineer. All utility lines and related appurtenances which are abandoned shall be removed if necessary and legally disposed of legally off-site by the Contractor.
16. No extra compensation will be allowed by the Contractor for any expense incurred for complying with all of these aforementioned utility coordination and cooperation requirements, or because of delays, inconvenience or interruptions in their work resulting from the failure of any utility company to remove, relocate, construct, reconstruct or abandon their services. The responsibility for prompt and timely removal, relocation, reconstruction or abandonment of their facilities by all utility companies involved, and the coordination of their own work with that of these companies to the end that work on this improvement is not delayed because of the necessary changes in the existing utilities, public or private, shall rest upon the Contractor.
17. Prior to commencing work, the Contractor is to field check and verify all critical locations, elevations, materials, sizes, dimensions, and conditions affecting the work, and notify the Engineer immediately if there are any suspected discrepancies. No work shall be performed until the suspected discrepancy has been resolved. The Contractor shall also call to the attention of the Engineer any errors or discrepancies which may be suspected in the lines and grades which are established by the Surveyor, and shall not proceed with the work until any lines and grades which are to believed to be in error have been verified or corrected by the Engineer.
18. The Contractor shall maintain positive drainage at all times during construction. Construction shall not block off-site drainage and the flow from any drainage ways, field tiles, storm sewers or similar draining off-site properties. All on-site existing field tiles, storm sewers, drainage ways or similar encountered or damaged during construction shall be maintained, restored to their original pre-construction condition or better, properly re-routed, and/or connected to the proposed stormwater drainage system. If this can't be accomplished then the field tile should be repaired or re-routed with new pipe of similar diameter to the original line and put back in service. The Contractor shall notify the Engineer if any such field tiles are encountered. Whenever during any construction activities any loose material is deposited in the flow line of gutters, ditches, drainage structures, etc. such that the natural flow of water is obstructed, this material shall be removed by the responsible party.
19. Prior to commencement of construction, on sites that will ultimately result in the disturbance of one (1) acre or more, the Contractor shall be responsible for obtaining a copy of the notice of coverage letter and the IEPA National Pollutant Discharge Elimination System (NPDES) General Permit ILR10 from the Owner. The Owner together along with the Contractor and/or other entities if so designated by the Owner, shall be responsible for ensuring that all the requirements of the General Permit and the Storm Water Pollution Prevention Plan (SWPPP) including but not limited to the installation, maintenance as well as the installation of any additional measures necessary that may be required, and inspections of the soil erosion and sediment control measures as well as completing all of the necessary applicable certifications, reports, logs, etc. Inspections are required to be performed at least once every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches of rain (or equivalent snowfall) or greater. The SWPPP and all the required paperwork shall be kept on-site and be organized and ready for viewing.
20. No construction activities, disturbance or fill shall occur within the limits of natural resources such as wetlands, floodplains, creeks, streams, ponds, lakes, basins, reservoirs, etc. or their respective buffers unless specifically specified on the Plans and further that the work has been permitted. The Contractor shall take sufficient precautions to protect these natural resources that are to remain, whether on-site or on adjacent property, to protect them from sediment, fuels, oils, bitumens, calcium chloride, or other harmful materials that may be a detriment. The Contractor shall conduct and schedule their Construction so as to avoid siltation, or other disturbance or impact to these natural resource areas. The Contractor shall not disturb or otherwise impact these designated natural resource areas, or areas that have been designated to be protected or as essential habitat for State or Federal listed endangered or threatened species, or Prairie or Savannah areas where the Owner has made commitments for protection of these areas. Also, if previously unidentified natural resource areas, prairies, savannahs, or areas or locations suspected of containing protected species are identified during construction, the Contractor shall not disturb them unless written permission to do so is granted by the Owner or applicable Jurisdictional Agency. If the Owner, Engineer, or applicable Jurisdictional Agency determines that additional measures are necessary to prevent or mitigate project effects on natural resource areas, prairies, savannahs, protected species, or essential habitat the Contractor shall cooperate in accomplishing these measures.
21. The Contractor shall confine their activities to within the project boundaries, work areas, or easements specified. No work shall be performed on adjacent private property or outside the project work areas without the written permission of each respective Owner. The Contractor shall be liable for damage caused to existing or newly installed improvements as well as any damage on adjacent property or areas outside designated work areas, provided damage us a result of Contractor action, or lack thereof.
22. The Contractor is responsible for returning all areas affected by equipment, materials and/or laborers to pre-construction condition or better. All existing utilities or improvements, including but not limited to pavements, curbs, drives, trees, and parkways damaged or removed during construction shall be promptly restored to their respective original pre-construction condition or better. The Contractor is also responsible for protecting all newly constructed work from damage until the project has been completed and has been approved and accepted by the Owner.
23. Clean-up and final restoration shall be performed immediately upon completion of each phase of the work or when directed to do so by the Owner, so that these areas will be restored as nearly as possible to their original pre-construction condition or better, and shall include but not be limited to, restoration of maintained lawns and rights-of-way, roadways, driveways, sidewalks, ditches, landscaping, fences, mailboxes, storm sewers, drain tiles, sanitary sewers, water mains, etc. It shall also be the responsibility of the Contractor to remove from the site any and all materials and debris which results from their construction operations at no additional expense to the Owner.
24. All proposed grades shown on the Plans shall be considered to be finished grade surface elevations unless noted otherwise.
25. Construction staking/layout shall be provided by the Contractor and shall be included in the Contract Price unless otherwise agreed upon in writing with the Owner prior to the start of Construction.
26. All Construction means and methods, techniques, procedures, scheduling, sequencing, and job site safety is the sole responsibility of the Contractor.
27. The Contractor shall observe and comply with all the Occupational Safety and Health Administration (OSHA) standards, rules and regulations, as well as any other applicable local, state and federal safety requirements.
28. All trenching, shoring, bracing and construction work performed shall be in accordance with the Occupational Safety and Health Administration (OSHA) standards.
29. The Contractor shall take whatever steps necessary to protect the public from open trenches, excavations, and other site obstructions or hazards. No trenches, excavations or holes in the pavement or parkway are to be left open over a holiday, weekend, or after 3 p.m. on the day preceding a holiday or weekend.
30. During construction the Contractor and their Sub-Contractors shall keep the premises clean by removing all rubbish, debris, waste material and other accumulations as necessary. The Contractor shall clean the premises to the satisfaction of the Village/City and Owner.
31. The Contractor shall have appropriate equipment and material including street sweepers and end loaders available on-site at all times when equipment or vehicles are using existing public or private roads and/or pavement. The Contractor shall immediately remove any sediment or debris including but not limited to dirt, mud, clay, sediment, concrete, gravel, sand, stones, plant material, refuse, garbage, oil, grease, etc. deposited on any roadway, street, walk, alley or other pavement by any equipment, vehicles or personnel associated with this project. This work shall be considered incidental to the Contract.
32. The Contractor shall at all times maintain proper dust control at the site and shall have a watering truck readily available during all working hours. The Contractor shall water the entire site whenever the site conditions become unhealthy due to blowing soil or dust. The site shall be watered as many times per day as necessary to maintain a healthy work site as determined by the Owner or Engineer. Water for non-emergency use shall not be obtained from any fire hydrant, unless the fire hydrant is metered with a proper backflow preventer in accordance with Village/City or Jurisdictional Agency requirements. The cost to furnish dust control shall be incidental to the cost of Construction.
33. Trees not marked for removal shall be protected as necessary by the Contractor. In the event that a tree is damaged by the Contractor during construction, the Contractor shall replace such tree with a tree or trees in accordance with Village/City requirements. If the Village/City does not have specific tree replacement requirements, the damaged existing or newly planted tree shall be replaced in accordance with the procedures outlined in Section 201 of the IDOT Standard Specifications. The Contractor shall ensure that they are familiar with the applicable tree preservation requirements and shall be held responsible for the replacement of all damaged trees not designed for removal, and any penalties associated with the unapproved removal of trees.
34. Where overhanging branches, limbs, or roots interfere with the required construction activities, said branches, limbs, or roots shall be trimmed or pruned as necessary in accordance with Section 201 of the IDOT Standard Specifications. This work shall be performed under the supervision of an approved arborist or landscape architect.
35. The Contractor is responsible for the installation and maintenance of adequate signs, traffic control devices, and warning devices, in accordance with the Plans, applicable IDOT Standard Specifications and the MUTCD Standards to inform and protect the public during all phases of construction. The Contractor shall provide all signage, barricades, devices, equipment, personnel, etc. necessary to provide for safe and efficient traffic flow in all areas where the work will interrupt, interfere or cause to change in any form, the conditions of traffic flow that existed prior to the commencement of any portions of the work. Roadways shall remain open to a degree satisfactory to the Owner or applicable Jurisdictional Agency which at their discretion may require the Contractor to furnish traffic control under these or other circumstances where in their opinion it is necessary for the protection of life and property. Emergency vehicle access along with access to fire hydrants shall be maintained at all times. Further, unless authorized by the Owner, all existing access points shall be maintained at all times by the Contractor.
36. Where noted in the Plans, the Contractor shall have Shop Drawings and any other required supporting documentation or calculations prepared and submitted for review and approval prior to any fabrication, placement, or construction. If structural elements such as retaining walls are required, the drawings and any required supporting design calculations must be prepared, and signed and sealed by an Illinois licensed Structural Engineer.
37. The Contractor is responsible for having a set of approved Plans and Specifications with the latest revision date on the job site at all times during the construction period.
38. The Contractor shall maintain a clean, legible, undamaged set of Field Marked Construction Plans. These Field Marked Construction Plans shall show the location of the actual installed location of all underground utilities including related appurtenances (sanitary, storm, water, service stubs, gas, telephone, electric, cable TV, etc.) giving particular attention to concealed elements that would be difficult to measure and record at a later date. Any approved modifications, deviations, or alterations from the approved Plans should also be noted and shown on these Field Marked Construction Plans. These Field Marked Construction Plans shall be provided to the Owner/Engineer at the completion of construction.
39. All work that is performed that is not in conformity with the Plans, Specifications or other Contract Documents or that is defective shall be removed and replaced, or otherwise corrected or remedied by and at the sole expense of the Contractor. Any unauthorized work or work performed beyond the limits or in excess of that shown on the Plans will not be measured or paid for.
40. All work performed under the Plans, Specifications or other Contract Documents shall be guaranteed against all defects in materials and workmanship of whatever nature by the Contractor and his surety for a minimum period of 12 months from the date of final acceptance of the work by the Village/City, other applicable Jurisdictional Agencies, and the Owner, unless otherwise agreed upon in writing with the Owner prior to the start of construction,.
41. Before acceptance by the Owner and prior to final payment all work shall be inspected and approved by the Owner or designated representative. Final payment will be made after the Contractor's work has been approved and accepted or as required by the Contract Documents.
42. If required, the Owner shall have As-built or Record Drawings prepared and submitted to the Village/City and all other applicable Jurisdictional Agencies for approval after the completion of construction. These drawings shall be prepared in accordance with the Village/City and other applicable Jurisdictional Agency requirements. The As-built or Record Drawings must be prepared, and signed and sealed by a registered professional Engineer in Illinois.

DEMOLITION AND CLEARING

1. The Contractor shall perform all demolition, clearing, grubbing, and tree removal and protection work in accordance with all applicable Federal, State, County and Local requirements or as noted in the Plans.
2. Prior to the commencement of any demolition or clearing activities, the Owner or Contractor shall obtain all applicable permits to disconnect the existing utility services to each building proposed for demolition.
3. The Contractor shall coordinate all demolition work with the Village/City, utility companies, and other Jurisdictional Agencies, so as to ensure the protection of all existing sewer, water main, and other utilities, and further to ensure that proper stormwater conveyance is attained until the proposed improvements can be installed and placed into operation.
4. Clearing shall consist of the removal and legal disposal of all obstructions such as trees, hedges, fences, walls, accumulations of rubbish of whatever nature, and all logs, shrubs, brush, grass, weeds, and other vegetation and stumps. These items shall be removed whenever they are found within the street right-of-ways or within the limits of construction. Trees to be saved or protected shall be identified by the Engineer on the Plans or in the field. All trees except those designated to be saved or protected, as well as all stumps and hedges within the limits of construction, shall be removed completely and legally disposed of off-site or as otherwise designated on the Plans or authorized by the Owner. Trees designated to be saved or protected as indicated on the Plans or as directed by the Engineer, shall be protected from damage in accordance with the procedures outlined in Section 201 of the IDOT Standard Specifications.
5. All items shown to be removed on the Plans including items not specifically noted but necessary to be removed to construct the proposed improvements shall be demolished or removed as necessary and disposed of legally off-site or as approved by the Owner.
6. Existing utilities to be disconnected shall be done so at the main or as directed by the applicable Jurisdictional Agency or as noted on the Plans.
7. Utilities marked to be abandoned shall be abandoned as required by the applicable Jurisdictional Agency or as noted on the Plans.
8. All existing pavement or concrete to be removed shall be saw-cut along the limits of the proposed removal to provide a clean vertical edge. The cost of saw-cutting shall be considered incidental to the removal of each item.
9. All voids left by any item removed under any proposed building, pavement walk or other structural areas or within zones of influence thereof shall be properly backfilled with suitable backfill material and/or compacted as necessary by the Contractor.
10. The Contractor shall implement a daily program for dust control as it relates to the demolition and clearing activities. This program is to be approved by the Village/City prior to the start of any demolition or clearing work.
11. All existing building services serving buildings that are to be removed shall be disconnected and removed as required by the applicable Jurisdictional Agency.
12. All existing wells shown on the Plans to be abandoned or that are discovered during the course of construction shall be exposed and cut-off three (3) feet below the proposed finished grade and sealed by the Contractor in accordance with Section 920 of the "Illinois Water Well Construction Code", latest edition, or as required by the Health Department or by any other Local, County, State or Federal rules and regulations.
13. All existing septic tanks, grease traps or similar shown on the Plans to be abandoned or that are discovered during the course of construction shall have all liquids and solids removed and disposed of legally off-site by a licensed commercial waste hauler in accordance with the requirements of the Health Department or as required by any Local, County, State or Federal rules and regulations. The structures shall then be removed and disposed legally off-site or broken in-place, so as not to hold liquid, and back-filled with suitable materials by the Contractor or as required by the Health Department or by any other Local, County, State or Federal rules and regulations.
14. Any material containing asbestos or other hazardous materials found within existing structures or other items shown to be removed in order to construct the proposed improvements shall be removed from the site and legally disposed of off-site by the Contractor in accordance with applicable County, State or Federal rules or regulations.
15. All fire access lanes or routes located within the existing project area shall remain in service, clean of debris, and accessible for use by emergency vehicles at all times while demolition and clearing work is being performed.
16. It shall be the responsibility of the Contractor to legally remove from the site any and all materials and debris which results from their demolition or clearing operations at no additional expense to the Owner. Burning or incineration on the site is not permitted.

EARTHWORK AND GRADING

1. All earthwork and grading activities shall be performed in accordance with the IDOT Standard Specifications or as noted in the Plans. Included in this work, but not necessarily limited to the following are: stripping and stockpiling of topsoil, mass grading and fine grading of the site and roadways, excavation of unsuitable materials and adequate disposal of unsuitable materials and their replacement with suitable materials where required, construction of detention ponds, berm construction, and miscellaneous topsoil respread and seeding.
2. Any earthwork quantities, calculations, summaries that have been furnished by the Engineer are for information purposes only and are provided without any guarantee by the Owner or Engineer whatsoever as to their sufficiency or accuracy. They are intended to be used solely as a guide for the Contractor in determining the scope of the completed project. It is the responsibility of the Contractor to determine all material quantities and apprise themselves of all site conditions. The Contractor warrants that he has performed his own investigations as necessary and his own calculations to determine site soil conditions and earthwork quantities. The Engineer makes no representation or guarantee regarding earthwork quantities or that the earthwork for this project will balance due to the varying field conditions, changing soil types, allowable construction tolerances and construction methods that are beyond the control of the Engineer. In the event that the Earthwork is indicated to be Lump Sum then the Contract Price submitted by the Contractor shall be considered as Lump Sum and shall include all items necessary for the complete project and no claims for extra work will be recognized unless authorized in writing by the Owner.
3. The soil boring reports for the subject property can be obtained from the Owner. The information presented in these reports is solely for the guidance of the Contractor. The Owner and the Engineer make no representation or warranty regarding the information contained in the boring logs or soils report. The Contractor shall make their own investigations and shall plan their work accordingly. Arrangements to enter the property during the bidding phase may be made upon request of the Owner. There will be no additional payment for expenses incurred by the Contractor resulting from adverse soil or ground water conditions.
4. The initial establishment of soil erosion and sediment control measures such as the placement of erosion control silt fence, stabilized construction entrance, inlet protection, etc. shall be installed by the Contractor prior to the start of demolition, clearing and mass grading.
5. All earthwork and grading operations are to be supervised and inspected by a qualified Geotechnical/Soils Engineer or their designated representative. All testing, inspection, observation, and supervision of soil quality, unsuitable soil removal and its replacement, compaction testing, ensuring ponds and retention areas hold/retain water and other soils related operations shall be entirely the responsibility of the Geotechnical/Soils Engineer. Furthermore, no undercut or other recommended remediation work shall be performed without authorization by the Owner and documentation of extent by the Geotechnical/Soils Engineer.
6. A qualified Geotechnical/Soils Engineer or their designated representative shall observe the construction of the retention and detention areas including berming to ensure the areas will be capable of holding the designated normal and high water levels. Gravel or sand seams, or other conditions which may be encountered and which might tend to dewater the area shall be remedied as directed by the Geotechnical/Soils Engineer.
7. Topsoil stripping or excavation shall initially consist of the removal of the uppermost layers of organic soil and stockpiling at a location shown on the Plans, in another area deemed appropriate by the Contractor and approved by the Owner, or at a location specified by the Owner or Engineer. No stockpile location shall be finalized without the explicit approval from the Owner. Further, stockpiles shall not be located within flood prone areas or within designated buffer areas.
8. Stripping of vegetation or ground cover, grading, or other soil disturbance activities shall be done in a manner which will minimize soil erosion. Further, the disturbance shall be kept to a minimum and all disturbed areas shall be stabilized with temporary or permanent measures within fourteen (14) days of active hydrologic disturbance or re-disturbance.
9. The Contractor shall take precautionary measures to minimize earthwork and other activities in the areas where trees are to be saved or protected as to not cause injury to roots or trunks.
10. Embankment placement including preparation of existing ground surface prior to embankment placement and compaction shall be in accordance with Section 205 of the IDOT Standard Specifications. All embankments located within structural fill areas or zones of influence thereof shall be constructed to a minimum 95% of the modified proctor density in accordance with ASTM D1557. Embankments located in non-structural fill areas shall be constructed to a minimum of 90% of the modified proctor density in accordance with ASTM D1557.
11. Topsoil respread shall consist of placing a minimum of a four (4) inch layer of topsoil or depth indicated on the Plans over the disturbed unpaved areas within the construction limits. These areas shall then be seeded, sodded, landscaped, stabilized, etc. as indicated on the Plans.
12. Sod shall be placed on all disturbed areas within the right-of-way and at other locations indicated on the Plans.
13. Refer to the Landscape Plans prepared By Others for additional information on the landscaping and ground cover requirements.
14. Completed subgrade grading and final finished grading for all proposed improvements shall be within a tolerance of plus or minus one-tenth (0.1) foot of the design elevation.
15. Contractor shall provide uniform slopes between proposed grades and smooth vertical curves/transitions through all high and low points. Smooth transitions shall be provided where any proposed improvements match into or abut existing improvements.
16. The subgrade for the proposed streets and other pavement areas shall be proof-rolled by the Contractor in the presence of the Village/City Engineer or applicable Jurisdictional Agency and the Geotechnical/Soils Engineer. Any unstable areas or failures encountered shall be removed and replaced or remediated as directed by the Village/City Engineer or applicable Jurisdictional Agency and Geotechnical/Soils Engineer. Any unstable areas or failures encountered and remediation method including approximate size, quantity, etc. shall be documented by the Geotechnical/Soils Engineer.
17. It shall be the responsibility of the Contractor to legally remove from the site any and all materials and debris which results from their construction operations at no additional expense to the Owner. Burning or incineration on the site is not permitted.

SEWER AND WATER MAIN GENERAL NOTES

1. All sanitary sewers, storm sewers and water mains as well as their services and other related appurtenances shall be constructed and tested in accordance with the "Standard Specifications for Water and Sewer Construction in Illinois", latest edition, the requirements of the applicable Jurisdictional Agency, and the applicable Typical Details.
2. Rough grading shall be within one (1) foot of finished subgrade elevation shall be completed prior to the commencement of the underground utility construction.
3. Trench excavation, bedding and backfill, and compaction for sanitary sewers, storm sewers, water mains as well as their services and other related appurtenances shall be in accordance with applicable Trench Section Details.
4. When in the opinion of the Geotechnical/Soils Engineer, unsuitable soil conditions are encountered within utility trenches which require the removal of unsuitable materials below the depth of the bedding specified, the Contractor shall remove the unsuitable soils and replace the material with granular compacted bedding material as directed by the Geotechnical/Soils Engineer, Village/City or other applicable Jurisdictional Agency. The depth of the required removal and replacement shall be documented by the Geotechnical/Soils Engineer and witnessed by the Contractor. This work, when approved by the Owner and Geotechnical/Soils Engineer, will be measured and paid for at the contract unit price per cubic yard in place for unsuitable soil which price shall include the removal and off-site disposal of unsuitable soil, the additional bedding material, and all labor, materials and equipment required to perform the work as specified.
5. All utility trenches for the proposed sanitary sewer, storm sewer, water main and services lying under or where the inner edge of the trench is within two (2) feet of any pavement area, curb, curb and gutter, stabilized shoulder, sidewalk, building, utility crossing or other structural area shall be backfilled with select granular backfill material and compacted as noted on the Plans.
6. The Contractor shall be responsible for dewatering any excavation for the installation of sanitary sewers, storm sewers, water mains as well as their services and other related appurtenances. Any dewatering required to construct the proposed underground improvements shall be considered incidental to the respective underground improvement.
7. Connections to an existing sewer main shall be to an existing service stub, wye, tee, or manhole where possible. Sewer connections to existing sanitary manholes shall be machine cored. All pipe connections to sanitary structures shall be made with flexible waterstop gasket/boot (resilient connector) conforming to ASTM C923.
8. When connecting to an existing sewer main by means other than an existing service stub, wye, tee, or manhole, one of the following methods shall be used:
   a. Circular saw-cut of sewer main by proper tools ("sewer-tap" machine or similar) and proper installation of a suitable hub-wye saddle or hub-tee saddle.
   b. Remove the entire Section of pipe breaking only the top of one bell and replace with a wye or tee branch Section.
   c. With pipe cutter, neatly and accurately cut out the desired length of pipe for insertion of proper fittings, using "Band-Seal" or similar flexible type couplings to hold it firmly in place.
   d. Other method approved by Jurisdictional Agency.
9. "Band-Seal" or similar flexible type couplings shall be used in the connection of sewer pipe of dissimilar materials.
10. The Contractor shall mark the locations of the ends of the service stubs with 4"x4" wood posts extending a minimum of three (3) feet above the ground. The top twelve (12) inches of post shall be painted green for sanitary, white for storm, and blue for water. The Contractor shall keep accurate records of all service connection locations.
11. All structures including but not limited to frames and lids or grates, cleanouts, b-boxes, etc. shall be adjusted as necessary by the Contractor to final finished grade elevation.
12. All sanitary sewers, storm sewers, water mains as well as their services and other related appurtenances shall be thoroughly cleaned to the satisfaction of the Village/City, Owner, and Engineer as necessary during construction, prior to inspection and testing, and at the end of the project.
13. The Contractor shall coordinate the testing and televising so that it can be witnessed by the applicable Jurisdiction Agency.
14. The cost of the cleaning, televising, and testing shall be considered incidental to the Contract.
15. All deficiencies and defects observed as well as any necessary corrective work required as the result of testing or television inspection shall be performed by the Contractor at no additional cost to the Owner and without delay. All dips, cracks, leaks, improperly sealed joints and departures from the approved grades and alignment shall be repaired by removing and replacing the involved sections of pipe. Upon completion thereof, the sewer shall be retested and/or re-televised and such further inspection made as may appear warranted by the Owner or as required by the Jurisdictional Agency.
16. Refer to Sanitary Sewer, Storm Sewer, Water Main and Water Main Protection Requirements for additional requirements.

