

Narrative for Story Point, Grove City, Ohio

Applicant proposes to construct an approximately 229,420 square foot, one-three story building with private roads. The purpose of this planned development is for the creation of senior housing and special care housing for those requiring more supervised living conditions. The senior housing will be delivered through a three-story (approx. 50'-0" tall) apartment building. 116 Independent Living apartments will be made up of seventy-eight (78) 685 SF one-bedroom units, thirty-eight (30) 965 SF two-bedroom units and eight (8) 1085 SF 2-bedroom deluxe units. Amenities will include a variety of dining venues, indoor and outdoor activity areas, shops, postal services, bank, salon/barber, library and computer classroom and multi-purpose rooms for larger gatherings, fitness or other group activities. The use of these amenities are limited to the residents and their guests and are not open to the public.

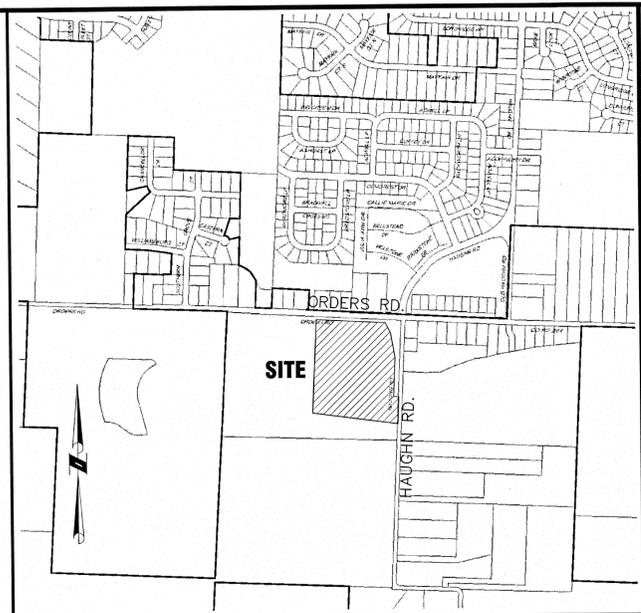
The housing programs for those requiring more services/assistance include Enhanced Living – an independent living program with 35 additional apartments offering “catered” services providing moderate assistance to those with slightly higher needs, but not the intensity required of an assisted or nursing care resident. Enhanced Living, located in the southwest quadrant, is a 1-story wing (Approx. 27'-0" tall) made up of thirty-three (33) 640 SF 1-bedroom units and two (2) 950 SF 2-bedroom units.

Finally, a specialized 1-story environment for seniors with Alzheimer’s or other associated dementias affecting memory and other cognitive skills is planned as a connected, yet stand-alone 48 unit, housing option for those unique seniors. The A.L. & Memory, located in the southeast quadrant, is a 1-story wing (Approx. 30'-0" tall) made up of forty-four (44) 295 SF 1-bed units and four (4) 450 SF 2-bed units.

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SITE DATA

BUILDING COVERAGE:	3.1 AC. (19.4%)
PAVEMENT COVERAGE:	3.1 AC. (19.4%)
OPEN/GREEN SPACE:	9.774 AC. (61.2%)
TOTAL SITE:	15.974 AC.

CURRENT ZONING: RURAL RESIDENTIAL (RR)
PROPOSED ZONING: PLANNED UNIT DEVELOPMENT-RESIDENTIAL (PUD-R)

EMPLOYEES:

DAYS	62
AFTERNOON	40
MIDNIGHT	12
TOTAL	114

RESIDENTS:

INDEPENDENT LIVING:	
1 BEDROOM UNITS	78
2 BEDROOM UNITS	38
ENHANCED (PARTIALLY ASSISTED):	
1 BEDROOM UNITS	33
2 BEDROOM UNITS	2
ASSISTED LIVING & MEMORY CARE:	
1 BEDROOM UNITS	44
2 BEDROOM UNITS	4
TOTAL UNITS	199

PARKING

152 PARKING SPACES
26 CARPORTS
168 TOTAL

- NOTES**
1. ORDERS AND HAUGHN ROADS ARE SHOWN PER PRELIMINARY IMPROVEMENT PLANS DATED JANUARY 9, 2015.
 2. PROPOSED LANDSCAPING SHOWN-ON SEPARATE SHEETS, L1.01 AND L2.01
 3. PHOTOMETRICS SHOWN ON SHEET ES01

DEVELOPMENT PLAN
STORY POINT

CITY PROJECT NO.: _____

OWNER: JOSEPH & MARCIA BROWN
2208 PINEVIEW DRIVE
MUNCIE, IN 47303

DEVELOPER: TRIPLE M INVESTMENTS
11640 SAN VINCENTE BLVD., SUITE 202
LOS ANGELES, CA 90049

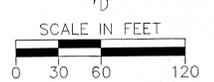
DATE: AUGUST 3, 2015

CITY ADMINISTRATOR: _____

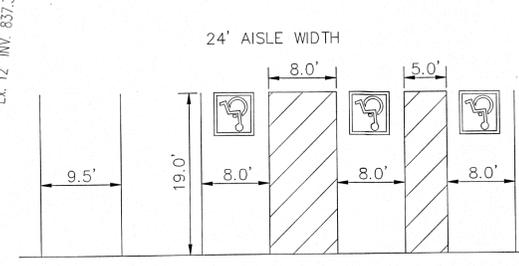
SERVICE DIRECTOR: _____

REVIEW FOR THE CITY OF GROVE CITY: _____

JACKSON TOWNSHIP FIRE DEPARTMENT: _____



Steve Bowersox

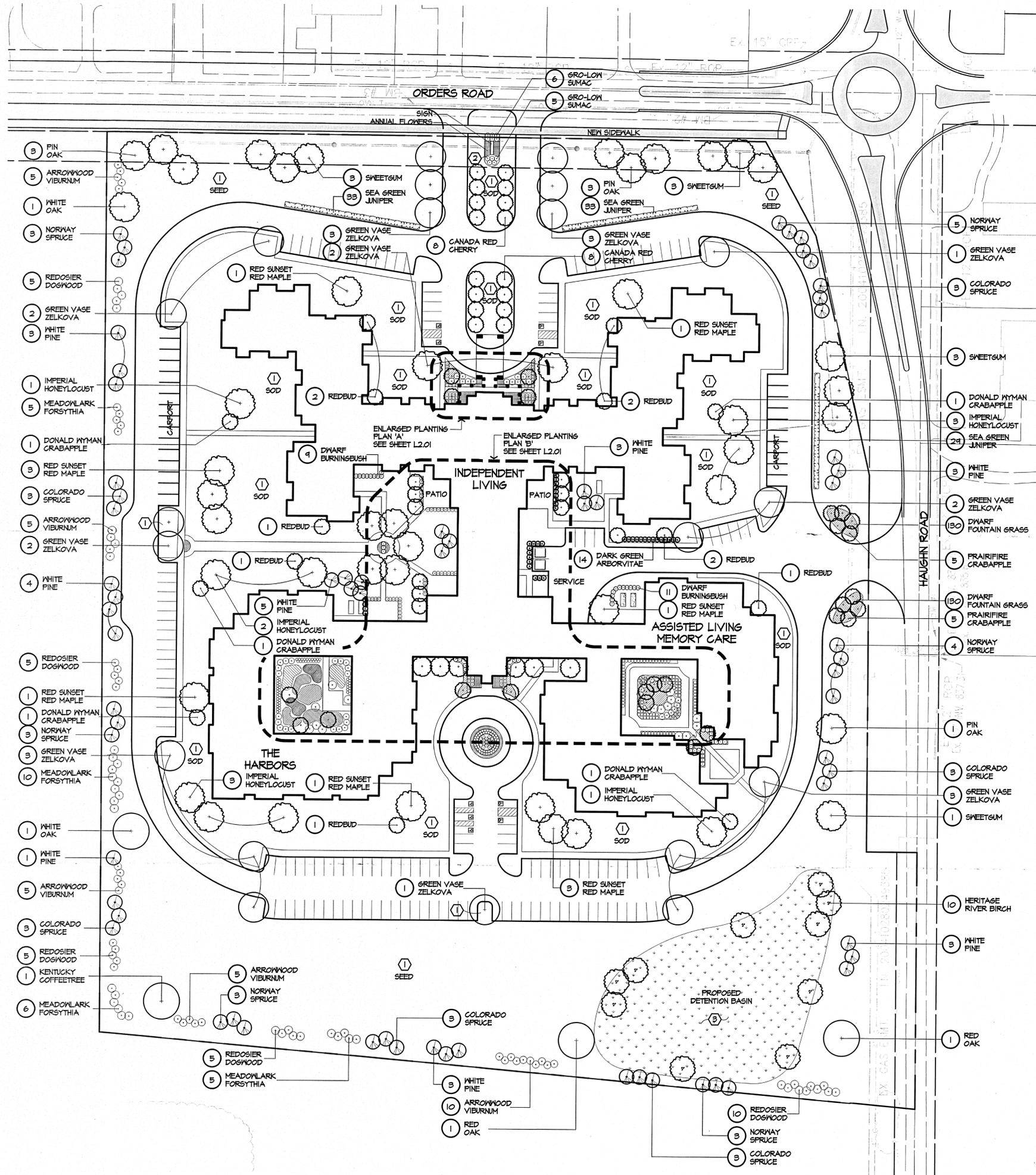


TYPICAL PARKING STALL DIMENSIONS



PROPOSED WET DETENTION BASIN
NORMAL WATER @ 836.5

EXISTING OUT BLDG.



