



SITE DATA

Total Site Area: +/- 39.0 ac
Public ROW: +/- 1.13 ac
Net Site Area: +/- 37.87 ac

Subareas A,B,C,D-1,D-2: +/- 33.02 ac
Multifamily Residential

• **Building A:** 4 BLDG.
Large Senior 1 and 2 Bedroom Suites
with Elevators, and Individual Garages: 120 Units
Parking Provided: 278 spaces (2.3 sp/du)

• **Building B:** 15 BLDG.
2 and 3 Bedroom Ranch Homes
with 2-Car Garages: 60 Units
Parking Provided: 248 spaces (4 sp/du)

• **Building C:** 16 BLDG.
2 and 3 Bedroom 2 Story
Townhomes with 1 Car Garages: 128 Units
Parking Provided: 327 spaces (2.5 sp/du)

Total Units: 308 Units
Density (Net Site Area): +/- 8.1 du/ac

Parking Required (3 spaces/1 unit): 924 spaces
Parking Provided: +/- 936 spaces

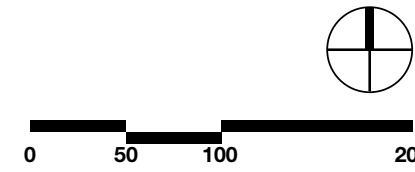
**Parking provided includes garage spaces, driveway stacking spaces, and surface parking spaces.*

Open Space
Open Space Required: +/- 7.56 ac (20%)
Open Space Provided: +/- 10.89 ac (29%)

Subareas E-1&E-2
Commerical
Outparcels (2 Lots): +/- 4.86 ac

- Pursuant to the requirements of City of Powell Zoning Code section 1145.29, (c) and (d), existing trees within the development footprint will be surveyed and trees that are unable to be preserved will be replaced per code.
- This property has been used for agriculture historically, therefore no natural watercourses traverse the site within the property boundaries. The headwater for Bartholomew Run is located at the southeast corner of the project and will be the discharge point for the site. A storm water basin will be located near this location to provide erosion and sediment control during construction and storm water quantity and quality control post a construction. The two man-made watercourses crossing the site will be filled and piped as part of the development process.

★ Desired Sign Locations



ILLUSTRATIVE PLAN

POWELL GRAND
RESORT LIVING

“ACTIVE ADULT CLASS-A GATED COMMUNITY”

MARGELLO
DEVELOPMENT CO.

SCHOTTENSTEIN
REAL ESTATE GROUP

Advancing Communities™

Powell Grand

Final Development Plan Application

09/02/2015

City of Powell, Ohio

Prepared For:

SCHOTTENSTEIN
REAL ESTATE GROUP

MARGELLO
DEVELOPMENT CO.

Prepared By:



THE POWELL GRAND: RESORT LIVING IN AN ACTIVE ADULT, CLASS "A" GATED COMMUNITY

Final Development Plan
September 2, 2015

Margello Development Co.
117 Lazelle Road
Columbus, Ohio 43235
614-848-4004
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Schottenstein Real Estate Group
2 Easton Oval, Ste. 510
Columbus, Ohio 432119
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APPLICATION FOR PLANNED COMMERCIAL DISTRICT

DEVELOPMENT TEXT

(1) Name, address and phone number of applicant.

Margello Development Co.
Group
117 Lazelle Road
Columbus, Ohio 43235
614-848-4004
margellodevelopment@gmail.com

Schottenstein Real Estate

2 Easton Oval, Ste. 510
Columbus, Ohio 432119
614-418-8900
bs@sregroup.com

(2) Name, address, and phone number of registered surveyor, registered engineer and/or urban planner assisting in the preparation of the final development plan.

Architect: Sullivan and Bruck

Planning Professionals:

James M. Houk, ASLA, AICP
VICE PRESIDENT, PLANNING, DESIGN, DEVELOPMENT
MANAGING DIRECTOR, OHIO

Rick Fay | RLA, LEED AP
LANDSCAPE ARCHITECT

OHM Advisors | ARCHITECTS. ENGINEERS. PLANNERS.
580 N. Fourth Street, #630
Columbus, Ohio 43215

614.418.0600
Jim.Houk@ohm-advisors.com
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Civil Engineers:

Craig Bohning, EMH&T
Patricia Brown, EMH&T

Engineers, Surveyors, Planners, Scientists

5500 New Albany Road, Columbus, OH 43054

v. 614.775.4396 | f. 614.775.4804 | pbrown@emht.com; cbohning@emht.com

- (3) **A list containing the names and mailing addresses of all owners of property contiguous to, directly across the street from and within 250 feet of the property in question.**

See Exhibit A for adjacent property owners.

- (4) **Legal description of the property.**

See Exhibit B for legal description.

- (5) **A description of present use(s) on and off the land.**

The property is currently vacant and undeveloped with some agricultural use. The property is zoned in Liberty Township as Planned Commercial and Planned Industrial. These districts were established with a development plan named Seldom Seen Acres. The original development scheme included a mix of retail and commercial uses (including the possibility of a big box retailer) and Planned Industrial District uses, such as a self-storage facility. There is an existing lattice tower type of cellular tower at the southwest corner of the site.

- (6) **Draft of a proposed Ordinance, prepared with the advice and counsel of the Director Law, establishing this specific Development Plan as an additional effective zoning control over the land in question, consistent with the continuing authorities of the current Planned District zoning in these areas provided for elsewhere in this Zoning Ordinance.**

Will be submitted by City of Powell.

- (7) **A vicinity map at a scale approved by the Zoning Inspector showing all property lines, existing streets and alleys, approved future streets and land uses on adjacent Planned District areas, transportation and land use elements of the Municipality's adopted Comprehensive Plan, current zoning classifications and boundaries, and current land uses on the site of the proposed Planned District development and in the surrounding areas to the physical extent deemed necessary by the Zoning Inspector, but no less than 250 feet beyond the limits of the proposed Planned District Development Plan.**

See Exhibit C for Vicinity Map.

- (8) **A final development plan at a scale approved by the Zoning Administrator illustrating:**

See Exhibit E for Final Development Plan.

A. The property line definition and dimensions of the perimeter of the site;

See Exhibit B for Boundary Survey.

B. Right-of-ways and paving widths of all existing, currently platted, and previously approved Planned District streets and alleys adjacent to, on, or abutting the site;

See Exhibit B for Boundary Survey, Exhibit D for Existing Conditions, and Exhibit E for Final Development Plan.

C. The area of the site and its subareas in acres;

The site is 39.0+/- acres, including 1.12 +/- acres for right-of-way dedication, yielding a net site area to be developed of 37.87+/- acres. There are seven subareas, including:

- Subarea A – Four, 30 Unit, Three-Story Buildings, 5.43 acres. (120 units and 278 parking spaces)
- Subarea B – Fifteen, 4 Unit Ranch Buildings, 10.40 +/- acres. (60 units and 248 parking spaces)
- Subarea C – Sixteen, 8 Unit, Two-Story Townhome Buildings, 13.97 +/- acres. (128 units and 327 parking spaces)
- Subarea D-1 – 1.15 acres open space..
- Subarea D-2 - 2.07 acres including Mail/Utility facilities, Clubhouse and Featured Amenities serving the residential subareas.
- Subarea E-1, 2.25 +/- acres commercial area.
- Subarea E-2, 2.61 +/- acres commercial area.

D. The topography of the site and abutting areas at no more than five (5) foot contour intervals;

See Exhibit D for Existing Conditions, and Exhibit F for Grading Plan.

E. Existing surface drainage ways and surface sheet flow patterns;

See Exhibit D for Existing Conditions, Exhibit F for Grading Plan, and Exhibit H for Utility Feasibility.

F. Flood plain areas, ravine-bottom areas, and areas of ground slope in excess of six (6) percent;

None on site.

G. Existing vegetation on the site with the specific tree spots for all trees six (6) inches in diameter or greater, measured twenty-four (24) inches from the ground;

See Exhibits G and J for landscaping and tree preservation plans.

H. Existing easements on the site with notations as to their type, extent, and nature;

See Exhibit B for Survey, Exhibit D for Existing Conditions, Exhibit E for Final Development Plan, and Exhibit H for Utility Feasibility.

I. The location and dimensions of existing utilities on and adjacent to the site, including the nearest sanitary sewer, with manhole invert elevations;

See Exhibit H for Utility Feasibility.

J. Calculation of the maximum residential units permitted on the site under the terms of the Zoning Ordinance, including delineation of the sub districts of the site upon which these calculations have been made;

Subarea dwelling unit counts are delineated as follows:

- Subarea A – Four, 30 Unit, Three-Story Buildings, 5.43 acres. (120 units)
- Subarea B – Fifteen, 4 Unit Ranch Buildings, 10.40 +/- acres. (60 units)
- Subarea C – Sixteen, 8 Unit, Two-Story Townhome Buildings, 13.97 +/- acres. (128 units)
- Subarea D-1 – 1.15 acres open space, zero dwelling units.
- Subarea D-2 - 2.07 acres including Clubhouse and Featured Amenities serving the residential subareas, zero dwelling units.
- Subarea E-1, 2.25 +/- acres commercial area.
- Subarea E-2, 2.61 +/- acres commercial area.

The overall net site density is 8.1 du/ac.

Under 1143.09 (c)(5) B – The maximum number of multi-family dwelling units on any single acre shall not exceed twelve (12) units to the acre. This provision is requested for divergence for residential subarea A, in which in some cases this maximum is exceeded.

Under 1143.09 (c)(10) A – As new residential units are planned as part of a PC district, the residential subareas in this PC district shall be designated Planned Residential and shall meet all requirements for density and physical arrangements for multi-family except where divergences are requested.

Section 1143.09 (c) (4) A

- Open space required - 20% or 7.57 +/- acres.
- Open space provided - 29% or 10.89 +/- acres.
- Open space shall be protected by deed restriction, and shall be owned and maintained by the developer. See exhibits E and M.

Section 1143.09 (c) (4) B

- A divergence is requested to reduce the required 5 acres open space for active recreation. This open space is typical for larger single-family developments and usually includes flat grassed common area for intense physical uses. This site plan offers 1.15 acres to be provided in Subarea D-1, and to permit the uses of Subareas D-1 and D-2 to serve as the recreational elements more suited for the target market residents than indicated in the code.
 - The targeted empty nester audience of this site does not require the intensive active recreational space specified in the code section.
 - The site provides overall open space above the required minimum 20%.
 - Subareas D-1 and D-2 offer recreational uses in the form of a dog park, common lawn open spaces for passive recreation, pool and patios, putting green, and community garden. Additionally, Subarea C includes a gazebo that overlooks the pond, offering passive recreation opportunities.

- This site is located across Seldom Seen Road and the future city park.

Section 1143.09 (c) (4) D

- This property has been used for agriculture historically, therefore, no natural watercourses traverse the site within the property boundaries. The headwater for Bartholomew Run is located at the southeast corner of the project and will be the discharge point for the site. A storm water basin will be located near this location to provide erosion and sediment control during construction and storm water quantity and quality control post-construction. The two man-made watercourses crossing the site will be filled and piped as part of the development process.
- Slopes of 6% or more are associated with the watercourses reference above, drainage ditches, or by stockpiles related to prior construction activities on the site, and the existing screen mound along the south property line.

Section 1143.13

Total building footprint coverage is 22.3% of developable area (building footprints only) which requires a divergence above the 20% code maximum. Such a divergence is requested.

Total impervious surface coverage is 43% of the site. (Code is 70% total lot coverage of all impervious surfaces.)

A divergence is requested for the NOTE provision of the 1143.13 providing no more than 4 dwelling units attached side-by-side for subarea A and C, and a total of no more than 8 units in any one structure for subarea A.

K. A final plan for the first, or next, phase of site development illustrating;

1. New street centerlines, right-of-ways, and street classification types;

See Exhibit E for Final Development Plan.

2. Names of existing and proposed streets;

See Exhibit D for Existing Conditions. All streets and access drives utilized shall be private.

3. **Generalized lot and block layouts, indicating and illustrating property lines, minimum lot areas, minimum building setbacks and yards, location and extent of major off-street parking areas, etc.;**

See Exhibit E for Final Development Plan.

4. **Subareas of the site to be developed, by land use type, housing types, and housing densities, including subarea statistics;**

- Subarea A
 - 5.43 acres
 - Four, 30 Unit, Three-Story Buildings; 120 units
 - Net density: 22.10 du/ac.
- Subarea B ,
 - 10.40 acres.
 - Fifteen, 4 Unit Ranch Buildings; 60 units
 - Net density: 5.77 du/ ac
- Subarea C
 - 13.97 acres.
 - Sixteen, 8 Unit, Two-Story Townhome Buildings; 128 units
 - Net density: 9.16 du/ac.
- Subarea D-1
 - 1.15 acres
 - 0 units
 - Net density: 0.0 du/ac
- Subarea D-2
 - 2.07 acres
 - 0 units
 - Net density: 0 du/ac
- Subarea E-1
 - 2.25 acres
 - 0 units
 - Net density: 0 du/ac
- Subarea E-2
 - 2.61 acres
 - 0 units
 - Net density: 0 du/ac

5. **All proposed structures shall be located showing square footage, tenant or user types, and expected entranceways and service or loading areas;**

See Exhibit E for Final Development Plan and Exhibit I for Architectural details.

6. **Common open areas, public lands, and natural scenic easements, including the area of each;**

See Exhibit E for Final Development Plan, and Exhibits G for Landscape Plans and Site Features, and M for Proposed easements, deed restrictions, and protective covenants.

7. **Proposed landscape treatment of the site;**

See Landscape Plan attached as Exhibit G.

8. **Proposed utility patterns and provisions including sanitary sewer, individual waste disposal systems, storm sewer, trash collection systems, outdoor lighting, and water supply, including relevant easements and engineering feasibility studies or other evidences of reasonableness;**

See Utility Service Letters and Utility Plan attached as Exhibit H. In addition, the applicant shall work with the City Engineering Department on site details and as part of final engineering plan review.

9. **Provisions for accommodating surface drainage runoff;**

See Exhibits E and Exhibit F for approximate location of storm water detention basins, and Exhibit M, draft easement agreements.

10. **Proposed architectural design criteria;**

See Exhibit I for architectural elevations. In addition to materials specified in said elevations or other drawings as approved by the City, high quality vinyl for siding and detailing shall be an approved material for the buildings in this planned district due to maintenance and durability benefits.

11. **Proposed pedestrian/jogging/bicycle pathways and equestrian paths, including locations, dimensions, landscape and construction, including relationships of such pathways to**

existing and proposed future pathways on surrounding property;

See exhibits E, G, and H for such pathways and easement areas to the future City Park. These proposals are subject to and shall be approved by the City Engineer as part of final engineering plan review.

12. Overall site development statistics comparing this plan for development with requirements of this Zoning Ordinance and with the comprehensive plan and indicating that all requirements of this Zoning Ordinance and the comprehensive plan have been met in this preliminary plan and will be met in final development.