SANITARY SEWER

1. Refer to Sewer and Water Main General Notes for additional requirements.
2. Gravity Sanitary Sewer Pipe shall be constructed from one or more of the following materials as specified on the Plans:
   a. Polyvinyl Chloride (PVC) Pipe conforming to ASTM D3034 with a Standard Dimension Ratio (SDR) of 26 unless noted otherwise on the Plans with elastomeric gasket joints conforming to ASTM D3212 and F477.
   b. Ductile Iron Pipe (DIP), Class 52, conforming to ANSI A21.51 and AWWA C151 with rubber gasket joints conforming to ANSI A21.11 and AWWA C111. The interior of the pipe and fittings shall be cement-mortar lined in accordance with ANSI A21.4 and AWWA C104. The exterior of all pipes and fittings shall be coated with an asphaltic coating per ANSI A21.51 and AWWA C151 for ductile iron pipe, and ANSI A21.10/A21.53 and AWWA C110/C153 for fittings.
3. Where water main quality pipe and joints are required to meet the water main protection requirements the sanitary sewer pipe shall be constructed from one or more of the following materials as specified on the Plans:
   a. Polyvinyl Chloride (PVC) Pipe conforming to ASTM D2241 with a Standard Dimension Ratio (SDR) of 26 unless noted otherwise on the Plans with elastomeric gasket joints conforming to ASTM D3139 and F477.
   b. Ductile Iron Pipe (DIP), Class 52, conforming to ANSI A21.51 and AWWA C151 with rubber gasket joints conforming to ANSI A21.11 and AWWA C111. The interior of the pipe and fittings shall be cement-mortar lined in accordance with ANSI A21.4 and AWWA C104. The exterior of all pipes and fittings shall be coated with an asphaltic coating per ANSI A21.51 and AWWA C151 for ductile iron pipe, and ANSI A21.10/A21.53 and AWWA C110/C153 for fittings.
4. All sanitary manholes shall be constructed of precast reinforced concrete sections with tongue and groove joints conforming to ASTM C478 and shall have a minimum inside diameter of 48-inches. If manhole diameter is not specified in the Plans the required manhole diameter shall be determined by size of pipes and their orientation. The precast reinforced concrete base and bottom section shall be monolithically cast. All pipe openings in the structure shall be precast into the structure walls at the proper invert elevation and orientation. Benches and defined channel invert flow lines shall be provided at bottom of structures to provide smooth defined flow path between all inlet and outlet pipe inverts. Sanitary manholes shall have eccentric offset cones, except where necessary due to height and opening restrictions, where a precast reinforced concrete flat top slab section shall be provided in-lieu of an eccentric cone section. Flat top slabs shall conform to IDOT Standard Detail 602601 as well as meet the H-20/HS-20 loading requirement. Concrete adjusting rings will be permitted where necessary and shall be limited to two (2) adjusting rings totaling not more than eight (8) inches in height or as permitted by the applicable Jurisdictional Agency. All joints between structure sections, adjusting rings and frames shall be securely sealed to one another using a resilient, flexible, non-hardening bituminous mastic or butyl sealing compound in accordance with ASTM C990, or flexible rubber gasket in accordance with ASTM C443 in order to provide a watertight joint. The Contractor shall remove all excess mastic on inside of structure and butter joints with mortar.
5. External chimney seals shall be provided on all sanitary manholes and all sanitary manholes shall be watertight.
6. Sanitary manhole frames and lids shall be Neenah R-1713 with Type B, self-sealing, watertight lids with concealed pick holes or approved equal, unless noted otherwise in the Plans. Sanitary manhole lids shall be imprinted with the word "SANITARY" cast into the lid.
7. Manhole steps shall be furnished and installed in all Sanitary and Storm structures in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition and as shown on the Plans. Steps shall be polypropylene coated steel core reinforced steps with slip, load, and pullout ratings in accordance with ASTM C478 and OSHA requirements. The steps shall be placed uniformly at twelve (12) to sixteen (16) inches on-center and shall be located directly below the manhole frame opening and shall not be located directly over a pipe opening with the alignment of the steps generally perpendicular to the pipe flow direction wherever possible.
8. An external drop manhole structure in accordance with Plans or other Jurisdictional Agency requirements shall be provided where the difference between inverts is greater than or equal to two (2) feet.
9. The minimum cover over sanitary sewer lines and services shall be three (3) feet.
10. The minimum sanitary service line size shall be 6-inch diameter pipe at a 1.0% minimum slope. All services stubs shall be capped with a watertight plug until connection is ready to be made. The plug shall be properly secured to withstand the required test pressures.
11. Sanitary sewer service risers shall be installed where the mainline sewer depth is greater than twelve (12) feet or in locations indicated on the Plans.
12. Cleanouts shall be provided in locations shown on the Plans or as required by the Jurisdictional Agency.
13. All floor drains shall discharge into the sanitary sewer.
14. External grease traps, if applicable, shall be provided in accordance with the Jurisdictional Agency requirements at the locations shown on Plans. Contractor shall submit shop drawings for review and approval prior to ordering or fabricating the grease trap.
15. Sanitary sewers and related appurtenances shall be tested and televised in accordance with the following:
    a. All sanitary sewers shall be tested for acceptability by either an air test, infiltration of water test, or exfiltration of water test or a combination thereof in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition or in accordance with the requirements of the Village/City or applicable Jurisdictional Agency, whichever is more restrictive. The maximum allowable rate of infiltration or exfiltration shall not exceed 200 gallons per inch diameter of pipe per mile of pipe per day.
    b. All flexible pipe sanitary sewers shall be deflection tested in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition or in accordance with the requirements of the Village/City or applicable Jurisdictional Agency, whichever is more restrictive. Deflection shall not exceed the manufacturer's recommended deflection limits or a maximum of 5% of the internal diameter of the pipe, whichever is more stringent.
    c. All sanitary manholes shall be tested for watertightness using a leakage test in accordance with ASTM C969 - "Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines" or ASTM C1244 - "Standard Test Method for Concrete Sewer Manholes by the Negative Pressure (Vacuum) Test Prior to Backfill".
    d. The Contractor shall televise all newly constructed sanitary sewers in accordance with applicable Jurisdictional Agency requirements prior to the completion of the project and final acceptance. A copy of the inspection video shall be provided to the applicable Jurisdictional Agency and the Engineer for review.

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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GENERAL NOTES AND SPECIFICATIONS

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C2.0 / C9

STORM SEWER

1. Refer to Sewer and Water Main General Notes for additional requirements.
2. Storm Sewer Pipe shall be constructed from one or more of the following materials as specified on the Plans:
   a. Reinforced Concrete Pipe (RCP) conforming to ASTM C76 with O-Ring gasket joints conforming to ASTM C443. Pipe class shall be per Section 550 of IDOT Standard Specifications, except that pipe shall be a minimum Class III in non-structural areas (i.e., grass, parkway, etc.) and a minimum of Class IV in or within zone of influence of all structural areas (i.e., roadways, parking lots, curbs, walks, etc.).
   b. Polyvinyl Chloride (PVC) Pipe conforming to ASTM D3034 with a Standard Dimension Ratio (SDR) of 26 unless noted otherwise on the Plans with elastomeric gasket joints conforming to ASTM D3212.
   c. High Density Polyethylene (HDPE) Pipe with smooth wall interior conforming to ASTM D3350 with joints conforming to ASTM D3212 and ASTM D3350.
   d. Ductile Iron Pipe (DIP), Class 52, conforming to ANSI A21.51 and AWWA C151 with rubber gasket joints conforming to ANSI A21.11 and AWWA C111. The interior of the pipe and fittings shall be cement-mortar lined in accordance with ANSI A21.4 and AWWA C104. The exterior of all pipes and fittings shall be coated with an asphaltic coating per ANSI A21.51 and AWWA C151 for ductile iron pipe, and ANSI A21.10/A21.53 and AWWA C110/C153 for fittings.
3. Where water main quality pipe and joints are required to meet the water main protection requirements the storm sewer pipe shall be constructed from one or more of the following materials as specified on the:
   a. Reinforced Concrete Pipe (RCP) conforming to ASTM C361 with O-Ring gasket joints conforming to ASTM C443 and C361. Pipe class shall be per Section 550 of IDOT Standard Specifications, except that pipe shall be a minimum Class III in non-structural areas (i.e., grass, parkway, etc.) and a minimum of Class IV in or within zone of influence of all structural areas (i.e., roadways, parking lots, curbs, walks, etc.).
   b. Polyvinyl Chloride (PVC) Pipe conforming to ASTM D2241 with a Standard Dimension Ratio (SDR) of 26 unless noted otherwise on the Plans with elastomeric gasket joints conforming to ASTM D3139 and F477.
   c. High Density Polyethylene (HDPE) pressure pipe with smooth wall interior and joints conforming to AWWA C-906.
   d. Ductile Iron Pipe (DIP), Class 52, conforming to ANSI A21.51 and AWWA C151 with rubber gasket joints conforming to ANSI A21.11 and AWWA C111. The interior of the pipe and fittings shall be cement-mortar lined in accordance with ANSI A21.4 and AWWA C104. The exterior of all pipes and fittings shall be coated with an asphaltic coating per ANSI A21.51 and AWWA C151 for ductile iron pipe, and ANSI A21.10/A21.53 and AWWA C110/C153 for fittings.
4. Non-circular reinforced concrete pipe shall be constructed from one or more of the following materials as specified on the Plans:
   a. Reinforced Concrete Arch Pipe in accordance with ASTM C506 and AASHTO M206.
   b. Reinforced Concrete Elliptical Pipe in accordance with ASTM C507 and AASHTO M207.
   c. Reinforced Concrete Box Culvert Sections in accordance with ASTM C1433.
5. All storm structures shall be constructed of precast reinforced concrete sections with tongue and groove joints conforming to ASTM C478. If the structure diameter is not specified in the Plans the required manhole diameter shall be determined by size of pipes and their orientation. The precast reinforced concrete base and bottom section shall be monolithically cast. All pipe openings in the structure shall be precast into the structure walls at the proper invert elevation and orientation. Benches and defined channel invert flow lines shall be provided at bottom of structures to provide smooth defined flow path between all inlet and outlet pipe inverts. Storm manholes and catch basins shall have eccentric offset cones, except where necessary due to height and opening restrictions, where a precast reinforced concrete flat top slab section shall be provided in-lieu of an eccentric cone section. Flat top slabs shall conform to IDOT Standard Detail 602601 as well as meet the H-20/HS-20 loading requirement. Catch Basins shall have the sump depth as specified in the Plans. Concrete adjusting rings will be permitted where necessary and shall be limited to two (2) adjusting rings totaling not more than eight (8) inches in height. All joints between structure sections, adjusting rings and frames shall be securely sealed to one another using a resilient, flexible, non-hardening bituminous mastic or butyl sealing compound in accordance with ASTM C990, or flexible rubber gasket in accordance with ASTM C443 in order to provide a watertight joint. The Contractor shall remove all excess mastic on inside of structure and butter joints with mortar.
6. Manhole steps shall be furnished and installed in all Sanitary and Storm structures in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition and as shown on the Plans. Steps shall be polypropylene coated steel core reinforced steps with slip, load, and pullout ratings in accordance with ASTM C478 and OSHA requirements. The steps shall be placed uniformly at twelve (12) to sixteen (16) inches on-center and shall be located directly below the manhole frame opening and shall not be located directly over a pipe opening with the alignment of the steps generally perpendicular to the pipe flow direction wherever possible.
7. Open lid storm structures are designated with "Gr" on the Plans and closed lid storm structures are designated with "Rim" on the Plans.
8. Closed lid storm structures frames and lids shall be Neenah R-1713 with Type B lid, or approved equal, unless noted otherwise in the Plans. Closed lid storm lids shall be imprinted with the word "STORM" cast into the lid.
9. Open lid storm structures frames and lids shall be Neenah R-2504-D, or approved equal, unless noted otherwise in the Plans.
10. Yard area drain structures shall be Nyloplast inline drains or drain basin structures, or approved equal, unless noted otherwise in the Plans.
11. Concrete flared end sections shall be precast reinforced concrete with an end block cast separate to anchor flared end section in place in accordance with IDOT Standard 542301 for circular concrete pipe and IDOT Standard 542306 for elliptical concrete pipe. Grating for flared end sections shall be in accordance with IDOT Standard 542311 and shall be provided at all flared end sections twelve (12) inches or greater.
12. Rip-Rap with filter fabric in accordance with Section 281 of the IDOT Standard Specifications shall be provided at locations shown on the Plans.
13. Cleanouts shall be provided in locations shown on the Plans or as required by the Jurisdictional Agency.
14. All downspouts, footing drains, and outside storm drains shall discharge to the storm sewer or discharge at grade. No stormwater shall be discharged into the sanitary sewer system.
15. Perforated pipe underdrains shall be corrugated flexible HDPE pipe conforming to AASHTO M252 or M294, perforated polyethylene pipe of diameter specified on the Plans with a smooth interior and wrapped in a soil filter fabric sock supplied and installed by the Contractor.
16. Elevations of structures located in curb and gutter are flow line elevations.
17. Elevations of flared end sections are provided at the extreme outer end of the flared end section.

WATER MAIN

1. Refer to Sewer and Water Main General Notes for additional requirements.
2. Water Main Pipe shall be constructed from one or more of the following materials as specified on the Plans:
   a. Ductile Iron Pipe (DIP), Class 52 conforming to ANSI A21.51 and AWWA C151 with a 150 psi working pressure, with push-on double sealing rubber gasket joints conforming to ANSI A21.11 and AWWA C111. The interior of the pipe and fittings shall be cement-mortar lined in accordance with ANSI A21.4 and AWWA C104. The exterior of all pipes and fittings shall be coated with an asphaltic coating per ANSI A21.51 and AWWA C151 for ductile iron pipe, and ANSI A21.10/A21.53 and AWWA C110/C153 for fittings. If specified, the ductile iron pipe and fittings shall be encased by a polyethylene encasement with an 8 mil thickness, Class C (Black) conforming to ANSI A21.5 and AWWA C105. Installation of DIP and fittings shall be in accordance with AWWA C600.
   b. Polyvinyl Chloride (PVC) Pipe, SDR 18 conforming to AWWA C900 (4"-12" diameters) and AWWA C905 (14"-48" diameters) with a pressure rating of 235 conforming to ASTM D2241 and joints in accordance with ASTM D3139 with elastomeric seals in accordance with ASTM F477. Installation of PVC pipe and fittings shall be in accordance with AWWA C605.
   c. High Density Polyethylene (HDPE) pressure pipe and fittings for water main in accordance with AWWA C906, DR 11, 160 psi, with ductile iron pipe size dimension.
3. Ductile iron fittings or cast iron fittings shall conform to ANSI A21.10 and AWWA C111; and compact ductile iron fittings shall conform to ANSI A21.53 and AWWA C153.
4. All water structures shall be constructed of precast reinforced concrete sections with tongue and groove joints conforming to ASTM C478 and shall have a minimum inside diameter of 48-inches. If structure diameter is not specified in the Plans the required structure diameter shall be determined by size of pipes and appurtenances that need to be located within said structure. The precast reinforced concrete base and bottom section shall be monolithically cast. All pipe openings in the structure shall be precast into the structure walls at the proper invert elevation and orientation. Water structures shall have concentric cones, except where necessary due to height and opening restrictions, where a precast reinforced concrete flat top slab section shall be provided in-lieu of an eccentric cone section. Flat top slabs shall conform to IDOT Standard Detail 602601 as well as meet the H-20/HS-20 loading requirement. Concrete adjusting rings will be permitted where necessary and shall be limited to two (2) adjusting rings totaling not more than eight (8) inches in height. All joints between structure sections, adjusting rings and frames shall be securely sealed to one another using a resilient, flexible, non-hardening bituminous mastic or butyl sealing compound in accordance with ASTM C990, or flexible rubber gasket in accordance with ASTM C443 in order to provide a watertight joint. The Contractor shall remove all excess mastic on inside of structure and butter joints with mortar. All water structures shall be watertight.
5. Valve vaults shall have minimum inside diameter of forty-eight (48) inches for eight (8) inch diameter and smaller valves, and have a minimum inside diameter of sixty (60) inches for ten (10) inch and larger valves.
6. Water services 2 ½ inches in diameter and smaller shall be Type K Copper for underground services conforming to ASTM B88 and ASTM B251. Larger diameter water services shall be of same pipe and joint materials as the mainline water main or as noted on the Plans.
7. The minimum cover from finished grade to the top of the water main and water services shall be 5.5 feet.
8. Water main fittings (i.e., bends, elbows, tees, reducers, etc.) may not be specifically referenced on the Plans and are to be considered incidental and included in the linear footage cost of the watermain.
9. The standards for maximum deflection at pipe joints and laying radius for the various pipe types and lengths shall be per the following:
   a. Ductile Iron Pipe (DIP) - AWWA C600.
   b. Polyvinyl Chloride (PVC) Pipe - AWWA C900.
   c. High Density Polyethylene (HDPE) - Per Manufacturer's requirements.
10. Thrust blocking shall be installed on water mains at all tees, elbows, plugs, and bends 11 ¼ degrees or greater etc. per the "Standard Specifications for Water and Sewer Construction", latest edition. Thrust blocking shall be poured in place Portland Cement Concrete.
11. All bends greater than 10 degrees, hydrants, tees, and fittings shall be mechanical joint with Mega-Lug retaining glands or Field Lok gasket in casings, between fittings and at grade changes.
12. All bolts and nuts shall be stainless steel.
13. A tracer wire shall be installed on all non-metallic water mains. The wire shall be continuous from valve vault to valve vault.
14. Frame and lids for water structures shall be Neenah R-1713 or approved equal and lids shall be imprinted with the word "WATER" cast into the lid.
15. All water valves, fire hydrants, b-boxes, corporation stops, curb stops, ground key stops, service boxes, tapping sleeves, and other water main related appurtenances shall conform to Village/City or applicable Jurisdictional Agency Requirements and shall furnish and install the same. Contractor shall verify exact model, style, type, and manufacturer required prior to ordering. All fire hydrants shall be painted in accordance with the applicable Jurisdictional Agency requirements.
16. Valves shall be non-rising stem type and shall close by turning clockwise. All valves shall be resilient wedge gate or ball valves, except that butterfly valves shall be installed on all water mains 16" diameter and larger, conforming to AWWA C500 with a minimum rated working pressure of 200 psi and in accordance with applicable Jurisdictional Agency requirements. Specialty valves and fittings such as cut-in-valves, tapping sleeves and valves, pressure reducing valves, insertion valves, and air release valves shall conform to the requirements of the applicable Jurisdictional Agency requirements and shall be installed at locations indicated on the Plans.
17. When making connections to existing water mains requires a shutdown that requires an interruption in service, the Contractor shall contact the Owner of the water main and they shall mutually agree upon a date and a time for connections which will allow ample time to perform the work required in order to make the required connection. Notifications of all users to be affected by the interruption shall be provided a minimum of twenty-four (24) hours prior to the service interruption. All water mains opened to atmosphere must be disinfected prior to returning the water main to service.
18. Water Main and related appurtenances shall be tested in accordance with the following:
   a. All water mains shall be tested by means of a pressure test and leakage test, in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition, AWWA C600, and in accordance with applicable Jurisdictional Agency requirements.
   b. All water structures (i.e., valve vaults) shall be subject to a leakage test in accordance with IEPA guidelines and Jurisdictional Agency requirements.
19. After completion of the water main testing, the water mains and related appurtenances shall be flushed clean and disinfected (chlorinated) in accordance with the "Standard Specifications for Water and Sewer Construction", latest edition and in accordance with applicable Jurisdictional Agency requirements.

WATER MAIN PROTECTION REQUIREMENTS

Water mains, water services and related appurtenances shall be protected from any existing or proposed drains, sanitary sewers, storm sewers, combined sewers, force mains, and sewer services. All these previously mentioned items shall collectively be referred to as "sewer(s)" for the remainder of this section. Horizontal and vertical separation requirements between water mains and sewers as well as other water main protection requirements shall be in accordance with "Standard Specifications for Water and Sewer Construction in Illinois", latest edition and per the following:

1. Horizontal Separation:
   a. Whenever possible, an existing or proposed water main must be at least ten (10) feet horizontally from any existing or proposed drain, storm sewer, sanitary sewer, combined sewer or sewer service.
   b. Should local conditions exist which would prevent a lateral separation of ten (10) feet, an existing or proposed water main may be closer than ten (10) feet to a sewer provided that the water main invert is at least eighteen (18) inches above the crown of the sewer, and is either in a separate trench or in the same trench on an undisturbed earth shelf located to one side of the sewer.
   c. If it is impossible to obtain proper horizontal and vertical separation as described in Items 1a and 1b above, both the water main and sewer must be constructed of pipe and joint material that conforms to water main quality pipe and joint standards, and be pressure tested to the maximum expected surcharge head to assure water tightness before backfilling.
2. Vertical Separation:
   a. Whenever water mains cross sewers, the water main shall be laid at such an elevation that the invert of the water main is at least eighteen (18) inches above the crown of the sewer. This vertical separation shall be maintained for that portion of the water main located within ten (10) feet horizontally of any sewer crossed. This must be measured as the perpendicular distance from the water main to the sewer. A length of water main pipe shall be centered over the sewer to be crossed with joints placed equidistant from the sewer.
   b. Where conditions exist that the minimum vertical separation set forth in Item 2a above cannot be maintained, or it is necessary for the water main to pass under a sewer, one of the following two measures must be taken:
      i. The water main shall be installed within a PVC casing pipe that conforms to water main quality pipe and joint standards and the casing pipe shall extend on each side of the crossing until the normal distance from the water main to the sewer is at least ten (10) feet.
      ii. The involved sewer shall be constructed of pipe and joint material which would conform to water main quality pipe and joint standards until the normal distance on either side of the crossing from the water main to the sewer is at least ten (10) feet.
   c. In making such crossings, a length of water main pipe shall be centered over the sewer to be crossed with joints equidistant from the sewer. Where a water main must cross under a sewer, a vertical separation of eighteen (18) inches between the invert of the sewer and the crown of the water main shall be maintained, along with means to support the sewer to prevent their settling and breaking the water main.
3. The horizontal and vertical separation between water service lines and sewers or related service lines should be the same as for water mains, as detailed above, except that when minimum horizontal and vertical separation cannot be maintained, water main quality pipe and joints as described under Vertical Separation above, may be used for sewer or related service lines.
4. Water mains or services shall not be allowed to pass through or come into contact with sewer structures.
5. Water mains shall be separated from septic tanks, disposal fields, seepage beds, and sewage lift stations by a minimum of twenty-five (25) feet.
6. Water mains shall be separated from sanitary sewer force mains by a minimum of at least ten (10) feet horizontally and there shall be an eighteen (18) inch vertical separation at crossings.
7. The Contractor shall protect water mains and service lines from the entrance of hydrocarbons through diffusion through any material used in the construction of the line.
8. Casing pipe shall be installed in locations and of material specified on the Plans or where necessary to meet the water main protection requirements. The carrier pipe shall be securely blocked and banded with appropriately spaced spacers, and sanitary and storm sewers shall maintain the specified gradient. Upon installing the carrier pipe the voids between the casing and carrier pipe shall be filled with sand, pea gravel or flowable fill and the ends shall be sealed.