GENERAL NOTES

1. EACH CONTRACTOR IS TO VERIFY WITH OWNER AND UTILITY COMPANIES THE LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION TO DETERMINE IN THE FIELD THE ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL CALL UTILITY PROTECTION SERVICE 72 HOURS PRIOR TO CONSTRUCTION.
2. EXAMINE FINISH SURFACE, GRADES, TOPSOIL QUALITY AND DEPTH. DO NOT START ANY WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. VERIFY LIMITS OF WORK BEFORE STARTING.
3. CONTRACTOR RESPONSIBLE FOR COST OF REPAIRS TO EXISTING SITE CONDITIONS WHEN DAMAGED BY CONTRACTOR. REPAIR TO THE SATISFACTION OF THE OWNER.
4. ALL PLANT MASSES TO BE CONTAINED WITHIN 3" DEEP HARDWOOD BARK MULCH BED.
5. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN LAWN AREAS.
6. FINE GRADE LAWN AREAS TO PROVIDE A SMOOTH AND CONTINUAL GRADE FREE OF IRREGULARITIES OR DEPRESSIONS.
7. CONTRACTOR SHALL SEED OR SOD ALL AREAS DISTURBED DURING CONSTRUCTION, SEE PLAN. ALL PARKING ISLANDS TO BE TURF.
8. ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET IN THE U.S.A. STANDARD FOR NURSERY STOCK.
9. ALL PLANTING OPERATIONS SHALL ADHERE TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
10. ALL PARKING ISLANDS ARE TO BE MULCHED UNLESS NOTED OTHERWISE.

CONSTRUCTION NOTES

1. LAWN AREA, FILL WITH TOPSOIL, MINIMUM DEPTH SHALL BE 6". MEET ADJACENT SURFACES FLUSH. PROVIDE POSITIVE DRAINAGE ACROSS ALL SURFACES.
2. LANDSCAPE AREA, FILL WITH TOPSOIL, MINIMUM DEPTH SHALL BE 24". MEET ADJACENT SURFACES FLUSH. PROVIDE POSITIVE DRAINAGE ACROSS ALL SURFACES.
3. DETENTION SEED MIX, SEE SPECIFICATIONS.

NOTE:
 PROVIDE COMPLETE IRRIGATION SYSTEM COVERING LAWNS / PLANT BEDS INSIDE PERIMETER DRIVE & ENTRY DRIVE AREA AND 20'-0" ALONG OUTSIDE EDGE OF PERIMETER DRIVE. SUBMIT SHOP DRAWINGS TO OWNER'S REPRESENTATIVE FOR REVIEW.

CONSULTANTS

SEAL **PRELIMINARY**
NOT FOR CONSTRUCTION

PROJECT TITLE

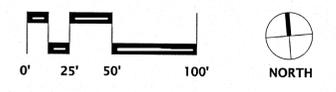
StoryPoint
Grove City, OH

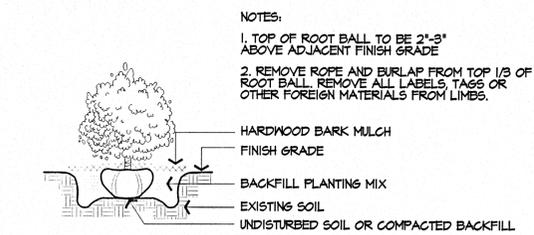
CLIENT

PROJECT NO.	XXXXX
Date	07/31/15
Revisions	

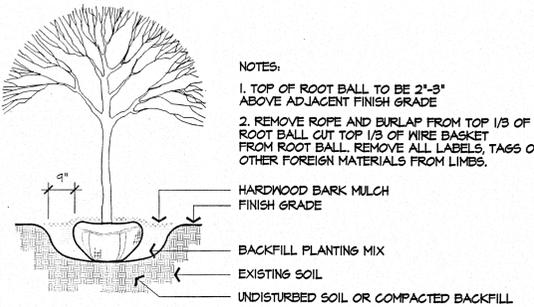
Sheet Title
OVERALL PLANTING PLAN
 Sheet Number

L1.01

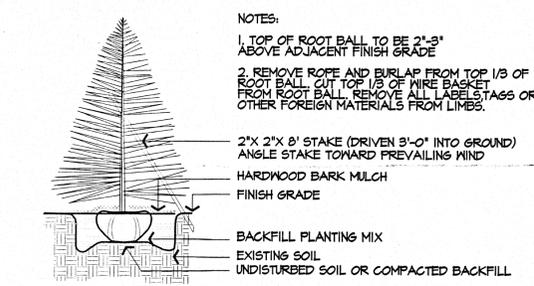




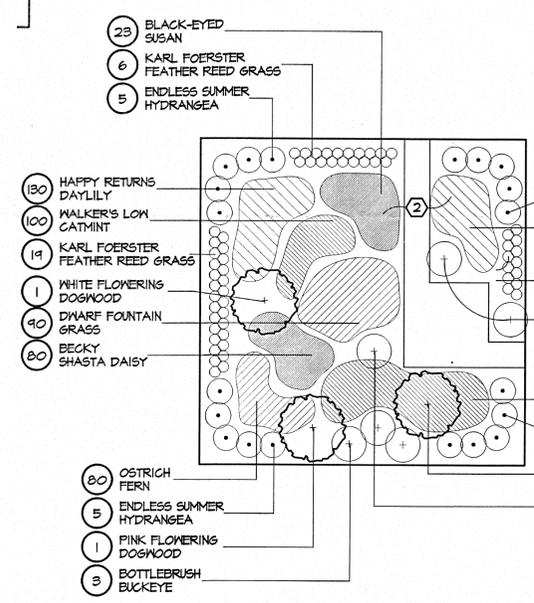
1 SHRUB PLANTING
NTS



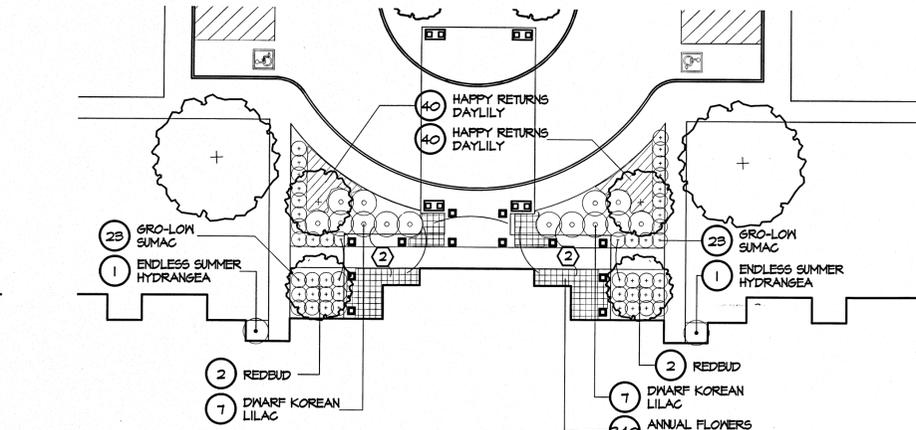
2 TREE PLANTING
NTS



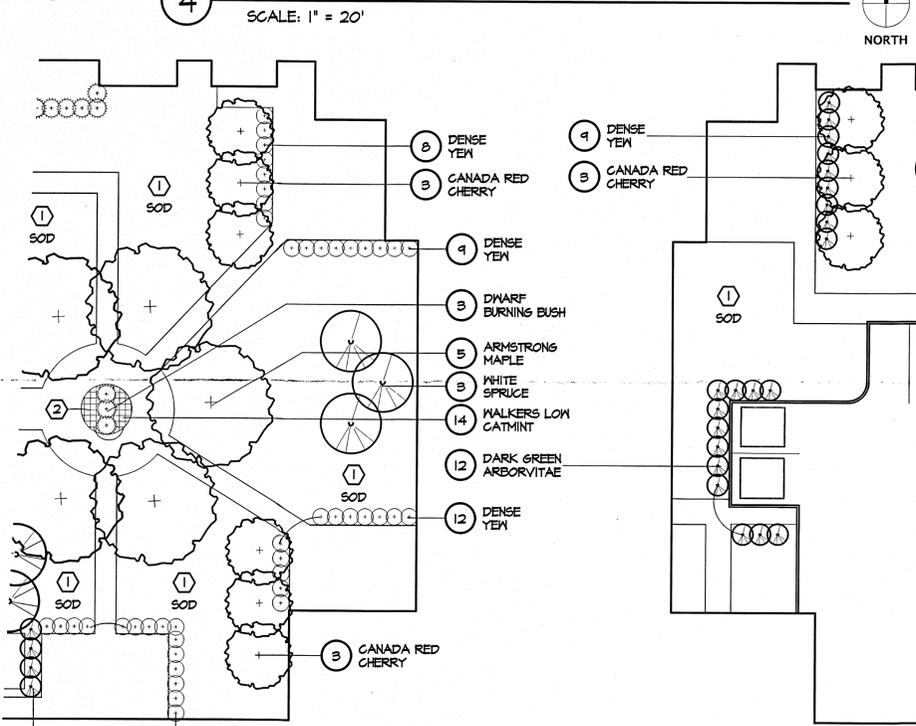
3 EVERGREEN TREE PLANTING
NTS



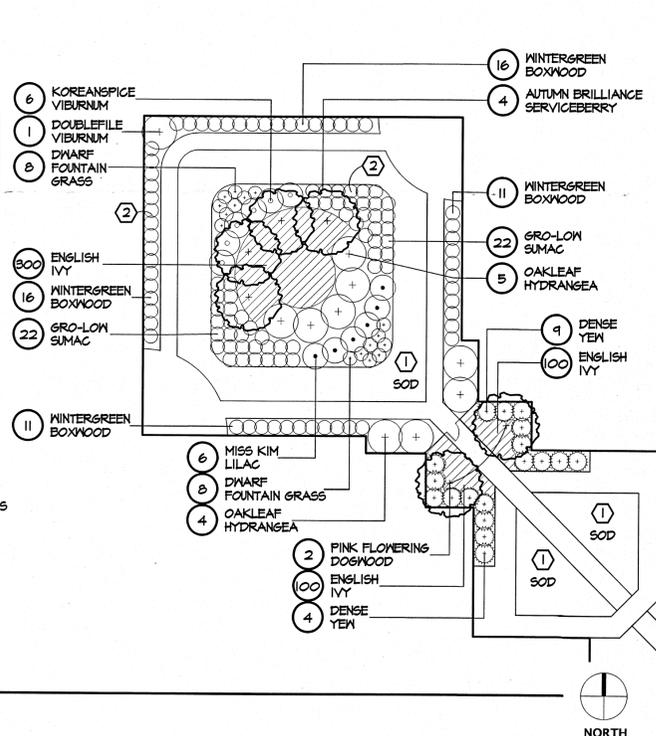
5 ENLARGED PLANTING PLAN 'B'
SCALE: 1" = 20'