The plan incorporates the direction given to the applicant by the planning and zoning director, as well as comments and suggestions by the Planning and Zoning Commission.

The upscale active adult, senior and empty nester housing proposed for the site is consistent with many comments expressed during the ongoing Community Plan update, based on the recognition that Powell has many upscale single-family homes but few upscale dwellings meeting the changing needs of active adults, empty nesters, and seniors. The size and scale of the building and the different housing options match the development intensity of the Sawmill Parkway corridor and the changing expectations and needs of the community. This site is no longer appropriate for single-family development based on neighboring development. Lower intensity of use in terms of people per units, very limited school use, less traffic impact, low utility use and the opportunity for housing that allows seniors and empty nesters to remain in the community are all positives of this plan. The upscale nature of the architecture and luxury of the amenities matches the quality of the Powell environment.

The Powell Zoning Code allows for multi-family residential, elderly households, senior housing facilities and congregate housing within the PC – Planned Commercial District. The maximum number of dwelling units in any Planned District development plan cannot exceed twelve (12) units per any one acre and no more than 4 dwelling units can be attached side-by-side, with no more than 8 per structure. Divergences are requested for both these provisions. The Planned Residential District allows for up to 9 du/acre and the proposed development has a net density of 8.1 du/acre.

Consideration is requested for such density at this location based on the less intense use of the land, traffic, schools, utilities, etc. from active adults, empty nesters and seniors, as well as the fact that some units are likely to be unoccupied in winter months due to travel and second dwelling arrangements for several residents.

Yard Setbacks

- Building and Parking setback from the railroad right-of-way shall be 40 feet.
- Building and parking setback from the south property line shall be 40 feet.
- Building setback from the west property line shared with the commercial outparcel shall be 25 feet.
- Parking setback from the west property line shared with the commercial outparcel shall be 15 feet.
- Minimum distance between buildings shall be 30 feet.

Building Setbacks

- Front building setback from any right-of-way shall be 60 feet.
- Front parking setback from any right-of-way shall be 15 feet.

Parking and Circulation

- Subarea A shall provide parking at a minimum of 2.32 spaces per dwelling unit.
- Subarea B shall provide parking at a minimum of 3 spaces per dwelling unit.
- Subarea C shall provide parking at a minimum of 2.5 spaces per dwelling unit.
- Parking spaces shall be a minimum 9 feet x 19 feet.
- Parking may be provided in the form of garage spaces, tandem spaces in garage driveways, surface parking spaces.
- A +/- 1.13 acre portion of the site shall be publicly dedicated 60' wide right-of-way to extend Bunker Lane to connect to Sawmill Parkway. The road and utilities shall be dedicated to the city for ownership and maintenance.
- Private streets and drive aisles shall be a minimum of 22 feet wide.
- An 8 feet wide asphalt bike path shall be provided as shown on the Final Development plan. The bike path shall be built within the Sawmill Parkway, Bunker Lane, and Seldom Seen rights-of-way. The path will be built by the developer, and owned and maintained by the city.

- Off-site roadway improvements are to be determined based on the outcome of final engineering and in coordination with the City and County Engineering staff.
- A pedestrian connection will link this site and the City park on the north side of Seldom Seen Road to be coordinated with the City.

Lot Coverage – Building

- Maximum lot coverage by buildings for combined subareas A, B, C, D-1, and D-2 shall be 22.3%. This requires a 2.3% divergence from code required maximum of 20% lot coverage.
- See Exhibit E Final Development Plan.

Lot Coverage – Total

The code allows 70% total lot coverage (all impervious surfaces). The development plan depicts 43% total lot coverage of building, sidewalks and vehicle use area with the residential subareas.

Landscaping

- See Exhibit G for Landscape Plan.
- Landscaping shall be provided per code requirements.
- Along the east property line adjacent to the rail road, a 3-6 feet tall mound with buffer planting shall be provided.
- Subarea E, excluding the proposed dedicated right-of-way, shall provide a screen as specified by city code along any boundary shared with Subarea B and C.
- Along the south property line, an existing +/- 6 feet tall mound with evergreen trees spaced at +/- 10feet to 15 feet on center shall be preserved. Existing evergreen trees installed as part of that buffer that are dead or dying shall be replaced. The evergreen tree planting shall be extended along the portion of the south property line adjacent to existing buildings, as shown on the landscape plan, except where restricted by utility installations. Existing trees south of the mound shall remain.
- Within Subarea A, along Bunker Lane, and within the parking setback, a landscape buffer shall be provided for the purpose of buffering views of Building A garage doors from east bound Seldom Seen Road and shall consist of mounding and mixed plantings of shrubs and ornamental grasses.

Fencing and Wall Enclosures

- At the site entrances to Subareas A, B, and D-2, decorative entry columns/walls/fences and/or gates shall be permitted, but not required, and shall be permitted a 0' setback from the Bunker Lane right-of-way.
 - Such features shall include ornamental landscaping in the effect of an entry feature.
 - Gates may be operable or not operable.
 - Access through operable gates shall meet the approval of the fire department.
 - Columns, walls, and/ or fences included in the design shall not exceed six feet in height.
 - Vehicle sight distance shall meet the approval of the city staff
 - Designs are included in Exhibit G with Final Development Plan.

Signage

- Subarea A shall be permitted one monument sign at the corner of Seldom Seen Road and Bunker Lane. Signage shall be permitted to meet code requirements for “non-residential” signage.
- Subarea E-1:
 - Signage shall be per non-residential code requirements.
 - A monument sign shall be permitted along Sawmill Drive frontage and a joint identification sign, with agreement of the property owners, to be shared by the tenant/ owner of Subarea E-1 and the tenant/ owner of the multifamily subareas.
- Subarea E-2:
 - Signage shall be per code requirements.
 - A monument sign shall be permitted along Sawmill Parkway frontage and to be a joint identification sign, with agreement of the property owners, to be shared by the tenant/ owner of Subarea E-2 and the tenant/ owner of the multifamily subareas.

This section shall not exclude from any subarea additional signage as normally permitted by city code.

Lighting

- Subareas A, B, C, and D-2 shall provide site lighting within vehicular use areas and common pedestrian spaces.

- Lighting for subareas E-1 and E-2 shall meet code and shall be approved as part of the plans for those subareas.
- Light fixtures shall not exceed 14 feet in height.
- Light fixtures shall be cut-off style.
- See exhibit K for lighting information.

Building Height

The roofs of the four 30 unit, three story buildings are an average height of 40 feet, 5 inches. This is approximately 5 feet, 5 inches greater than the code standard of 35 feet in height for residential districts and typical housing. Roof peak heights for the 30 unit buildings range up to 50 feet, 4 inches in some instances to allow for architectural elements. Such roof peaks, variations in roof heights and other architectural features including dormers, provide an attractive residential style building that refines and softens the viewshed from the west, which is currently dominated by the existing fitness building and its significant height and commercial/industrial design. The average and peak building heights are further moderated by the building height at the roof truss bearing height,(gutter height), which is 30 feet, 6 inches, which is significantly lower than many homes and other three story buildings. . See elevations Exhibit I A4.01 and A4.02.

Minimum Unit Area

- One bedroom: 760 sq.ft.
- Two bedrooms: Four different two bedroom designs, ranging from 1,100 sq. ft. to 1,350 sq.ft.
- Three bedrooms: Several designs ranging from 1,585 sq. ft. to 1,950 sq.ft.

L. Projected development schedule by subareas of the entire planned development site, and for the first, or next phase of development, including land uses, public areas, natural and scenic reserves, streets, building, utilities, and other facilities, indicating the relationship of the proposed development to existing and probably uses of surrounding areas during the development timetable.

The multifamily site will not be phased and construction completion will be anywhere from 18-24 months.

The commercial subareas E-1 and E-2 shall be permitted to be constructed as independent phases and based on separate approved plans.

M. An overall traffic scheme, illustrating points of access, parking areas, including the number of parking spaces and indicating visitor, employee and service traffic flow, illustrating calculated peak hour traffic use for residents and employees as well as deliveries and other transport and the effect of this traffic on the community traffic ways.

- See Exhibit E for traffic circulation and parking for this site.
- Subarea A shall be permitted minimum parking of 2.32 spaces per unit.
- Subarea B shall be permitted minimum parking of 3 spaces per unit.
- Subarea C shall be permitted minimum parking of 2.5 spaces per unit.
- Subarea D-2 shall be permitted to provide parking as shown on the site plan.
- Parking for subareas A, B, C, D-1, and D-2 shall be permitted to be located within any multifamily subarea.
- Parking is required at 3 spaces for each unit or 924 spaces and approximately 936 spaces are provided.
- Parking for subareas E-1 and E-2 shall be per code and approvable under separate plans.

N. If to be developed in phases, the entire site development shall be described in outline and diagrammatic plan form, and in a complementing detailed text in a manner calculated to assure City officials that Planned Development requirements and other requirements of this Zoning Ordinance shall be met in the detailed development of the phases to follow, and that the entire Planned Development area will meet all of the requirements of this Zoning Ordinance, such diagrams and descriptive texts being accepted with, and becoming a part of the extended zoning plan for the entire site.

Subareas shall be developed as described within this text and accompanying final development plans. Any item not specified within these documents shall be governed by City of Powell Code of Ordinances.

- (9) **Evidences of the ability of the applicant to carry forth its plan by control of the land and the engineering feasibility of the plan, and that the applicant**

has sufficient control over the land and financing to initiate the proposed development plan phase within two (2) years.

The Applicants are in contract to purchase the property. The Applicant builder, Schottenstein Real Estate Group (SREG), is a builder, developer and operator of active adult, empty nester and senior housing in several states, including Florida, Kentucky and Ohio. SREG has three plus decades of experience in the residential housing market and development, and is a successful multi-state developer of similar luxury rental and fee simple projects. The Applicant commercial developer, Margello Development Company has significant development and successful project experience in the Powell community, including retail, office and senior villages.

- (10) **Evidence of the applicant's ability to post a bond if the plan is approved assuring completion of public service facilities to be constructed within the project area by the developer.**

The Applicants shall provide evidence that they have the ability to post a bond for the City of Powell Council prior to Final Engineering Plan approval.

- (11) **Verification by the owner of the property that all the information in the application is true and correct to the best of his knowledge.**

The landowner and applicant have reviewed the included information in the Final Development Plan submittal and believe it to be true and correct to the best of their knowledge.

Landowner or Landowner's Representative

- (12) **A statement of the character and nature of the development including the cost range or rent levels for housing in residential development and the general types of business or industrial and commercial developments.**

The "Powell Grand – Resort Living" is an active adult, Class A, gated community proposed as a Planned Commercial District zoning under Powell's Zoning Ordinance. The community will provide a comparable option in terms of aesthetics, amenities and architectural quality for many Powell residents wishing to downsize their current high-quality single-family home to a more active adult and/or senior living environment within Powell. Powell Grand will help facilitate "aging in place" for those Powell residents wishing to change housing options, without leaving the community that has been their home. There will be other residents, new to Powell, who will be attracted to this unique, incomparable central Ohio community.

The total site is made up of 39.0+/- acres. A proposed internal public road (+/- 1.13 acres) will connect from Sawmill Parkway to the intersection of Sawmill Drive and Bunker Lane. The residential component includes 308 units of leased dwellings with three distinct building types and housing options, a clubhouse and related open spaces and site amenities on +/- 33.02 acres. 4.86+/- acres of commercial property are planned on two lots near or adjacent to Sawmill Parkway.

Rents/Lease Rates for eight different dwelling units will range from +/- \$900's- \$1900's per month.

Amenities include a bike path connection along Sawmill Parkway and the interior public streets leading to a pathway to Seldom Seen Road to the new Seldom Seen Park. A large club house in the east-central portion of the site, including a pool, fitness center, community gathering rooms, fire pit lounge area, community garden and golf putting green are available for use by the Powell Grand residents. The site will also include a gazebo overlooking the pond, and an enclosed dog-park. There will be a site office open 7 days a week, 24-hour emergency services, and onsite staffing to provide special, outstanding services for residents.

- (13) **A statement of the general impact the development will have on the infrastructure, municipality and schools including projected demographics, a traffic impact study and a fiscal impact analysis may be required by the Planning and Zoning Commission.**

The proposed development has low impacts on traffic, utility usage and infrastructure in general terms, as compared to typical single-family homes and most commercial zonings in the area. The travel and commuting patterns by active adults, empty nesters, and seniors are demonstrably lower than other commuters. Traffic study analysis is attached to application as Exhibit P. Approximately five to seven staff members (3 to 4 leasing and 2 to 3 maintenance) will work at the site during day time hours, with lesser staff levels at night. The proposed land use compares favorably to the current Township zonings that could create peak commuting and overall traffic in much higher volume and likely more average daily trips.

There is not expected to be a real impact on schools in terms of new students, but positive tax benefits are expected with the commercial property development and very few children to educate. The tax and overall value generated by the site is expected to allow the construction of infrastructure and traffic solutions in the vicinity, some of which pre-exist this proposal.

- (14) **A fee as established by ordinance.**

The fee payment is included with this application.

In accordance with the requirements of the codified ordinance 1431.11(g), in approving a final development plan, the Planning and Zoning Commission shall consider:

a) **If the proposed development is consistent with the intent and requirements of this Zoning Ordinance;**

The site will be zoned as Planned Commercial District (PC) upon its annexation into the city. The PC allows for residential uses, elderly households, elderly housing facilities, and such uses as congregate housing. As a planned district, the Planning and Zoning Commission can create specific regulations, approve uses and grant divergences to the code requirements provided they are in line with the scale and size of the community and are desirable land uses.

Summary of Divergences Requested:

1. **Building Area Coverage** The proposed building footprint area is approximately 22.3% of the total land area and therefore a 2.3% divergence for lot coverage is requested with this planned district approval.

2. Under 1143.09 (c)(5) B – The maximum number of multi-family dwelling units on any single acre shall not exceed twelve (12) units to the acre.

This provision is requested for divergence for residential subarea A, in which in some cases this maximum is exceeded.

3. Under 1143.09 (c)(10) A – As new residential units are planned as part of a PC district, the residential subareas in this PC district shall be designated Planned Residential and shall meet all requirements for density and physical arrangements.

Section 1143.09, (c), (4), B

- A divergence is requested to reduce the required 5 acre, typically flat grassed common area to 1.15 acres to be provided in Subarea D-1, and to permit the uses of Subareas D-1 and D-2 to serve as the recreational elements indicated in the zoning code.
 - The targeted empty nester audience of this site does not require the intensive active recreational space specified in the code section that is based on single-family communities with programming for children at play.

- The site provides overall open space above the required minimum 20%.
- Subareas D-1 and D-2 offer recreational uses targeted for active adult residents in the form of a dog park, common lawn open spaces for passive recreation, pool and patios, putting green, and community garden. Additionally, Subarea C included a gazebo that overlooks the pond offering passive recreation opportunities.
- This site is located across Seldom Seen Road from the future city park.