PAVEMENT, CURB & GUTTER, AND WALKS

1. All work under this Section shall be performed in accordance the IDOT Standard Specifications or as specified in the Plans.
2. Concrete curb or curb and gutter shall be constructed in accordance with the Plans and Section 606 of the IDOT Standard Specifications. A ¾" pre-molded fiber joint filler along with two (2) 18" long x ½" (#4) epoxy coated smooth round dowel bars with greased end caps, centered on joint, shall be provided at expansion joints. Expansion joints shall be provided at a maximum of sixty (60) foot intervals and at all points of curvature and tangency, curb returns, five (5) feet either side of edge of structures, and at the end of each pour. Construction joints shall be provided at maximum twenty (20) foot intervals.
3. Where proposed curb or curb and gutter connects to an existing curb or curb and gutter, the existing curb or curb and gutter shall be saw-cut and then two 18" long x ½" (#4) epoxy coated smooth round dowel bars with greased end caps shall be drilled and installed nine (9) inches into the existing and proposed curb. Bars shall be installed in a location similar to that of the expansion joint in the curb or curb and gutter as applicable.
4. All curb and curb and gutter constructed over a utility trench shall be reinforced with two (2) #4 epoxy coated reinforcing bars for a length of ten (10) feet centered over the trench or as shown on the plans.
5. Reversed pitched curb and gutter shall be installed in areas where pavement slopes away from the curb.
6. Sidewalks and walks shall be constructed in accordance with the Plans and Section 424 of the IDOT Standard Specifications. Concrete sidewalks and walks shall be thickened to a minimum of 6" at all driveways. All sidewalks and walks shall be IDOT Portland Cement Concrete, Class SI, on compacted aggregate base course as shown on the Plans. Scored contraction joints shall be provided at five (5) foot intervals or as specified in the Plans. Expansion joints consisting of a ½" pre-molded fiber joint filler shall be provided at maximum fifty (50) foot intervals, and adjacent to concrete curbs, drives, foundations, ramps, etc. as well as when meeting existing concrete walks.
7. Sidewalks and walks constructed over a utility trench shall be reinforced with three (3) #4 round epoxy coated reinforcing bars for a length of ten (10) feet centered over the utility trench or as shown on the plans.
8. Curb ramps accessible to the disabled with raised truncated dome detectable warning surface of standard brick red color or other contrasting color shall be provided at all locations where sidewalk meets curb and at other locations shown on the Plans in accordance with the Illinois Accessibility Code (IAC), latest edition and IDOT Standard 424001, latest revision.
9. Curing and protection of all exposed concrete surfaces shall be in accordance with the IDOT Standard Specifications. No "honey-combing" or other similar failures of the concrete surfaces will be accepted.
10. Aggregate base course shall be in accordance with the Plans and Section 351 of the IDOT Standard Specifications. Aggregate base course material shall be CA-6, Type B, 100% crushed gravel conforming to Section 1004 of the IDOT Standard Specifications.
11. Bituminous binder and surface courses shall be Hot Mix Asphalt (HMA) of type and compacted thickness as specified in the Plans and shall be constructed in accordance with Section 406 of the IDOT Standard Specifications. The surface course shall be made with virgin materials; no recycled materials shall be allowed unless specified otherwise on the Plans. The Contractor shall provide and pay for the services of a competent paving laboratory to design and supervise the control of the paving mixture. All paving materials and mixes shall be IDOT certified.
12. Portland cement concrete (PCC) pavement shall be Class PV with reinforcement as specified on Plans and be constructed in accordance with Section 420 of the IDOT Standard Specifications.
13. All concrete work shall be finished with a broom finish unless specified otherwise in the Plans.
14. The Contractor shall saw-cut the exposed edges of all existing pavement adjacent to any proposed pavement, apron, sidewalk, curb and gutter or similar to provide a smooth, clean edge that is free of loose material. A proper transition butt joint and/or taper shall also be provided as necessary. Refer to butt joint detail for additional information.
15. The testing of the subgrade, aggregate base course, bituminous aggregate material, binder course, surface course, and concrete work shall be required and be performed in accordance with the IDOT Standard Specifications and requirements of the applicable Jurisdictional Agency. A qualified testing firm shall be employed to perform the required tests, ensure quality and conformance, and provide the results to the Engineer, Owner, and Jurisdictional Agency. The Contractor shall provide the Owner with a construction schedule and shall coordinate all required testing with the testing firm.
16. Prior to the commencement of any paving activities, a proof-roll must be performed by the Contractor and approved by the Village/City or applicable Jurisdictional Agency, and the Owner. All areas not passing the proof-roll shall be remediated as recommended by the Soils/Geotechnical Engineer and approved by the Owner. Any remediate areas shall be re-tested.
17. Prior to installation of the aggregate base course:
   a. The subgrade shall be prepared in accordance with Section 301 of the IDOT Standard Specifications.
   b. The Contractor shall be responsible for all subgrade compaction and preparation to within 0.1-ft of the proposed subgrade elevation. Subgrade shall be compacted to a minimum 95% of the modified proctor density in accordance with ASTM D1557.
   c. Sub-grade shall pass a proof-roll and any unsuitable areas in the subgrade shall be remediated as recommended by the Soils/Geotechnical Engineer and approved by the Owner.
18. Prior to the installation of the binder course:
   a. The aggregate base course shall be prepared in accordance with Section 351 of the IDOT Standard Specifications.
   b. The aggregate base course shall be clean and dry.
   c. The bituminous priming material shall be prepared and applied according to Section 403 of the IDOT Standard Specifications.
   d. The Contractor shall prime the aggregate base course at a rate of 0.25 gallons per square yard prior to the placement of the binder course.
   e. The binder course shall be placed only when the temperature in the shade is at least 40º F and the forecast is for rising temperatures.
19. Prior to the installation of the surface course:
   a. The Contractor shall patch and repair all damaged and failed areas in the binder course to the satisfaction of the Village/City or applicable Jurisdictional Agency, and the Owner.
   b. The Contractor shall repair all damaged curb and gutter or other concrete pavement to the satisfaction of the Village/City or applicable Jurisdictional Agency, and the Owner.
   c. Structures within pavement shall be adjusted to final surface grade.
   d. The Contractor shall clean and prime the binder course at a rate of 0.05 gallons per square yard prior to the placement of the surface course.
   e. The surface course shall be placed only when the air temperature in the shade is at least 45º F and the forecast is for rising temperatures.
20. Pavement marking/striping:
   a. All Pavement markings shall be in accordance with Section 780 of the IDOT Standard Specifications and the MUTCD, and be of the material type, size and color specified on the Plans.
   b. Pavement marking on freeways shall be placed with truck-mounted equipment. Markings on roads other than freeways may be placed with either truck-mounted or hand-operated equipment.
   c. Before applying the pavement marking material, the pavement shall be clean, dry, and free of debris or any other material that would reduce the adhesion of the markings on the pavement.
   d. Pavement markings shall be applied in accordance with the manufacturer's recommended instructions.
   e. Pavement markings shall be uniform and have clean, straight edges.
   f. Pavement marking words and symbols shall conform closely to the dimensions and spacing specified in the MUTCD, IDOT Standard Details, and the Plans.
   g. Deviations from the required dimensions and spacing or other departures from reasonable standards of professionalism will be cause for rejection by the Engineer.
21. Handicapped stalls shall be striped and signed in accordance with the Illinois Accessibility Code (IAC), latest edition and any other applicable ADA guidelines. Handicapped stalls shall be a minimum of sixteen (16) feet wide and signage shall be affixed to a post permanently mounted in the ground or wall and located in the center of the space no further than five (5) feet from the front of the accessible space. The minimum height to the bottom of the fine sign shall be four (4) feet. Handicapped stall striping shall be yellow in color.
22. All signs shall be in accordance with Section 720 of the IDOT Standard Specifications and the MUTCD, and be of the material type, size, and color specified on the Plans.
23. Raised reflective pavement markers shall be in accordance with Section 781 of the IDOT Standard Specifications and be recessed into the pavement as required by the applicable Jurisdictional Agency.
24. Pavement marking and marker removal shall be in accordance with Section 783 of the IDOT Standard Specifications.
25. All pavements, curb, curb and gutters, walks, etc. shall be cleaned to the satisfaction of the Village/City or applicable Jurisdictional Agency, Owner, and Engineer as necessary during construction and at the end of the project prior to the final acceptance.

SOIL EROSION AND SEDIMENTATION CONTROL GENERAL NOTES

1. All soil erosion and sedimentation control (SESC) measures shall be installed and properly maintained in accordance with the Illinois Environmental Protection Agency's (IEPA) "Illinois Urban Manual", latest edition and "Illinois Procedures and Standards for Urban Soil Erosion and Sedimentation Control", latest edition, and shall be followed as directed by the Village/City and Engineer. In addition, on sites that will ultimately result in the disturbance of one (1) acre or more the provisions outlined in the General National Pollutant Discharge Elimination System (NPDES) General Permit No. ILR10, latest edition, shall also be followed.
2. Prior to commencement of construction, on sites that will ultimately result in the disturbance of one (1) acre or more, the Contractor shall be responsible for obtaining a copy of the notice of coverage letter and the IEPA National Pollutant Discharge Elimination System (NPDES) General Permit ILR10 from the Owner. The Owner together along with the Contractor and/or other entities if so designated by the Owner, shall be responsible for ensuring that all the requirements of the General Permit and the Storm Water Pollution Prevention Plan (SWPPP) including but not limited to the installation, maintenance as well as the installation of any additional measures necessary that may be required, and inspections of the soil erosion and sediment control measures as well as completing all of the necessary applicable certifications, reports, logs, etc. Inspections are required to be performed at least once every seven (7) calendar days and within 24 hours of the end of a storm event of 0.5 inches of rain (or equivalent snowfall) or greater. The SWPPP and all the required paperwork shall be kept on-site and be organized and ready for viewing.
3. All erosion control measures are to be installed prior to any demolition, earth moving activities or other disturbance.
4. Soil Erosion Control measures shall include the provision of an erosion control fence as required along the area of disturbance, a stabilized construction entrance, and sediment traps or other inlet protection method at each inlet or catch basin.
5. Contractor to establish a temporary stabilized construction entrance as well as install all perimeter silt fence prior to the start of any clearing or grading activities.
6. Temporary gravel stabilized construction entrance shall be maintained, adjusted, and/or relocated as necessary to prevent mud and other debris from being tracked onto adjacent public roadways. Any mud or other debris that is tracked onto a public road shall be properly removed as soon as practical, but before the end of each working day.
7. After the start of mass grading and before all storm water conveyance improvements are in place and functional, all on-site storm water shall be temporarily diverted into the detention basin or a properly constructed temporary sedimentation basin or collection device, as per local requirements, so as to prevent surface waters from flowing onto adjacent property.
8. Disturbed areas shall be stabilized by seeding within seven (7) calendar days of the completion of disturbance. If construction activity on a portion of the site is to resume within fourteen (14) calendar days of the end of the last disturbance, then stabilization measures do not have to be initiated on that portion of the site by the 7th day after the completion of said disturbance. Areas with slopes 3H:1V or greater shall be stabilized with erosion control blanket or mat in addition to seeding.
9. The Contractor shall provide adequate planning and supervision during the project construction period for implementing construction methods, processes and cleanup procedures necessary to prevent water pollution and control erosion.
10. No sediment or debris shall be allowed to enter the existing storm sewer system or flow off-site.
11. All temporary and permanent erosion and sedimentation control measures shall be maintained, repaired and/or replaced as necessary to ensure effective performance. If required, a designated erosion control inspector shall inspect all measures every seven (7) calendar days, or within twenty-four (24) hours of a 0.5-inch rain event or equivalent snowfall, and report where items are in non-compliance. Otherwise, the Contractor shall be responsible for the inspection as well as maintenance of all measures and shall be subject to the terms of Federal, State, and local requirements.
12. All temporary erosion and sedimentation control measures are to remain in place and be functioning until final stabilization. After final stabilization, the Contractor is to remove and properly dispose of all erosion and sedimentation measures according to Jurisdictional Agency requirements within thirty (30) days. All disturbed areas or trapped sediment that accumulates from said measures shall be permanently stabilized.
13. Topsoil stockpiles shall not be located in flood prone areas or buffers protecting wetlands, or waters of the United States or County. Stockpiles shall be protected from erosion by installing silt fence around the perimeter of the stockpile(s). Stockpiles shall be seeded within seven (7) calendar days of completion.
14. If dewatering services are used, adjoining properties and discharge locations shall be protected from erosion. Discharges shall be routed through an effective sediment control measure (i.e., sediment Trap, sediment Basin, or other appropriate measure).
15. All storm sewers, drainage structures, catch basin sumps and/or retention/detention/sedimentation basins provided within this project are to be cleaned at the end of construction and prior to final acceptance. Cleaning may also be required during the course of construction if it is determined that the structures are not properly functioning and their performance is impaired.
16. Storm water conveyance swales, channels, streams or similar, if disturbed, are to be stabilized within 48 hours after the end of active disturbance.
17. Extreme caution shall be taken by the Contractor to prevent erosion and siltation during construction. The Contractor shall inspect catch basins and clean out if necessary. The contractor shall use silt/erosion control fence staked in place to prevent siltation of all drainage structures.
18. The Contractor shall water the site, as required during dry weather to control dust.
19. Erosion Control Maintenance and Replacement Notes:
   a. Silt fences are to be cleaned as required during the course of the construction of the project or if the Engineer determines that they are not properly functioning and their performance is impaired.
   b. Sediment traps and basins shall be inspected immediately after each rainfall and at least daily during prolonged rainfall. Any required repairs shall be made immediately.
   c. Should the fabric decomposed or become ineffective prior to the end of the expected life and the barrier still be necessary, the fabric shall be replaced promptly.
   d. Sediment deposits should be removed after each storm event. They must be removed when deposits reach approximately half the height of the barrier.
   e. Mud or dust which is deposited on adjacent roadways shall be removed at the end of each day.
20. The sediment and erosion control measures indicated on the plans are the minimum requirements. Additional measures may be required, as directed by the Engineer or Jurisdictional Agency.
21. The Contractor shall assume responsibility for maintenance of all soil erosion and sedimentation control measures during and after construction. However, the Contractor shall not transfer these improvements for the purpose of maintenance until they have completed with the above and until they have received final inspection and approval from the Jurisdictional Agency or designated erosion control inspector and a Notice of Termination has been filed (NOT).
22. The work shall generally follow the following typical Construction Sequencing:
   a. Installation of them soil erosion and sediment control (SE/SC) measures:
      1. Selective vegetation removal for silt fence installation
      2. Silt fence installation
      3. Construction fencing around areas not to be disturbed
      4. Stabilized construction entrance
   b. Install tree protection fencing and tree removal where necessary (clear & grub)
   c. Construct sediment trapping devices (sediment traps, basins, etc.)
   d. Construct detention facilities and outlet control structure with restrictor.
   e. Strip and stockpile topsoil and mass grade the site
   f. Temporarily stabilize topsoil stockpiles (seed and silt fence around toe of slope)
   g. Install sanitary sewer, storm sewer, watermain and associated inlet & outlet protection
   h. Permanently stabilize detention basins with seed and erosion control blanket
   i. Temporarily stabilize all areas including lots that have reached temporary grade
   j. Install roadways, parking areas, etc.
   k. Final grade and permanently stabilize all outlot areas with topsoil and seed
   l. Install structures and grade individual lots
   m. Permanently stabilize site with topsoil and seed
   n. Remove all temporary SE/SC measures after the site is stabilized with vegetation

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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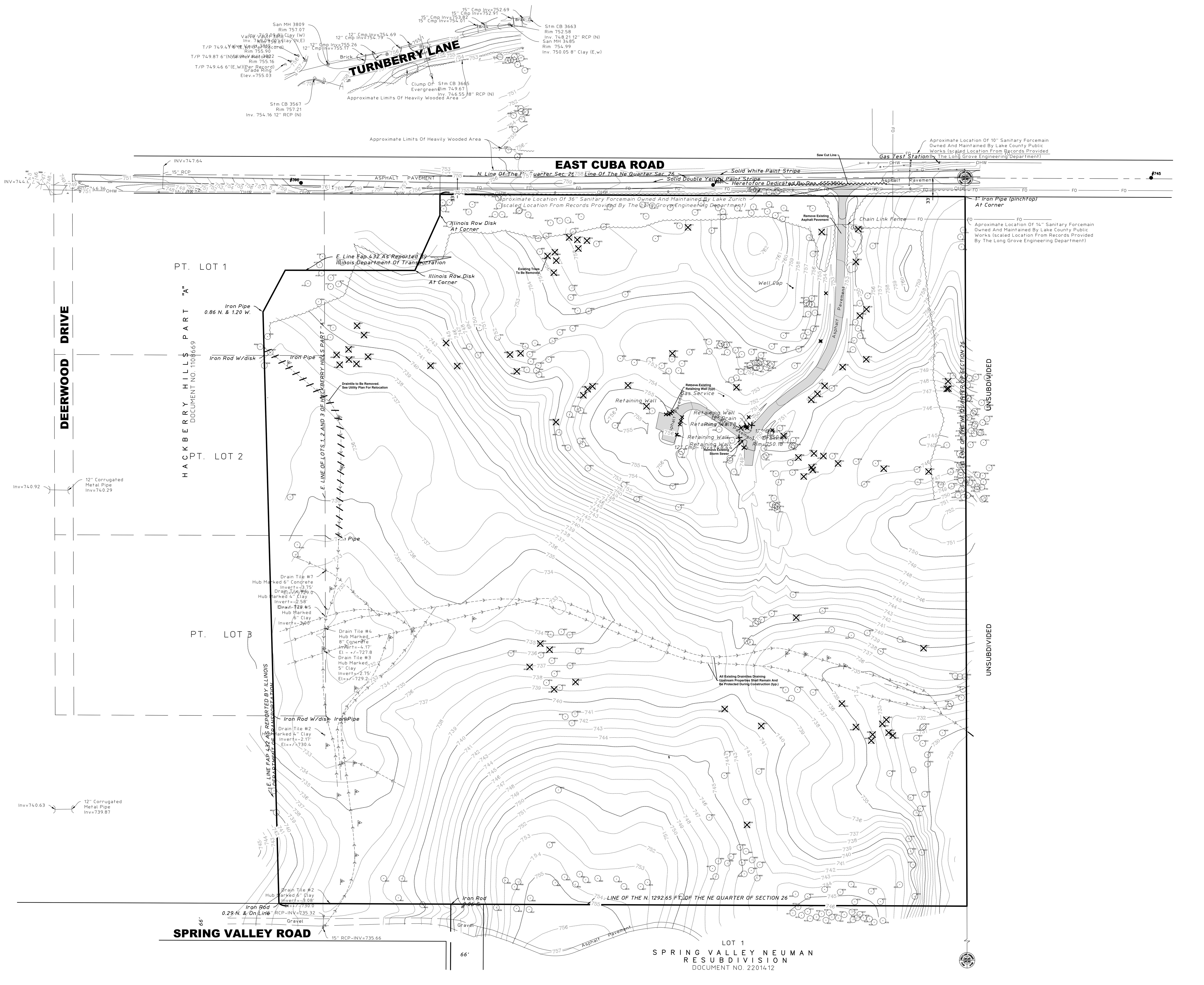
GENERAL NOTES AND SPECIFICATIONS

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C2.1 / C9

Plot Date: Mar 24, 2023 - 9:30am Plotted By: gjl-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Title Sheet and Details.dwg



No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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EXISTING CONDITIONS AND DEMOLITION PLAN-OVERALL

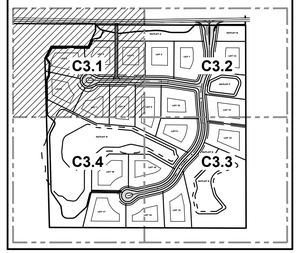
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C3.0 / C9

Plot Date: Mar 24, 2023 - 9:30am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Existing and Demolition Plan.dwg

KEY MAP



DEMOLITION LEGEND

- PAVEMENT REMOVAL
- UTILITY REMOVAL
- ABANDON UTILITY
- FENCE REMOVAL
- MISCELLANEOUS REMOVAL
- SAW CUT
- TREE REMOVAL

NORTH

20 0 40

Scale: 1" = 40'

T U R N B E R R Y L A N E

E A S T C U B A R O A D

H A C K B E R R Y H I L L S P A R T "A"
DOCUMENT NO. 1108669

PT. LOT 1

PT. LOT 2

E. LINE OF LOTS 1, 2 AND 3 OF HACKBERRY HILLS PART "A"

MATCH LINE (SEE SHEET C3.4)

MATCH LINE (SEE SHEET C3.2)

Existing Trees To Be Removed

Draintile to Be Removed. See Utility Plan For Relocation

S 00° 11' 46" W 36.86'

Illinois Row Disk At Corner

S 24° 20' 52" W 107.70'

N 89° 54' 06" W 230.22'

E. Line Fap 432 As Reported By Illinois Department Of Transportation

Illinois Row Disk At Corner

83.81'
S 27° 59' 57" W

Iron Pipe 0.86 N. & 1.20 W.

Iron Rod W/disk

Iron Pipe

San MH 3809
Rim 757.07
Inv. 749.09 8" Clay (W)
Inv. 749.09 10" Clay (N,E)

Valve Vault 3818
Rim 756.87
T/P 749.47 6"(E,W) (Per Record)

Valve Vault 3819
Rim 755.90
T/P 749.87 6"(N,S) (Per Record)

Valve Vault 3822
Rim 755.16
T/P 749.46 6"(E,W)(Per Record)

Grade Ring
Elev.=755.03

Stm CB 3567
Rim 757.21
Inv. 754.16 12" RCP (N)

12" Cmp Inv=755.17
12" Cmp Inv=755.26
12" Cmp Inv=754.79
12" Cmp Inv=754.69

Clump Of Evergreens

Stm CB 3665
Rim 749.67
Inv. 746.55 18" RCP (N)

Approximate Limits Of Heavily Wooded Area

15" Cmp Inv=754.01
15" Cmp Inv=753.82
15" Cmp Inv=752.91
15" Cmp Inv=752.69

Stm CB 3663
Rim 752.58
Inv. 748.21 12" RCP (N)

San MH 3485
Rim 754.99
Inv. 750.05 8" Clay (E,w)

Approximate Limits Of Heavily Wooded Area

INV=747.64
15" RCP

#396

ASPHALT PAVEMENT

N. Line Of The Ne Quarter Sec. 2

Approximate Location (scaled Location) Eco

Inv=740.92
12" Corrugated Metal Pipe
Inv=740.29

No.	Revision	Date
1	PROJECT COORDINATION	08-12-2022
2	PROJECT PLANS SUBMITTAL SET	09-30-2022

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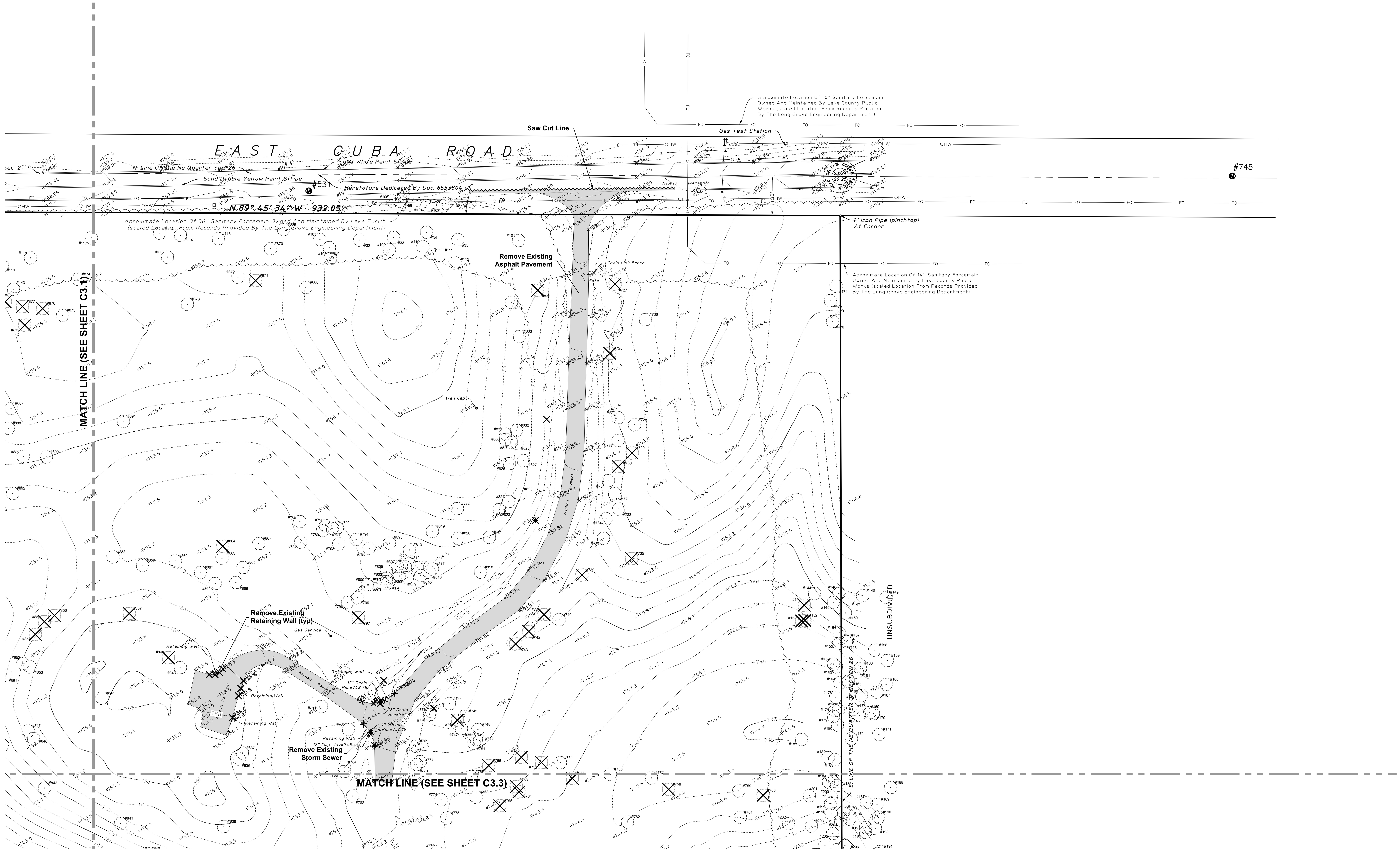
EXISTING CONDITIONS AND DEMOLITION PLAN-NW

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C3.1 / C9

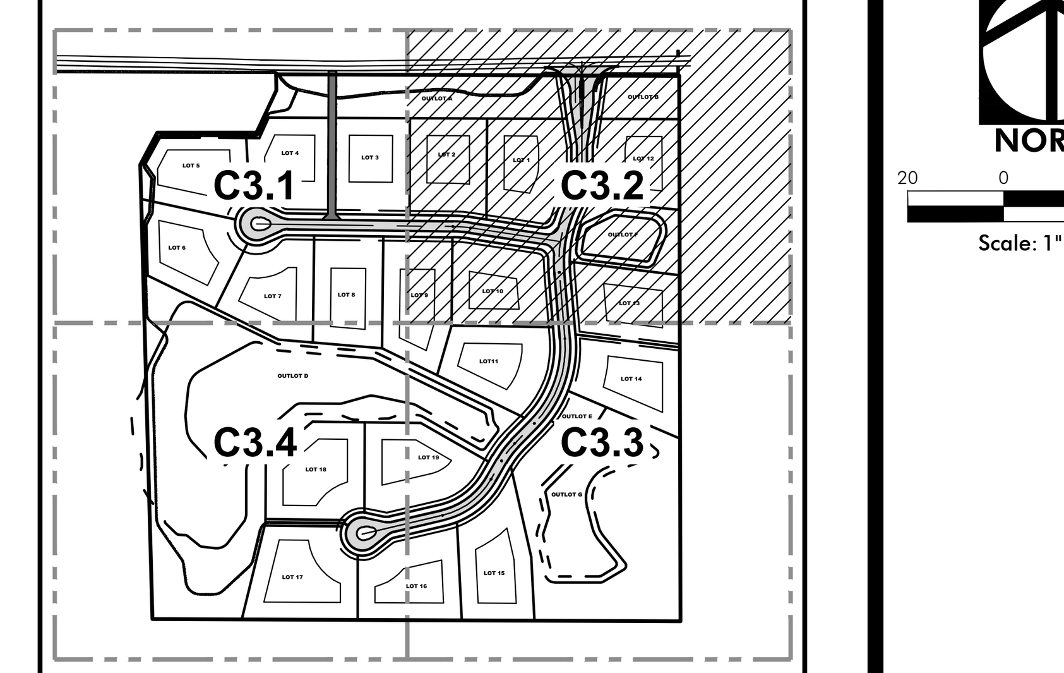
Plot Date: Mar 24, 2023 - 9:30am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Existing and Demolition Plan.dwg