4 ENLARGED PLANTING PLAN 'A'
SCALE: 1" = 20'



QTY.	COMMON NAME	BOTANICAL NAME	SIZE	ROOT	REMARKS
TREES					
11	RED SUNSET RED MAPLE	Acer rubrum 'Franksred'	3" Cal.	B4B	
4	AUTUMN BRILLIANCE SERVICEBERRY	Amelanchier x grandiflora 'Autumn Brilliance'	2" Cal.	B4B	
10	HERITAGE RIVER BIRCH	Betula nigra 'Heritage'	10-12" Cal.	B4B	MULTI STEM
11	ARMSTRONG MAPLE	Acer Rubrum 'Armstrong'	2" Cal.	B4B	
14	REDBUD	Cercis canadensis	2" Cal.	B4B	SINGLE STEM
2	WHITE FLOWERING DOGWOOD	Cornus florida	2" Cal.	B4B	SINGLE STEM, WHITE
3	PINK FLOWERING DOGWOOD	Cornus florida 'Rubra'	2" Cal.	B4B	SINGLE STEM, PINK
10	IMPERIAL HONEYLOCUST	Gleditsia triacanthos var. inermis 'Imperial'	2" Cal.	B4B	
1	KENTUCKY COFFEETREE	Gymnocladus dioica	3" Cal.	B4B	LARGE TREE
10	SWEETGUM	Liquidambar styraciflua	3" Cal.	B4B	
5	DONALD WYMAN CRABAPPLE	Malus 'Donald Wyman'	2" Cal.	B4B	
10	PRAIRIE FIRE CRABAPPLE	Malus 'Prairifire'	2" Cal.	B4B	
18	COLORADO SPRUCE	Picea pungens	6" Hgt.	B4B	
25	WHITE PINE	Pinus strobus	6" Hgt.	B4B	
27	CANADA RED CHERRY	Prunus virginiana	2" Cal.	B4B	
2	WHITE OAK	Quercus alba	3" Cal.	B4B	LARGE TREE
7	PIN OAK	Quercus palustris	3" Cal.	B4B	LARGE TREE
2	RED OAK	Quercus rubra	3" Cal.	B4B	LARGE TREE
22	GREEN VASE ZELKOVA	Zelkova serrata 'Green Vase'	3" Cal.	B4B	
3	WHITE SPRUCE	Picea glauca	6" Hgt.	B4B	
21	NORWAY SPRUCE	Picea abies	6" Hgt.	B4B	
SHRUBS					
3	BOTTLEBRUSH BUCKEYE	Aesculus parviflora	36" Hgt.	B4B	
54	WINTERGREEN BOXWOOD	Buxus sibirica var. insularis 'Wintergreen'	18" Hgt.	Cont.	
30	REDOISIER DOGWOOD	Cornus sericea	24" Hgt.	Cont.	
22	ENDLESS SUMMER HYDRANGEA	Hydrangea macrophylla 'Endless Summer'	36" Hgt.	Cont.	
4	OAKLEAF HYDRANGEA	Hydrangea quercifolia	36" Hgt.	B4B	
45	SEA GREEN JUNIPER	Juniperus chinensis 'Sea Green'	24" Hgt.	B4B	
14	DWARF KOREAN LILAC	Syringa meyeri 'Palibin'	24" Hgt.	Cont.	
6	MISS KIM LILAC	Syringa patula 'Miss Kim'	24" Hgt.	Cont.	
81	DENSE YEM	Taxus x media 'Densiformis'	24" Hgt.	B4B	
30	DARK GREEN ARBORVITAE	Thuja occidentalis 'Nigra'	6" Hgt.	B4B	
134	GRO-LOW SUMAC	Rhus aromatica 'Gro-Low'	24" Spr.	Cont.	
4	KOREAN SPICE VIBURNUM	Viburnum carlesii	36" Hgt.	B4B	
30	ARROWWOOD VIBURNUM	Viburnum dentatum	36" Hgt.	B4B	
3	DOUBLEFILE VIBURNUM	Viburnum plicatum f. tomentosum	36" Hgt.	B4B	
23	DWARF BURNING BUSH	Evonymus alatus 'Compactus'	30" Hgt.	Cont.	
26	MEADOWLARK FORSYTHIA	Viburnum plicatum f. tomentosum	30" Hgt.	Cont.	
PERENNIALS / GROUNDCOVER					
112	KARL FOERSTER FEATHER REED GRASS	Calamagrostis x acutiflora 'Karl Foerster'	2 Gal.	Cont.	
500	ENGLISH IVY	Hedera helix	2.25" P.P.	FLAT	SPACE 12" O.C.
380	HAPPY RETURNS DAYLILY	Hemerocallis 'Happy Returns'	1 Gal.	Cont.	
80	BECKY SHASTA DAISY	Leucanthemum x superbum 'Becky'	2 Gal.	Cont.	
182	WALKER'S LOW CATMINT	Nepeta x faassenii 'Walker's Low'	1 Gal.	Cont.	
106	DWARF FOUNTAIN GRASS	Fernisetum alopecuroides 'Hameln'	2 Gal.	Cont.	
23	BLACK-EYED SUSAN	Rudbeckia hirta var. sullivantii 'Goldsturm'	2 Gal.	Cont.	
80	OSTRICH FERN	Matteuccia struthiopteris	2 Gal.	Cont.	
240	MIXED HOSTA	Hosta	2 Gal.	Cont.	(3) VARIETIES
540	DAFFODIL	Narcissus		Bulb	(3) PER PLANTING @ 12" O.C.



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CONSTRUCTION NOTES

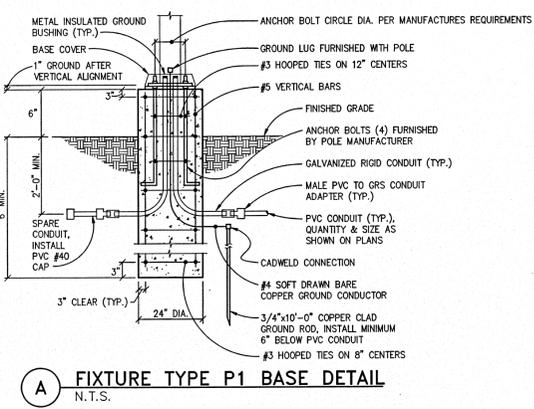
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NO.	DATE	REVISION

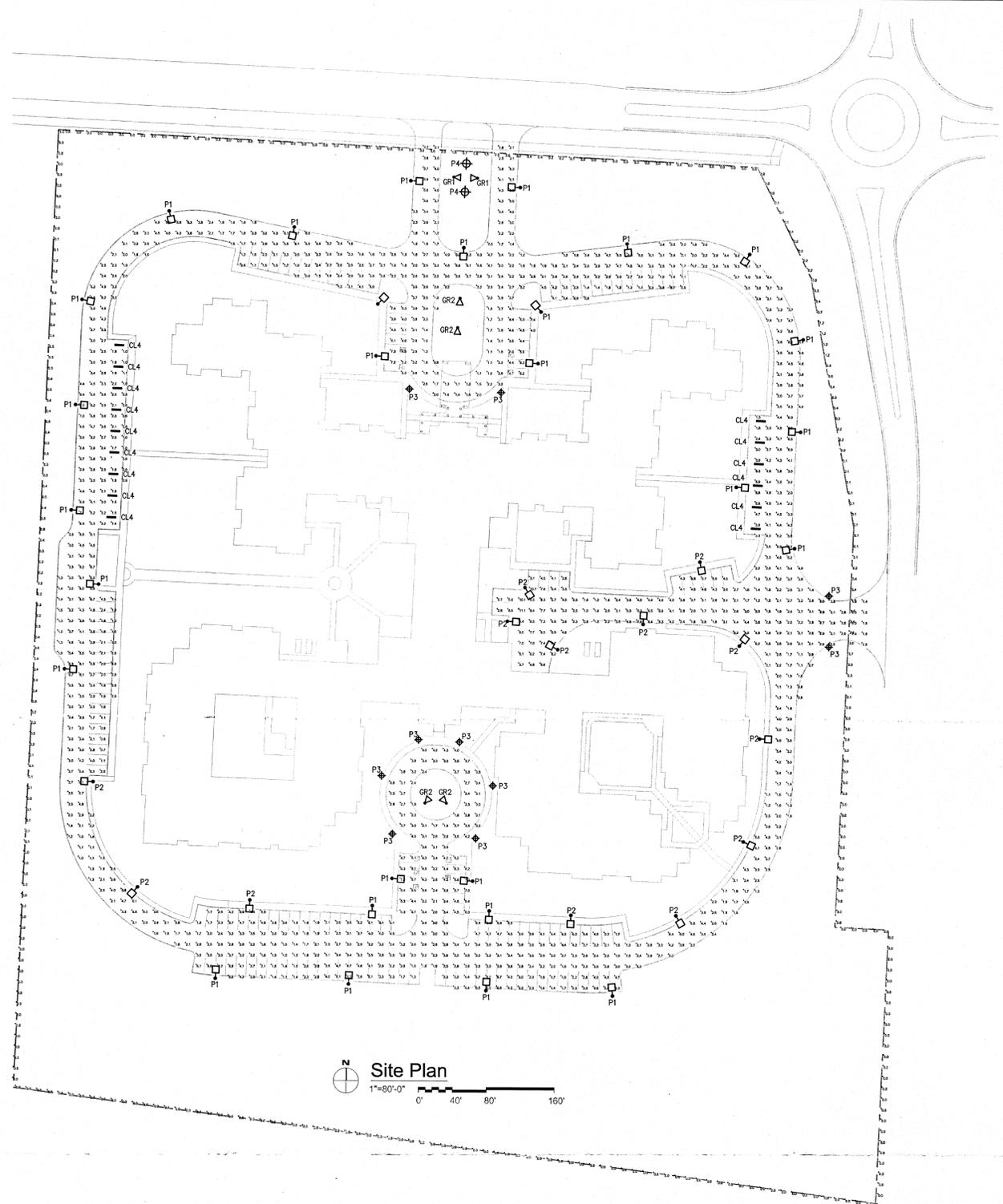
JOB NO. : 2015-12
 DATE : 7-30-2015

ELECTRICAL
 SITE PLAN

ES01



A FIXTURE TYPE P1 BASE DETAIL
 N.T.S.