4. A divergence is requested for the NOTE provision of the 1143.13 providing no more than 4 dwelling units attached side-by-side for subareas A and C, and a total of no more than 8 units in any one structure for subarea A. More attached units are tempered with site amenities, design elements at the pedestrian scale and the community's strong sense of place.

5. 1145.34 Fences, walls, shrubbery, and hedges in "residence" (r), "old powell residence" (opr), and "planned residence" (pr) districts, as well as in all residential portions of other planned districts:

A divergence is requested to permit the entry gates/ fences/ columns/ walls in front yard with a 0' setback.

6. 1151: Signage – The plan calls for three sign locations: one at Sawmill Parkway at the new street; one at Seldom Seen and Bunker Lane: and one on Sawmill Drive. These will be joint monument signs for use by the commercial lots and the Powell Grand community. The follow divergences are therefore requested:

- Divergence to permit 3 multifamily signs, 2 on commercial property
- Divergence to permit shared signs with commercial outparcels.

7. Height divergence – Divergences are requested from 1143.13(a) MAXIMUM BUILDING HEIGHT for the height of principal buildings and the two stories limit. The average roof heights for the four 30 unit, three story buildings are 40 feet, 5 inches.. This is approximately 5 feet, 5 inches greater than the code standard of 35 feet in height for residential districts and typical housing. Roof peak heights for the 30 unit buildings range up to 50 feet, 4 inches in some instances to allow for architectural elements. Such variations in roof peakss changes in roof heights and other architectural features including dormers, provide an attractive residential style building that refines and softens the current viewshed from the west, which today is dominated by the existing fitness building and its significant height and commercial/industrial design. The average roof and peak building heights are further moderated by the building height at the roof

truss bearing height,(gutter height), which is 30 feet, 6 inches, which is significantly lower than many homes and other three story buildings. . See elevations Exhibit I A4.01 and A4.02.

b) **The relationships between uses, and between uses and public facilities, streets, and pathways;**

The proposed land uses, type, location and intensity are appropriate for the site and its surrounding area. The land uses proposed are similar in scale, size and use to the commercial and residential uses in proximity. The residential building designs fit the scale of the area and Powell's market expectations.

The plan provides a transition of uses and density by matching unit types with the existing Woods at Big Bear Farms condominiums on south border, and by transitioning to higher density to the north. The commercial lots fronting Sawmill Parkway and Sawmill Drive are consistent with existing commercial uses. The two and three story buildings are placed closest to the existing three story fitness facility bordering the northeast corner of the site, matching height and massing, but softening the modern industrial design. The railroad tracks separate the site from all uses to the west.

Easement areas shall be identified on final engineering plans to facilitate a proposed pathway from the site to the future city park site to connect with the bike path system that ties the property into future bike pathways along Sawmill Parkway on the southern property border and to the east and west along Seldom Seen Road.

c) **Adequacy of provisions for traffic and circulation, and the geometry and characteristics of street and pathway systems;**

The proposal has adequate provisions for traffic and on-site circulation. Sawmill Parkway and Seldom Seen Road are capable of handling increased traffic as a result of the development. The interior circulation has been designed to allow for the flow of traffic throughout the entire site. There is also adequate parking on-site. The value generated by the site should help address existing traffic challenges.

See Traffic Analysis, Exhibit P for details.

d) **Adequacy of yard-spaces and uses at the periphery of the development;**

Yard and open spaces are adequate for this type of multi-family living. Common areas make up most of the useable spaces with periphery spaces designed mainly to buffer the community from other uses and the railroad tracks.

- e) **Adequacy of open spaces and natural preserves and their relationship to land use areas and public access ways;**

Green spaces on the site are more than adequate to meet code requirements. There is significantly more (29% and 10.89 acres) than the required 20% green space and recreational areas, much of it programmed for specific uses and/or amenitized to fit the needs of residents.

- f) **The order, or phases, in which the development will occur and the land uses and quantities to be developed at each phase;**

This development will likely be built in 2-3 phase(s), depending on market conditions and absorption, which is appropriate for the size and scale of this proposal. The multifamily sites will be built as one phase. The commercial site may be built as two separate phases.

- g) **Estimates of the time required to complete the development and its various phases;**

This proposal can be developed within an appropriate time frame projected at a range of 18 to 24 months, but subject to economic and market conditions.

- h) **Improvements to be made by the Municipality, if any, and their cost;**

The applicant is in discussions with the City regarding this item.

- i) **The community cost of providing public services to the development, and**

This development will not add a considerable amount to the overall cost of public services provided to it.

- j) **Impacts of the development on surrounding or adjacent areas.**

There will be minimal impacts upon the surrounding/adjacent areas near the site or the overall city. The site will generate enough taxes to cover any potential additional city expenses and the value generated should help address existing traffic challenges, as well as the traffic challenges created by the development.

Section 1143.11(k) Recommendation by the Planning and Zoning Commission

THE FOLLOWING SHALL BE CONSIDERED IN APPROVING THE FINAL DEVELOPMENT PLAN:

- (1) **Can the development plan or its phase be initiated within two years and completed within five years?**

Yes. The site can be developed within an appropriate time frame projected at a range of 18 to 24 months, but subject to economic and market conditions.

(2) Have the requirements of the Comprehensive Plan relative to the site been fulfilled?

Yes. This proposal fits with ongoing comments/requests documented during the current Powell Comprehensive Plan update process, whereby people cite the need for higher-end senior and active adult housing. This plan meets that need because it provides Powell's long term residents new housing options to "age in place" in a luxury living environment that is consistent with the quality and amenity level of existing Powell residences. Residents can downsize while staying in their own community.

The ability to provide high quality housing for seniors, allowing independent, active and attractive living arrangements, is also a benefit to many existing single-family residents, whose active and older loved ones choose to live close to their families in a flexible lease situation. This allows for care-free travel and/or splitting time between other residences, while giving families the opportunity to strengthen generational and community ties.

Such an active adult and empty nester housing with access to Sawmill Parkway, and proximity to health-care services, commercial, other multi-family districts and retail uses also represents appropriate planning. Utility and peak traffic impacts are limited, with virtually zero school impact. However, the community benefits with receipt of additional real property taxes.

(3) Are the proposed streets suitable and adequate to carry anticipated traffic, and will increased densities generate traffic in such amounts to overload the street network outside the development plan area?

The proposed development has lower impacts on traffic, utility usage and infrastructure than the zoning approved previously in the Township and many other permitted uses under the Powell code. Sawmill Parkway and Seldom Seen Road traffic improvements are adequate to handle the increase in traffic, much of which will be generated off-peak. (See Traffic Analysis, Exhibit P in this regard) This is an example of a development that is sized based the existing infrastructure that is in place to handle it. This site is appropriate for the housing density proposed based on the following:

- (A) The interior circulation has been designed to allow for the flow of traffic throughout the entire site. There is also adequate parking on-site.

- (B) There is not direct access onto to Sawmill Parkway from the site. Improvements and access distances on Sawmill Drive and Drive One moderate the impact on Sawmill Parkway.

Traffic signalization and other improvements strategies as documented in the Traffic Engineering Study approved by the Delaware County Engineer and committed to by the applicant mean the development will address the need for improvements that the development creates, as well as address existing traffic issues not related to the development.

(4) Can the non-residential development be justified at the location and in the amounts proposed?

Yes. Commercial development is appropriately placed and is in keeping with the area.

(5) Are the housing densities warranted by the amenities and conditions incorporated in the development plan and in accordance with the planned district development requirements?

Yes, see the answer to number 2 above in this section and the explanation related to density. In addition, the development is highly amenitized and architecture is consistent with Powell's high quality design environment.

(6) Are the lands to be dedicated to public use of acceptable and usable size, shape, and location?

Upon approval, the City will cooperate with Developer to cause the Property to be re-platted from the currently effective plat to permit the development of the Property generally in accordance with the Development Plan Concept. In connection therewith, the City will cooperate in vacating the existing public road designated "Revere Court" as well as the platted setbacks along Seldom Seen Road, it being the intention of the parties that setbacks will be conformed/addressed based on the outcome of this rezoning.

(7) Can the area surrounding the proposed development be planned and zoned in coordination with and in substantial compatibility with the proposed development?

Yes. The surrounding area is mostly commercial, retail, park or similar multi-family. Assisted living and health care services are also close to the vicinity and are consistent with this use.

(8) Are the existing and proposed utility services adequate for the population densities and uses proposed?

Yes

- (9) Has adequate provision been made for the detention, retention, and channelization of surface drainage runoff?**

Yes. See the attached plans and Exhibit M for storm water facilities and maintenance.

3158860.1 : 05737 00007

EXHIBIT
ADJACENT PARCEL OWNERS

Subject Parcels to be Annexed:

1. #31942302002000
 9121 Sawmill Parkway
 Powell, OH 43065
 Sawmill Seldom Seen LLC
 4300 East Fifth Avenue
 Columbus, OH 43219
2. #31942302001000
 8957 Bunker Lane
 Powell, OH 43065
 Sawmill Seldom Seen LLC
 4300 East Fifth Avenue
 Columbus, OH 43219
3. #31942302001002
 3280 Revere Court
 Powell, OH 43065
 Sawmill Seldom Seen LLC
 4300 East Fifth Avenue
 Columbus, OH 43219
4. #31942302001003
 8882 Revere Court
 Powell, OH 43065
 Sawmill Seldom Seen LLC
 4300 East Fifth Avenue
 Columbus, OH 43219

Adjacent Parcels:

1. #31942202051000
 Seldom Seen Road
 Powell, OH 43065
 City of Powell
 47 Hall St
 Powell, OH 43065

2. #31931401023000
3474 Sawmill Drive
Powell, OH 43065
Realty Income Properties 24 LLC
3474 Sawmill Drive
Powell, OH 43065
3. #31931401022001
2.996 Acres, Lot 3413 Seldom Seen Acres
Sawmill Parkway
Powell, OH 43065
SSA Ltd.
Sawmill Parkway
Powell, OH 43065
4. #31931401023001
1.859 Acres, Lots 4497 Seldom Seen Acres
Realty Income Properties 24 LLC
Sawmill Road
Powell, OH 43065
5. #31942305003000
425 Village Park Drive
Powell, OH 43065
Fernco Development Ltd.
425 Village Park Drive
Powell, OH 43065
6. #31942305002000
489 Village Park Drive
Powell, OH 43065
LDH 2000 Family Limited Partnership
c/o Countryside Construction
P. O. Box 389
Delaware, OH 43015
7. #31942601002001
321 Bear Woods Drive
Powell, OH 43065
Village of Powell
47 Hall Street
Powell, OH 43065

8. #31942601002537
340 Park Woods Lane
Powell, OH 43065
Paul A. Bischoff
340 Park Woods Lane
Powell, OH 43065
9. #31942601002554
335 Bear Woods Drive
Powell, OH 43065
Continuing Partners Limited Partnership
335 Bear Woods Drive
Powell, OH 43065
10. #31942601002527
393 Park Woods Lane
Powell, OH 43065
Julia Baranova Benet
393 Park Woods Lane
Powell, OH 43065

ALTA/ACSM LAND TITLE SURVEY

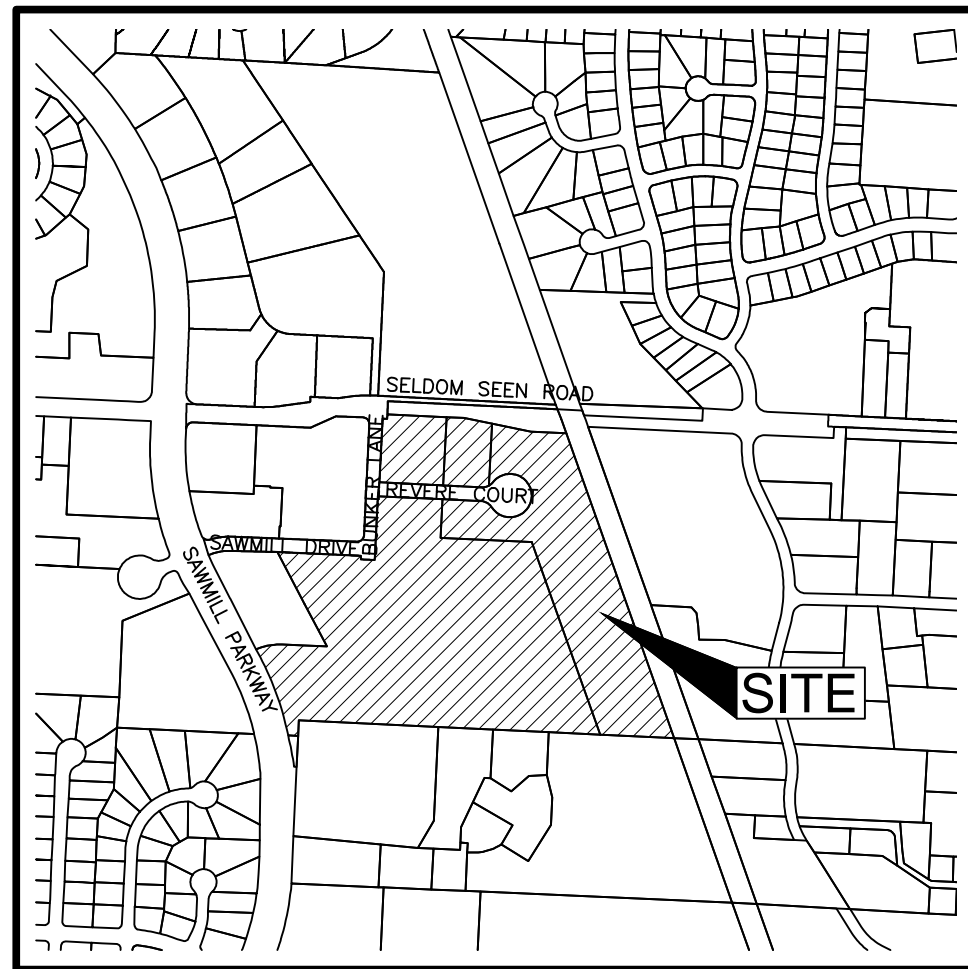
FARM LOT 10, QUARTER TOWNSHIP 3, TOWNSHIP 3, RANGE 19

FARM LOTS 35 AND 36 QUARTER TOWNSHIP 4, TOWNSHIP 3, RANGE 19

UNITED STATES MILITARY LANDS

LIBERTY TOWNSHIP, DELAWARE COUNTY, OHIO

LEGEND	
	= Telephone Pedestal Box
	= Telephone Pole
	= Gas Marker Post
	= Transformer
	= Sanitary Sewer Manhole
	= Storm Sewer Catch Basin
	= Storm Sewer Curb & Gutter Inlet
	= Storm Sewer Manhole
	= Guy Wire & Anchor
	= Utility Pole w/ Multiple Services
	= Centerline of Fire Hydrant on Top
	= Water Valve
	= Overhead Utilities



LOCATION MAP AND BACKGROUND DRAWING

NOT TO SCALE

DESCRIPTION
Situating in the Township of Liberty, County of Delaware and the State of Ohio and bounded and described as follows:

PARCEL 1:

Being known as Lot Number Three Thousand Four Hundred Fourteen (3414) in SELDOM SEEN ACRES, as the same is numbered and delineated upon the recorded plat thereof, of record in Plat Cabinet 2, Slides 245, 245A-245B, Delaware County Recorder's Office.