DEMOLITION LEGEND

- PAVEMENT REMOVAL
- UTILITY REMOVAL
- ABANDON UTILITY
- FENCE REMOVAL
- MISCELLANEOUS REMOVAL
- SAW CUT
- TREE REMOVAL

KEY MAP



NORTH

Scale: 1" = 40'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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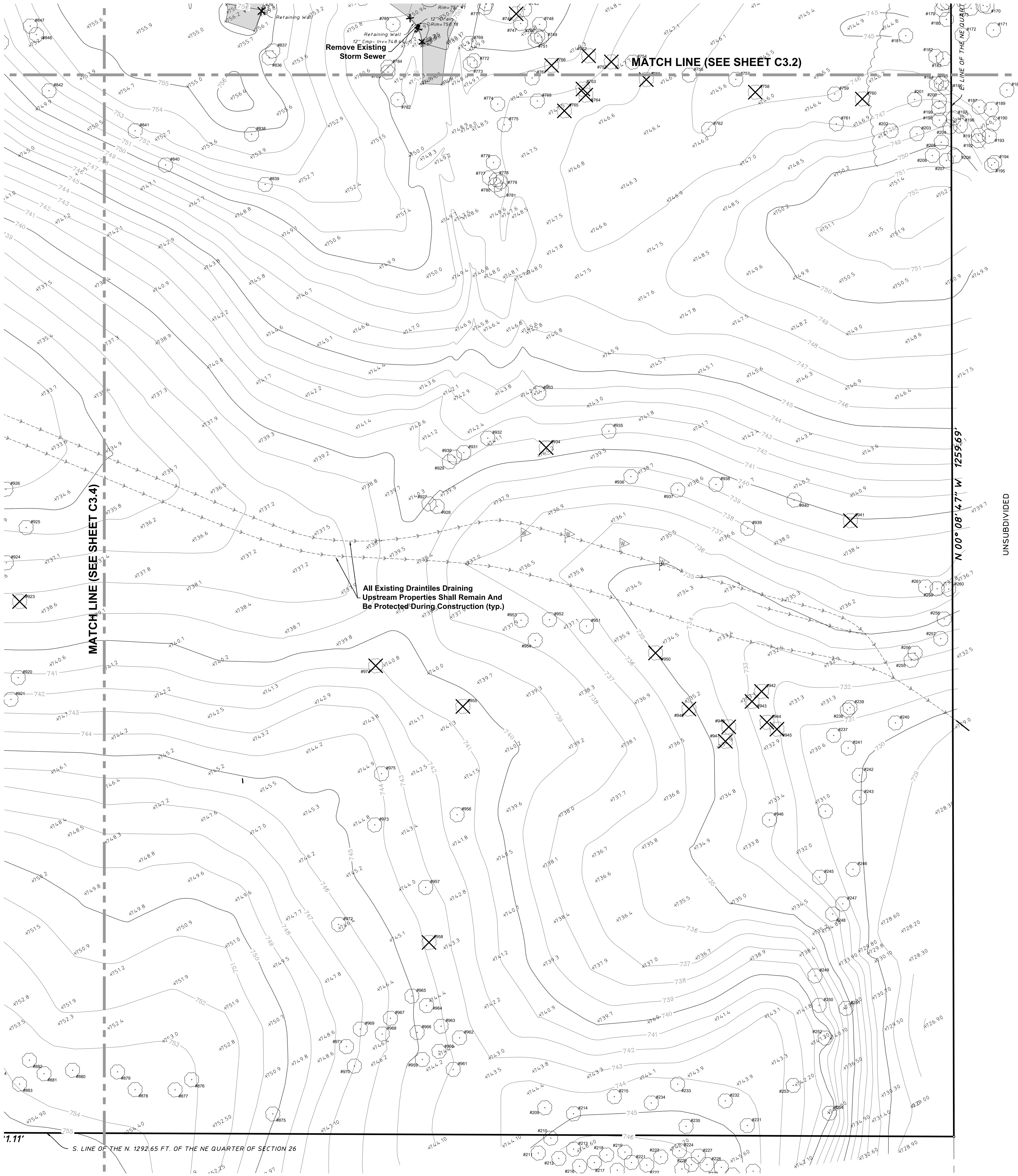
EXISTING CONDITIONS AND DEMOLITION PLAN-NE

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C3.2 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Existing and Demolition Plan.dwg



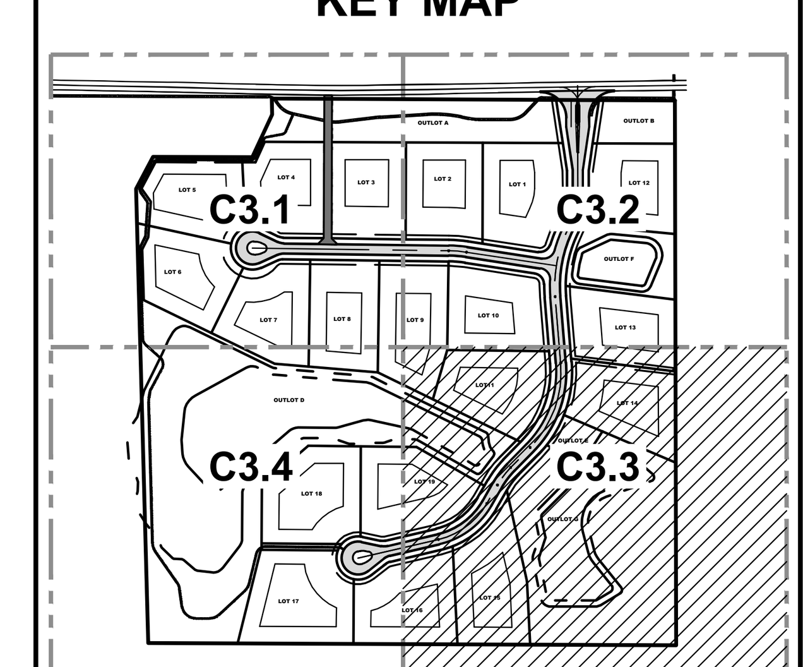
NORTH

Scale: 1" = 40'

DEMOLITION LEGEND

- PAVEMENT REMOVAL
- UTILITY REMOVAL
- ABANDON UTILITY
- FENCE REMOVAL
- MISCELLANEOUS REMOVAL
- SAW CUT
- TREE REMOVAL

KEY MAP



No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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EXISTING CONDITIONS AND DEMOLITION PLAN-SE

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C3.3 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gill-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Existing and Demolition Plan.dwg

PT. LOT 2

PT. LOT 3

HACKBERRY HILLS PART "A"
DOCUMENT NO. 1108669

MATCH LINE (SEE SHEET C3.1)

MATCH LINE (SEE SHEET C3.3)

E. LINE OF LOTS 1, 2 AND 3 OF HACKBERR

S 01° 32' 28" E 1050.55'

E. LINE FAP 432 AS REPORTED BY ILLINOIS DEPARTMENT OF TRANSPORTATION

N 89° 46' 21" W 1221.11'

S. LINE OF THE N. 1292.65 FT. OF THE NE (

12" Corrugated Metal Pipe
Inv=740.92
Inv=740.29

12" Corrugated Metal Pipe
Inv=740.63
Inv=739.87

Iron Pipe

Iron Rod W/disk

Iron Rod
0.29 N./S. On Line

Iron Rod
0.06 S.

Drain Tile #7
Hub Marked 6" Concrete
Invert=-3.75'
Elv=+/-729.0

Drain Tile #6
Hub Marked 4" Clay
Invert=-2.58'
Elv=+/-729.4

Drain Tile #5
Hub Marked
4" Clay
Invert=-3.00'

Drain Tile #4
Hub Marked
8" Concrete
Invert=-2.17'
Elv = +/-727.8

Drain Tile #3
Hub Marked
5" Clay
Invert=-2.75'
Elv=+/-729.2

Drain Tile #2
Hub Marked 4" Clay
Invert=-2.17'
Elv=+/-730.4

Drain Tile #2
Hub Marked 6" Clay
Invert=-3.08'
Elv=+/-730.0

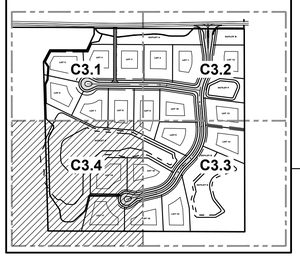
15" RCP INV. 735.32

Gravel

(PRIVATE ROAD)

66'

KEY MAP



DEMOLITION LEGEND

- PAVEMENT REMOVAL
- UTILITY REMOVAL
- ABANDON UTILITY
- FENCE REMOVAL
- MISCELLANEOUS REMOVAL
- SAW CUT
- TREE REMOVAL

NORTH

20 0 40

Scale: 1" = 40'

No.	Date	Revision
2	09-20-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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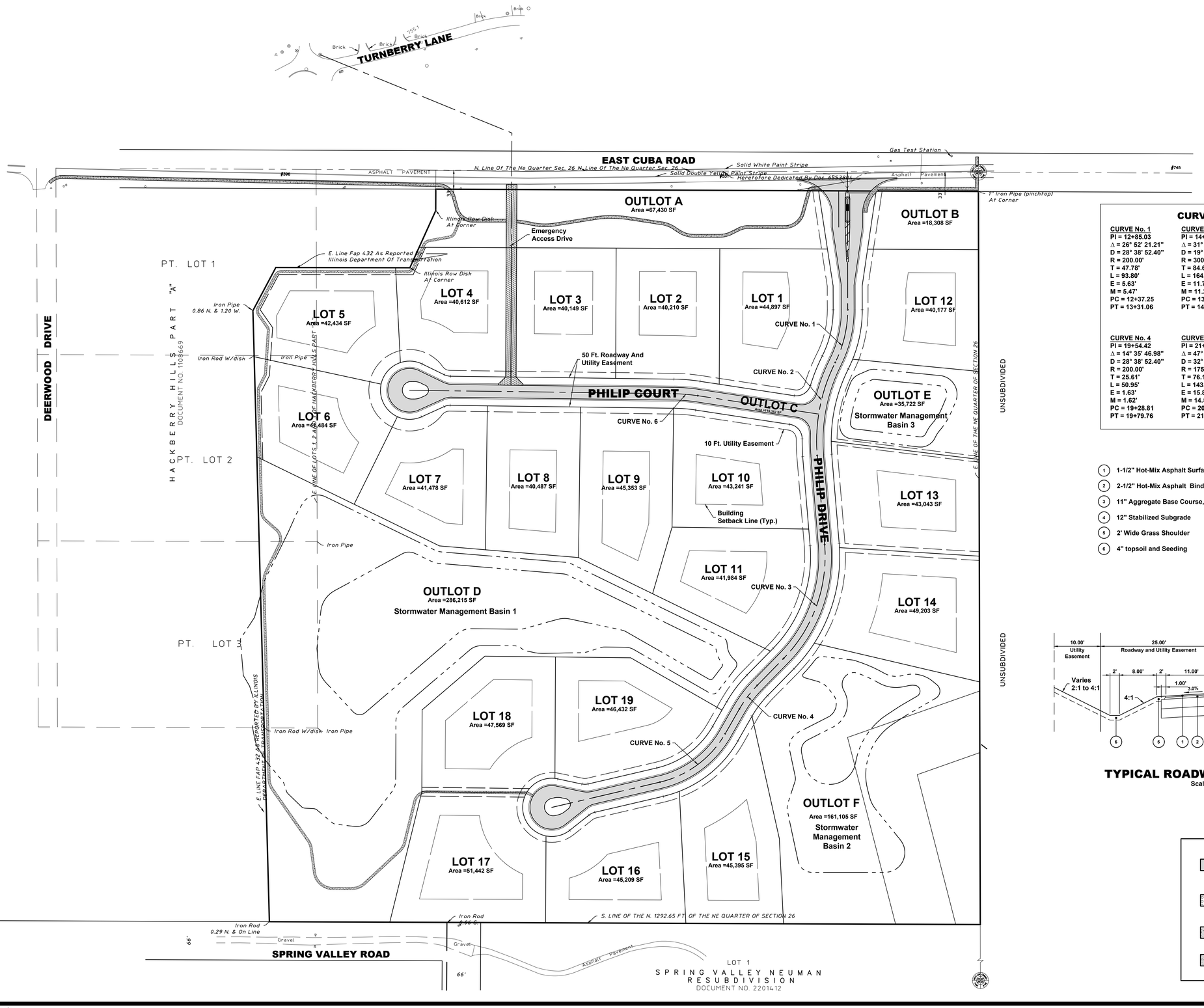
EXISTING CONDITIONS AND DEMOLITION PLAN-SW

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C3.4 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Existing and Demolition Plan.dwg

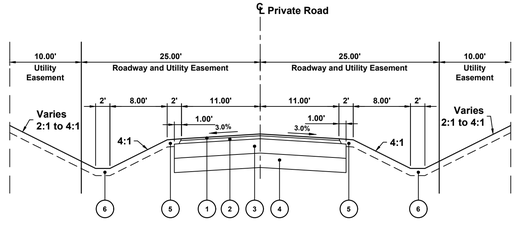


CURVE DATA

CURVE No. 1	CURVE No. 2	CURVE No. 3
PI = 12+85.03	PI = 14+15.66	PI = 17+64.07
Δ = 26° 52' 21.21"	Δ = 31° 29' 50.25"	Δ = 49° 11' 18.71"
D = 28° 38' 52.40"	D = 19° 05' 54.94"	D = 22° 55' 05.92"
R = 200.00'	R = 300.00'	R = 250.00'
T = 47.78'	T = 84.60'	T = 114.43'
L = 93.80'	L = 164.92'	L = 214.63'
E = 5.63'	E = 11.70'	E = 24.94'
M = 5.47'	M = 11.26'	M = 22.68'
PC = 12+37.25	PC = 13+31.06	PC = 16+49.64
PT = 13+31.06	PT = 14+95.98	PT = 18+64.26

CURVE No. 4	CURVE No. 5	CURVE No. 6
PI = 19+54.42	PI = 21+04.86	PI = 22+30.78
Δ = 14° 35' 46.98"	Δ = 47° 02' 05.06"	Δ = 7° 55' 00.20"
D = 28° 38' 52.40"	D = 32° 44' 25.60"	D = 19° 05' 54.94"
R = 200.00'	R = 175.00'	R = 300.00'
T = 25.61'	T = 76.16'	T = 20.76'
L = 50.95'	L = 143.66'	L = 41.45'
E = 1.63'	E = 15.85'	E = 0.72'
M = 1.62'	M = 14.54'	M = 0.72'
PC = 19+28.81	PC = 20+28.70	PC = 22+10.02
PT = 19+79.76	PT = 21+72.36	PT = 22+51.47

1. 1-1/2" Hot-Mix Asphalt Surface Course, Mix 'D', N50
2. 2-1/2" Hot-Mix Asphalt Binder Course, IL-19.0, N50
3. 11" Aggregate Base Course, CA-6, Crushed
4. 12" Stabilized Subgrade
5. 2' Wide Grass Shoulder
6. 4" topsoil and Seeding



TYPICAL ROADWAY CROSS SECTION

Scale: 1"=10', 1"=5'

PAVING LEGEND

BITUMINOUS PAVEMENT
- 1-1/2" Hot-Mix Asphalt (HMA) Surface Course, Mix 'D', N50
- 2-1/2" Hot-Mix Asphalt (HMA) Binder Course, IL-19.0, N50
- 11" Aggregate Base Course, CA-6, Crushed

EMERGENCY ACCESS
- Grasspave2 Porous Pavement System
- 12" Compacted Stone Base

CONCRETE SIDEWALK
- 5" Portland Cement Concrete (Class SI)
- 4" Aggregate Base Course, CA-6, Crushed

WALKING PATH
- 6" Crushed Limestone
- 2" Aggregate Base Course, CA-6

NORTH

40 0 80

Scale: 1" = 80'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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GEOMETRIC AND PAVING PLAN-OVERALL

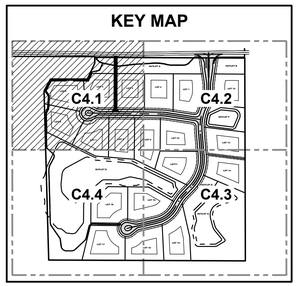
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C4.0 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Geometric Plan.dwg

KEY MAP



PAVING LEGEND

BITUMINOUS PAVEMENT
- 1-1/2" Hot-Mix Asphalt (HMA) Surface Course, Mix 'D', N50
- 2-1/2" Hot-Mix Asphalt (HMA) Binder Course, IL-19.0, N50
- 11" Aggregate Base Course, CA-6, Crushed

EMERGENCY ACCESS
- Grasspave2 Porous Pavement System
- 12" Compacted Stone Base

CONCRETE SIDEWALK
- 5" Portland Cement Concrete (Class SI)
- 4" Aggregate Base Course, CA-6, Crushed

WALKING PATH
- 6" Crushed Limestone
- 2" Aggregate Base Course, CA-6

No.	Revision	Date
2	PROJECT PLANS SUBMITTAL SET	09-30-2022
1	PROJECT COORDINATION	08-12-2022

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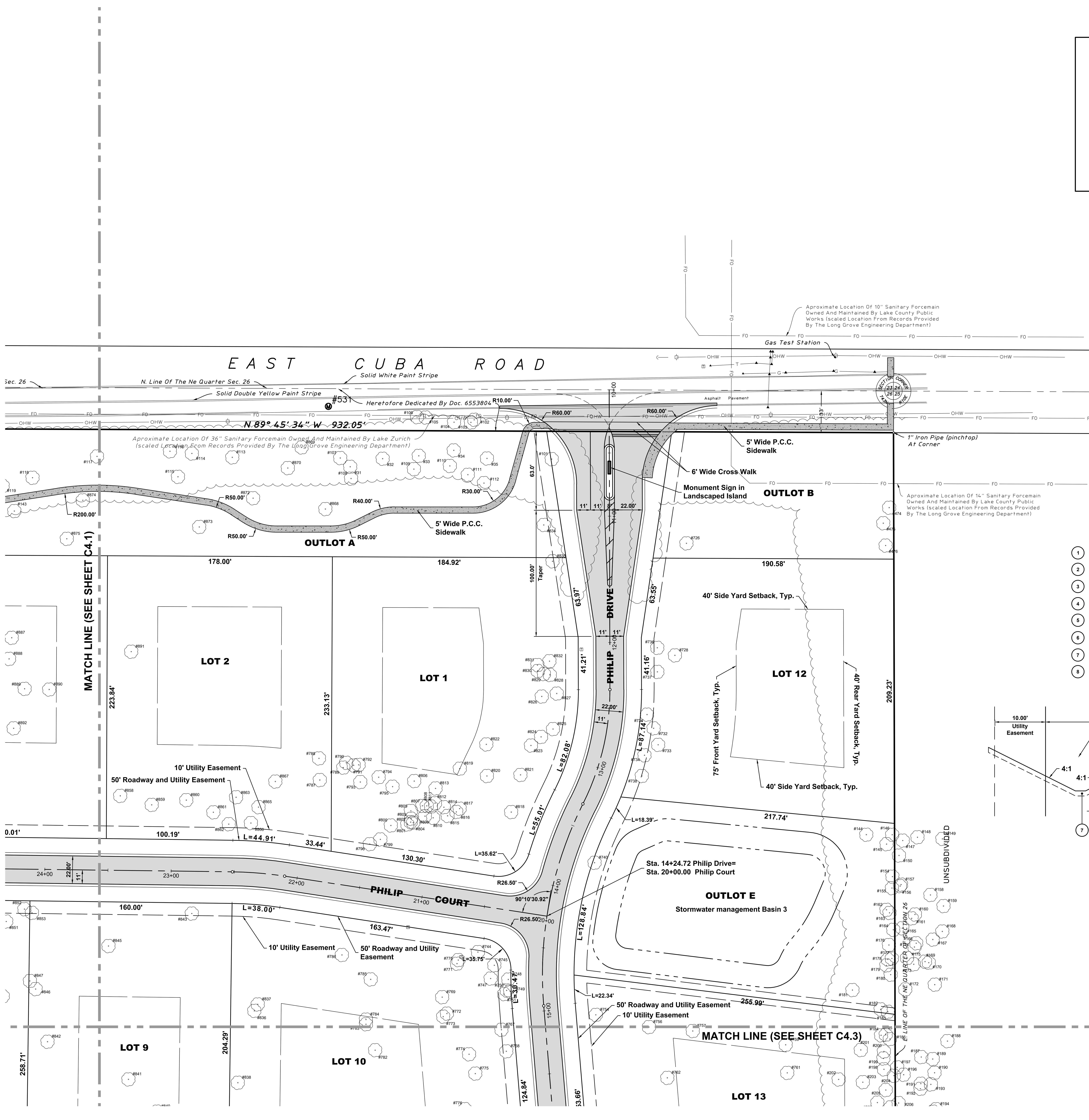
GEOMETRIC AND PAVING PLAN-NW

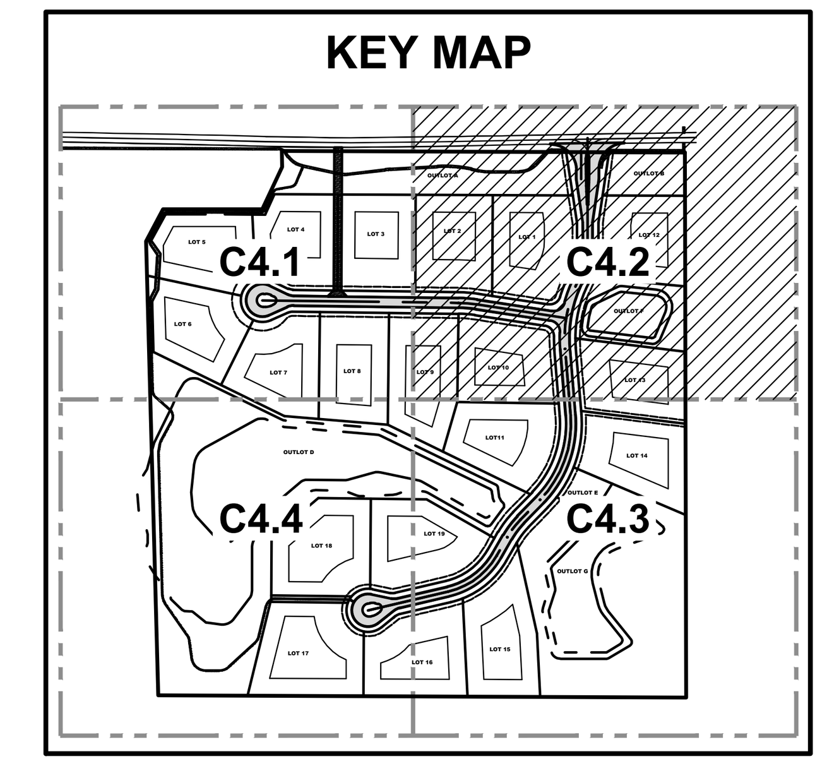
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C4.1 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gli-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Geometric Plan.dwg





NORTH

Scale: 1" = 40'

PAVING LEGEND

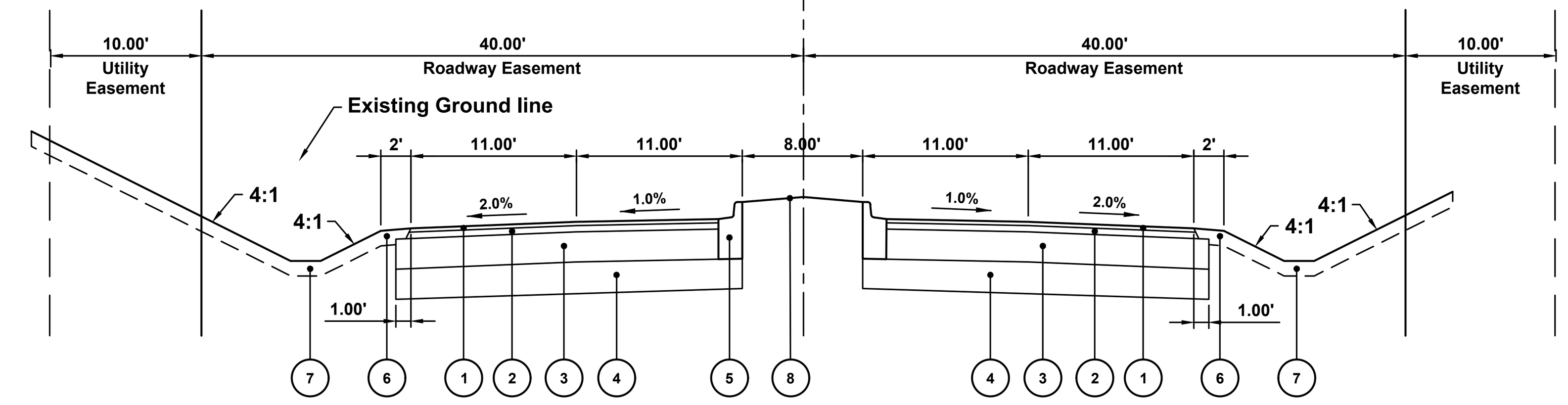
BITUMINOUS PAVEMENT
- 1-1/2" Hot-Mix Asphalt (HMA) Surface Course, Mix 'D', N50
- 2-1/2" Hot-Mix Asphalt (HMA) Binder Course, IL-19.0, N50
- 11" Aggregate Base Course, CA-6, Crushed

EMERGENCY ACCESS
- Grasspave2 Porous Pavement System
- 12" Compacted Stone Base

CONCRETE SIDEWALK
- 5" Portland Cement Concrete (Class SI)
- 4" Aggregate Base Course, CA-6, Crushed

WALKING PATH
- 6" Crushed Limestone
- 2" Aggregate Base Course, CA-6

1. 1-1/2" Hot-Mix Asphalt Surface Course, Mix 'D', N50
2. 2-1/2" Hot-Mix Asphalt Binder Course, IL-19.0, N50
3. 11" Aggregate Base Course, CA-6, Crushed
4. 12" Stabilized Subgrade
5. Combination Concrete Curb and Gutter, Type B-6.12
6. 2' Wide Grass Shoulder
7. 4" topsoil and Seeding
8. Landscape Median