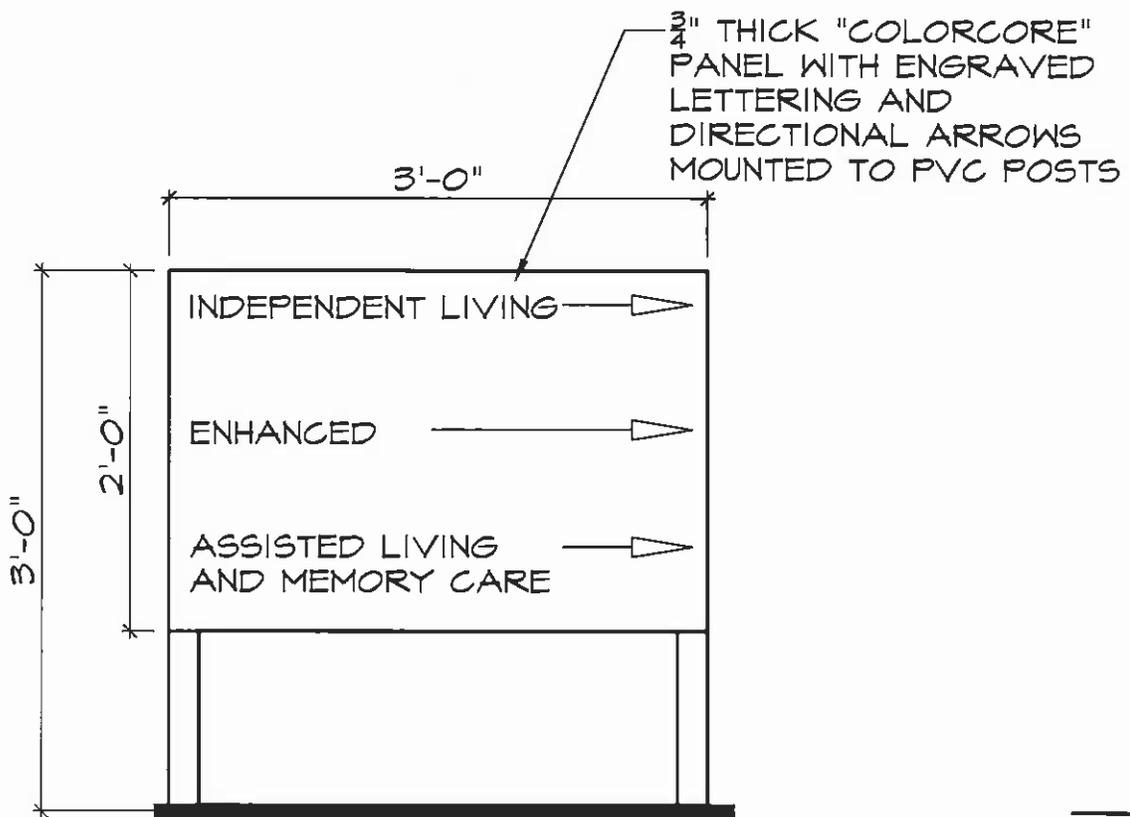
Site Plan
 1"=80'-0"
 0' 40' 80' 160'

LIGHTING FIXTURE SCHEDULE					
FIXTURE TYPE	MANUFACTURER	CATALOG NO./MODEL NO.	QTY/LAMP/TYPE	FINISH	DESCRIPTION
CL4	ATO ELECTRONICS	#P4FT4K	1/50/LED	BY ARCHITECT	4' SURFACE MOUNTED FIXTURE W/ WIREGUARD - 4300 LUMENS
GR1	LITHONIA	DSXF1 LED-2-A530/40K-HMF-MVOLT-THK	2/19/LED	BY ARCHITECT	LED FLOOR FIXTURE
GR2	LITHONIA	DSXF1 LED-2-A530/40K-NSP-MVOLT-THK	2/19/LED	BY ARCHITECT	LED FLOOR FIXTURE FOR FLAGPOLE
P1	LITHONIA	KAD LED-60C-1000-40K-R3-MVOLT	1/216/LED	BY ARCHITECT	20' LED POLE LIGHT
P2	LITHONIA	KAD LED-60C-1000-40K-R3-MVOLT	1/216/LED	BY ARCHITECT	20' LED POLE LIGHT W/ HOUSESIDE SHIELD
P3	LITHONIA	KAD LED-20C-1000-40K-R3-MVOLT-SPD04	1/73/LED	BY ARCHITECT	9' LED POLE LIGHT
P4	ANTIQUE STREET LAMPS	LTL30-X-32LED 525MA-4K-ACT-MVOLT-N5	1/32/LED	BY ARCHITECT	DECORATIVE POST TOP LIGHT
P5	LITHONIA	MRP-LED-1-630350/40K SR5 M VOLT	1/109/LED	BY ARCHITECT	8' LED POLE LIGHT FOR COURTYARDS

NOTE: FIXTURE NUMBER, LETTER PREFIX INDICATES TYPE OF MOUNTING AS FOLLOWS: CH-CHAIN HUNG; CL-CEILING MOUNTED; S-STEM SUSPENDED; W-WALL MOUNTED; R-CEILING RECESSED; WR-WALL RECESSED; CV-COVE MOUNTED; UC-UNDER CABINET; RF-ROOF MOUNTED; P-POST OR POLE; GR-GROUND MOUNTED; H-MOUNTED IN HOOD

Story Point Proposed SetBacks

	Main Building	Accessory Building (Carports)	Parking/Drive Aisle
North	146'	170'	38'
South	238'	248'	126'
East	63'	58'	20'
West	106'	54'	18'



QUANTITY 8

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**LEGAL DESCRIPTION
15.974 ACRES**

Situated in the State of Ohio, County of Franklin, Township of Jackson, lying in Survey Number 1434 of the Virginia Military District, being a part of the 86.388 acre tract conveyed to Joseph D. Brown and Marcia L. Brown by of record in Instrument Number 200001120008580 and in Instrument Number 201209140136739 (all references are to the records of the Recorder's Office, Franklin County, Ohio) and being described as follows:

COMMENCING, FOR REFERENCE, at Franklin County Geodetic Survey monument number 2018 found at the intersection of the centerline of Orders Road (right of way width varies) and the centerline of Haughn Road (right of way width varies) being also the northeasterly corner of the 0.896 acre tract conveyed to the Franklin County Commissioners by deed of record in Instrument Number 200408170192072 and the northwesterly corner of the 0.727 acre tract conveyed to Dorothy A. Miller by deed of record in Instrument Number 201303220048045;

thence, South 02° 36' 56" West, 750.00 feet, along the centerline of Haughn Road, the easterly line of the 0.896 acre tract, the westerly line of the 0.727 acre tract, the westerly line of the 0.460 acre tract conveyed to Betty D. Gardner by deed of record in Official Record 5102 E09 and the westerly line of the 4.422 acre tract conveyed to Rebecca L. Absten and Michael J. Absten by deed of record in Instrument Number 200406090133243, to a Mag Nail set in the southeasterly corner of the 0.896 acre tract and being the **PRINCIPAL PLACE OF BEGINNING**;

thence, continuing South 02° 36' 56" West, 254.58 feet, along the centerline of Haughn Road, to a Mag Nail set;

thence, North 82° 23' 04" West, 810.50 feet, to an iron pin set, passing for reference an iron pin set at 20.08 feet in the westerly right of way line of Haughn Road;

thence, North 02° 36' 56" East, 889.58 feet, to an iron pin set in the southerly line of the 2.250 acre tract conveyed to the City of Grove City, Ohio by deed of record in Instrument 201410310144844;

thence, South 86° 59' 05" East, 651.50 feet, along the southerly line of the 2.250 acre tract and the northerly line of the Brown tract, to an iron pin found (13/16" ID. iron pipe with "EMHT" plug per survey by Joshua M. Meyer);

thence, South 26° 06' 28" East, 114.30 feet, along a southwesterly line of the 2.250 acre tract and a northeasterly line of the Brown tract, to an iron pin found (13/16" ID. iron pipe with "EMHT" plug per survey by Joshua M. Meyer);

thence, South 09° 55' 41" East, 234.82 feet, along a southwesterly line of the 2.250 acre tract and a northeasterly line of the Brown tract, to an iron pin found (13/16" ID. iron pipe with

"EMHT" plug per survey by Joshua M. Meyer) in the westerly line of the Franklin County Commissioners 0.896 acre tract;

thence, South 02° 36' 56" West, 371.64 feet, along the westerly line of the 0.896 acre tract and an easterly line of the Brown tract, to an iron pin set in the southwesterly corner of the 0.896 acre tract;

thence, South 87° 23' 04" East, 50.00 feet, along the southerly line of the 0.896 acre tract and a northerly line of the Brown tract, to the Principal Place of Beginning, passing for reference an iron pin set at 30.00 feet.