PARCEL 2:

Being known as Lot Number Three Thousand Four Hundred Fifteen (3415) in SELDOM SEEN ACRES, as the same is numbered and delineated upon the recorded plat thereof, of record in Plat Cabinet 2, Slides 245, 245A-245B, Delaware County Recorder's Office.

PARCEL 3:

Being known as Lot Number Three Thousand Four Hundred Sixteen (3416) in SELDOM SEEN ACRES, as the same is numbered and delineated upon the recorded plat thereof, of record in Plat Cabinet 2, Slides 245, 245A-245B, Delaware County Recorder's Office.

PARCEL 4:

Being known as Lot Number Three Thousand Four Hundred Seventeen (3417) in SELDOM SEEN ACRES, as the same is numbered and delineated upon the recorded plat thereof, of record in Plat Cabinet 2, Slides 245, 245A-245B, Delaware County Recorder's Office.

Schedule B Part II Items from Title Commitment Number 30625 issued by First American Title Insurance Company with an effective date of December 22, 2014 at 7:00 A.M.

Items 1-18 NOT SURVEY RELATED ITEMS.

Item 19 Easements appearing of record in Official Record Volume 79, page 2547 and Official Record Volume 523, page 77, Recorder's Office, Delaware County, Ohio. 10' ELECTRIC EASEMENT OF V. 79, PG. 2547 IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON. 10' ELECTRIC EASEMENT OF V. 523, PG. 77, IS LOCATED ON THE SUBJECT TRACT CENTERED ON LINES AS INSTALLED NOT PLOTTED.

Item 20 Easements appearing of record in Official Record Volume 668, page 2503, Recorder's Office, Delaware County, Ohio. 10' GAS EASEMENT OF V. 668, PG. 2503, IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON, THE 30' TEMPORARY CONSTRUCTION EASEMENT HAS EXPIRED.

Item 21 Easement appearing of record in Official Record Volume 645, page 296, Recorder's Office, Delaware County, Ohio. 20' SANITARY EASEMENT OF V. 645, PG. 296, IS LOCATED ON THE SUBJECT TRACT SHOWN HEREON.

Item 22 Cell Tower Lease appearing of record in Official Record Volume 46, page 598, Assignment of record in Volume 54, page 807 and Volume 656, page 771, Recorder's Office, Delaware County, Ohio. IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 23 Easement Agreement appearing of record in Official Record Volume 20, page 726, Assignment of record in Volume 54, page 807 and Volume 656, page 771, Recorder's Office, Delaware County, Ohio. IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 24 Easement granted to Columbus Southern Power Co. appearing of record in Official Record Volume 627, page 649, Recorder's Office, Delaware County, Ohio. 10' EASEMENT IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 25 Easement of record in Deed Book 217, page 659, Recorder's Office, Delaware County, Ohio. THE LOCATION OF THE EASEMENT CAN NOT BE DETERMINED FROM THE DESCRIPTION PROVIDED.

Item 26 Easement of record in Deed Book 217, page 674, Recorder's Office, Delaware County, Ohio. THE LOCATION OF THE EASEMENT CAN NOT BE DETERMINED FROM THE DESCRIPTION PROVIDED.

Item 27 Easement of record in Deed Book 523, page 73, Recorder's Office, Delaware County, Ohio. 5' EASEMENT IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 28 Easement of record in Deed Book 342, page 45, Recorder's Office, Delaware County, Ohio. 16' EASEMENT IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 29 Easement of record in Deed Book 366, page 647, Recorder's Office, Delaware County, Ohio. THE SUBJECT TRACT IS LOCATED IN THE AREA DESCRIBED AND THE 12' EASEMENT IS CENTERED ON WATERLINE AS INSTALLED NOT PLOTTED.

Item 30 Platted Building Setback Lines per recorded plat of subdivision of record in Plat Cabinet 2, Slides 245, 245A-245B, Recorder's Office, Delaware County, Ohio. BUILDING SETBACK LINES ARE LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

Item 31 Platted utility easements per recorded plat of subdivision of record in Plat Cabinet 2, Slides 245, 245A-245B, Recorder's Office, Delaware County, Ohio. NOTE: THIS EXCEPTION IS SOLELY BENEFICIAL TO THE SUBJECT PROPERTY.

Item 32 Subject to terms and conditions of Agreement of Restrictive Covenant by and between SSA LTD., an Ohio limited liability company and JLP-ME Sawmill LLC, an Ohio limited liability company, dated May 9, 2012, filed for record on May 21, 2012 of record in Official Record Book 1122, page 1528, Recorder's Office, Delaware County, Ohio. SUBJECT TRACT IS LOCATED IN THE AREA DESCRIBED.

Item 33-36 NOT SURVEY RELATED ITEMS.

Additional items not included in the Title Commitment.

A. Non-Disturbance Agreement appearing of record in Official Record Volume 20, page 734, Recorder's Office, Delaware, Ohio. IS LOCATED ON THE SUBJECT TRACT AS SHOWN HEREON.

B. Surveyor's Affidavit, as per Plat Cabinet 2, page 278, Recorder's Office, Delaware County, Ohio. THE SUBJECT TRACT IS LOCATED IN THE AREA DESCRIBED.

CERTIFICATION: Commitment No. 30625

To: First American Title Insurance Company, Schottenstein Real Estate Group LLC, an Ohio limited liability company.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2011 "Minimum Standard Detail Requirements for ALTA/ACSM Land Title Surveys", jointly established and adopted by ALTA and NSPS, and includes Items 1, 3, 4, 7(a), 8, 9, 11(a), and 13 of Table A thereof. Field work was completed on June 29, 2012.

By Joshua M. Meyer
Professional Surveyor No. 8485

Date

UTILITY STATEMENT:

The utilities shown hereon have been located from field survey information and existing drawings. The surveyor makes no guarantee that the utilities shown comprise all such utilities in the area, either in service or abandoned. The surveyor further does not warrant that the utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from information available.

BASIS OF BEARINGS:

The bearings shown on this plat are based on the Ohio State Plane Coordinate System, North Zone, NAD83 (2011). Said bearings originated from a field traverse which was tied (referenced) to said coordinate system by GPS observations and observations of selected CORS base stations in the National Spatial Reference System. The portion of the easterly right-of-way line of Bunker Lane, having a bearing of North 02°46'39" East and monumented as shown hereon, is designated the "basis of bearing" for this survey.

SURVEY NOTE:

This survey was prepared using documents of record, prior plats of survey, and observed evidence located by an actual field survey in June 2012.

FEMA NOTE:

According to the Federal Emergency Management Agency's Flood Insurance Map (dated April 16, 2012), the subject tract shown hereon lies within Zone X (areas determined to be outside of the 0.2% annual chance floodplain), Community Panel No.39041C0237K.

PARKING NOTE:

There are no marked parking areas on the subject tract.

- = STONE FND.
- = MON. FND.
- = I.P. FND.
- = I.P. SET
- = MAG. NAIL FND.
- = MAG. NAIL SET
- ▲ = R.R. SPK. FND.
- △ = R.R. SPK. SET
- = P.K. NAIL FND.

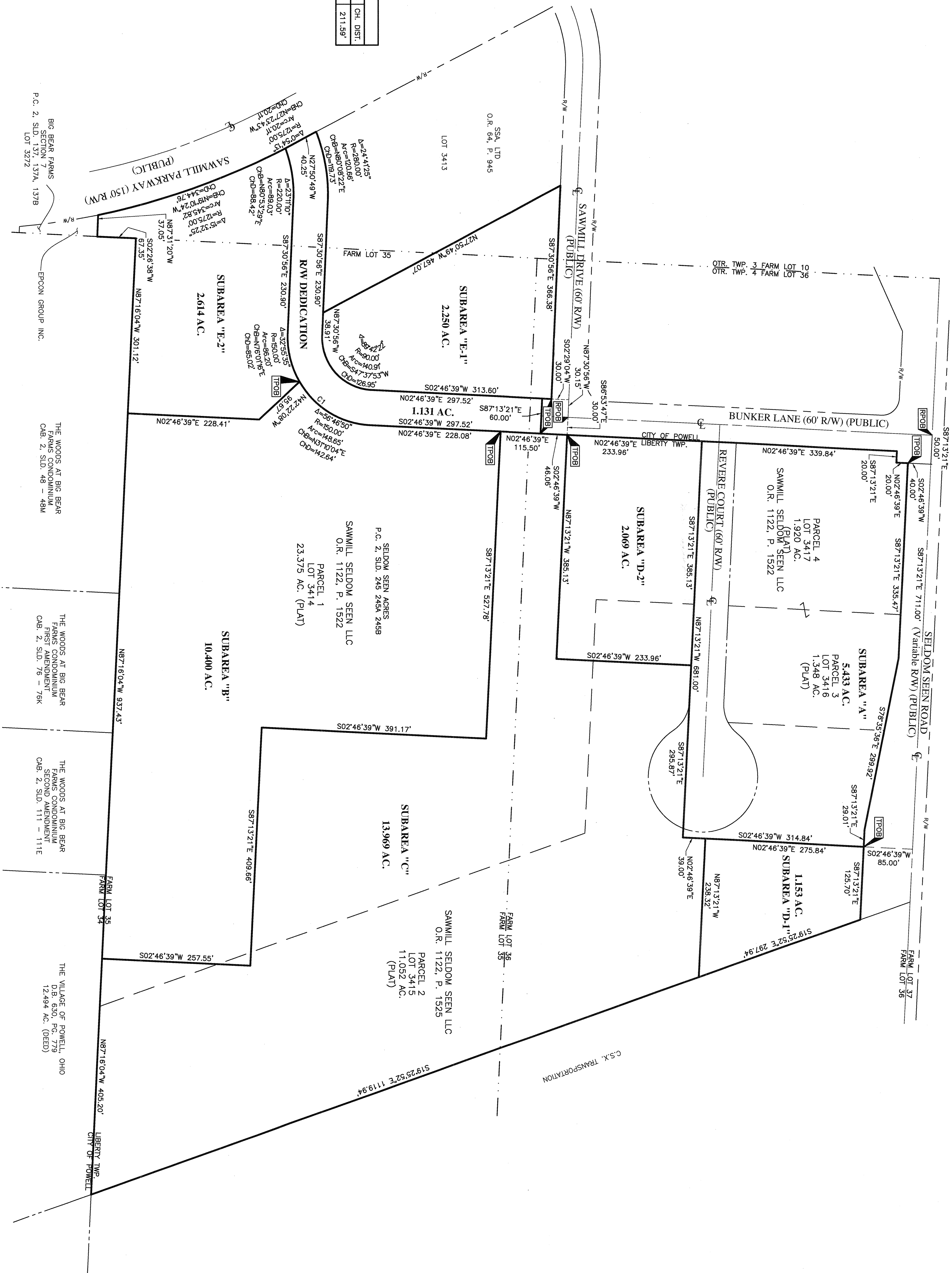
I.P. Set are 13/16" I.D. iron pipe with cap inscribed EMHT INC




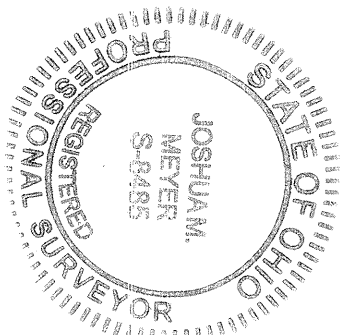
EMHT Evans, Mechwart, Hamilton & Tilton, Inc. Engineers • Surveyors • Planners • Scientists 6800 New Albany Road, Columbus, OH 43054 Phone: 614.775.4500 Toll Free: 888.775.3648 emht.com		Date: May 13, 2015
Scale: 1" = 100'		Job No: 20142045
Sheet: 1 of 1		
REVISIONS		
MARK	DATE	DESCRIPTION

**FARM LOT 10, QUARTER TOWNSHIP 3, TOWNSHIP 3, RANGE 19
FARM LOTS 35 AND 36 QUARTER TOWNSHIP 4, TOWNSHIP 3, RANGE 19**

CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CH. BEARING	CH. DIST.
C1	89°42'24"	150.00'	234.85'	547°37'51"W	211.59'

[illegible]

By  Date 8-7-2015
Joshua M. Meyer
Professional Surveyor No. 8485



SUBAREA "A"
5.433 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lot 36 Quarter Township 4, Township 3, Range 19, United States Military Lands, being all of Lots 3417 and 3416 and part of Lot 3415 and Revere Court of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of those tracts conveyed to Sawmill Seldom Seen LLC by deeds of record in Official Record 1122, Page 1522 and Official Record 1122, Page 1525, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Seldom Seen Road;

thence South 87° 13' 21" East, with said centerline of Seldom Seen Road, a distance of 50.00 feet to a point;

thence South 02° 46' 39" West, across said Seldom Seen Road, a distance of 40.00 feet to a point in the southerly right-of-way line of said Seldom Seen Road, the TRUE POINT OF BEGINNING;

thence with said southerly right-of-way line, the following courses and distances:

South 87° 13' 21" East, a distance of 335.47 feet to a point;

South 78° 35' 36" East, a distance of 299.92 feet to a point; and

South 87° 13' 21" East, a distance of 29.01 feet to a point;

thence South 02° 46' 39" West, across said Lot 3415, a distance of 314.84 feet to a point;

thence North 87° 13' 21" West, continuing across said Lot 3415 and across said Revere Court, a distance of 681.00 feet to a point in the easterly right-of-way line of said Bunker Lane;

thence with said easterly right-of-way line, the following courses and distances:

North 02° 46' 39" East, a distance of 339.84 feet to an angle point in said easterly right-of-way line;

South 87° 13' 21" East, a distance of 20.00 feet to an angle point in said easterly right-of-way line; and

North 02° 46' 39" East, a distance of 20.00 feet to the TRUE POINT OF BEGINNING, containing 5.433 acres, more or less.

This description was prepared from document of record, is for zoning purposes only, and is not to be used for transfer.



EVANS, MECHWART, HAMBLETON & TILTON, INC.

A handwritten signature in blue ink, appearing to read "J M Meyer", written over the printed name.