PHILIP DRIVE CROSS SECTION AT CUBA ROAD
Sta. 10+75.00
Scale: 1"=10', 1"=5'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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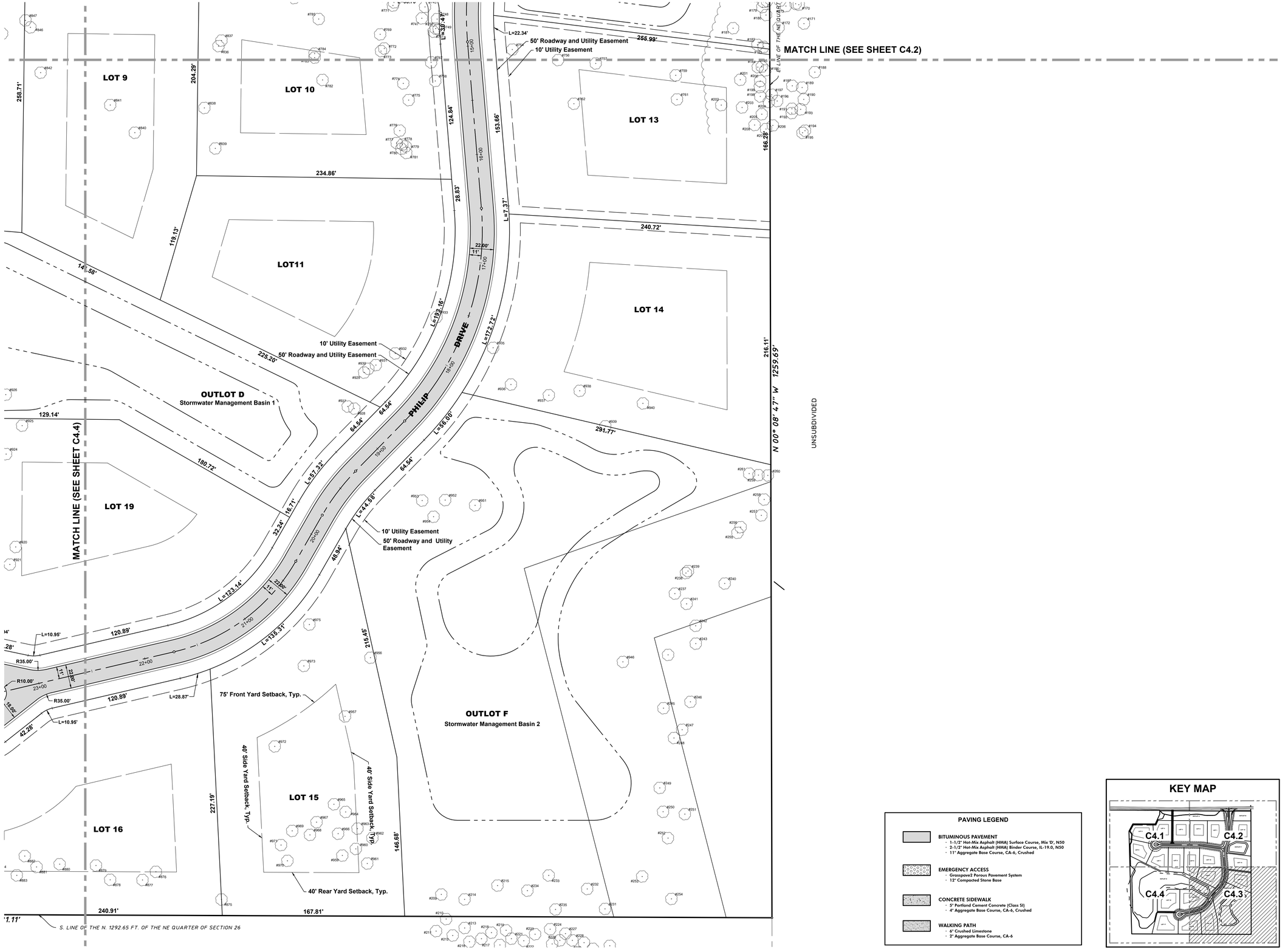
GEOMETRIC AND PAVING PLAN-NE

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C4.2 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gill-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Geometric Plan.dwg



NORTH

20 0 40

Scale: 1" = 40'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

PAVING LEGEND

BITUMINOUS PAVEMENT
- 1-1/2" Hot-Mix Asphalt (HMA) Surface Course, Mix 'D', N50
- 2-1/2" Hot-Mix Asphalt (HMA) Binder Course, IL-19.0, N50
- 11" Aggregate Base Course, CA-6, Crushed

EMERGENCY ACCESS
- Grasspave2 Porous Pavement System
- 12" Compacted Stone Base

CONCRETE SIDEWALK
- 5" Portland Cement Concrete (Class SI)
- 4" Aggregate Base Course, CA-6, Crushed

WALKING PATH
- 6" Crushed Limestone
- 2" Aggregate Base Course, CA-6

KEY MAP

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GEOMETRIC AND PAVING PLAN-SE

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C4.3 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Geometric Plan.dwg

PT. LOT 2

PT. LOT 3

HACKBERRY HILLS PART "A"
DOCUMENT NO. 1108669

MATCH LINE (SEE SHEET C4.1)

MATCH LINE (SEE SHEET C4.3)

E. LINE OF LOTS 1, 2 AND 3 OF HACKBERR

E. LINE FAP 432 AS REPORTED BY ILLINOIS DEPARTMENT OF TRANSPORTATION

12" Corrugated Metal Pipe
Inv=740.92

12" Corrugated Metal Pipe
Inv=739.87
Inv=740.63

4' Wide Crushed Limestone Sidewalk

185.80'

167.85'

163.27'

79.14'

160.40'

247.38'

258.71'

R24.00'

R46.00'

R30.00'

R34.00'

Iron Pipe

Iron Rod W/disk

S 01° 32' 28" E 1050.55'

LOT 7

LOT 8

LOT 9

LOT 18

LOT 19

LOT 17

LOT 16

OUTLOT D
Stormwater Management Basin 1

40' Rear Yard Setback, Typ.

40' Side Yard Setback, Typ.

75' Front Yard Setback, Typ.

141.83'

140.59'

208.81'

179.92'

230.93'

149.30'

Sidewalk Easement

L=57.81'

L=4.94'

L=10.95'

42.28'

120.89'

R35.00'

R30.00'
R37.50'

18.00'

22.00'

R10.00'

R15.00'

25.00'

L=94.82'
R=60.00'

L=43.29'

22+00

23+00

23+63

121.32'

129.14'

267.72'

240.91'

N 89° 46' 21" W 1221.11'

S. LINE OF THE N. 1292.65 FT. OF THE NE (

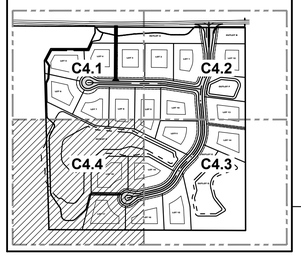
Iron Rod
0.29 N. & On Line

Iron Rod
0.06 S.

15" RCP=INV=735.32

SPRING VALLEY ROAD

KEY MAP



PAVING LEGEND

BITUMINOUS PAVEMENT
- 1-1/2" Hot-Mix Asphalt (HMA) Surface Course, Mix 'D', N50
- 2-1/2" Hot-Mix Asphalt (HMA) Binder Course, IL-19.0, N50
- 11" Aggregate Base Course, CA-6, Crushed

EMERGENCY ACCESS
- Grasspave2 Porous Pavement System
- 12" Compacted Stone Base

CONCRETE SIDEWALK
- 5" Portland Cement Concrete (Class SI)
- 4" Aggregate Base Course, CA-6, Crushed

WALKING PATH
- 6" Crushed Limestone
- 2" Aggregate Base Course, CA-6

NORTH
20 0 40
Scale: 1" = 40'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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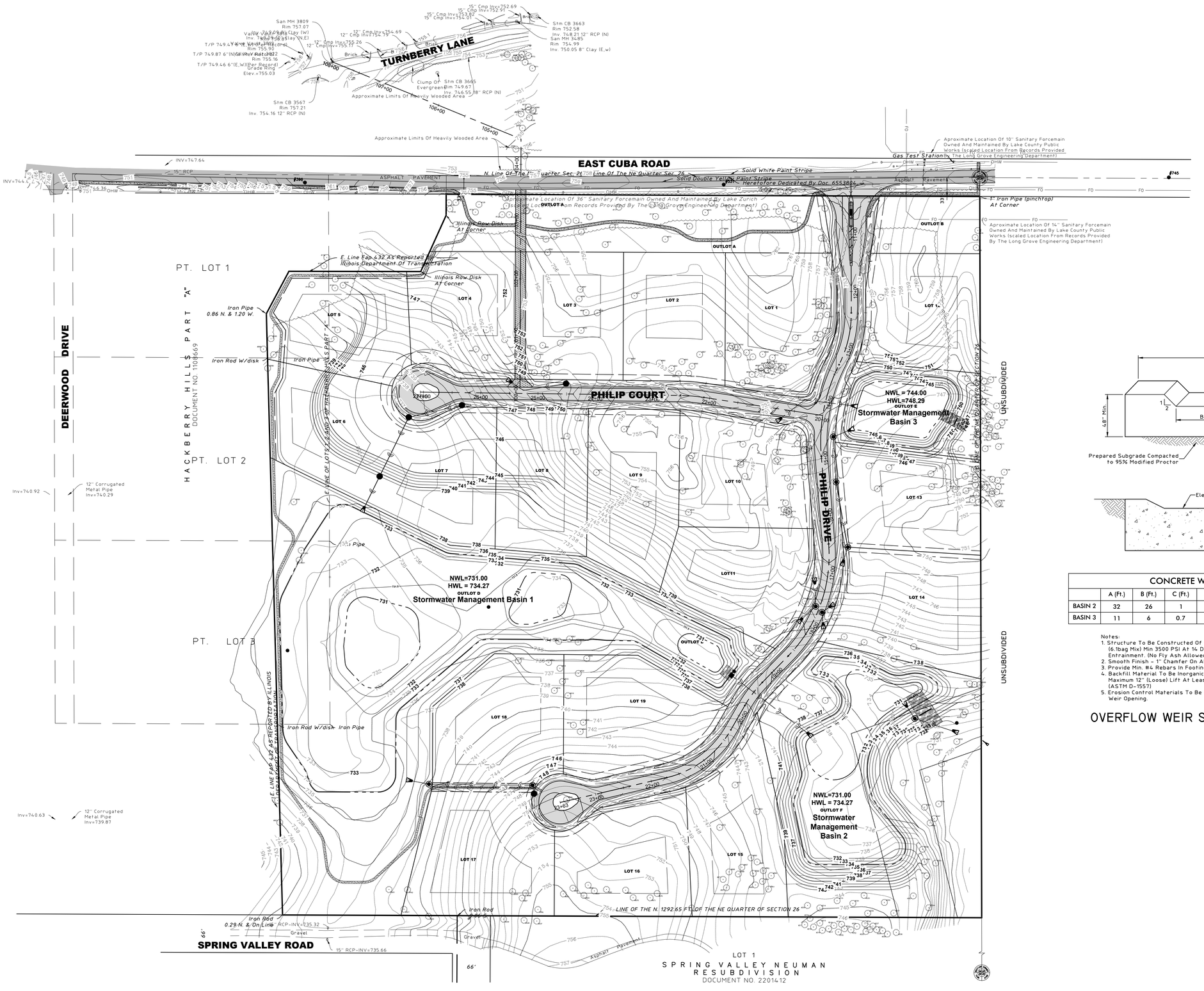
www.haegerengineering.com

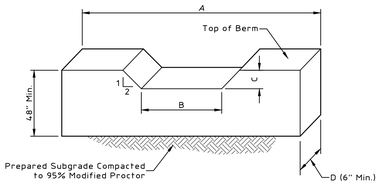
GEOMETRIC AND PAVING PLAN-SW

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C4.4 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Geometric Plan.dwg





CONCRETE WEIR TABLE							
	A (Ft.)	B (Ft.)	C (Ft.)	D (Ft.)	E	F	G
BASIN 2	32	26	1	0.5	737.00	736.0	733.0
BASIN 3	11	6	0.7	0.5	750.00	749.3	746.0

Notes:
1. Structure To Be Constructed Of Reinforced Concrete, IDOT Class SI (6.1bag Mix) Min 3500 PSI At 14 Days, With 5% To 7 % Air Entrainment. (No Fly Ash Allowed)
2. Smooth Finish – 1" Chamfer On All Exposed Edges.
3. Provide Min. #4 Rebars In Footing And Weir, 12" O.C. EW
4. Backfill Material To Be Inorganic Cohesive Soil Compacted In Maximum 12" (Loose) Lift At Least 90% Modified Proctor Density (ASTM D-1557)
5. Erosion Control Materials To Be Provided In Front And Rear And Weir Opening.

OVERFLOW WEIR STRUCTURE DETAIL

NORTH
40 0 80
Scale: 1" = 80'

No.	Date	Revision
3	10.10.2022	BASIN 2 AND 3 WEIR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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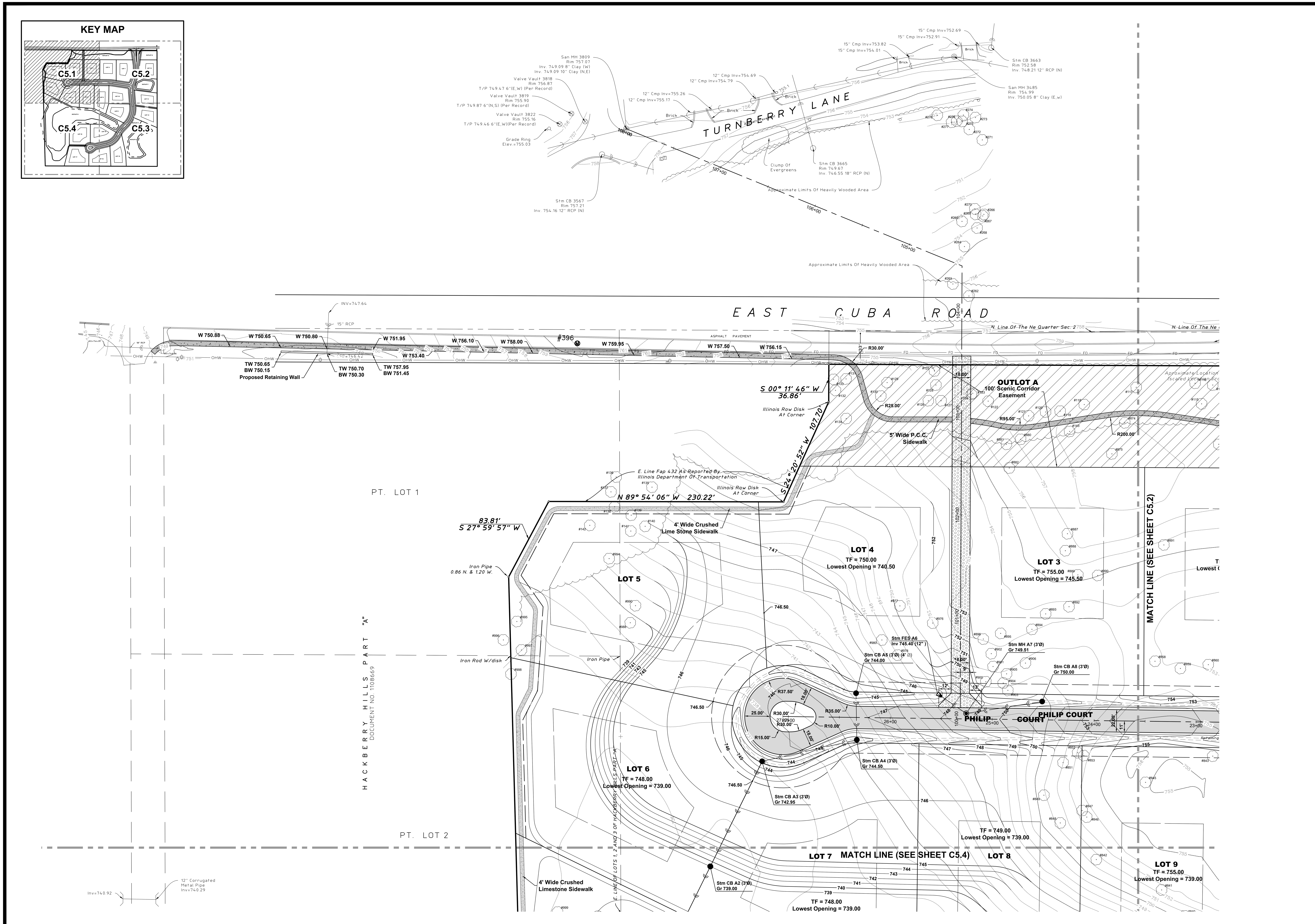
GRADING PLAN-OVERALL

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C5.0 / C9

Plot Date: Mar 24, 2023 - 9:31am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg



NORTH
Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WEIR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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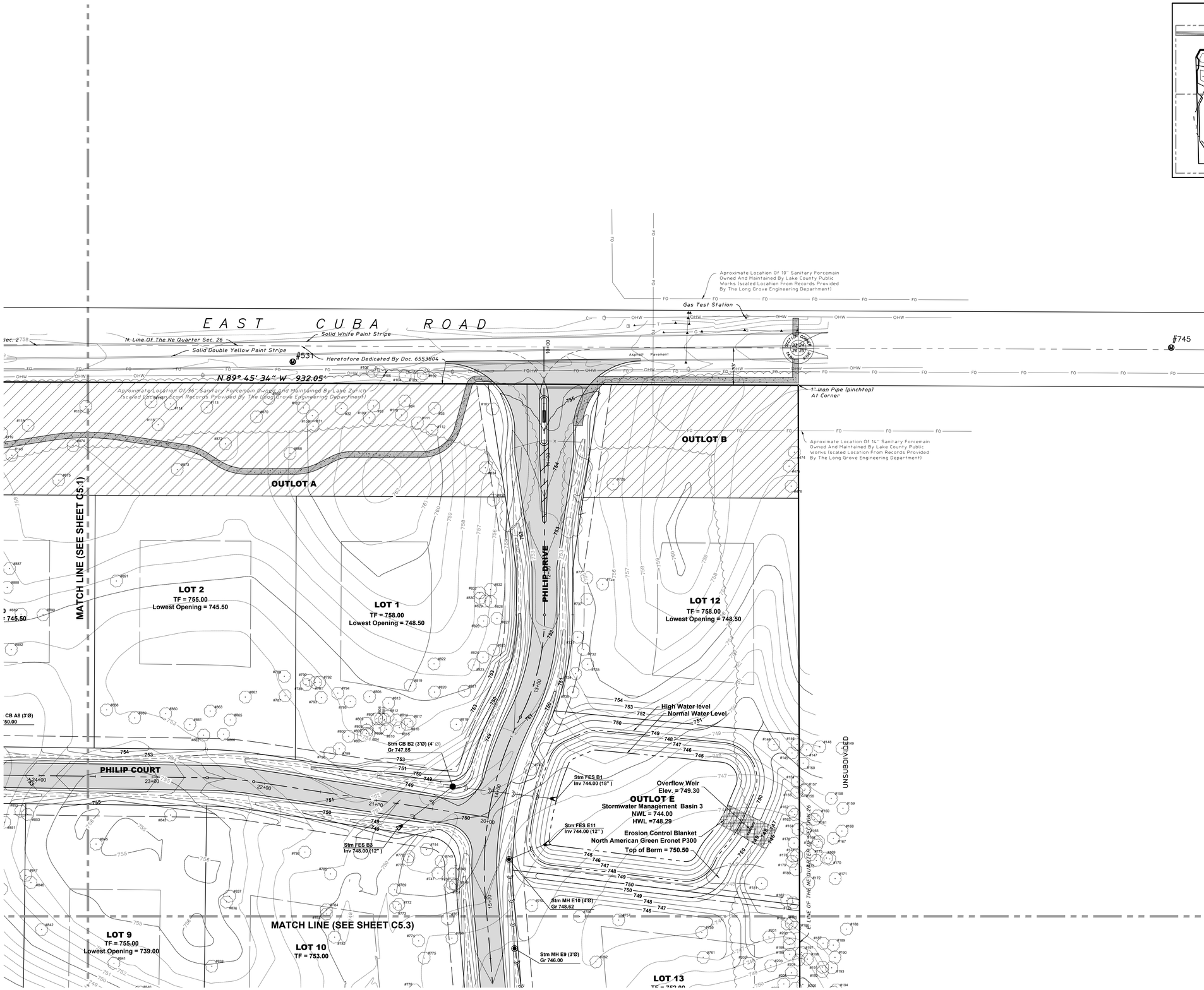
GRADING PLAN-NW

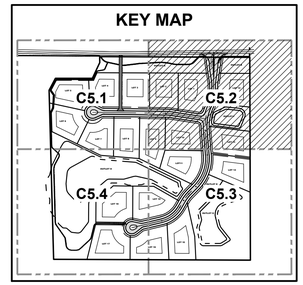
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C5.1 / C9



KEY MAP



NORTH

20 0 40

Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WEIR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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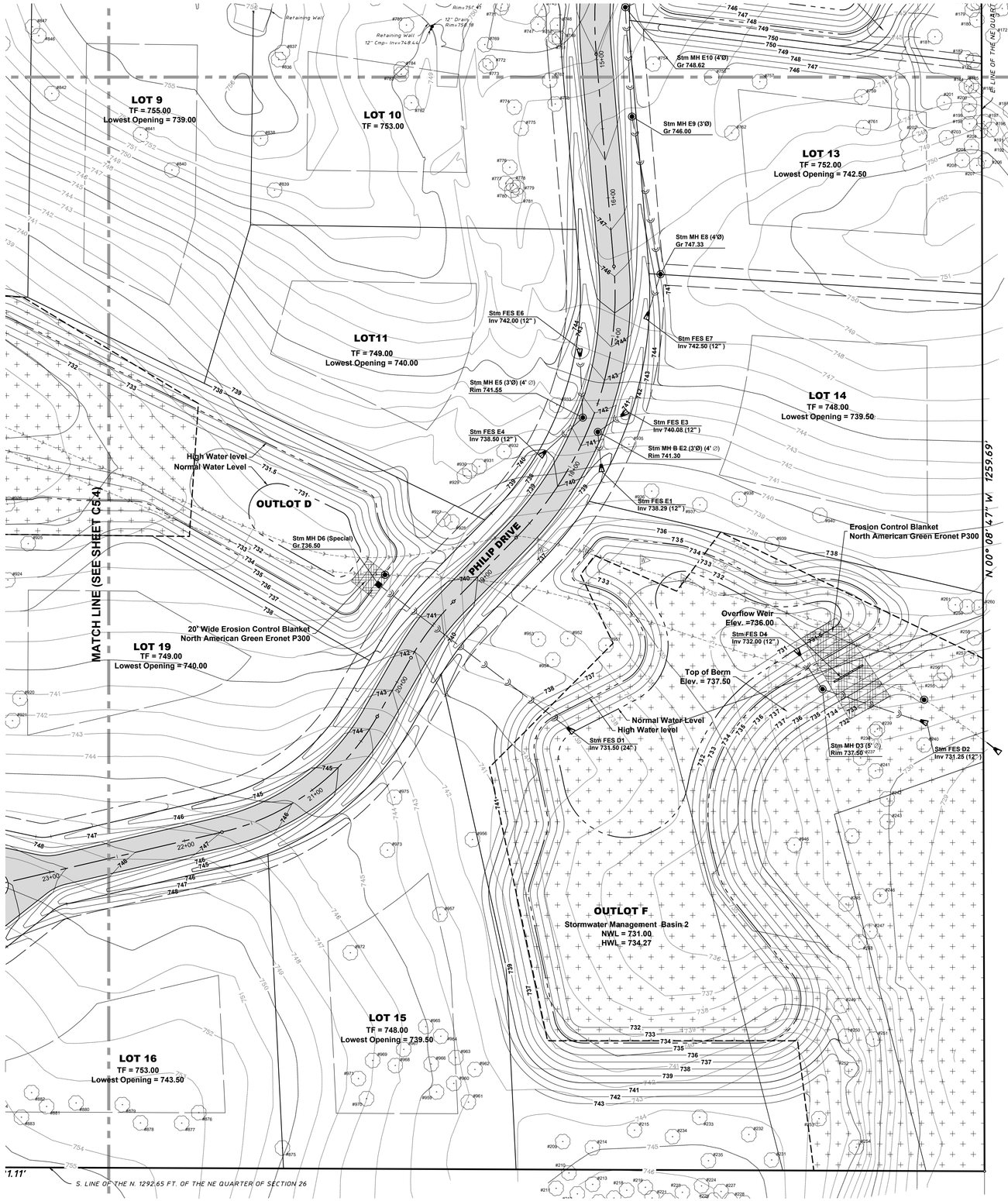
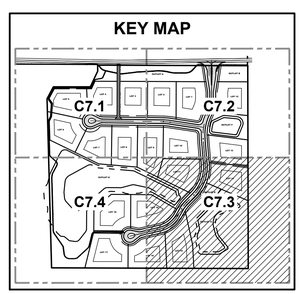
GRADING PLAN-NE

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C5.2 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg





NORTH

20 0 40

Scale: 1" = 40'

No.	Revision	Date
3	PROJECT COORDINATION	10-10-2022
2	PROJECT PLANS SUBMITTAL SET	05-30-2022
1	BASIN 2 AND 3 WER ELEVATION ADJUSTMENT	08-12-2022

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GRADING PLAN-SE

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C5.3 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg

PT. LOT 2

PT. LOT 3

HACKBERRY HILLS PART "A"
DOCUMENT NO. 1108669

12" Corrugated Metal Pipe
Inv=740.92
Inv=740.29

12" Corrugated Metal Pipe
Inv=740.63
Inv=739.87

E. LINE OF LOTS 1, 2 AND 3 OF HACKBERRY

E LINE FAP 432 AS REPORTED BY ILLINOIS DEPARTMENT OF TRANSPORTATION

S 01° 32' 28" E 1050.55'

Iron Pipe

Iron Rod W/disk

Iron Pipe

Iron Rod
0.29 N. & On Line

Iron Rod
0.86 S.