Containing 15.974 acres more or less of which 0.116 acres is within the present right of way occupied by Haughn Road. Subject, however, to all legal rights of way and/or easements, if any, of previous record.

Iron pins set, where indicated, are 5/8 inch diameter by 30 inches in length solid re-bars with yellow plastic caps bearing the inscription of Choice One Engineering and SEB LS-7059.

The bearings shown on this survey are based on NAD 83, GEOID 2003, Ohio South Zone, ODOT VRS CORS Network and verified by field traverse utilizing and referencing the Franklin County Engineering Department monuments FCGS 5623, FCGS 2018, FCGS 2017 and L21. The bearing of South 02° 36' 56" East between monuments FCGS 2018 and FCGS 2017 was utilized as the "basis of bearings" for this survey.

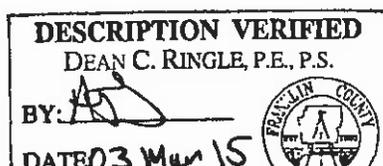
This survey was prepared using documents of record, prior plats of survey and observed evidence located by an actual field survey during the month of February 2015 performed under the direct supervision of Steven E. Bowersox, Ohio Professional Surveyor number 7059.

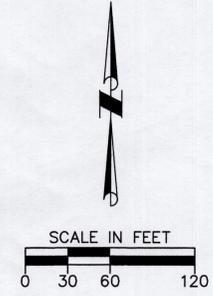
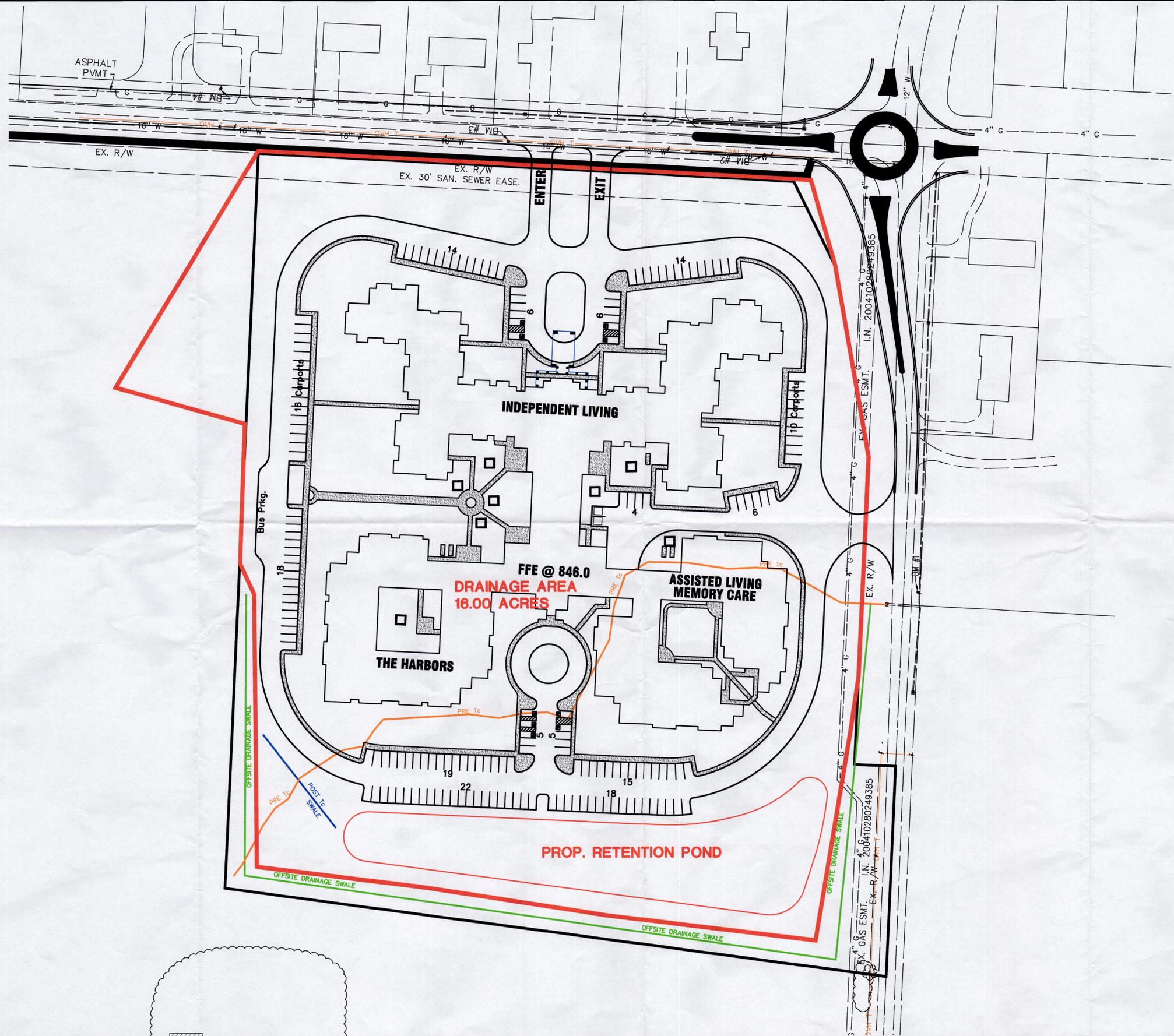


CHOICE ONE ENGINEERING

Steven E. Bowersox 3/2/2015
Steven E. Bowersox Date
Professional Surveyor No. 7059

0-33-2
Split
15.974 acre
outlot
(160)
184





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ONE CHOICE	ENGINEERING
440 E. HOEWISHER ROAD SIDNEY, OHIO 45365 (937) 497-0000 www.choiceengineering.com 203 W. LOVELAND AVENUE LOVELAND, OHIO 45140 (513) 239-8554	
STORY POINT, A SENIOR LIVING FACILITY CITY OF GROVE CITY, OHIO DRAINAGE EXHIBIT	
REVISIONS:	
FILE NAME FRAGC11403_fdp_ut	
DRAWN BY R.J.L.	
CHECKED BY J.S.P.	
PROJECT No. FRAGC11403	
DATE 07-30-2015	
SHEET NUMBER 1 OF 1	

**GROVE CITY SENIOR LIVING FACILITY
CITY OF GROVE CITY, FRANKLIN COUNTY
PRELIMINARY STORM WATER DETENTION CALCULATIONS**

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AUG 03 2015

GC PLANNING COMMISSION

SITE DESCRIPTION:

The existing site is composed of agricultural runoff from field row crops, ~~with some crop residue~~, in good condition. The proposed site will increase the impervious area on the site and require a means of storing the water runoff via a retention basin on site. Water Quality measures will be added to the proposed detention basin and the size of the basin will be sized to control the additional runoff produced by additional impervious area.

HYDROLOGIC METHODOLOGIES:

The hydrologic methodology used for this design was the Soil Conservation Service (SCS) TR-55 Method, which was computed via the Bentley PondPack program.

EXISTING HYDROLOGIC CONDITIONS:

The storm water on the existing site is drained via overland flow and ultimately outlets to an existing storm sewer on the east side of the site, under Haughn Road. This discharge outlet consists of a 24" concrete storm sewer.

DEVELOPED HYDROLOGIC CONDITIONS:

The proposed site will move the rain water across the site through the proposed storm sewer system. Once the storm water has entered the storm sewer it will then be carried to the proposed retention basin. The first ¼" of rain will be detained for the required 24 hours to treat that water for water quality. All release rates will not exceed the pre developed 1 year storm. There is some offsite drainage that was not factored as a part of this design due to the post developed site not including this drainage in the retention pond design. This drainage will drainage through a proposed swale around the site.

STORM WATER MANAGEMENT PLAN:

The proposed site will move the runoff through the site by having the proposed pavement sloped towards proposed catch basins. Once the water enters the catch basins it will then travel through proposed storm sewer to the retention basin.

APPLICABLE PERMITS:

The Ohio Environmental Protection Agency, Notice of Intent, will be required.
A Storm Water Pollution Prevention Plan (SWPPP) will be required.
Applicable City and State Permits.

CALCULATION SHEETS:

Below is a summary of the storm water detention calculations. Please see the attached computer printouts for additional details.

Hydrologic Soil Group C and D was used for these calculations based upon soil in the surrounding area. See attached soil map and classifications.

The proposed retention basin will be design to accommodate the additional water that will need to be retained based upon additional impervious area and water quality volume requirements.