Joshua M. Meyer
Professional Surveyor No. 8485

6-19-2015

Date

SUBAREA "B"
10.400 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lot 35 Quarter Township 4, Township 3, Range 19, United States Military Lands, being part of Lots 3414 and 3415 of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deeds of record in Official Record 1122, Page 1522 and Official Record 1122, Page 1525, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence South 86° 53' 47" East, across said Bunker Lane, a distance of 30.00 feet to the easterly right-of-way line of said Bunker Lane;

thence South 02° 46' 39" West, with said easterly right-of-way line and across said Lot 3414, a distance of 115.50 feet to the TRUE POINT OF BEGINNING;

thence South 87° 13' 21" East, continuing across said Lot 3414, a distance of 527.78 feet to a point;

thence South 02° 46' 39" West, continuing across said Lot 3414, a distance of 391.17 feet to a point;

thence South 87° 13' 21" East, continuing across said Lot 3414 and across said Lot 3415, a distance of 409.66 feet to a point;

thence South 02° 46' 39" West, continuing across said Lots 3414 and 3415, a distance of 257.55 feet to a point in the northerly line of that 12.494 acre tract conveyed to The Village of Powell, Ohio by deed of record in Deed Book 630, Page 779;

thence North 87° 16' 04" West, with the line common to said Lot 3414 and said 12.494 acre tract, that tract conveyed to The Woods at Big Bear Farms Condominium Second Amendment by deed of record in Cabinet 2, Slides 111-111E, that tract conveyed to The Woods at Big Bear Farms Condominium First Amendment by deed of record in Cabinet 2, Slides 76-76K and that tract conveyed to The Woods at Big Bear Farms Condominium by deed of record in Cabinet 2, Slides 48-48M, a distance of 937.43 feet to a point;

thence across said Lot 3414, the following courses and distances:

North 02° 46' 39" East, a distance of 228.41 feet to a point;

North 42° 22' 08" West, a distance of 95.67 feet to a point;

with the arc of a curve to the left, having a central angle of 56° 46' 50", a radius of 150.00 feet, an arc length of 148.65 feet, a chord bearing of North 31° 10' 04" East and chord distance of 142.64 feet to a point of tangency; and

North 02° 46' 39" East, a distance of 228.08 feet to the TRUE POINT OF BEGINNING, containing 10.400 acre, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



EVANS, MECHWART, HAMBLETON & TILTON, INC.

A handwritten signature in dark ink, appearing to read "J. Meyer", written over the printed name.

Joshua M. Meyer
Professional Surveyor No. 8485

8-7-2015

Date

SUBAREA "C"
13.969 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lots 35 and 36 Quarter Township 4, Township 3, Range 19, United States Military Lands, being part of Lots 3414 and 3415 and Revere Court of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deeds of record in Official Record 1122, Page 1522 and Official Record 1122, Page 1525, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence South 86° 53' 47" East, across said Bunker Lane, a distance of 30.00 feet to the easterly right-of-way line of said Bunker Lane, the TRUE POINT OF BEGINNING;

thence South 87° 13' 21" East, across said Lot 3414, a distance of 385.13 feet to a point;

thence North 02° 46' 39" East, continuing across said Lot 3414 and across said Lot 3415 and across Revere Court, a distance of 233.96 feet to a point;

thence South 87° 13' 21" East, continuing across said Revere Court and said Lot 3415, a distance of 295.87 feet to a point;

thence North 02° 46' 39" East, continuing across said Lot 3415, a distance of 39.00 feet to a point;

thence South 87° 13' 21" East, continuing across said Lot 3415, a distance of 238.32 feet to a point in the westerly line of that tract conveyed to C.S.X. Transportation;

thence South 19° 25' 52" East, with the line common to said C.S.X. Transportation and Lot 3415, a distance of 1119.94 feet to the northeasterly corner of that 12.494 acre tract conveyed to The Village of Powell, Ohio by deed of record in Deed Book 630, Page 779;

thence North 87° 16' 04" West, with the line common to said Lot 3415 and said 12.494 acre tract and the line common to said Lot 3414 and said 12.494 acre tract, a distance of 405.20 feet to a point;

thence North 02° 46' 39" East, across said Lots 3414 and 3415, a distance of 257.55 feet to a point;

thence North 87° 13' 21" West, continuing across said Lots 3414 and 3415, a distance of 409.66 feet to a point;

thence North 02° 46' 39" East, across said Lot 3414, a distance of 391.17 feet to a point;

thence North 87° 13' 21" West, continuing across said Lot 3414, a distance of 527.78 feet to a point;

thence North 02° 46' 39" East, continuing across said Lot 3414 and with said easterly right-of-way line, a distance of 115.50 feet to the TRUE POINT OF BEGINNING, containing 13.969 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



EVANS, MECHWART, HAMBLETON & TILTON, INC.

Joshua M. Meyer
Professional Surveyor No. 8485

6-19-2015

Date

SUBAREA "D-1"
1.153 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lot 36 Quarter Township 4, Township 3, Range 19, United States Military Lands, being part of Lot 3415 and Revere Court of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deed of record in Official Record 1122, Page 1525, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Seldom Seen Road;

thence South 87° 13' 21" East, with said centerline of Seldom Seen Road, a distance of 711.00 feet to a point;

thence South 02° 46' 39" West, across said Seldom Seen Road, a distance of 85.00 feet to a point in the southerly right-of-way line of said Seldom Seen Road, the TRUE POINT OF BEGINNING;

thence South 87° 13' 21" East, with said southerly right-of-way line, a distance of 125.70 feet to the northeast corner of said Lot 3415, in the westerly line of that tract conveyed to C.S.X. Transportation;

thence South 19° 25' 52" East, with the line common to said Lot 3415 and said C.S.X. Transportation tract, a distance of 297.94 feet to a point;

thence North 87° 13' 21" West, across said Lot 3415, a distance of 238.32 feet to a point;

thence North 02° 46' 39" East, continuing across said Lot 3415, a distance of 275.84 feet to the TRUE POINT OF BEGINNING, containing 1.153 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



JMM:dm
1_153 ac 20142045-subarea-D1.doc

EVANS, MECHWART, HAMBLETON & TILTON, INC.

A handwritten signature in blue ink, appearing to read "J. M. Meyer", written over the printed name.

Joshua M. Meyer
Professional Surveyor No. 8485

6-19-2015

Date

SUBAREA "D-2"
2.069 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lot 36 Quarter Township 4, Township 3, Range 19, United States Military Lands, being part of Lots 3414 and 3415 and Revere Court of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deeds of record in Official Record 1122, Page 1522 and Official Record 1122, Page 1525, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence South 86° 53' 47" East, across said Bunker Lane, a distance of 30.00 feet to a point in the easterly right-of-way line of said Bunker Lane, the TRUE POINT OF BEGINNING;

thence North 02° 46' 39" East, with said easterly right-of-way line, a distance of 233.96 feet to a point;

thence South 87° 13' 21" East, across Revere Court, a distance of 385.13 feet to a point;

thence South 02° 46' 39" West, continuing across Revere Court and said Lots 3414 and 3415, a distance of 233.96 feet to a point;

thence North 87° 13' 21" West, continuing across said Lot 3414, a distance of 385.13 feet to the TRUE POINT OF BEGINNING, containing 2.069 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



JMM:mm
2_069 ac 20142045-subarea-D2.doc

EVANS, MECHWART, HAMBLETON & TILTON, INC.

Joshua M. Meyer
Professional Surveyor No. 8485

6-19-2015

Date

SUBAREA "E-1"
2.250 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lots 35 and 36 Quarter Township 4, Township 3, Range 19, and Farm Lot 10, Quarter Township 3, Township 3, Range 19, United States Military Lands, being part of Lot 3414 of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deed of record in Official Record 1122, Page 1522, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence North 87° 30' 56" West, with said centerline of Sawmill Drive, a distance of 30.15 feet to a point;

thence South 02° 29' 04" West, across said Sawmill Drive, a distance of 30.00 feet to the westerly right-of-way line of said Bunker Lane, the TRUE POINT OF BEGINNING;

thence South 02° 46' 39" West, with said westerly right-of-way line and across said Lot 3414, a distance of 313.60 feet to a point of curvature;

thence with the arc of a curve to the right, having a central angle of 89° 42' 22", a radius of 90.00 feet, an arc length of 140.91 feet, a chord bearing of South 47° 37' 53" West and chord distance of 126.95 feet to a point of tangency;

thence North 87° 30' 56" West, continuing across said Lot 3414, a distance of 38.91 feet to the southeasterly corner of Lot 3413 of said "Seldom Seen Acres";


thence North 27° 50' 49" West, with a line common to said Lots 3414 and 3413, a distance of 467.07 feet to a point in the southerly right-of-way line of said Sawmill Drive;

thence South 87° 30' 56" East, with said southerly right-of-way line, a distance of 366.38 feet to the TRUE POINT OF BEGINNING, containing 2.250 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



EVANS, MECHWART, HAMBLETON & TILTON, INC.


Joshua M. Meyer
Professional Surveyor No. 8485

8-7-2015

Date

SUBAREA "E-2"
2.614 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lot 35 Quarter Township 4, Township 3, Range 19, and Farm Lot 10, Quarter Township 3, Township 3, Range 19, United States Military Lands, being part of Lot 3414 of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deed of record in Official Record 1122, Page 1522, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence South 86° 53' 47" East, across said Bunker Lane, a distance of 30.00 feet to point in the easterly right-of-way line of said Bunker Lane;

thence South 02° 46' 39" West, with said easterly right-of-way line and across said Lot 3414, a distance of 343.58 feet to a point of curvature;

thence continuing across said Lot 3414, with the arc of a curve to the right, having a central angle of 56° 46' 50", a radius of 150.00 feet, an arc length of 148.65 feet, a chord bearing of South 31° 10' 04" East and chord distance of 142.64 feet to the TRUE POINT OF BEGINNING;

thence South 42° 22' 08" East, continuing across said Lot 3414, a distance of 95.67 feet to a point;

thence South 02° 46' 39" West, continuing across said Lot 3414, a distance of 228.41 feet to a point in the northerly line of that tract conveyed to The Woods at Big Bear Farms Condominium by deed of record in Cabinet 2, Slides 48-48M;

thence North 87° 16' 04" West, with the line common to said Lot 3414 said The Woods at Big Bear Farms Condominium tract, a distance of 301.12 feet to the northwesterly corner of said The Woods at Big Bear Farms Condominium;

thence South 02° 26' 38" West, continuing with said common line, a distance of 67.35 feet to the northeasterly corner of Lot 3272 of that subdivision entitled "Big Bear Farms Section 7" of record in Plat Cabinet 2, Slides 137, 137A and 137B;

thence North 87° 31' 20" West, with the line common to said Lots 3414 and 3272, a distance of 37.05 feet to a point in the easterly right-of-way line of Sawmill Parkway;

thence continuing with said easterly right-of-way line, with the arc of a curve to the left, having a central angle of 15° 32' 25", a radius of 1275.00 feet, an arc length of 345.82 feet, a chord bearing of North 19° 10' 24" West and chord distance of 344.76 feet a point;

thence across said Lot 3414, the following courses and distances:

with the arc of a curve to the right, having a central angle of 23° 11' 10", a radius of 220.00 feet, an arc length of 89.03 feet, a chord bearing of North 80° 53' 29" East and chord distance of 88.42 feet to a point of tangency;

South 87° 30' 56" East, a distance of 230.90 feet to a point; and

with the arc of a curve to the left, having a central angle of 32° 55' 35", a radius of 150.00 feet, an arc length of 86.20 feet, a chord bearing of North 76° 01' 16" East and chord distance of 85.02 feet to the TRUE POINT OF BEGINNING, containing 2.614 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.



EVANS, MECHWART, HAMBLETON & TILTON, INC.

Joshua M. Meyer
Professional Surveyor No. 8485

8-7-2015

Date

SUBAREA "RIGHT OF WAY DEDICATION"
1.131 ACRES

Situated in the State of Ohio, County of Delaware, Township of Liberty, located in Farm Lots 35 and 36 Quarter Township 4, Township 3, Range 19, and Farm Lot 10, Quarter Township 3, Township 3, Range 19, United States Military Lands, being part of Lot 3414 of that subdivision entitled "Seldom Seen Acres" of record in Plat Cabinet 2, Slides 245, 245A and 245B, being part of that tract conveyed to Sawmill Seldom Seen LLC by deed of record in Official Record 1122, Page 1522, (all references refer to the records of the Recorder's Office, Delaware County, Ohio) being more particularly described as follows:

Beginning, for reference, at the intersection of the centerline of Bunker Lane and the centerline of Sawmill Drive;

thence South 86° 53' 47" East, across said Bunker Lane, distance of 30.00 feet to a point in the easterly right-of-way line of said Bunker Lane;

thence South 02° 46' 39" West, with said easterly right-of-way line, a distance of 46.06 feet to the TRUE POINT OF BEGINNING;

thence across said Lot 3414, the following courses and distances:

South 02° 46' 39" West, a distance of 297.52 feet to a point of curvature;

with the arc of a curve to the right, having a central angle of 89° 42' 24", a radius of 150.00 feet, and arc length of 234.85 feet, a chord bearing of South 47° 37' 51" West and chord distance of 211.59 feet to a point of tangency;

North 87° 30' 56" West, a distance of 230.90 feet to a point of curvature; and

with the arc of a curve to the left, having a central angle of 23° 11' 10", a radius of 220.00 feet, an arc length of 89.03 feet, a chord bearing of South 80° 53' 29" West and chord distance of 88.42 feet to a point in the easterly right-of-way line of Sawmill Parkway;

thence with said easterly right-of-way line, with the arc of a curve to the left, having a central angle of 00° 54' 13", a radius of 1275.00 feet, an arc length of 20.11 feet, a chord bearing of North 27° 23' 43" West and chord distance of 20.11 feet to a point of tangency;

thence North 27° 50' 49" West, continuing with said easterly right-of-way line of Sawmill Parkway, a distance of 40.25 feet to the southwesterly corner of Lot 3413 of said "Seldom Seen Acres";

thence with a line common to said Lots 3414 and 3413, with the arc of a curve to the right, having a central angle of 24° 41' 25", a radius of 280.00 feet, an arc length of 120.66 feet, a chord bearing of North 80° 08' 22" East and chord distance of 119.73 feet to a point of tangency;

thence South 87° 30' 56" East, continuing with said common line, and across said Lot 3414, a distance of 230.90 feet to a point of curvature;

thence continuing across said Lot 3414, with the arc of a curve to the left, having a central angle of 89° 42' 22", a radius of 90.00 feet, an arc length of 140.91 feet, a chord bearing of North 47° 37' 53" East and chord distance of 126.95 feet to a point of tangency;

thence North 02° 46' 39" East, continuing across said Lot 3414, a distance of 297.52 feet to a point in the northerly line of said Lot 3414;

thence South 87° 13' 21" East, with said northerly line, a distance of 60.00 feet to the TRUE POINT OF BEGINNING, containing 1.131 acres, more or less.