N 89° 46' 21" W 1221.11'

S. LINE OF THE N. 1292.65 FT. OF THE NE

MATCH LINE (SEE SHEET C5.1)

MATCH LINE (SEE SHEET C5.3)

Stm CB A3 (3'Ø)
Gr 742.95

Stm CB A2 (3'Ø)
Gr 739.00

Stm FES A1
Inv 734.00 (15")

Stm FES C1
Inv 735.00 (12")

Stm CB C2 (4' Ø)
Rim 739.80

Stm MH C3 (4' Ø)
Rim 748.20

Stm CB C5 (2'Ø)
Gr 747.00

LOT 7

TF = 748.00
Lowest Opening = 739.00

LOT 8

TF = 749.00
Lowest Opening = 739.00

LOT 9
TF = 755.00
Lowest Opening = 739.00

LOT 18
TF = 749.00
Lowest Opening = 740.00

LOT 19
TF = 749.00
Lowest Opening = 740.00

LOT 17
TF = 753.00
Lowest Opening = 743.50

LOT 16
TF = 753.00
Lowest Opening = 743.50

OUTLOT D
Stormwater Management Basin 1
NWL = 731.00'
HWL = 734.27

High Water level

Normal Water Level

High Wat
Normal Wate

20' Wide
North Ame

PHILIP COURT
23+00
22+00
23+63

Drain Tile #7
Hub Marked 6" Concrete
Invert=+3.75'
El=+/-729.0

Drain Tile #6
Hub Marked 6" Clay
Invert=+2.58'
El=+/-729.4

Drain Tile #5
Hub Marked
6" Clay
Invert=+3.00'

Drain Tile #4
Hub Marked
8" Concrete
Invert=+4.17'
El=+/-727.8

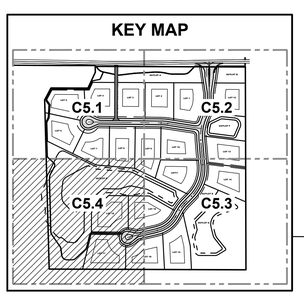
Drain Tile #3
Hub Marked
5" Clay
Invert=+4.75'
El=+/-729.2

Drain Tile #2
Hub Marked 6" Clay
Invert=+2.17'
El=+/-730.4

Drain Tile #2
Hub Marked 6" Clay
Invert=+3.08'
El=+/-730.0

15" RCP-INV=735.32

KEY MAP



NORTH
20 0 40
Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WSE ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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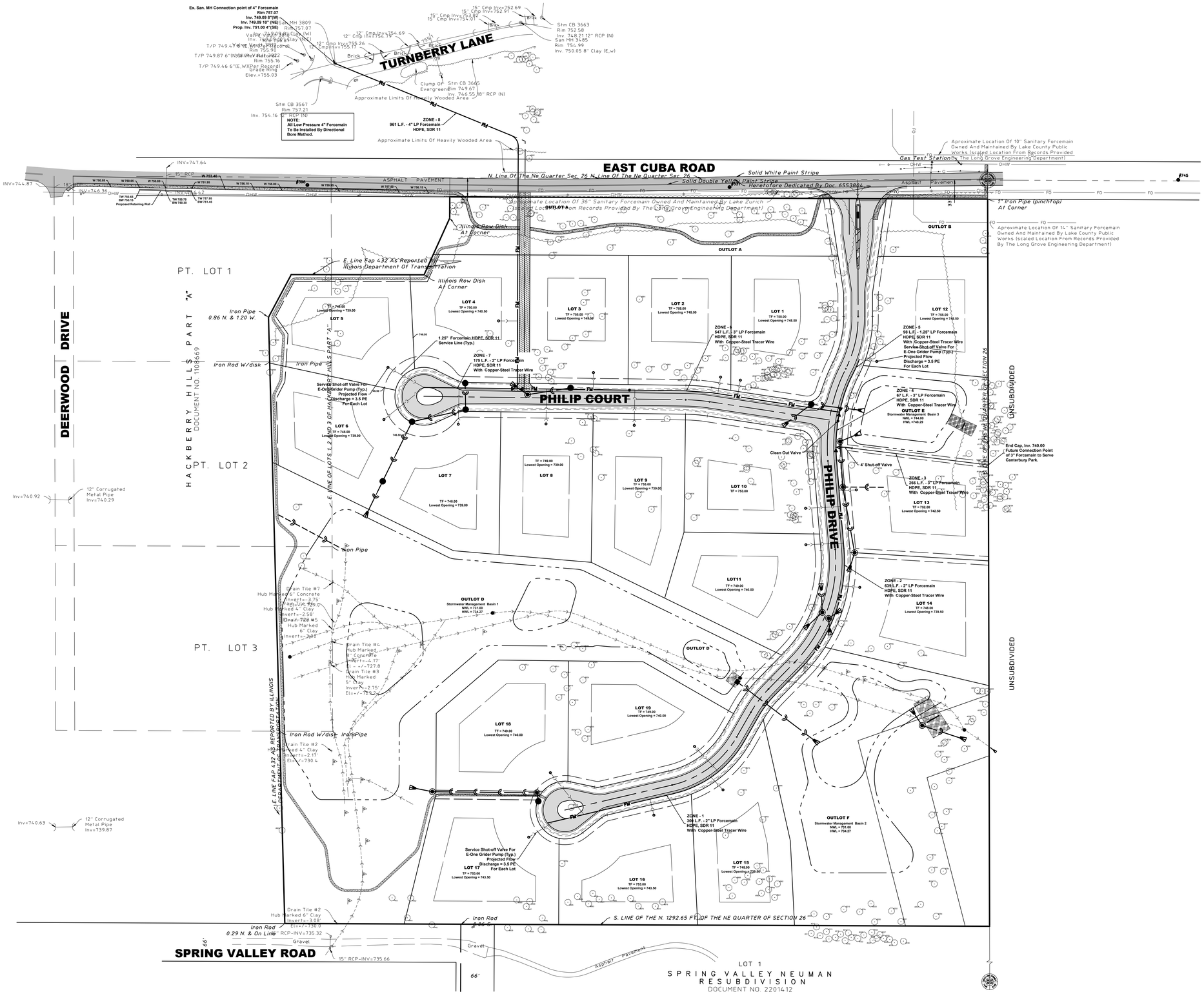
GRADING PLAN-SW

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C5.4 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg



No.	Revision	Date
3	BASIN 2 AND 3 WSR ELEVATION ADJUSTMENT	10-10-2022
2	PROJECT PLANS SUBMITTAL SET	09-30-2022
1	PROJECT COORDINATION	08-12-2022

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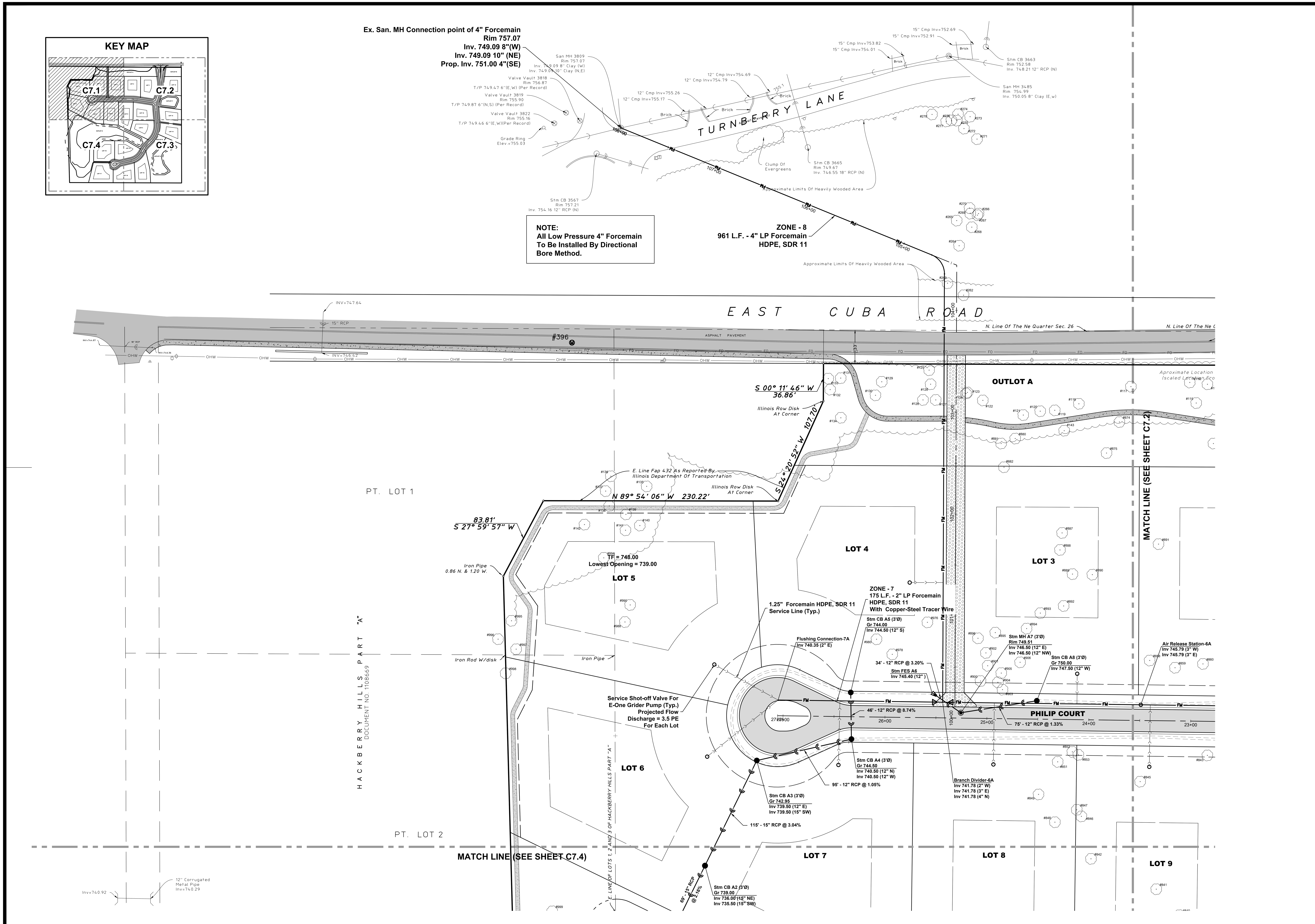
UTILITY PLAN-OVERALL

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C7.0 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg



KEY MAP
C7.1
C7.2
C7.4
C7.3
Ex. San. MH Connection point of 4" Forcemain
Rim 757.07
Inv. 749.09 8"(W)
Inv. 749.09 10" (NE)
Prop. Inv. 751.00 4"(SE)
TURNBERRY LANE
NOTE:
All Low Pressure 4" Forcemain
To Be Installed By Directional
Bore Method.
ZONE - 8
961 L.F. - 4" LP Forcemain
HDPE, SDR 11
EAST CUBA ROAD
OUTLOT A
S 00° 11' 46" W
36.86'
Illinois Row Disk
At Corner
S 24° 20' 52" W 107.70'
E. Line Fap 432 As Reported By Illinois Department Of Transportation
N 89° 54' 06" W 230.22'
PT. LOT 1
83.81'
S 27° 59' 57" W
Iron Pipe
0.86 N. & 1.20 W.
TF = 748.00
Lowest Opening = 739.00
LOT 5
LOT 4
LOT 3
MATCH LINE (SEE SHEET C7.2)
ZONE - 7
175 L.F. - 2" LP Forcemain
HDPE, SDR 11
With Copper-Steel Tracer Wire
1.25" Forcemain HDPE, SDR 11
Service Line (Typ.)
Stm CB A5 (3'Ø)
Gr 744.00
Inv 744.50 (12" S)
Flushing Connection-7A
Inv 740.35 (2" E)
Stm MH A7 (3'Ø)
Rim 749.51
Inv 746.50 (12" E)
Inv 746.50 (12" NW)
Stm CB A8 (3'Ø)
Gr 750.00
Inv 747.50 (12" W)
Air Release Station-6A
Inv 745.79 (3" W)
Inv 745.79 (3" E)
34' - 12" RCP @ 3.20%
Stm FES A6
Inv 745.40 (12")
Service Shot-off Valve For
E-One Grider Pump (Typ.)
Projected Flow
Discharge = 3.5 PE
For Each Lot
46' - 12" RCP @ 8.74%
PHILIP COURT
75' - 12" RCP @ 1.33%
Iron Rod W/disk
Iron Pipe
LOT 6
Stm CB A4 (3'Ø)
Gr 744.50
Inv 740.50 (12" N)
Inv 740.50 (12" W)
95' - 12" RCP @ 1.05%
Branch Divider-6A
Inv 741.78 (2" W)
Inv 741.78 (3" E)
Inv 741.78 (4" N)
Stm CB A3 (3'Ø)
Gr 742.95
Inv 739.50 (12" E)
Inv 739.50 (15" SW)
115' - 15" RCP @ 3.04%
HACKBERRY HILLS PART "A"
DOCUMENT NO. 1108669
PT. LOT 2
MATCH LINE (SEE SHEET C7.4)
LOT 7
LOT 8
LOT 9
Stm CB A2 (3'Ø)
Gr 739.00
Inv 736.00 (15" NE)
Inv 735.50 (15" SW)
E. LINE OF LOTS 1, 2 AND 3 OF HACKBERRY HILLS PART "A"

NORTH

Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WEIR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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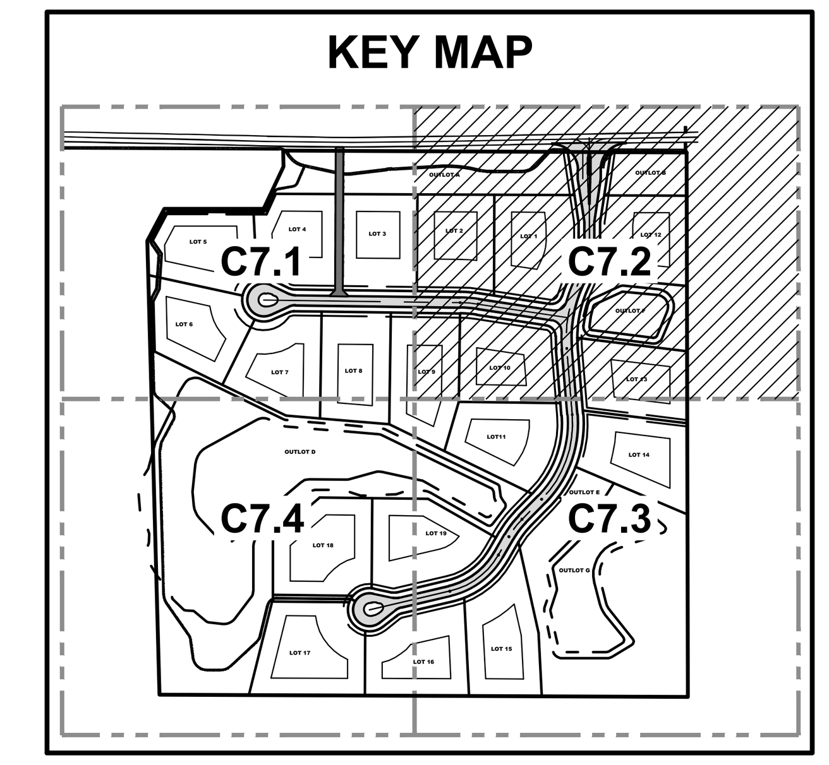
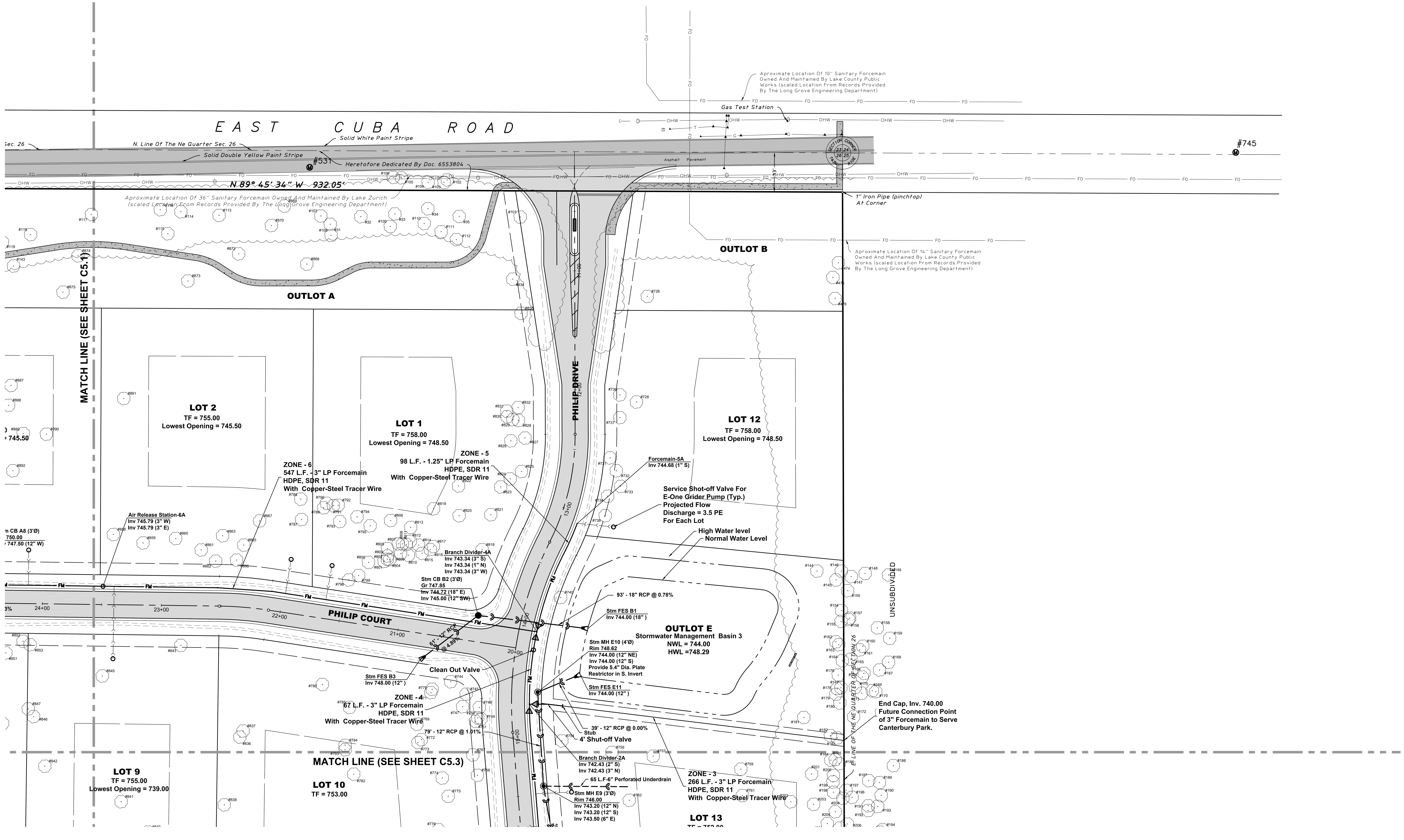
UTILITY PLAN-NW

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager: PL
Engineer: KML
Date: 05-27-2022
Project No. 22001
Sheet C7.1 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gill-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg




EAST CUBA ROAD
Solid White Paint Stripe
N. Line Of The Ne Quarter Sec. 26
Solid Double Yellow Paint Stripe
Heretofore Dedicated By Doc. 6553804
N. 89° 45' 34" W 932.05'
Aproximate Location Of 36" Sanitary Forcemain Owned And Maintained By Lake Zurich (scaled Location From Records Provided By The Long Grove Engineering Department)
Aproximate Location Of 10" Sanitary Forcemain Owned And Maintained By Lake County Public Works (scaled Location From Records Provided By The Long Grove Engineering Department)
Gas Test Station
Asphalt Pavement
1" Iron Pipe (pinchtop) At Corner
Aproximate Location Of 14" Sanitary Forcemain Owned And Maintained By Lake County Public Works (scaled Location From Records Provided By The Long Grove Engineering Department)
#745
#531
OUTLOT A
OUTLOT B
MATCH LINE (SEE SHEET C5.1)
PHILIP DRIVE
LOT 2
TF = 755.00
Lowest Opening = 745.50
LOT 1
TF = 758.00
Lowest Opening = 748.50
LOT 12
TF = 758.00
Lowest Opening = 748.50
ZONE - 5
98 L.F. - 1.25" LP Forcemain
HDPE, SDR 11
With Copper-Steel Tracer Wire
ZONE - 6
547 L.F. - 3" LP Forcemain
HDPE, SDR 11
With Copper-Steel Tracer Wire
Forcemain-5A
Inv 744.68 (1" S)
Service Shot-off Valve For
E-One Grider Pump (Typ.)
Projected Flow
Discharge = 3.5 PE
For Each Lot
High Water level
Normal Water Level
Air Release Station-6A
Inv 745.79 (3" W)
Inv 745.79 (3" E)
Branch Divider-4A
Inv 743.34 (3" S)
Inv 743.34 (1" N)
Inv 743.34 (3" W)
Stm CB B2 (3'Ø)
Gr 747.85
Inv 744.72 (18" E)
Inv 745.00 (12" SW)
PHILIP COURT
93' - 18" RCP @ 0.78%
Stm FES B1
Inv 744.00 (18")
OUTLOT E
Stormwater Management Basin 3
NWL = 744.00
HWL =748.29
UNSUBDIVIDED
Stm MH E10 (4'Ø)
Rim 748.62
Inv 744.00 (12" NE)
Inv 744.00 (12" S)
Provide 5.4" Dia. Plate
Restrictor in S. Invert
Stm FES E11
Inv 744.00 (12")
Stm FES B3
Inv 748.00 (12")
Clean Out Valve
ZONE - 4
67 L.F. - 3" LP Forcemain
HDPE, SDR 11
With Copper-Steel Tracer Wire
79' - 12" RCP @ 1.01%
39' - 12" RCP @ 0.00%
Stub
4' Shut-off Valve
End Cap, Inv. 740.00
Future Connection Point
of 3" Forcemain to Serve
Canterbury Park.
Branch Divider-2A
Inv 742.43 (2" S)
Inv 742.43 (3" N)
65 L.F.-6" Perforated Underdrain
Stm MH E9 (3'Ø)
Rim 746.00
Inv 743.20 (12" N)
Inv 743.20 (12" S)
Inv 743.50 (6" E)
ZONE - 3
266 L.F. - 3" LP Forcemain
HDPE, SDR 11
With Copper-Steel Tracer Wire
MATCH LINE (SEE SHEET C5.3)
LOT 9
TF = 755.00
Lowest Opening = 739.00
LOT 10
TF = 753.00
LOT 13
E. LINE OF THE NE QUARTER SECTION 26
NORTH
Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WEIR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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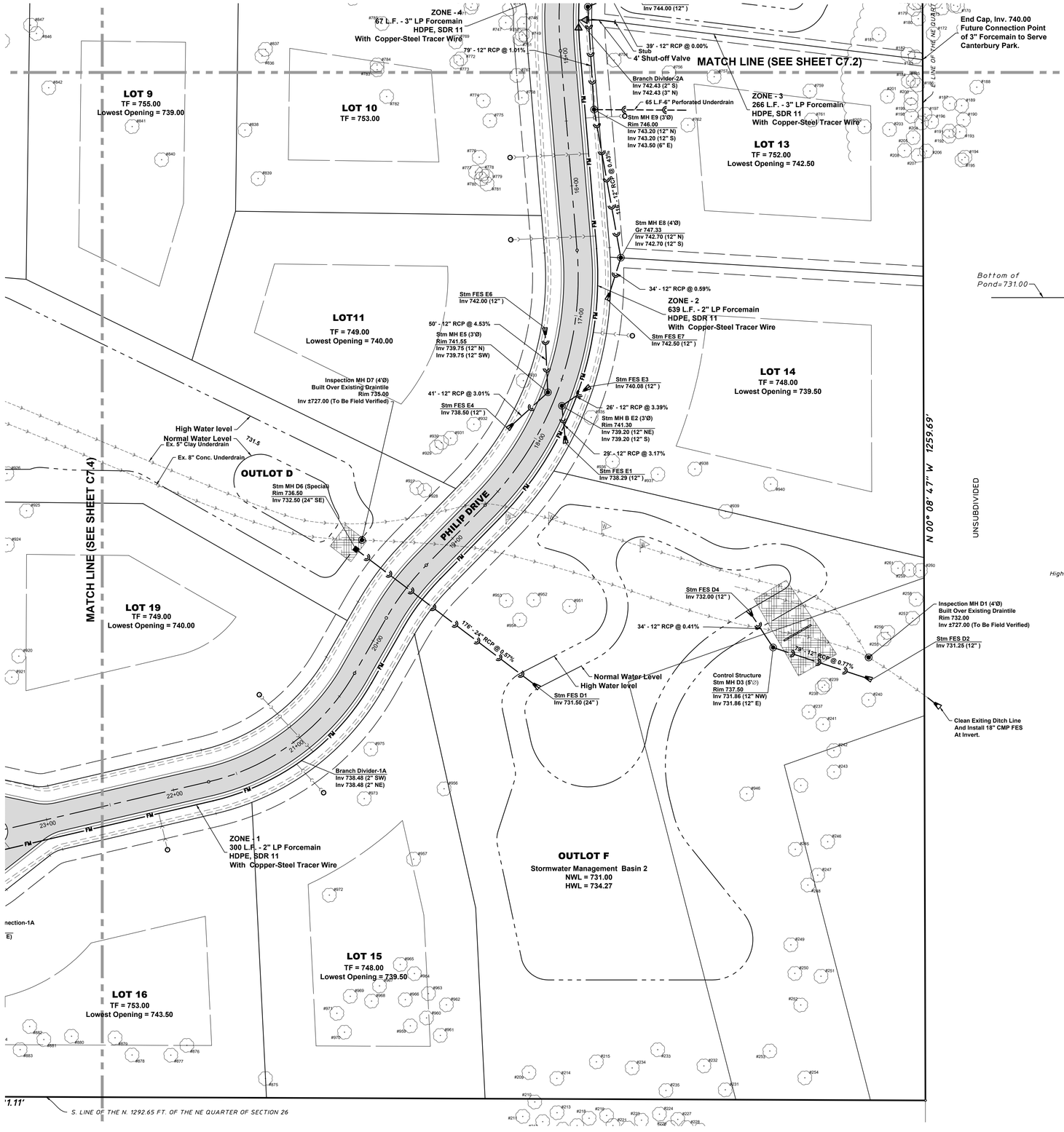
UTILITY PLAN-NE

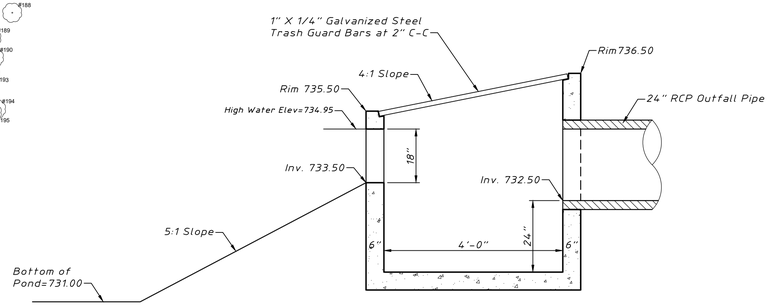
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

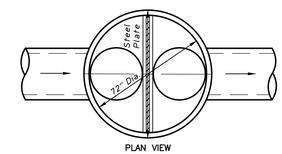
Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C7.2 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gill-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg

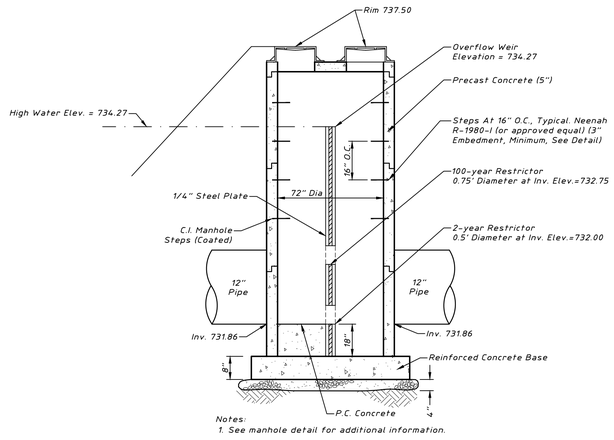




RETENTION POND OUTFALL STRUCTURE
STM MH D6 (SPECIAL)
6' x 4'



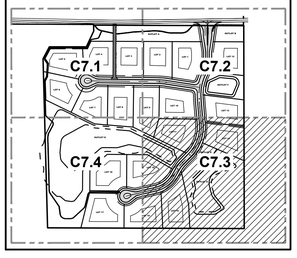
PLAN VIEW



Notes:
1. See manhole detail for additional information.