EXISTING PRE-DEVELOPED SITE

- Time of Concentration (Tc)
Pre-developed drainage area = 62 minutes (1.030 hrs) See page 7 of 23 of computer calcs
- CN Number
Pre-developed = 85 – See page 10 of 23 of computer calcs
- Total Acreage = 16.00 acres

PROPOSED RETENTION BASIN

- Time of Concentration (Tc)
Pre-developed drainage area = 62 minutes (1.030 hrs)- See page 7 of 23 of computer calcs
Post-developed drainage area = 26 minutes (0.429 hrs)- See page 5 of 23 of computer calcs
- CN Number
Pre-developed = 85 – see page 10 of 23 of computer calculations
Post-developed = 87.85 – see page 9 of 23 of computer calculations
- Total Acreage = 16.00 acres

Pre-developed Peak Flow		Post-developed Peak Flow	
Storm	Peak Flow	Storm	Peak Flow / Total Area
1 year	7.78 cfs	1 year	15.18 cfs
2 year	9.70 cfs	2 year	18.41 cfs
5 year	14.38 cfs	5 year	26.13 cfs
10 year	17.83 cfs	10 year	31.72 cfs
25 year	21.34 cfs	25 year	37.33 cfs
50 year	24.17 cfs	50 year	41.83 cfs
100 year	26.31 cfs	100 year	45.21 cfs

- Critical Storm via Peak Flows = $(15.18 - 7.78) / 7.78 = 95\% = 10$ year storm
via Hydrograph Volume = $(1.616 - 1.360) / 1.360 = 19\% = 2$ year storm
- The site will be designed using the Peak Flow Critical Storm due to its more conservative nature, so Critical Storm is 10 year.
- Storm Requirements = Control runoff from a 1, 2, 5, and 10 year storms on the post developed site to the runoff from a 1 year storm on the pre developed site. Then control runoff from the 25, 50, and 100 year storms on the post developed site to the runoff from these respective storms for the pre developed site.
- Retention Volume provided to an elevation of 841.00 = 4.048 acre-feet – see page 11 of 23
- Retention Outlet Structure consists of:
A 2-2 catch basin with a 4” dia. Orifice at Inv. 836.50. This orifice will cover the WQ_v requirements. The top of the 2-2B catch basin at a grate elevation of 839.75. The emergency overflow will be a 10 foot wide weir at an elevation of 840.25. This allows water to overflow into it and then discharges through the existing storm sewer trunk line.

Proposed Retention Basin Summary:

STORM	PEAK INFLOW	PEAK OUTFLOW	ALLOWABLE FLOW	STORAGE	PEAK BASIN ELEVATION
1 YEAR	15.18 cfs	0.47 cfs	7.78 cfs	1.180 ac-ft	838.12
2 YEAR	18.41 cfs	0.53 cfs	7.78 cfs	1.458 ac-ft	838.45
5 YEAR	26.13 cfs	0.63 cfs	7.78 cfs	2.151 ac-ft	839.21
10 YEAR	31.72 cfs	0.70 cfs	7.78 cfs	2.677 ac-ft	839.74
25 YEAR	37.74 cfs	2.24 cfs	21.34 cfs	2.800 ac-ft	839.87
50 YEAR	41.83 cfs	3.89 cfs	24.17 cfs	2.928 ac-ft	839.99
100 YEAR	45.21 cfs	5.51 cfs	26.31 cfs	3.049 ac-ft	840.10

NOTE: The post developed release rates from the 1, 2, 5, 10, 25, 50 and 100 year storms are all less than the 1 year pre developed release rate and the post developed release rates.

WATER QUALITY VOLUME CALCULATIONS

Below is a summary of the storm water runoff quality calculations that would be needed to fully contain the water quality runoff for the site.

- OEPA Requirements
- Detention Pond:
 - Release the runoff from a ¼” rain event on the drainage area over 24 hours or longer.
 - The first half of the total volume generated by the runoff from a ¼” rain event must be detained for greater than 8 hours.

Water Quality Calculations

Post-Construction storm water management water quality volume for development of both lots using 0.75 inches of rain:

$$WQ_v = 0.59 * 0.75 * 16.00 / 12 = 0.59 \text{ AC-FT}$$

0.69 AC-FT Provided to elev. 837.50. Therefore $0.69 > 0.59$ and water quality volume is detained.

Retention Basin

Retention Outlet Structure consists of:

- A 4” diameter hole at Inv. 836.50 would be required to hold back the water quality runoff from the site.
- Per the draw down calculation we satisfy the requirement of not releasing more than 50% before 8 hours and not more than 100% by 24 hours. Per the calculations the pond releases about 31% at 8 hours and about 91% at 24 hours. **(See attached WQv Calculations)**

OEPA REQUIREMENTS :

- 1) Release the runoff from a 3/4" rain event on the drainage area over 24 hours or longer
- 2) The first half of the total volume generated by the runoff from a 3/4" rain event must be detained for greater than 8 hours

WQv VOLUME CALCULATIONS USING 0.75" OF RAIN

$WQv = 0.59 \times 16.00 \times 0.75 / 12 = 0.590 \text{ AC-FT} = 25,700 \text{ CF}$

THE RETENTION BASIN HOLDS 26,409 CF AT ELEV. OF 838.15. 26,409 CF > 25,700 CF THEREFORE WQv SATISFIED. THEREFORE MUST RELEASE WQv THRU PROPERLY SIZED ORIFICE UNTIL 838.15 (1.15' HIGH) TO ENSURE WQv IS PROPERLY DETAINED AND RELEASED.

WQv DRAW DOWN CALCULATIONS

INSTALL 4 0" ORIFICE IN FACE OF CATCH BASIN AT INV 837.00 TO RELEASE WQv AT REQUIRED RATE SET TOP OF CATCH BASIN GRATE ELEV. AT OR ABOVE 840.25.

Per the draw down calculation below we satisfy the requirement of not releasing more than 50% before 8 hours and not more than 100% by 24 hours. Per the calculations the 4.0" dia. orifice releases about 33% at 8 hours and about 98% at 24 hours

SITE RETENTION BASIN

Basin Invert.....	837.00 Ft.
Orifice Opening.....	4.00 In.
Orifice Coefficient.....	0.55
Average Head.....	0.575
Average Discharge	0.292 In.
Average Discharge Volume	525.71 cfs

Time (hour)	Time (min)	Starting Volume (CF)	Total Discharged Volume (CF)	Percentage Discharged (%)
0.0	0	25,700.00	0	0.00%
0.5	30		525.71	2.05%
1.0	60		1,051.42	4.09%
1.5	90		1,577.13	6.14%
2.0	120		2,102.84	8.18%
2.5	150		2,628.55	10.23%
3.0	180		3,154.26	12.27%
3.5	210		3,679.97	14.32%
4.0	240		4,205.68	16.36%
4.5	270		4,731.39	18.41%
5.0	300		5,257.10	20.46%
5.5	330		5,782.82	22.50%
6.0	360		6,308.53	24.55%
6.5	390		6,834.24	26.59%
7.0	420		7,359.95	28.64%
7.5	450		7,885.66	30.68%
8.0	480		8,411.37	32.73%
8.5	510		8,937.08	34.77%
9.0	540		9,462.79	36.82%
9.5	570		9,988.50	38.87%
10.0	600		10,514.21	40.91%
10.5	630		11,039.92	42.96%
11.0	660		11,565.63	45.00%
11.5	690		12,091.34	47.05%
12.0	720		12,617.05	49.09%
12.5	750		13,142.76	51.14%
13.0	780		13,668.47	53.18%
13.5	810		14,194.18	55.23%
14.0	840		14,719.89	57.28%
14.5	870		15,245.60	59.32%
15.0	900		15,771.31	61.37%
15.5	930		16,297.02	63.41%
16.0	960		16,822.73	65.46%
16.5	990		17,348.45	67.50%
17.0	1020		17,874.16	69.55%
17.5	1050		18,399.87	71.59%
18.0	1080		18,925.58	73.64%
18.5	1110		19,451.29	75.69%
19.0	1140		19,977.00	77.73%
19.5	1170		20,502.71	79.78%
20.0	1200		21,028.42	81.82%
20.5	1230		21,554.13	83.87%
21.0	1260		22,079.84	85.91%
21.5	1290		22,605.55	87.96%
22.0	1320		23,131.26	90.00%
22.5	1350		23,656.97	92.05%
23.0	1380		24,182.68	94.10%
23.5	1410		24,708.39	96.14%
24.0	1440		25,234.10	98.19%
24.5	1470		25,759.81	100.23%

Hydrologic Soil Group—Franklin County, Ohio



Map Scale: 1:1,870 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 17N WGS84



MAP LEGEND

Area of Interest (AOI)		Area of Interest (AOI)		C
				C/D
Soils				D
				Not rated or not available
Soil Rating Polygons				
		A		Streams and Canals
		AD		
		B		
		B/D		
		C		
		C/D		
		D		
		Not rated or not available		
Soil Rating Lines				
		A		Aerial Photography
		AD		
		B		
		B/D		
		C		
		C/D		
		D		
		Not rated or not available		
Soil Rating Points				
		A		
		AD		
		B		
		B/D		
		C		
		C/D		
		D		
		Not rated or not available		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Franklin County, Ohio
 Survey Area Data: Version 12, Sep 18, 2014

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

Date(s) aerial images were photographed: Feb 27, 2012—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Franklin County, Ohio (OH049)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CrB	Crosby silt loam, Southern Ohio Till Plain, 2 to 6 percent slopes	C/D	6.6	44.3%
Ko	Kokomo silty clay loam, 0 to 2 percent slopes	C/D	7.0	46.9%
LeB	Lewisburg-Crosby complex, 2 to 6 percent slopes	D	1.3	8.8%
Totals for Area of Interest			14.9	100.0%