This description was prepared from documents of record, is for zoning purposes only, and is not to be used for transfer.

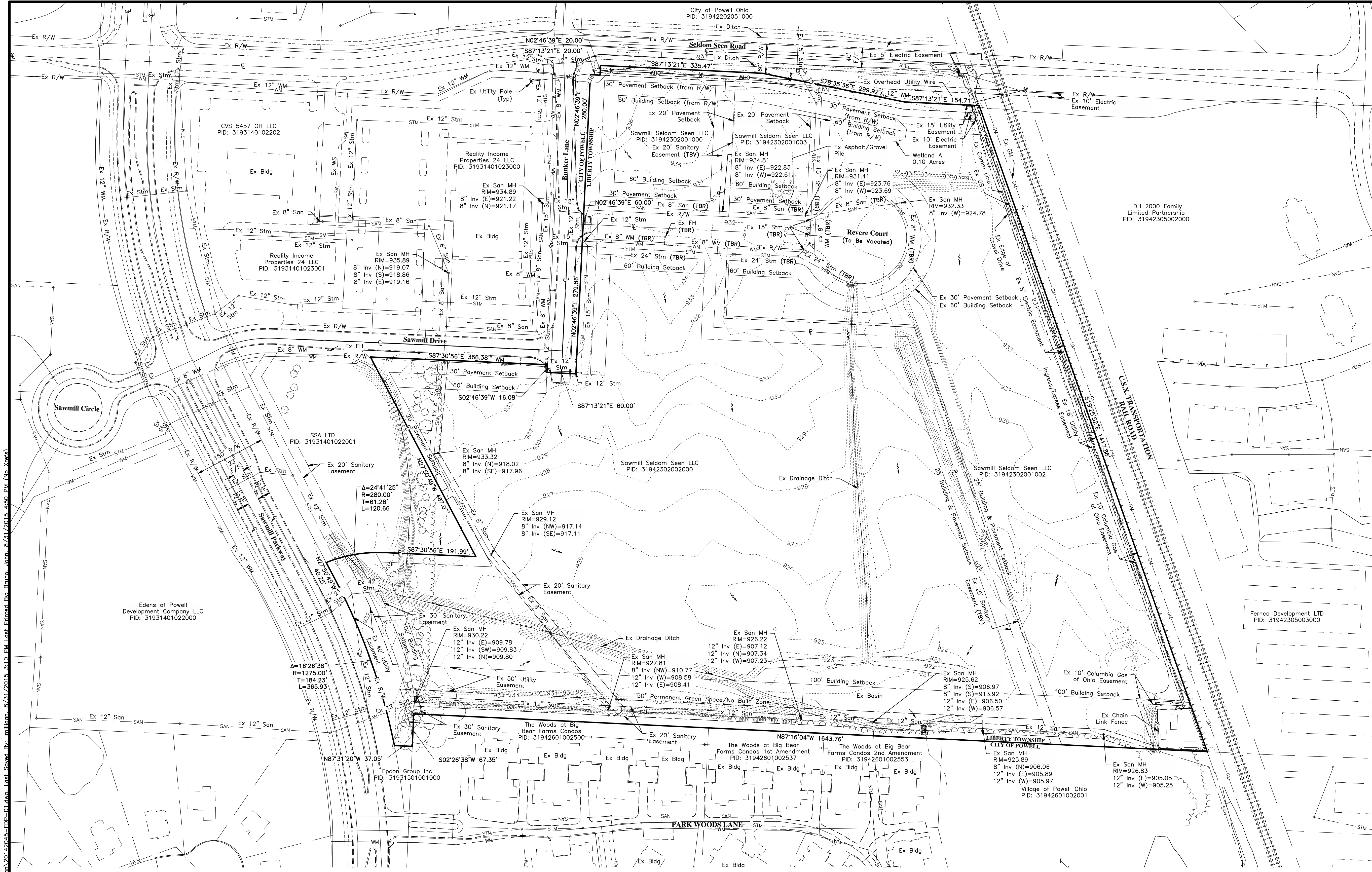


EVANS, MECHWART, HAMBLETON & TILTON, INC.

Joshua M. Meyer
Professional Surveyor No. 8485

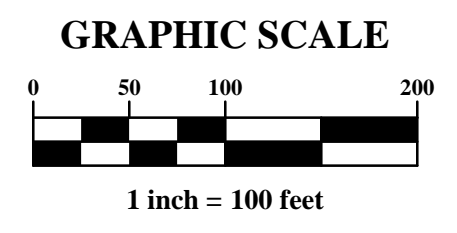
8-7-2015

Date



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NOTE(S):
TBR To Be Removed
TBV To Be Vacated



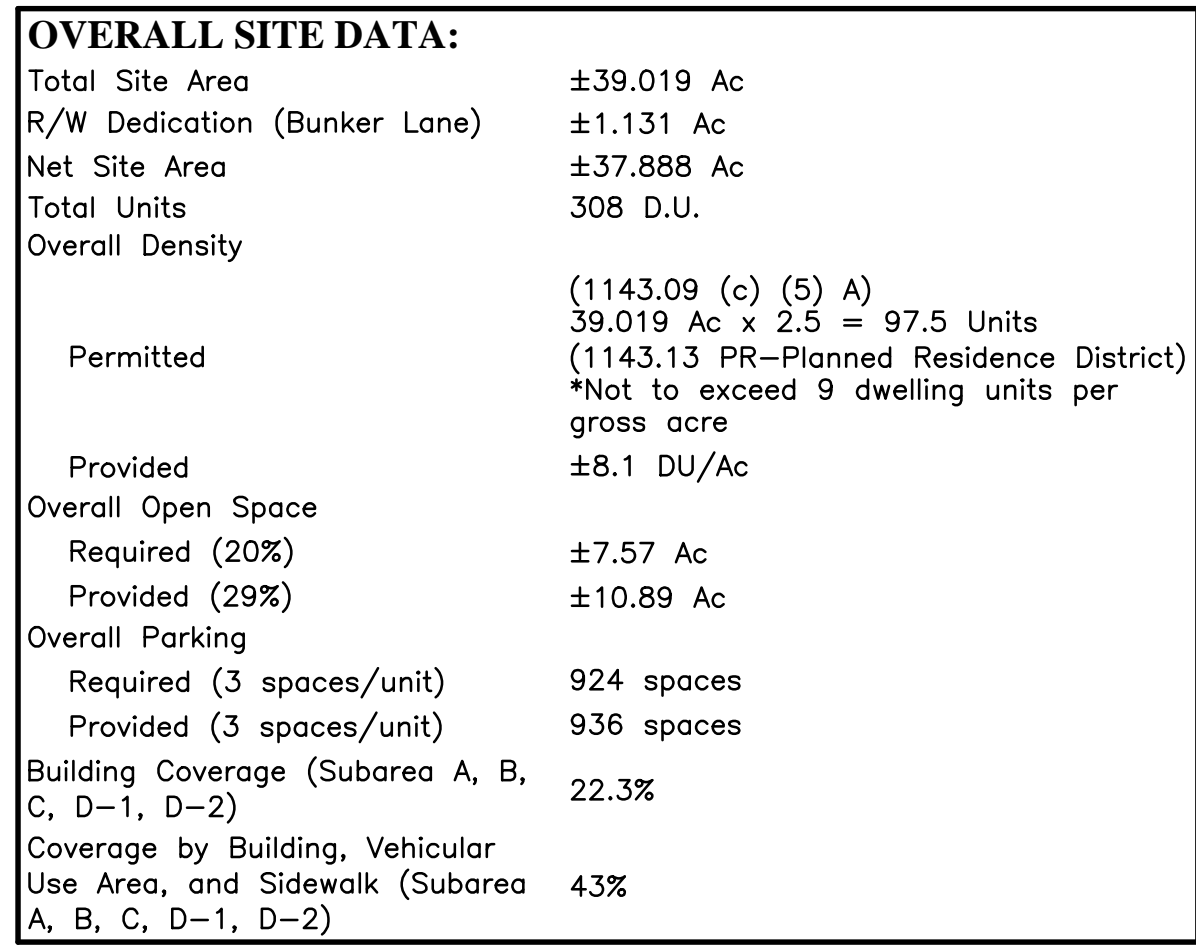
PRELIMINARY
NOT TO BE USED FOR
CONSTRUCTION

PLAN SET DATE
SEPTEMBER 1, 2015

REVISIONS	
MARK	DATE DESCRIPTION

CITY OF POWELL, DELAWARE COUNTY, OHIO FINAL DEVELOPMENT PLAN FOR POWELL GRAND EXHIBIT "D" EXISTING CONDITIONS	SCHOTTENSTEIN REAL ESTATE GROUP
	EMHT Evans, Meacham, Hampton & Titon, Inc. 5500 New Albany Road, Columbus, OH 43254 Phone 614.775.4500 Toll Free 888.775.3448 emht.com
	SEPTEMBER 1, 2015


SCALE 1" = 100'
JOB NO. 20142045
SHEET D-1



SUBAREA SITE AREA:	
Subarea A – Residential	
Acreage	±5.433 Ac
Units	120 D.U.
Parking Provided	278 spaces (2.32 spaces/unit)
Subarea B – Residential	
Acreage	±10.400 Ac
Units	60 D.U.
Parking Provided	248 Spaces (4 spaces/unit)
Subarea C – Residential	
Acreage	±13.969 Ac
Units	128 D.U.
Parking Provided	327 spaces (2.5 spaces/unit)
Subarea D-1 – Open Space	
Acreage	±1.153 Ac
Subarea D-2 – Clubhouse/Amenities	
Acreage	±2.069 Ac
Clubhouse	
Parking	83 spaces
Subarea E-1 – Commercial	
Acreage	±2.250 Ac
Subarea E-2 – Commercial	
Acreage	±2.614 Ac

LINE #	BEARING	DISTANCE
L1	S42°22'08"E	69.96'
L2	S87°13'21"E	463.58'
L3	S87°13'21"E	140.32'
L4	S87°13'21"E	243.33'
L5	S87°13'21"E	469.78'
L6	S02°46'39"W	201.90'
L7	N02°46'39"E	506.67'
L8	S87°13'21"E	243.33'
L9	S87°13'21"E	79.00'
L10	S87°13'21"E	610.10'
L14	N02°46'39"E	201.70'
L25	S02°46'39"W	506.67'

C/L CURVE DATA TABLE				
CURVE #	Δ	RADIUS	TANGENT	LENGTH
C1	44°51'12"	100.00'	41.27'	78.28'

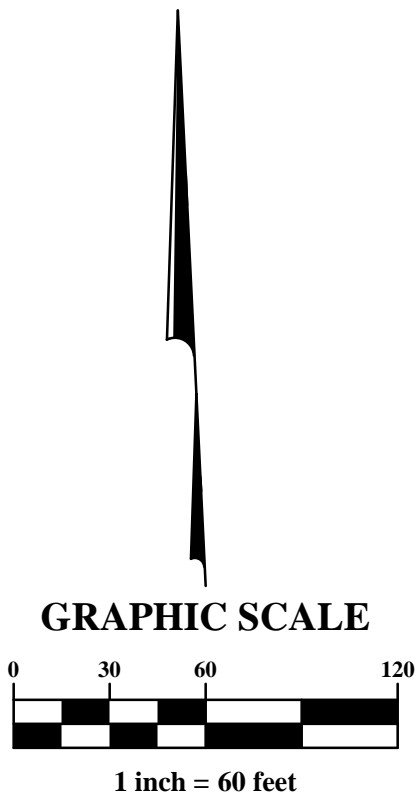
<u>LEGEND</u>	
	Number of Parking Spaces (Typ)
C#, L#	Curve Number, Line Number

NOTES:

All Radii are 5' Unless Otherwise Noted

All radii shall be measured to the edge of pavement or face of curb, unless otherwise noted.

All dimensions shall be to the edge of pavement or face of curb, unless otherwise noted. Expansions joints shall be placed at all work intersections with stoops, pavement and other walks.

[illegible]

**SCHOTTENSTEIN REAL
ESTATE GROUP**

**CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN**

**FOR
POWELL GRAND
EXHIBIT "E!"**

EXHIBIT "E"

EXHIBIT D

PRELIMINARY AND FINAL DEVELOPMENT PLAN



DATE _____

SCALE

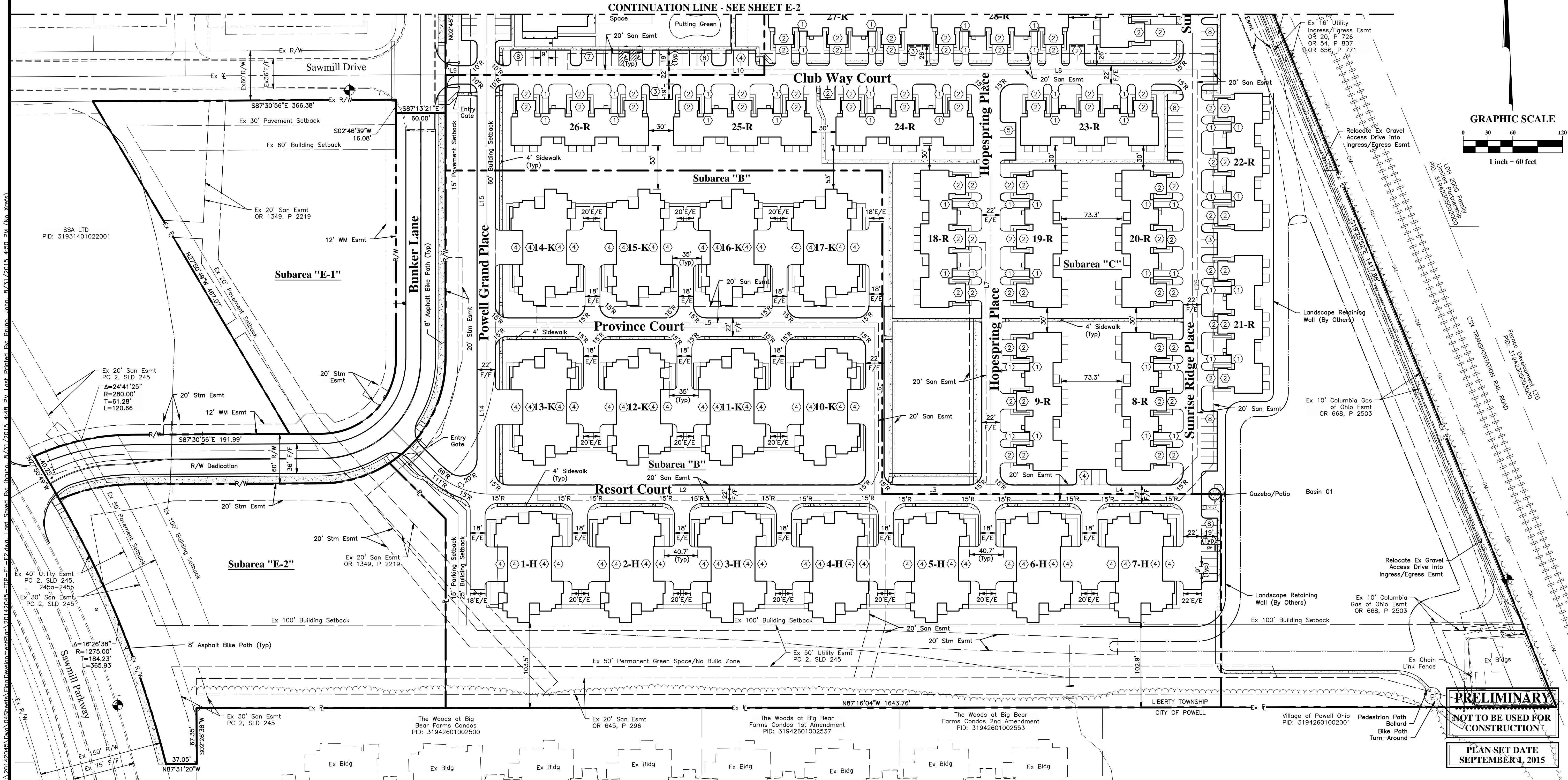
1" = 60'

JOB NO.