CONTROL STRUCTURE DETAIL STM MH D3

KEY MAP



NORTH
20 0 40
Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WSR ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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UTILITY PLAN-SE

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager: P L
Engineer: K M L
Date: 05-27-2022
Project No. 22001
Sheet C7.3 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg

PT. LOT 2

PT. LOT 3

HACKBERRY HILLS PART "A"
DOCUMENT NO. 1108669

E. LINE OF LOTS 1, 2 AND 3 OF HACKBERR

S 01° 32' 28" E 1050.55'

E. LINE FAP 439 AS REPORTED BY ILLINOIS DEPARTMENT OF TRANSPORTATION

12" Corrugated Metal Pipe
Inv=740.92
Inv=740.29

12" Corrugated Metal Pipe
Inv=740.63
Inv=739.87

Stm CB A3 (3'Ø)
Gr 742.95
Inv 739.50 (12" E)
Inv 739.50 (15" SW)

115' - 15" RCP @ 3.04%

MATCH LINE (SEE SHEET C7.1)

LOT 7

69' - 15" RCP @ 3.16%

Stm CB A2 (3'Ø)
Gr 739.00
Inv 736.00 (15" NE)
Inv 735.50 (15" SW)

TF = 748.00
Lowest Opening = 739.00

Stm FES A1
Inv 734.00 (15")

Iron Pipe

Relocated Draintile

Inv 741.78 (4" N)

TF = 749.00
Lowest Opening = 739.00

LOT 8

LOT 9
TF = 755.00
Lowest Opening = 739.00

High Water level

Drain Tile #7
Hub Marked 6" Concrete
Invert=-3.75'
Els=/-729.0

Drain Tile #6
Hub Marked 4" Clay
Invert=-2.58'
Els=/-729.4

Drain Tile #5
Hub Marked
6" Clay
Invert=-3.00'

Normal Water Level

OUTLOT D
Stormwater Management Basin 1
NWL = 731.00
HWL = 734.27

Inspection MH D8 (3'Ø)
Built Over Existing Draintile
Rim 731.00
Inv ±727.00 (To Be Field Verified)

Drain Tile #4
Hub Marked
8" Concrete
Invert=-4.17'
El =/-727.8

Drain Tile #3
Hub Marked
5" Clay
Invert=-3.75'
Els=/-729.2

Inspection MH D9 (4'Ø)
Built Over Existing Draintile
Rim 733.75
Inv ±727.00 (To Be Field Verified)

High Wat
Normal Wate
Ex. 5" Clay Unc
Ex. 8" Con

MATCH LINE (SEE SHEET C7.3)

Iron Rod W/disk

Iron Pipe

Drain Tile #2
Hub Marked 4" Clay
Invert=-2.17'
Els=/-730.4

Stm FES C1
Inv 735.00 (12")

40' - 12" RCP @ 2.00%

Stm CB C2 (4' Ø)
Gr 739.80
Inv 735.80 (12" E)
Inv 735.80 (12" W)

181' - 12" RCP @ 4.25%

Stm MH C3
Gr 748.20
Inv 743.50 (12" W)
Inv 743.50 (12" S)

15' - 12" RCP @ 1.02%

Stm CB C5 (2'Ø) (4' Ø)
Gr 747.00
Inv 743.65 (12" N)

PHILIP DRIVE
23+00
22+00
23+63
FM

Flushing Connection-1A
Rim 743.03
Inv 742.83 (2" E)

Service Shot-off Valve For
E-One Grider Pump (Typ.)
Projected Flow
Discharge = 3.5 PE
For Each Lot

LOT 17
TF = 753.00
Lowest Opening = 743.50

LOT 18
TF = 749.00
Lowest Opening = 740.00

LOT 19
TF = 749.00
Lowest Opening = 740.00

LOT 16
TF = 753.00
Lowest Opening = 743.50

Drain Tile #2
Hub Marked 6" Clay
Invert=-3.08'
Els=/-730.0

Iron Rod
0.29 N. & On Line

15" RCP-INV=735.32

Iron Rod
0.06 S.

N 89° 46' 21" W 1221.11'

S. LINE OF THE N. 1292.65 FT. OF THE NE (

KEY MAP

C7.1 C7.2 C7.3 C7.4

NORTH
20 0 40
Scale: 1" = 40'

No.	Date	Revision
3	10-10-2022	BASIN 2 AND 3 WSE ELEVATION ADJUSTMENT
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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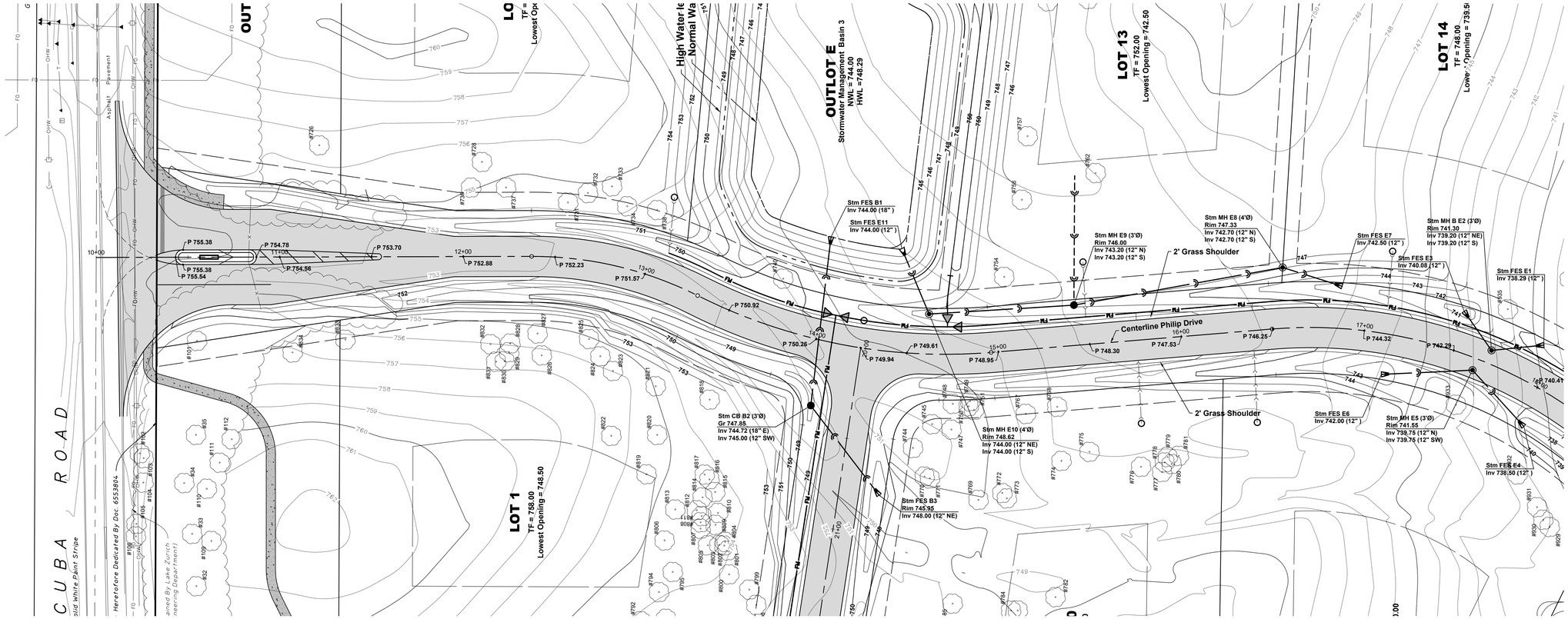
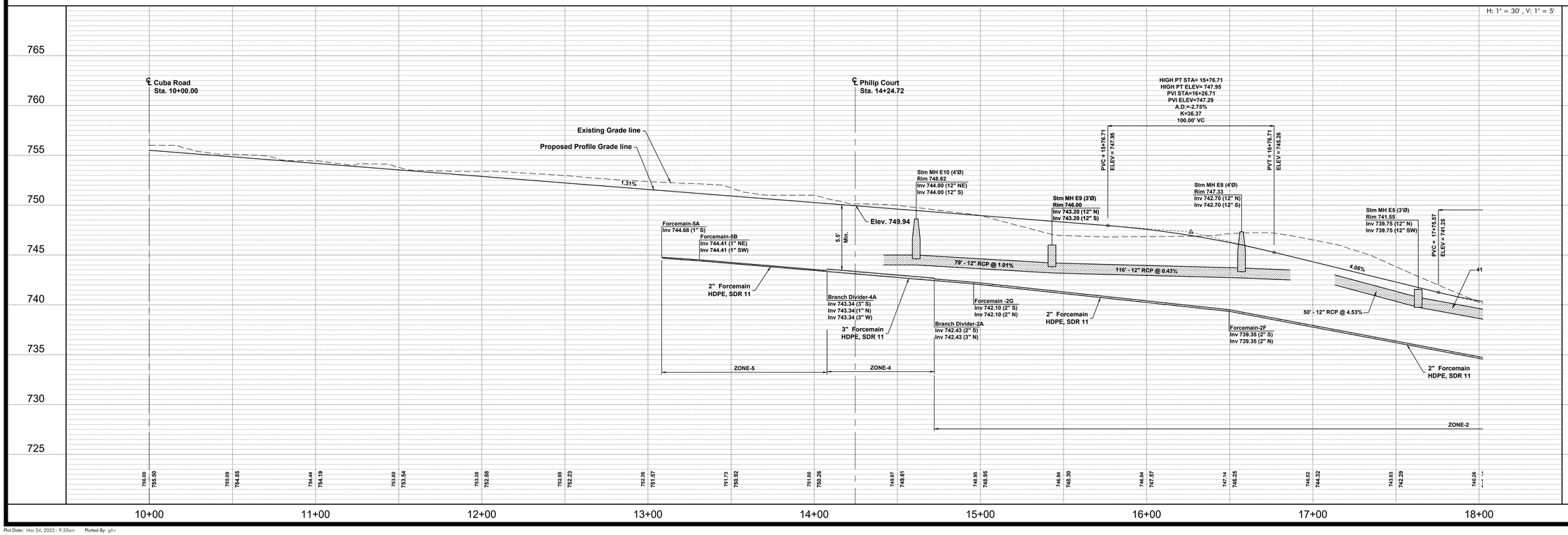
UTILITY PLAN-SW

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C7.4 / C9

Plot Date: Mar 24, 2023 - 9:32am Plotted By: gll-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Grading and Utility Plan.dwg





NORTH
15 0 30
Scale: 1" = 30'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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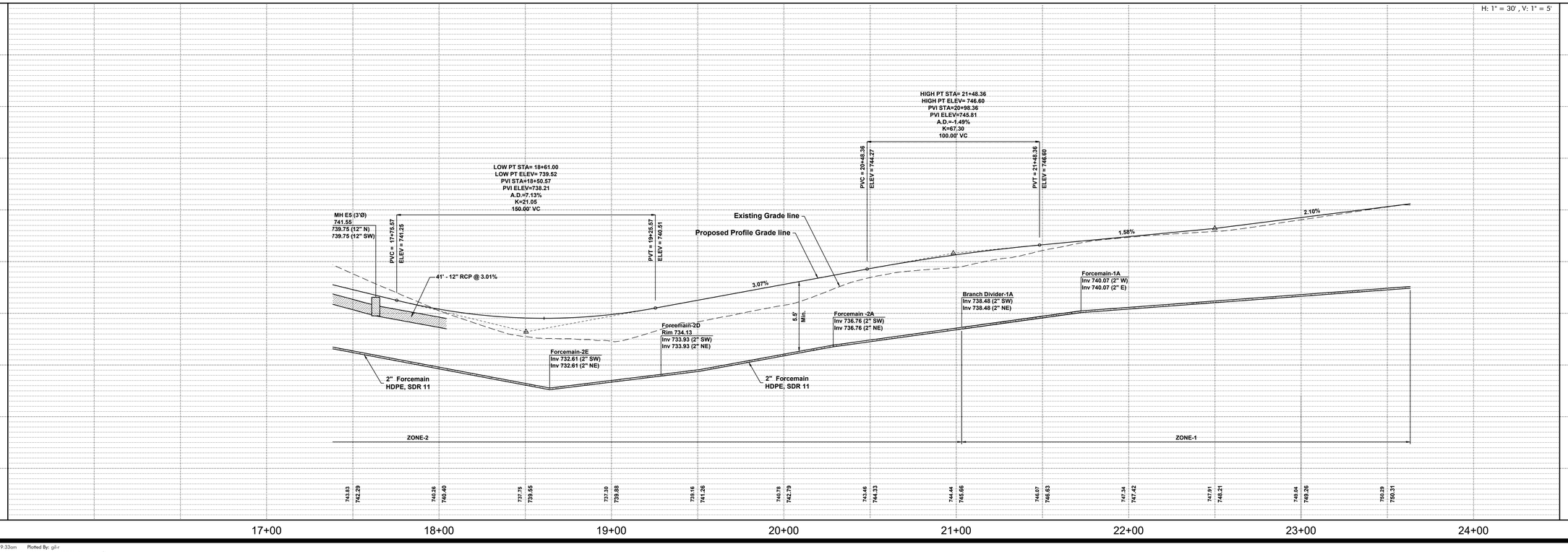
PLAN AND PROFILE - PHILIP DRIVE
STA. 10+00 - STA. 17+50
PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.0 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg

PHILIP DRIVE



NORTH

15 0 30

Scale: 1" = 30'

No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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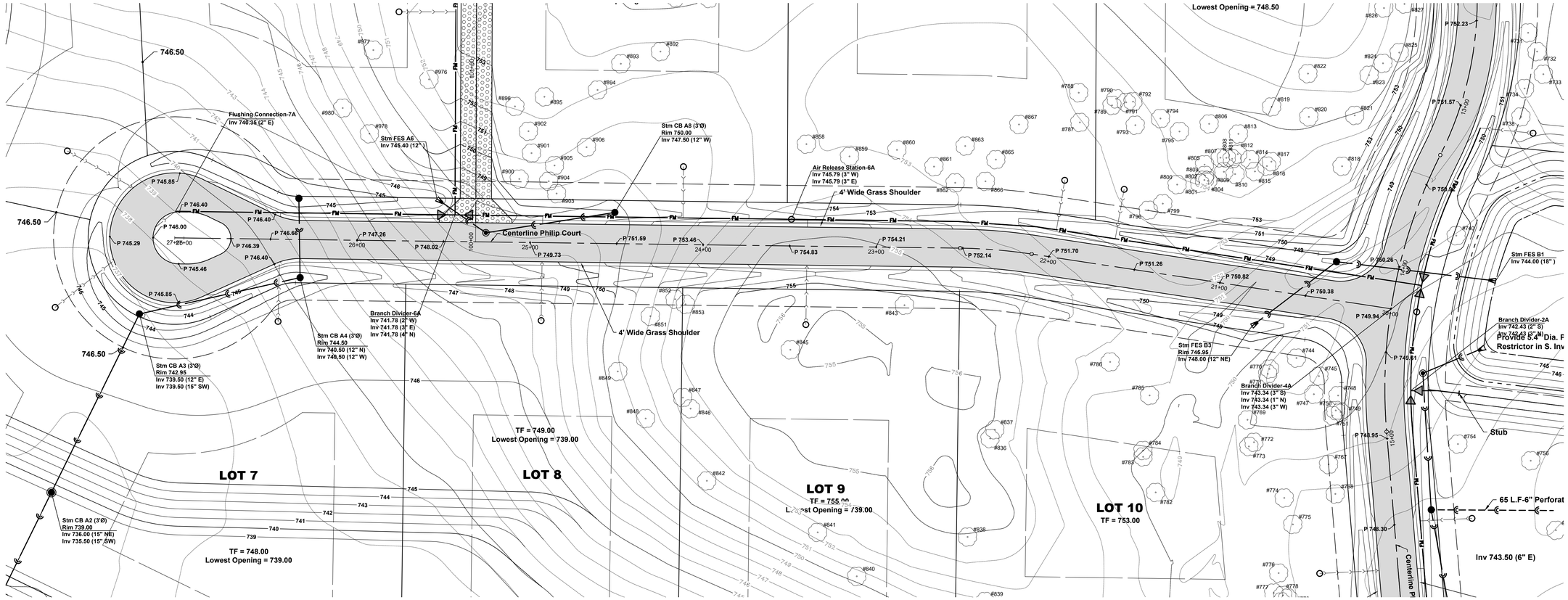
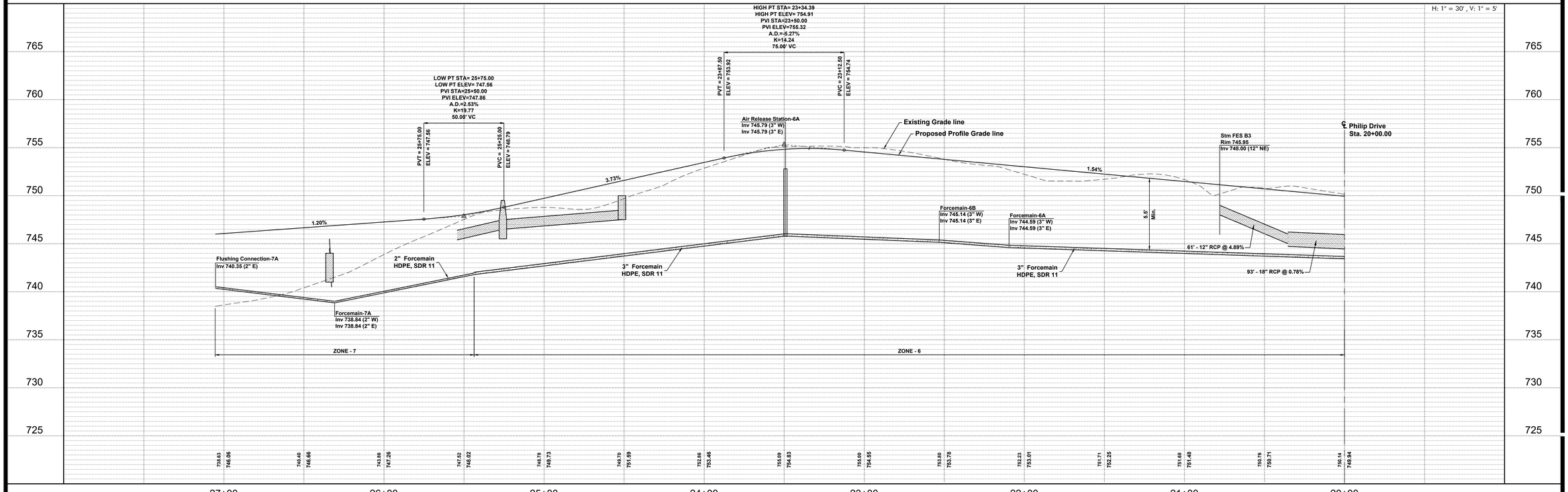
PLAN AND PROFILE - PHILIP DRIVE
STA. 17+50 - STA. 23.63
PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.1 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg



PHILIP COURT



NORTH

15 0 30

Scale: 1" = 30'

No.	Revision	Date
2	PROJECT COORDINATION	09-30-2022
1	PROJECT PLANS SUBMITTAL SET	08-12-2022

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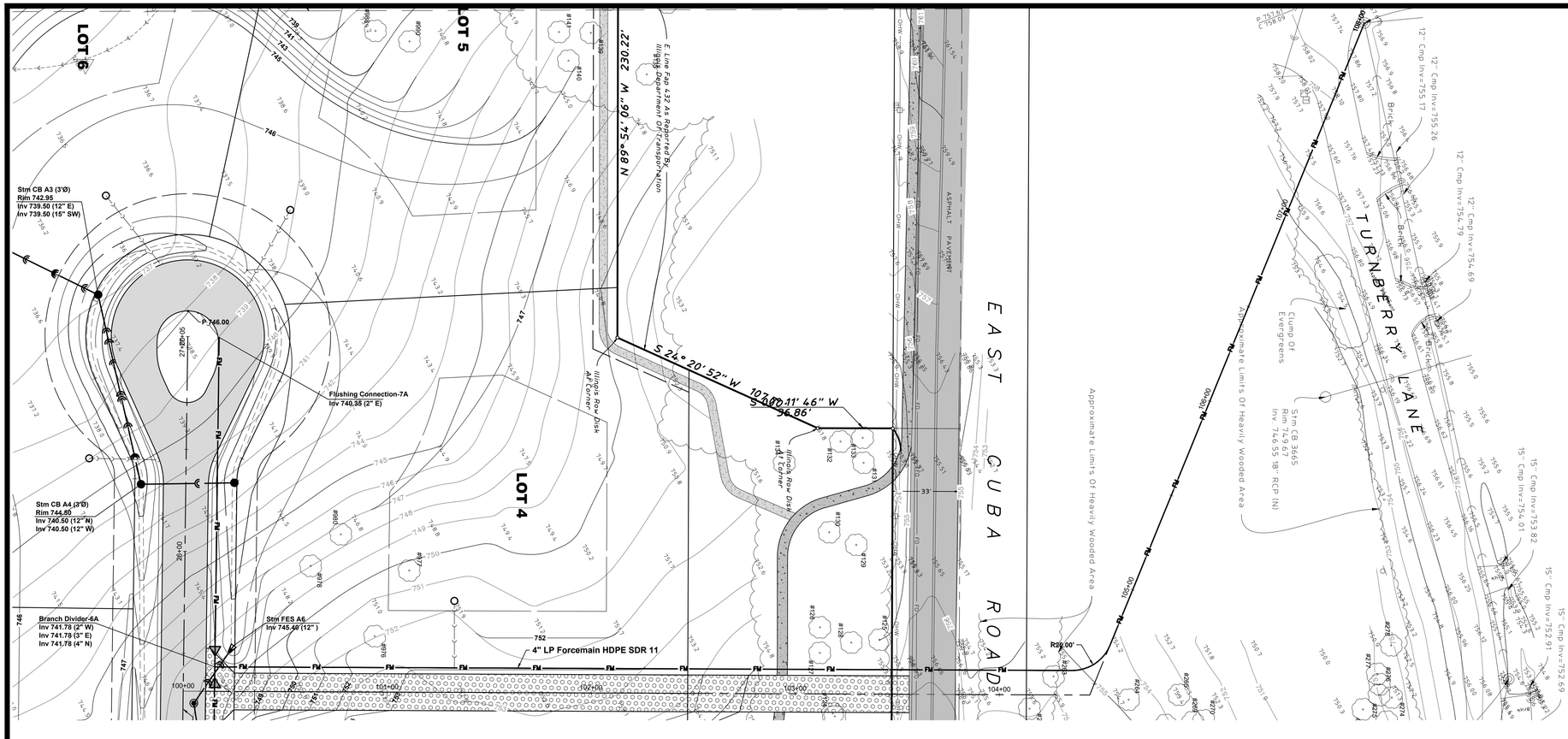
PLAN AND PROFILE - PHILIP COURT