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

GROVE CITY SENIOR LIVING FACILITY

Project Summary

Title	Grove City Senior Living Facility
Engineer	RJL
Company	COEC
Date	7/29/2015

Notes

GROVE CITY SENIOR LIVING FACILITY

Subsection: Master Network Summary

Catchments Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
Pre Developed Site	FRANKLIN COUNTY - , 1 yrs	1	1.360	12.500	7.78
Pre Developed Site	FRANKLIN COUNTY - , 2 yrs	2	1.675	12.500	9.70
Pre Developed Site	FRANKLIN COUNTY - , 5 yrs	5	2.454	12.500	14.38
Pre Developed Site	FRANKLIN COUNTY - , 10 yrs	10	3.035	12.500	17.83
Pre Developed Site	FRANKLIN COUNTY - , 25 yrs	25	3.631	12.500	21.34
Pre Developed Site	FRANKLIN COUNTY - , 50 yrs	50	4.116	12.500	24.17
Pre Developed Site	FRANKLIN COUNTY - , 100 yrs	100	4.483	12.500	26.31
Post Developed Site	FRANKLIN COUNTY - , 1 yrs	1	1.616	12.100	15.18
Post Developed Site	FRANKLIN COUNTY - , 2 yrs	2	1.957	12.100	18.41
Post Developed Site	FRANKLIN COUNTY - , 5 yrs	5	2.783	12.100	26.13
Post Developed Site	FRANKLIN COUNTY - , 10 yrs	10	3.392	12.100	31.72
Post Developed Site	FRANKLIN COUNTY - , 25 yrs	25	4.011	12.100	37.33
Post Developed Site	FRANKLIN COUNTY - , 50 yrs	50	4.513	12.100	41.83
Post Developed Site	FRANKLIN COUNTY - , 100 yrs	100	4.892	12.100	45.21

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
Pre Developed Outlet	FRANKLIN COUNTY - , 1 yrs	1	1.360	12.500	7.78
Pre Developed Outlet	FRANKLIN COUNTY - , 2 yrs	2	1.675	12.500	9.70
Pre Developed Outlet	FRANKLIN COUNTY - , 5 yrs	5	2.454	12.500	14.38
Pre Developed Outlet	FRANKLIN COUNTY - , 10 yrs	10	3.035	12.500	17.83
Pre Developed Outlet	FRANKLIN COUNTY - , 25 yrs	25	3.631	12.500	21.34
Pre Developed Outlet	FRANKLIN COUNTY - , 50 yrs	50	4.116	12.500	24.17

GROVE CITY SENIOR LIVING FACILITY

Subsection: Master Network Summary

Node Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)
Pre Developed Outlet	FRANKLIN COUNTY - , 100 yrs	100	4.483	12.500	26.31
Post Developed Outlet	FRANKLIN COUNTY - , 1 yrs	1	0.832	19.400	0.47
Post Developed Outlet	FRANKLIN COUNTY - , 2 yrs	2	0.946	19.650	0.53
Post Developed Outlet	FRANKLIN COUNTY - , 5 yrs	5	1.169	20.300	0.63
Post Developed Outlet	FRANKLIN COUNTY - , 10 yrs	10	1.309	21.500	0.70
Post Developed Outlet	FRANKLIN COUNTY - , 25 yrs	25	1.913	14.650	2.24
Post Developed Outlet	FRANKLIN COUNTY - , 50 yrs	50	2.409	13.600	3.89
Post Developed Outlet	FRANKLIN COUNTY - , 100 yrs	100	2.785	13.200	5.51

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Post Developed Pond (IN)	FRANKLIN COUNTY - , 1 yrs	1	1.616	12.100	15.18	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 1 yrs	1	0.832	19.400	0.47	838.12	1.180
Post Developed Pond (IN)	FRANKLIN COUNTY - , 2 yrs	2	1.957	12.100	18.41	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 2 yrs	2	0.946	19.650	0.53	838.45	1.458
Post Developed Pond (IN)	FRANKLIN COUNTY - , 5 yrs	5	2.783	12.100	26.13	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 5 yrs	5	1.169	20.300	0.63	839.21	2.151
Post Developed Pond (IN)	FRANKLIN COUNTY - , 10 yrs	10	3.392	12.100	31.72	(N/A)	(N/A)

GROVE CITY SENIOR LIVING FACILITY

Subsection: Master Network Summary

Pond Summary

Label	Scenario	Return Event (years)	Hydrograph Volume (ac-ft)	Time to Peak (hours)	Peak Flow (ft ³ /s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 10 yrs	10	1.309	21.500	0.70	839.74	2.677
Post Developed Pond (IN)	FRANKLIN COUNTY - , 25 yrs	25	4.011	12.100	37.33	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 25 yrs	25	1.913	14.650	2.24	839.87	2.800
Post Developed Pond (IN)	FRANKLIN COUNTY - , 50 yrs	50	4.513	12.100	41.83	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 50 yrs	50	2.409	13.600	3.89	839.99	2.928
Post Developed Pond (IN)	FRANKLIN COUNTY - , 100 yrs	100	4.892	12.100	45.21	(N/A)	(N/A)
Post Developed Pond (OUT)	FRANKLIN COUNTY - , 100 yrs	100	2.785	13.200	5.51	840.10	3.049

GROVE CITY SENIOR LIVING FACILITY

Subsection: Time of Concentration Calculations
Label: Post Developed Site

Return Event: 100 years
Storm Event: TypeII 24hr (2.3 in)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	130.00 ft
Manning's n	0.240
Slope	0.010 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.08 ft/s
Segment Time of Concentration	0.429 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	0.429 hours

GROVE CITY SENIOR LIVING FACILITY

Subsection: Time of Concentration Calculations
Label: Post Developed Site

Return Event: 100 years
Storm Event: TypeII 24hr (2.3 in)

==== SCS Channel Flow

$$R = Q_a / W_p$$
$$V = (1.49 * (R^{2/3}) * (S_f^{0.5})) / n$$

$$T_c = (L_f / V) / 3600$$

Where:

- R= Hydraulic radius
- A_q= Flow area, square feet
- W_p= Wetted perimeter, feet
- V= Velocity, ft/sec
- S_f= Slope, ft/ft
- n= Manning's n
- T_c= Time of concentration, hours
- L_f= Flow length, feet

GROVE CITY SENIOR LIVING FACILITY

Subsection: Time of Concentration Calculations
Label: Pre Developed Site

Return Event: 100 years
Storm Event: TypeII 24hr (2.3 in)

Time of Concentration Results

Segment #1: TR-55 Sheet Flow	
Hydraulic Length	300.00 ft
Manning's n	0.240
Slope	0.009 ft/ft
2 Year 24 Hour Depth	2.6 in
Average Velocity	0.09 ft/s
Segment Time of Concentration	0.895 hours

Segment #2: TR-55 Shallow Concentrated Flow	
Hydraulic Length	722.00 ft
Is Paved?	False
Slope	0.009 ft/ft
Average Velocity	1.49 ft/s
Segment Time of Concentration	0.135 hours

Time of Concentration (Composite)	
Time of Concentration (Composite)	1.030 hours

GROVE CITY SENIOR LIVING FACILITY

Subsection: Time of Concentration Calculations
Label: Pre Developed Site

Return Event: 100 years
Storm Event: TypeII 24hr (2.3 in)

==== SCS Channel Flow

$$R = Qa / Wp$$
$$V = (1.49 * (R^{2/3}) * (Sf^{0.5})) / n$$

$$Tc = (Lf / V) / 3600$$

Where:

R= Hydraulic radius
Aq= Flow area, square feet
Wp= Wetted perimeter, feet
V= Velocity, ft/sec
Sf= Slope, ft/ft
n= Manning's n
Tc= Time of concentration, hours
Lf= Flow length, feet

==== SCS TR-55 Shallow Concentration Flow

Unpaved surface:

$$V = 16.1345 * (Sf^{0.5})$$

Paved Surface:

$$V = 20.3282 * (Sf^{0.5})$$
$$Tc = (Lf / V) / 3600$$

Where:

V= Velocity, ft/sec
Sf= Slope, ft/ft
Tc= Time of concentration, hours
Lf= Flow length, feet

GROVE CITY SENIOR LIVING FACILITY

Subsection: Runoff CN-Area
 Label: Post Developed Site

Return Event: 100 years
 Storm Event: TypeII 24hr (2.3 in)

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft ²)	C (%)	UC (%)	Adjusted CN
Impervious (Building)	98.000	135,315.000	0.0	0.0	98.000
Impervious (Road/Walks)	98.000	168,568.000	0.0	0.0	98.000
Pervious (Grass Good Condition)	80.000	392,938.000	0.0	0.0	80.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	696,821.000	(N/A)	(N/A)	87.850

GROVE CITY SENIOR LIVING FACILITY

Subsection: Runoff CN-Area
 Label: Pre Developed Site

Return Event: 100 years
 Storm Event: TypeII 24hr (2.3 in)

Runoff Curve Number Data

Soil/Surface Description	CN	Area (ft ²)	C (%)	UC (%)	Adjusted CN
Impervious (Field Row Crops SR + CR Good Condition)	85.000	695,821.000	0.0	0.0	85.000
COMPOSITE AREA & WEIGHTED CN --->	(N/A)	695,821.000	(N/A)	(N/A)	85.000

GROVE CITY SENIOR LIVING FACILITY

Subsection: Elevation-Area Volume Curve

Return Event: 100 years

Label: Post Developed Pond

Storm Event: TypeII 24hr (2.3 in)

Elevation (ft)	Planimeter (ft ²)	Area (ft ²)	A1+A2+sqr(A1*A 2) (ft ²)	Volume (ac-ft)	Volume (Total) (ac-ft)
836.50	0.0	27,768.000	0.000	0.000	0.000
837.00	0.0	30,244.000	86,991.569	0.333	0.333
837.50	0.0	32,746.000	94,460.145	0.361	0.694
838.00	0.0	35,272.000	102,003.540	0.390	1.085
838.50	0.0	37,824.000	109,621.719	0.419	1.504
839.00	0.0	40,400.000	117,314.787	0.449	1.953
839.50	0.0	43,002.000	125,082.701	0.479	2.431
840.00	0.0	45,629.000	132,927.030	0.509	2.940
840.50	0.0	48,282.000	140,847.759	0.539	3.479
841.00	0.0	50,959.000	148,843.444	0.569	4.048

GROVE CITY SENIOR LIVING FACILITY

Subsection: Outlet Input Data

Return Event: 100 years

Label: Retention Pond Outlet Structure

Storm Event: TypeII 24hr (2.3 in)