20142045

SHEET

E-1





- KEY:**
- ① Mail / Utility / Compactor
 - ② Clubhouse
 - ③ Patio / Entertainment Space
 - ④ Pool
 - ⑤ Putting Green
 - ⑥ Community Garden
 - ⑦ Dog Park
 - ⑧ Gazebo
 - ⑨ Bocce Ball
 - ⑩ Pickleball

SITE DATA

Total Site Area: +/- 39.0 ac
Public ROW: +/- 1.13 ac
Net Site Area: +/- 37.87 ac

Subareas A,B,C,D-1,D-2: +/- 33.02 ac
Multifamily Residential

- **Building A:** 4 BLDG.
Large Senior 1 and 2 Bedroom Suites with Elevators, and Individual Garages: 120 Units
Parking Provided: 278 spaces (2.3 sp/du)
- **Building B:** 15 BLDG.
2 and 3 Bedroom Ranch Homes with 2-Car Garages: 60 Units
Parking Provided: 248 spaces (4 sp/du)
- **Building C:** 16 BLDG.
2 and 3 Bedroom 2 Story Townhomes with 1 Car Garages: 128 Units
Parking Provided: 327 spaces (2.5 sp/du)

Total Units: 308 Units
Density (Net Site Area): +/- 8.1 du/ac

Parking Required (3 spaces/1 unit): 924 spaces
Parking Provided: +/- 936 spaces

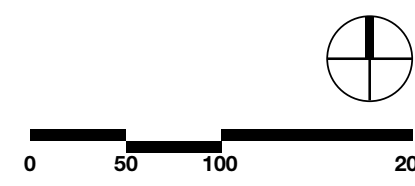
**Parking provided includes garage spaces, driveway stacking spaces, and surface parking spaces.*

Open Space
Open Space Required: +/- 7.56 ac (20%)
Open Space Provided: +/- 10.89 ac (29%)

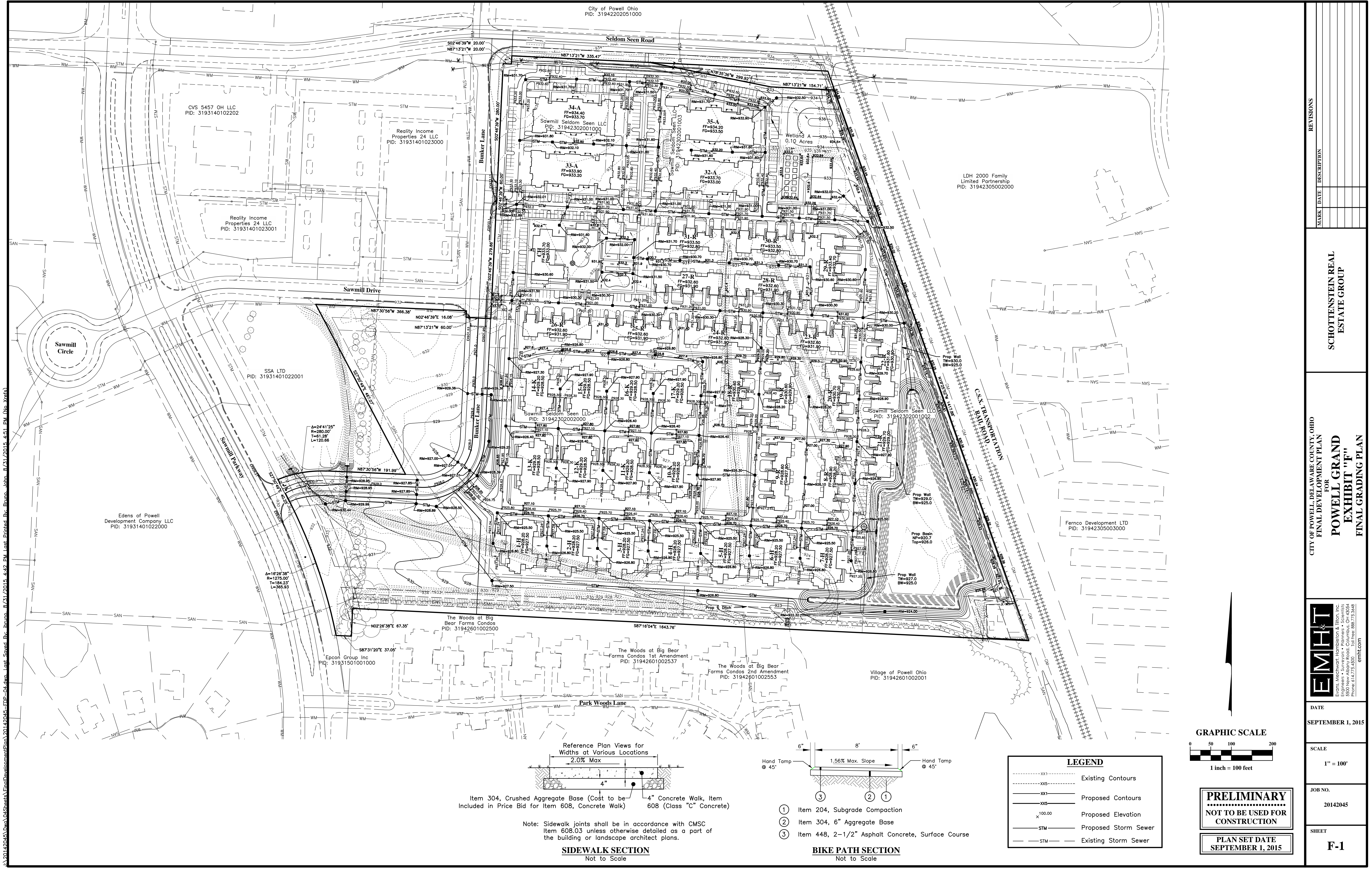
Subareas E-1&E-2
Commerical
Outparcels (2 Lots): +/- 4.86 ac

- Pursuant to the requirements of City of Powell Zoning Code section 1145.29, (c) and (d), existing trees within the development footprint will be surveyed and trees that are unable to be preserved will be replaced per code.
- This property has been used for agriculture historically, therefore no natural watercourses traverse the site within the property boundaries. The headwater for Bartholomew Run is located at the southeast corner of the project and will be the discharge point for the site. A storm water basin will be located near this location to provide erosion and sediment control during construction and storm water quantity and quality control post a construction. The two man-made watercourses crossing the site will be filled and piped as part of the development process.

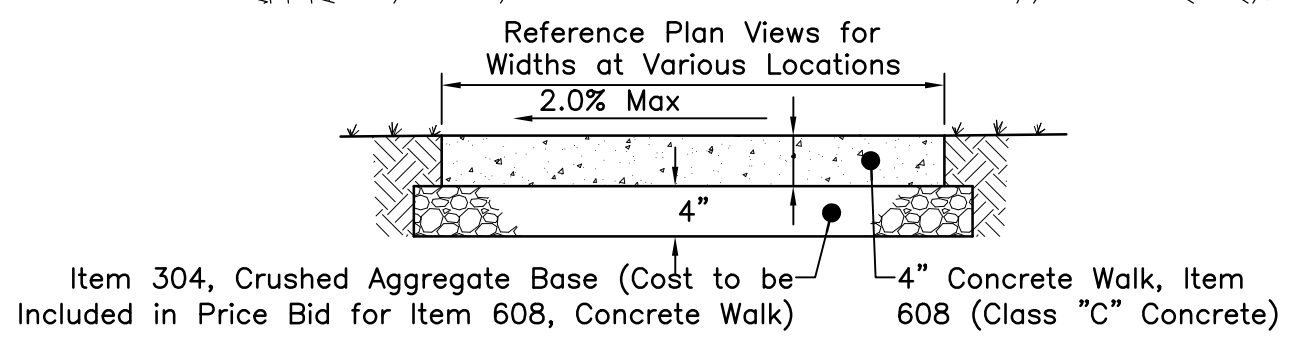
★ Desired Sign Locations



ILLUSTRATIVE PLAN

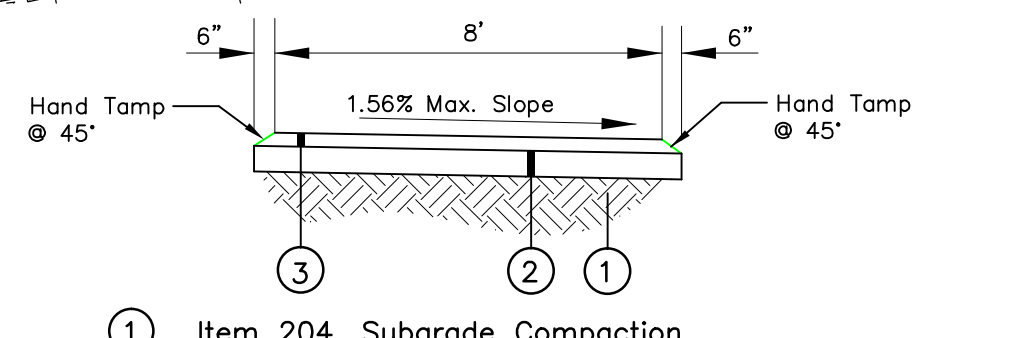


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Note: Sidewalk joints shall be in accordance with CMSC Item 608.03 unless otherwise detailed as a part of the building or landscape architect plans.

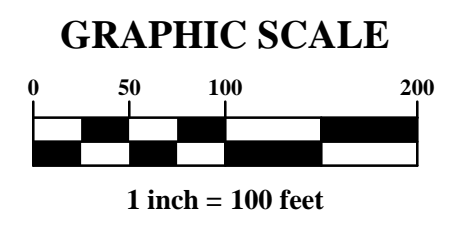
SIDEWALK SECTION
Not to Scale



- ① Item 204, Subgrade Compaction
- ② Item 304, 6" Aggregate Base
- ③ Item 448, 2-1/2" Asphalt Concrete, Surface Course

BIKE PATH SECTION
Not to Scale

LEGEND	
-----XXI-----	Existing Contours
-----XXS-----	Proposed Contours
x 100.00	Proposed Elevation
-----STM-----	Proposed Storm Sewer
-----STM-----	Existing Storm Sewer



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

PLAN SET DATE
SEPTEMBER 1, 2015

MARK	DATE	DESCRIPTION

SCHOTTENSTEIN REAL ESTATE GROUP

CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN
FOR
POWELL GRAND
EXHIBIT "F"
FINAL GRADING PLAN

EMHT

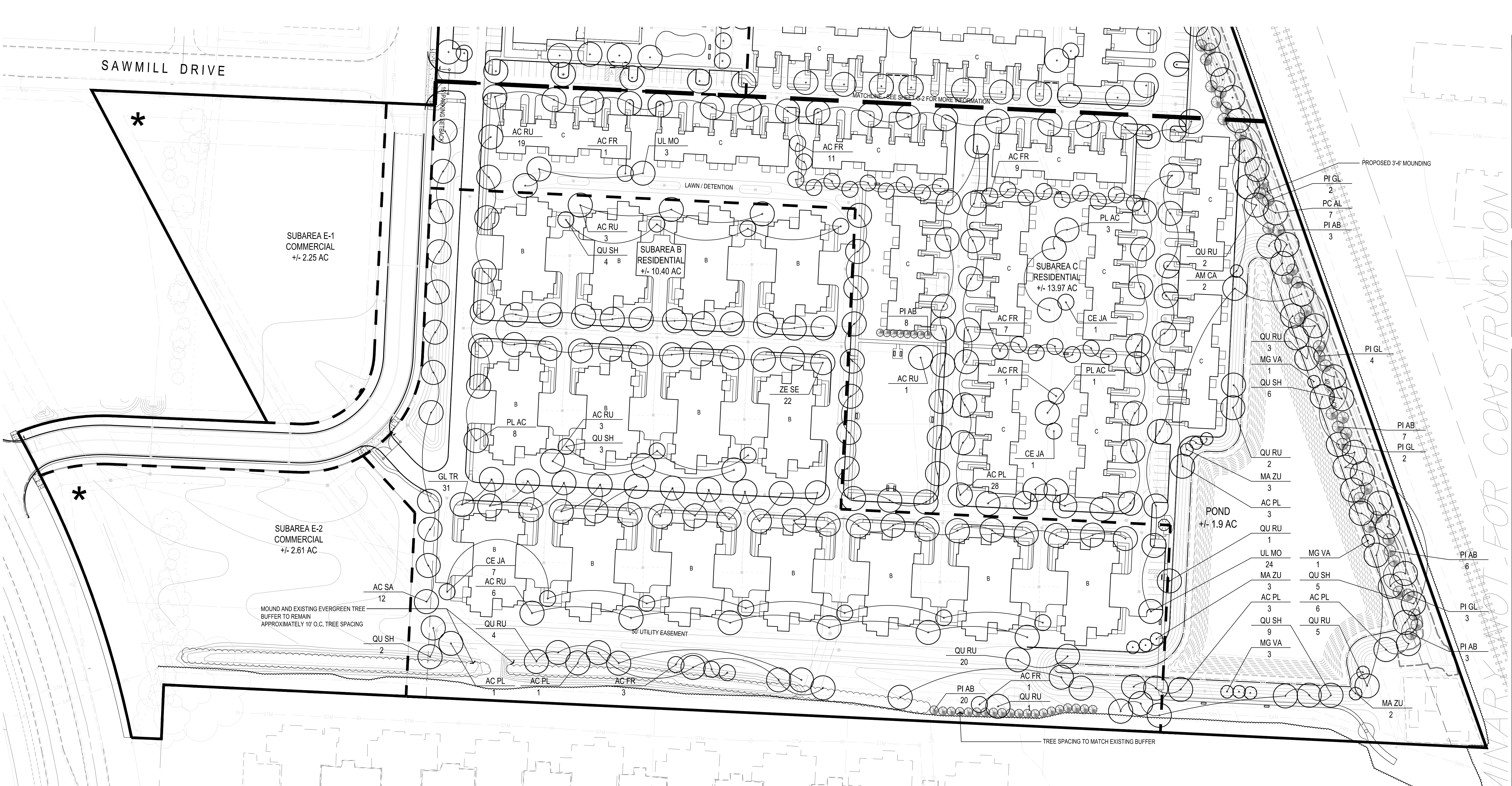
Evans, Meacham, Hampton & Titon, Inc.
5500 New Albany Road, Columbus, OH 43254
Phone 614.775.4500 Toll Free 888.775.3448
emht.com