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS

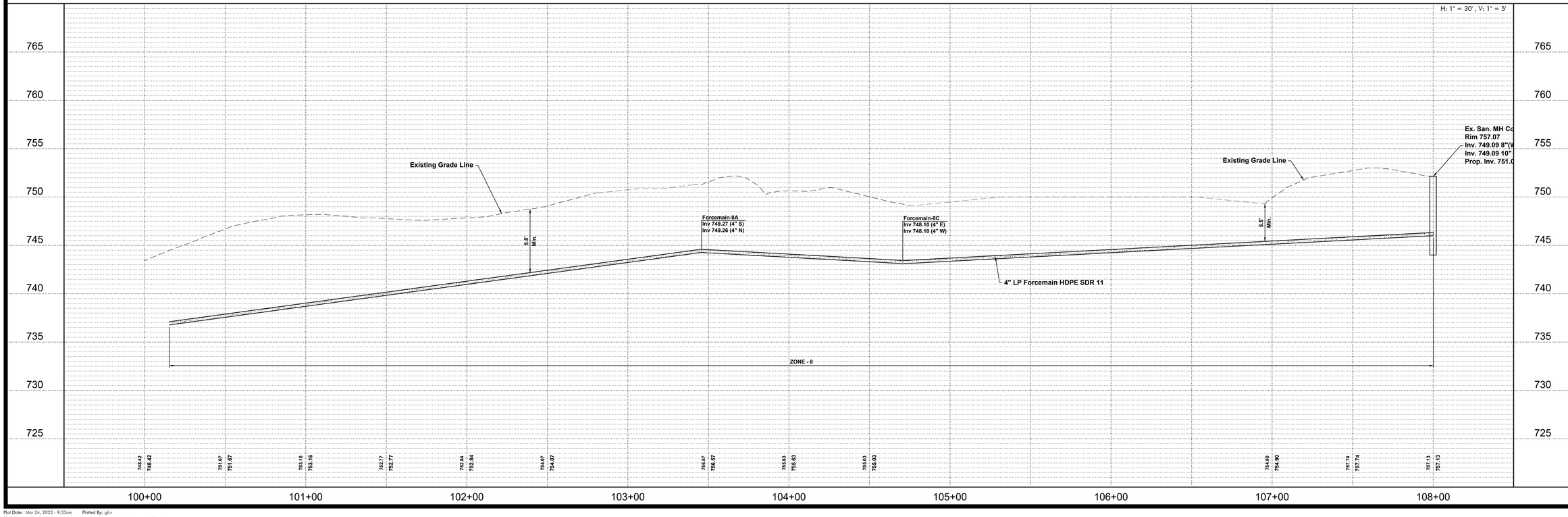
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.2 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg



EMERGENCY ACCESS DRIVE



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NORTH
15 0 30
Scale: 1" = 30'

No.	Date	Revision
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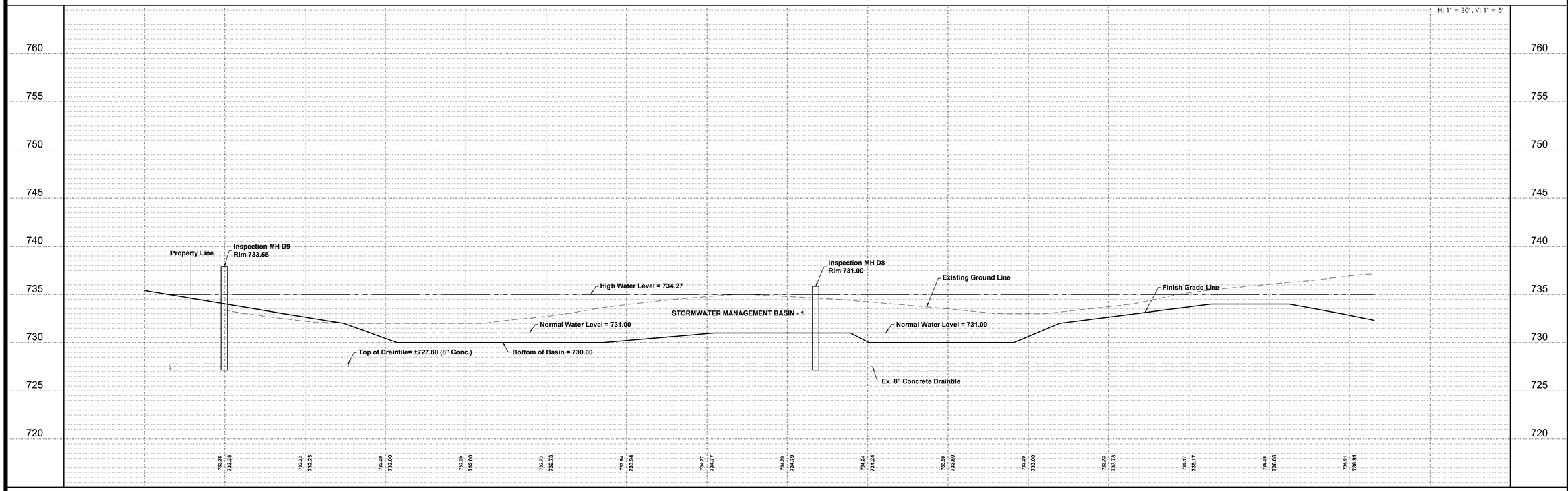
PLAN AND PROFILE - EMERGENCY ACCESS

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

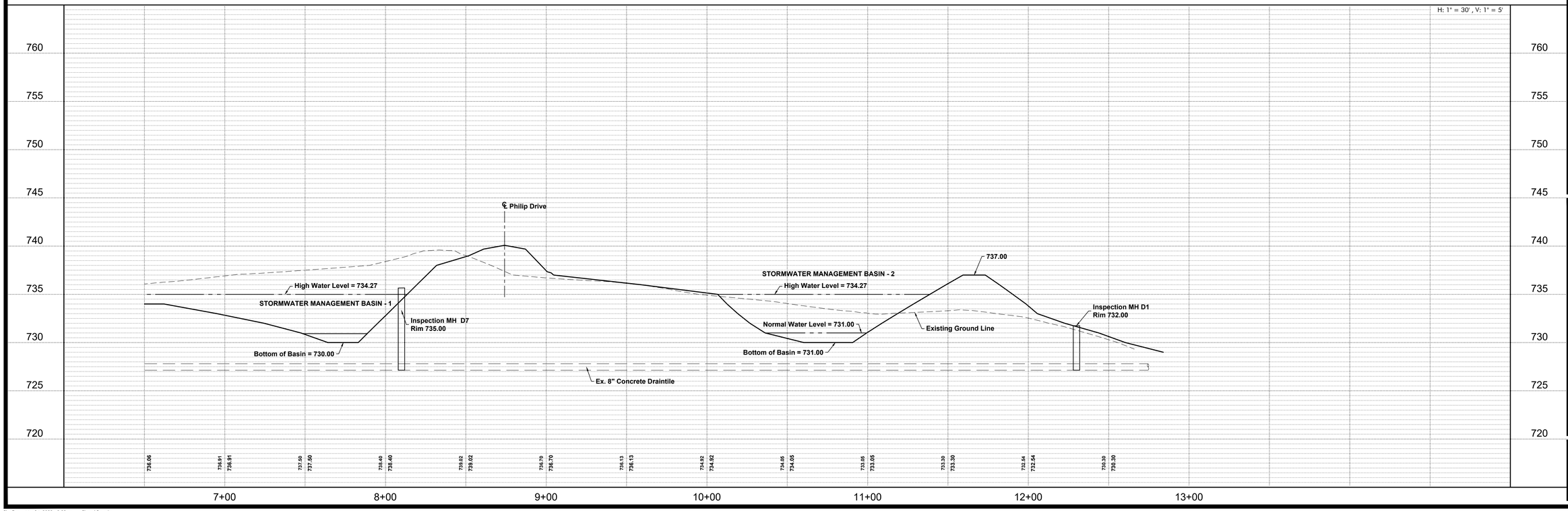
Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.3 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg

8" CONCRETE DRAINTILE



8" CONCRETE DRAINTILE



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8 INCH CONCRETE DRAINTILE PROFILE

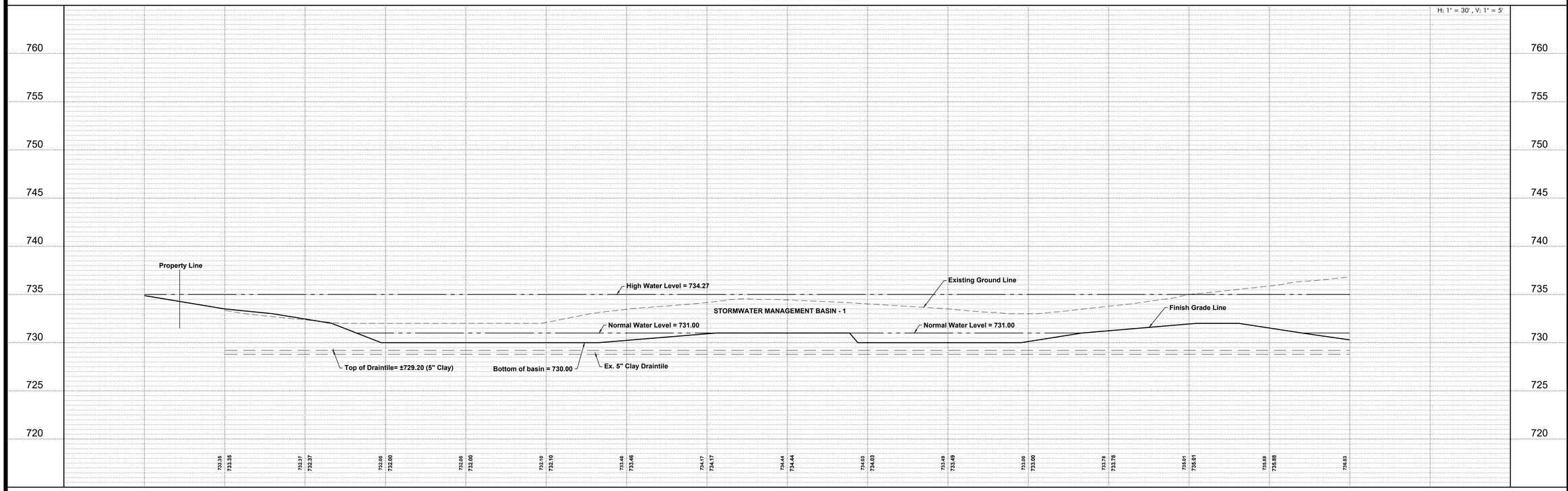
PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

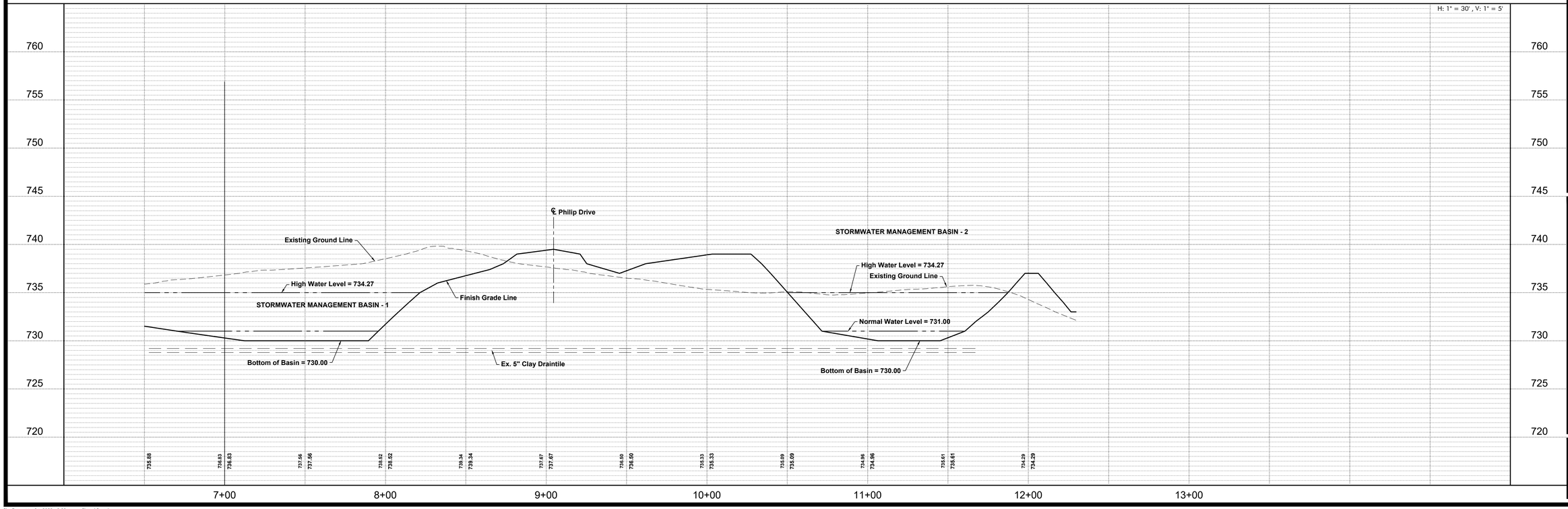
Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.4 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg

5" CLAY DRAINTILE



5" CLAY DRAINTILE



No.	Date	Revision
2	09-30-2022	PROJECT PLANS SUBMITTAL SET
1	08-12-2022	PROJECT COORDINATION

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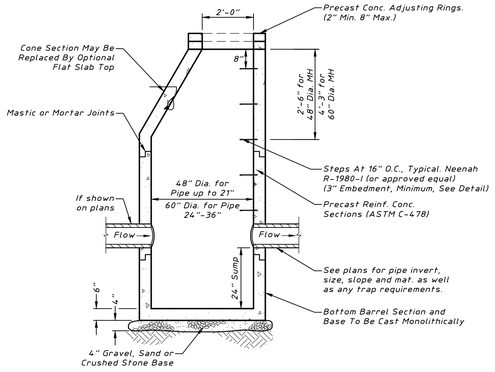
5 INCH CLAY DRAINTILE PROFILE

PHILIP ESTATES SUBDIVISION SITE IMPROVEMENT PLANS

LONG GROVE, ILLINOIS

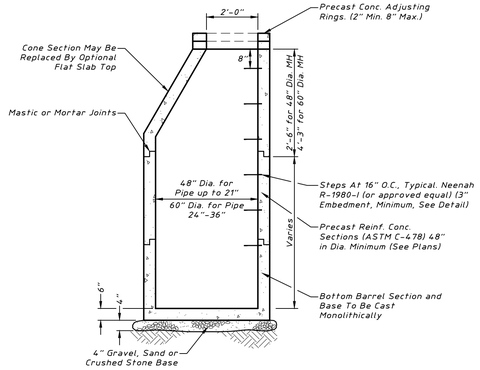
Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C8.5 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gil-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Plan and Profile.dwg



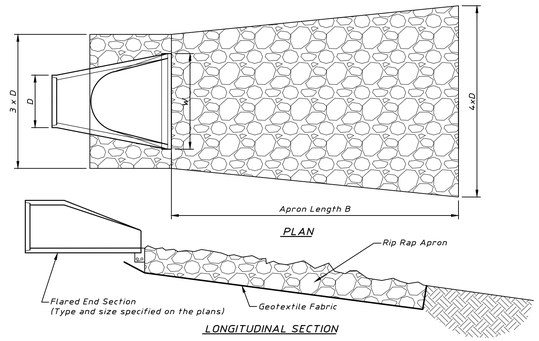
Backfill: Same material and procedure as adjacent piping.

CATCH BASIN - TYPE A



For shallow manholes, the cone shall be replaced with an 8" precast concrete slab.

STORM SEWER MANHOLE

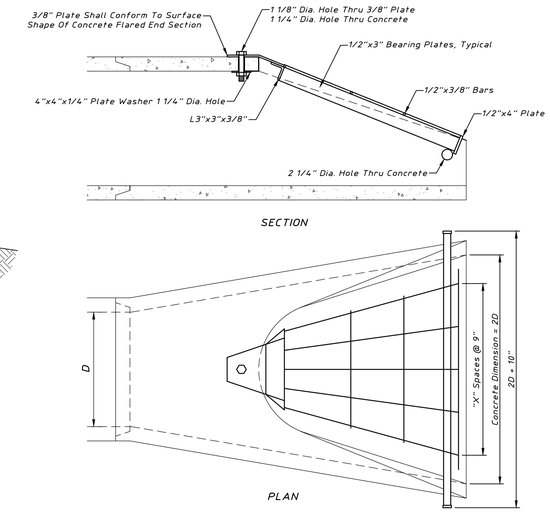


LONGITUDINAL SECTION

Pipe Dia.	Min. Thickness	Gradation Number (RR)	Minimum Apron Length	Weight Average (lbs)	Average Size
12"	8"	3	4'	10	4.5"
15"	8"	3	5'	10	4.5"
18"	16"	4	6'	40	7"
24"	16"	4	8'	40	7"
30"	16"	4	10'	40	7"
36"	22"	5	12'	90	10"
48"	26"	6	16'	170	12"
60"	26"	6	20'	170	12"
72"	26"	6	24'	170	12"

NOTE:
1. Information Obtained from IDOT Specifications - See Specification For Additional Information.

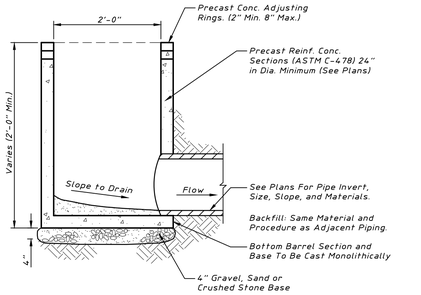
RIP RAP OUTLET PROTECTION



NOTES:

1. *Gratings shall be required for all flared end sections, Larger than 12 inches, except when installed as part Of a driveway culvert.*
2. *Grating shall conform to the following I.D.O.T. Standard drawings:*
   2364-3 24, 30 & 36 inch
   2379-2 42, 48 & 54 inch
   For sizes not listed, the standard drawings shall be interpolated and modified as necessary.

GRATING FOR CONCRETE FLARED END SECTION

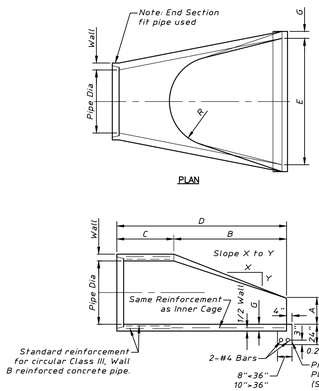


INLET - TYPE A

STORM SEWER

FRAME & GRATE SCHEDULE

1. All Frames include East Jordan Equivalent
2. Manholes & Inlets Closed Frame: Neenah R-1772 (Self-Sealing Lid w/Proper Utility Marking)
3. Manholes & Inlets Open Lid in Pavement: Neenah R-1772 C
4. Manholes & Inlets Open Lid in Yards & Swales: Neenah R-4340 B.
5. B6.12 Curb & Gutter: Neenah R-3281 (Bicycle Safe).
6. M3.12 Curb & Gutter: Neenah R-3501 TR or TL (Bicycle Safe).



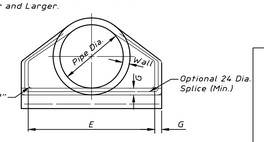
DESIGN NOTES

Concrete Flared End Sections should be considered for use with concrete pipe culverts having skews no greater than 15°.

Standards 2364 and 2379 (Grading for Concrete Flared End Sections) should be considered for use with this Standard whenever Flared End Sections for 18" thru 54"-diameter across road culverts are, or will be, located within the clear zone of the roadway.

NOTES:

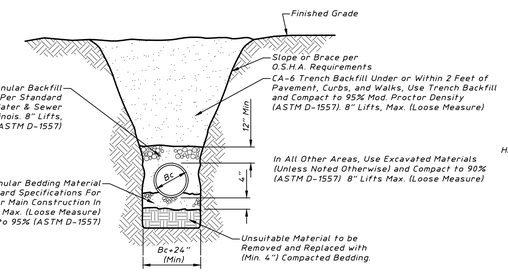
1. *Precast concrete flared end sections shall conform to the applicable requirements of AASHTO M-170 Class III, Wall B reinforced concrete pipe.*
2. *Precast concrete flared end section for pipe diameter required shall be as indicated on detail plan for each individual installation.*
3. *The end block shall be placed prior to the installation of the flared end section. The end block shall be backfilled in accordance with Art.502.11 of the Standard Specifications, cost incidental to End Section.*
4. *Grates Shall Be Installed On All FES 18" In Diameter and Larger.*



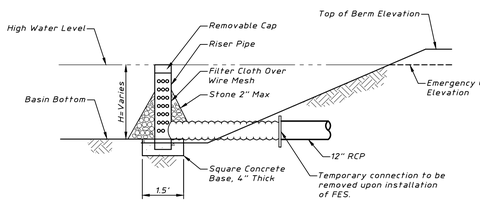
LONGITUDINAL SECTION *END VIEW*

Pipe Dia.	Approx Wt.(lbs)	Wall	A	B	C	D	E	G	R	Slope
12"	530	2"	4"	2'-0"	4'-0 3/4"	6'-0 3/4"	2'-0"	2"	9"	3:1
15"	740	2 1/4"	6"	2'-3"	3'-10"	6'-1"	2'-6"	2 1/4"	11"	3:1
18"	990	2 1/2"	9"	2'-3"	3'-10"	6'-1"	3'-0"	2 1/2"	12"	3:1
21"	1280	2 3/4"	9"	2'-11"	3'-2"	6'-1"	3'-6"	2 3/4"	13"	3:1
24"	1520	3"	9 1/2"	3'-7 1/2"	2'-6"	6'-1 1/2"	4'-0"	3"	14"	3:1
27"	1930	3 1/4"	10 1/2"	4'-0"	2'-11 1/2"	6'-1 1/2"	4'-6"	3 1/4"	14 1/2"	3:1
30"	2190	3 1/2"	1'-0"	4'-6"	1'-7 1/2"	6'-1 1/2"	5'-0"	3 1/2"	15"	3:1
33"	3200	3 3/4"	1'-1 1/2"	4'-10 1/2"	3'-3 1/2"	8'-1 1/2"	5'-6"	3 1/2"	17 1/2"	3:1
36"	4100	4"	1'-3"	5'-3"	2'-10 1/2"	8'-1 1/2"	6'-0"	4"	20"	3:1
42"	5380	4 1/2"	1'-9"	5'-3"	2'-11"	8'-2"	6'-6"	4 1/2"	22"	3:1
48"	6550	5"	2'-0"	6'-0"	2'-2"	8'-2"	7'-0"	5"	22"	3:1
54"	8240	5 1/2"	2'-3"	5'-5"	2'-11"	8'-4"	7'-6"	5 1/2"	24"	2.4:1
60"	8730	6"	2'-11"	5'-0"	3'-3"	8'-3"	8'-0"	5"	×	2:1
66"	10710	6 1/2"	2'-6"	6'-0"	2'-3"	8'-3"	8'-6"	5 1/2"	×	2:1
72"	12520	7"	3'-0"	6'-6"	1'-9"	8'-3"	9'-0"	6"	×	1.86:1
78"	14770	7 1/2"	3'-0"	7'-6"	1'-9"	9'-3"	9'-6"	6 1/2"	×	1.82:1
84"	18160	8"	3'-0"	7'-6 1/2"	1'-9"	9'-3 1/2"	10'-0"	6 1/2"	×	1.5:1

PRECAST FLARED END SECTION



TRENCH SECTION - STORM SEWER

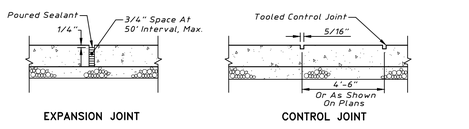


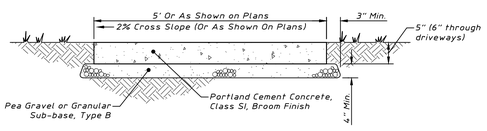
SECTION ON CENTERLINE

NOTES:

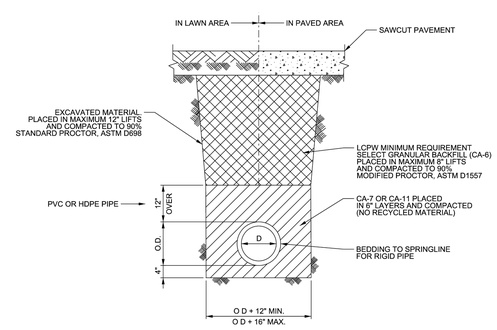
1. *Slotted inlets shall be fabricated from corrugated metal or smooth steel.*
2. *Slots shall be cut cleanly and deburred. Ends of slots may be round or square.*
3. *Gravel filter, if used, shall be pit run sand and natural gravel with a maximum particle diameter of 2".*
4. *Fabricated or standard elbow, fabricated or standard tee with the pipe or plug in upstream end, or standard tee with one end embedded in concrete.*
5. *Thirty 1" diameter holes per foot of riser may be substituted for the 1"x 4" slots for 6" diameter risers.*
6. *Drain pipe shall be the same material and gauge as the principle spillway pipe.*
7. *Slot spacing and size shall be as shown on standard drawing IL-580.*
8. *Coupling bands shall be as shown on standard drawing IL-580.*

CONSTRUCTION SEDIMENT / STORMWATER DEWATERING DEVICE





PORTLAND CEMENT CONC. SIDEWALK



NOTE:

CONFIRM REQUIREMENTS OF LOCAL MUNICIPALITY AND ROADWAY AUTHORITY REGARDING THEIR SPECIFIC BEDDING AND BACKFILL MATERIAL STANDARDS

Lake County Department of Public Works

PIPE BEDDING TRENCH BACKFILL

DATE: 6/26/15 ID: 3

REVISIONS	DATE
ENG-MAIN. UPDATE	7/24/18
ENG-MAIN. UPDATE	9/20/18
ENG-MAIN. UPDATE	12/14/20

No.	Revision	Date
2	PROJECT PLANS SUBMITTAL SET	09-30-2022
1	PROJECT COORDINATION	08-12-2022

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STANDARD DETAILS

PHILIP ESTATES SUBDIVISION
SITE IMPROVEMENT PLANS
LONG GROVE, ILLINOIS

Project Manager:	P L
Engineer:	K M L
Date:	05-27-2022
Project No.	22001
Sheet	C9.0 / C9

Plot Date: Mar 24, 2023 - 9:33am Plotted By: gjl-r
File Name: P:\2022\22001\Drawings\Final Engineering\22001 Title Sheet and Details.dwg