Requested Pond Water Surface Elevations	
Minimum (Headwater)	836.50 ft
Increment (Headwater)	0.50 ft
Maximum (Headwater)	841.00 ft

Outlet Connectivity

Structure Type	Outlet ID	Direction	Outfall	E1 (ft)	E2 (ft)
Inlet Box	2-2B CB	Forward	18" Culvert	839.75	841.00
Orifice-Circular	WQV Orifice	Forward	18" Culvert	836.50	841.00
Culvert-Circular	18" Culvert	Forward	TW	836.50	841.00
Rectangular Weir	Emergency Overflow Weir	Forward	TW	840.25	841.00
Tallwater Settings	Tallwater			(N/A)	(N/A)

GROVE CITY SENIOR LIVING FACILITY

Subsection: Outlet Input Data

Return Event: 100 years

Label: Retention Pond Outlet Structure

Storm Event: TypeII 24hr (2.3 in)

Structure ID: WQV Orifice	
Structure Type: Orifice-Circular	
<hr/>	
Number of Openings	1
Elevation	836.50 ft
Orifice Diameter	4.0 In
Orifice Coefficient	0.600
<hr/>	
Structure ID: 2-2B CB	
Structure Type: Inlet Box	
<hr/>	
Number of Openings	1
Elevation	839.75 ft
Orifice Area	2.1 ft ²
Orifice Coefficient	0.600
Weir Length	9.10 ft
Weir Coefficient	3.00 (ft ^{0.5})/s
K Reverse	1.000
Manning's n	0.000
Kev, Charged Riser	0.000
Weir Submergence	False
Orifice H to crest	False

GROVE CITY SENIOR LIVING FACILITY

Subsection: Outlet Input Data

Return Event: 100 years

Label: Retention Pond Outlet Structure

Storm Event: TypeII 24hr (2.3 in)

Structure ID: 18" Culvert	
Structure Type: Culvert-Circular	
Number of Barrels	1
Diameter	18.0 in
Length	300.00 ft
Length (Computed Barrel)	300.00 ft
Slope (Computed)	0.002 ft/ft
Outlet Control Data	
Manning's n	0.013
Ke	0.200
Kb	0.018
Kr	0.000
Convergence Tolerance	0.00 ft
Inlet Control Data	
Equation Form	Form 1
K	0.0045
M	2.0000
C	0.0317
Y	0.6900
T1 ratio (HW/D)	1.094
T2 ratio (HW/D)	1.196
Slope Correction Factor	-0.500

Use unsubmerged inlet control 0 equation below T1 elevation.

Use submerged inlet control 0 equation above T2 elevation

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

T1 Elevation	838.14 ft	T1 Flow	7.58 ft ³ /s
T2 Elevation	838.29 ft	T2 Flow	8.66 ft ³ /s

GROVE CITY SENIOR LIVING FACILITY

Subsection: Outlet Input Data

Return Event: 100 years

Label: Retention Pond Outlet Structure

Storm Event: TypeII 24hr (2.3 in)

Structure ID: Emergency Overflow Weir	
Structure Type: Rectangular Weir	
Number of Openings	1
Elevation	840.25 ft
Weir Length	10.00 ft
Weir Coefficient	3.00 (ft ^{0.5})/s
Structure ID: TW	
Structure Type: TW Setup, DS Channel	
Tailwater Type	Free Outfall
Convergence Tolerances	
Maximum Iterations	30
Tailwater Tolerance (Minimum)	0.01 ft
Tailwater Tolerance (Maximum)	0.50 ft
Headwater Tolerance (Minimum)	0.01 ft
Headwater Tolerance (Maximum)	0.50 ft
Flow Tolerance (Minimum)	0.001 ft ³ /s
Flow Tolerance (Maximum)	10.000 ft ³ /s

GROVE CITY SENIOR LIVING FACILITY

Subsection: Composite Rating Curve
 Label: Retention Pond Outlet Structure

Return Event: 100 years
 Storm Event: TypeII 24hr (2.3 in)

Composite Outflow Summary

Water Surface Elevation (ft)	Flow (ft ³ /s)	Tailwater Elevation (ft)	Convergence Error (ft)
836.50	0.00	(N/A)	0.00
837.00	0.21	(N/A)	0.00
837.50	0.35	(N/A)	0.00
838.00	0.45	(N/A)	0.00
838.50	0.54	(N/A)	0.00
839.00	0.60	(N/A)	0.00
839.50	0.68	(N/A)	0.00
839.75	0.70	(N/A)	0.00
840.00	4.04	(N/A)	0.00
840.25	7.58	(N/A)	0.00
840.50	12.78	(N/A)	0.00
841.00	29.93	(N/A)	0.00

Contributing Structures

(no Q: 2-2B CB,WQV Orifice,18"
 Culvert,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 WQV Orifice,18" Culvert (no Q: 2-2B
 CB,Emergency Overflow Weir)
 2-2B CB,WQV Orifice,18" Culvert (no
 Q: Emergency Overflow Weir)
 2-2B CB,WQV Orifice,18" Culvert (no
 Q: Emergency Overflow Weir)
 2-2B CB,WQV Orifice,18"
 Culvert,Emergency Overflow Weir
 2-2B CB,18" Culvert,Emergency
 Overflow Weir (no Q: WQV Orifice)

GROVE CITY SENIOR LIVING FACILITY

Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 1 years
 Storm Event: TypeII 24hr (2.3 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	15.18 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	0.47 ft ³ /s	Time to Peak (Flow, Outlet)	19.400 hours
Peak Conditions			
Elevation (Water Surface, Peak)	838.12 ft		
Volume (Peak)	1.180 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	1.616 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.832 ac-ft		
Volume (Retained)	0.780 ac-ft		
Volume (Unrouted)	-0.004 ac-ft		
Error (Mass Balance)	0.3 %		

GROVE CITY SENIOR LIVING FACILITY

Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 2 years
 Storm Event: TypeII 24hr (2.6 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	18.41 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	0.53 ft ³ /s	Time to Peak (Flow, Outlet)	19.650 hours
Peak Conditions			
Elevation (Water Surface, Peak)	838.45 ft		
Volume (Peak)	1.458 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	1.957 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	0.946 ac-ft		
Volume (Retained)	1.007 ac-ft		
Volume (Unrouted)	-0.004 ac-ft		
Error (Mass Balance)	0.2 %		

GROVE CITY SENIOR LIVING FACILITY

Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 5 years
 Storm Event: TypeII 24hr (3.3 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	26.13 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	0.63 ft ³ /s	Time to Peak (Flow, Outlet)	20.300 hours
Elevation (Water Surface, Peak)	839.21 ft		
Volume (Peak)	2.151 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	2.783 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	1.169 ac-ft		
Volume (Retained)	1.609 ac-ft		
Volume (Unrouted)	-0.005 ac-ft		
Error (Mass Balance)	0.2 %		

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Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 10 years
 Storm Event: TypeII 24hr (3.8 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	31.72 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	0.70 ft ³ /s	Time to Peak (Flow, Outlet)	21.500 hours
Peak Conditions			
Elevation (Water Surface, Peak)	839.74 ft		
Volume (Peak)	2.677 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	3.392 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	1.309 ac-ft		
Volume (Retained)	2.077 ac-ft		
Volume (Unrouted)	-0.005 ac-ft		
Error (Mass Balance)	0.2 %		

GROVE CITY SENIOR LIVING FACILITY

Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 25 years
 Storm Event: TypeII 24hr (4.3 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	37.33 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	2.24 ft ³ /s	Time to Peak (Flow, Outlet)	14.650 hours
Elevation (Water Surface, Peak)	839.87 ft		
Volume (Peak)	2.800 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	4.011 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	1.913 ac-ft		
Volume (Retained)	2.093 ac-ft		
Volume (Unrouted)	-0.006 ac-ft		
Error (Mass Balance)	0.1 %		

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Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 50 years
 Storm Event: TypeII 24hr (4.7 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	41.83 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	3.89 ft ³ /s	Time to Peak (Flow, Outlet)	13.600 hours
Peak Conditions			
Elevation (Water Surface, Peak)	839.99 ft		
Volume (Peak)	2.928 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	4.513 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	2.409 ac-ft		
Volume (Retained)	2.098 ac-ft		
Volume (Unrouted)	-0.006 ac-ft		
Error (Mass Balance)	0.1 %		

GROVE CITY SENIOR LIVING FACILITY

Subsection: Level Pool Pond Routing Summary
 Label: Post Developed Pond (IN)

Return Event: 100 years
 Storm Event: TypeII 24hr (5.0 in)

Infiltration			
Infiltration Method (Computed)	No Infiltration		
Initial Conditions			
Elevation (Water Surface, Initial)	836.50 ft		
Volume (Initial)	0.000 ac-ft		
Flow (Initial Outlet)	0.00 ft ³ /s		
Flow (Initial Infiltration)	0.00 ft ³ /s		
Flow (Initial, Total)	0.00 ft ³ /s		
Time Increment	0.050 hours		
Inflow/Outflow Hydrograph Summary			
Flow (Peak In)	45.21 ft ³ /s	Time to Peak (Flow, In)	12.100 hours
Flow (Peak Outlet)	5.51 ft ³ /s	Time to Peak (Flow, Outlet)	13.200 hours
Peak Conditions			
Elevation (Water Surface, Peak)	840.10 ft		
Volume (Peak)	3.049 ac-ft		
Mass Balance (ac-ft)			
Volume (Initial)	0.000 ac-ft		
Volume (Total Inflow)	4.892 ac-ft		
Volume (Total Infiltration)	0.000 ac-ft		
Volume (Total Outlet Outflow)	2.785 ac-ft		
Volume (Retained)	2.101 ac-ft		
Volume (Unrouted)	-0.006 ac-ft		
Error (Mass Balance)	0.1 %		