DATE
SEPTEMBER 1, 2015

SCALE
1" = 100'

JOB NO.
20142045

SHEET
F-1

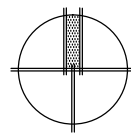
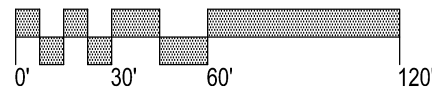


PLAN

Scale: 1" = 60'-0"

LANDSCAPE REQUIREMENTS

TREE PRESERVATION (1145.29)
(9 TREES WITH A MINIMUM TRUNK DIAMETER OF 6" TO BE REMOVED) x 6" = 22 REPLACEMENT TREES AT 2.5" CAL.
MINIMUM REQUIRED TREES (1145.30)
1/2 IN. TRUNK DIAMETER FOR EVERY 150 SQ. FT. OR FRACTION THEREOF OF BUILDING GROUND COVERAGE, WITH A MINIMUM OF 1 1/2 IN. OF TOTAL TRUNK DIAMETER
(BUILDING TYPE SF x NUMBER OF BUILDINGS) / 150 = NUMBER OF 1/2 IN. REQUIRED (NUMBER OF 1/2 IN. REQUIRED) x .5 = (NUMBER OF IN. REQUIRED) / 2.5 = NUMBER OF TREES REQUIRED AT 2.5 CAL.
BUILDING A
(14,626.02 SF x 4) = 58,504.1 / 150 = 390.03 x .5 = 195.01 / 2.5 = 78 TREES AT 2.5 IN. CAL.
BUILDING B
(8,200.8 SF x 15) = 123,012 / 150 = 820.1 x .5 = 410.04 / 2.5 = 164 TREES AT 2.5 IN. CAL.
BUILDING C
(7732.25 SF x 16) = 123,716 / 150 = 824.8 x .5 = 412.4 / 2.5 = 165 TREES AT 2.5 IN. CAL.
TOTAL NUMBER OF TREES REQUIRED = 407 TREES
PROVIDED = 407 TREES



Schottenstein Real Estate Group

Powell Grand

Powell, Ohio

Landscape Plan

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no. revisions: by:

job no: 6285150010

date: 09/02/2015

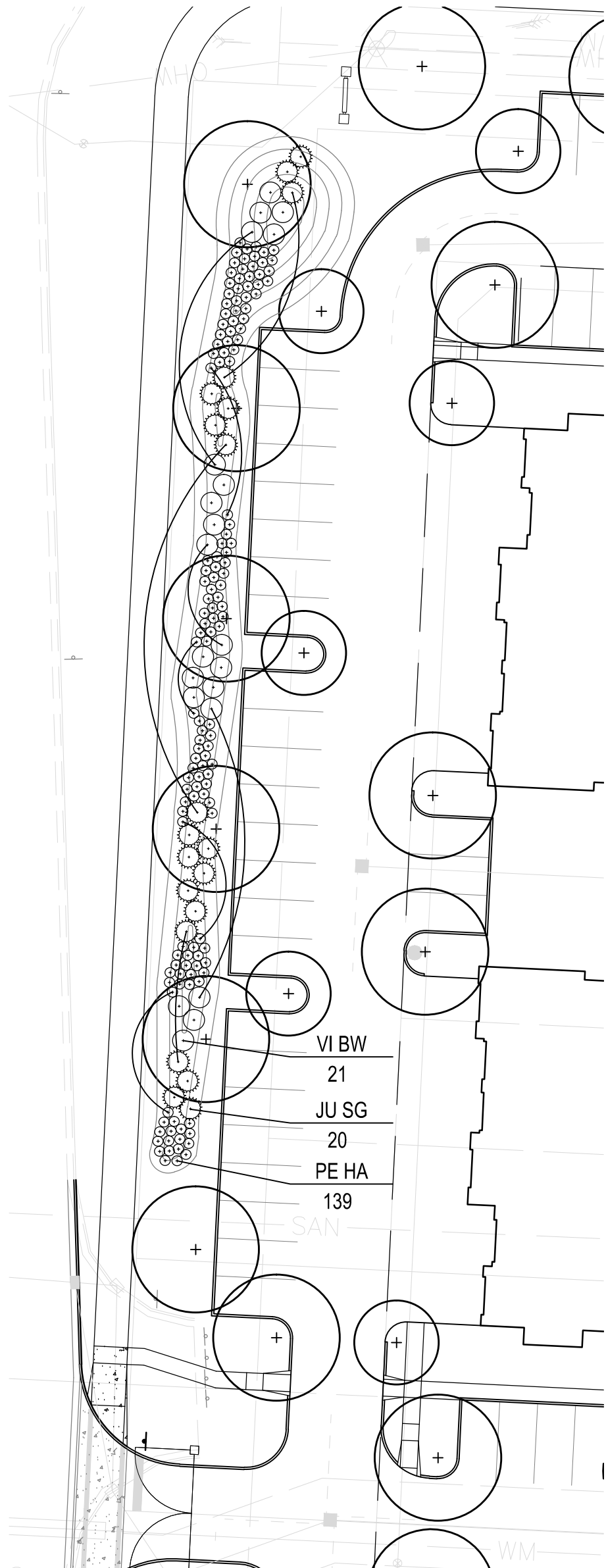
sheet:

G-1

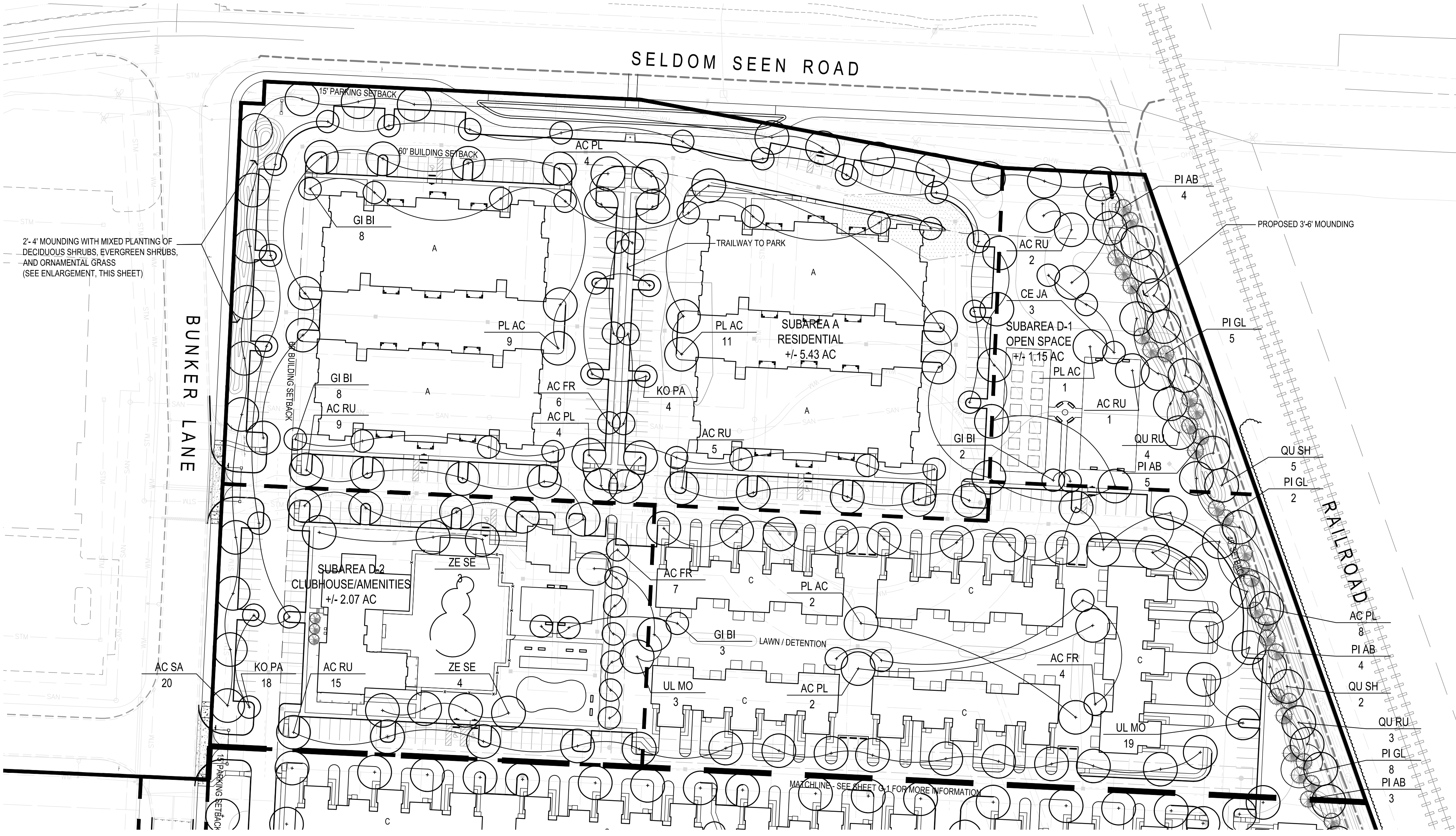
1 of 1

101 mill street, suite 200
gahanna, ohio 43230
phone: 614.418.0600
www.ohm-advisors.com

OHM



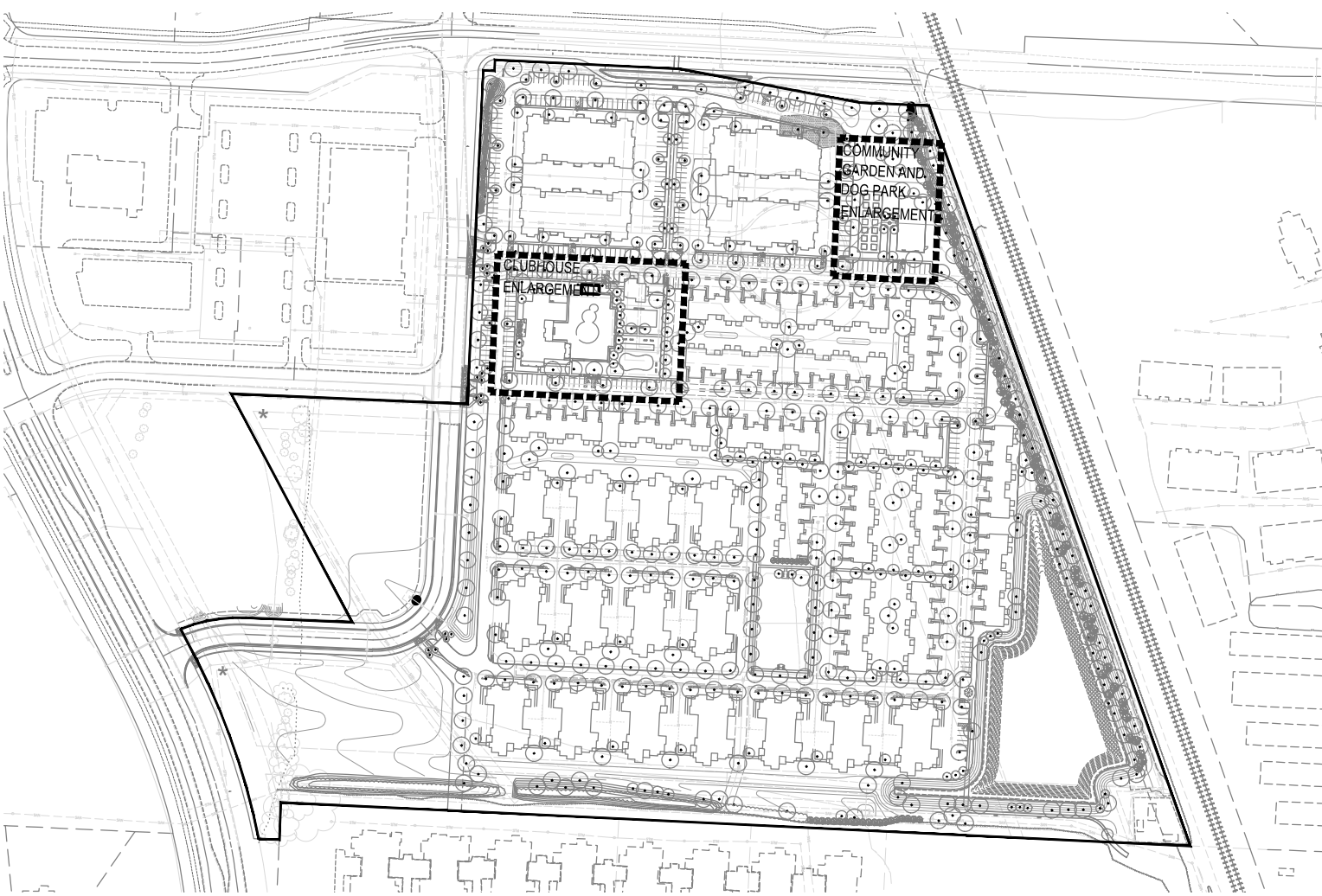
ENLARGEMENT
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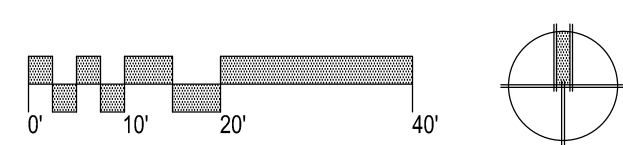
PLAN
Scale: 1" = 60'-0"

PLANT LIST

CODE	COMMON NAME	BOTANICAL NAME	SIZE	COND.	SPACING	CODE	COMMON NAME	BOTANICAL NAME	SIZE	COND.	SPACING
DECIDUOUS SHADE TREES						SHRUBS					
AC FR	AUTUMN BLAZE MAPLE	<i>Acer x freemanii 'Jeffers Red'</i>	2 1/2" CAL.	B&B	PER PLAN	BU GM	GREEN MOUNTAIN BOXWOOD	<i>Buxus x 'Green Mountain'</i>	24" HGT.	B&B	PER PLAN
AC PL	NORWAY MAPLE	<i>Acer plantanoides</i>	2 1/2" CAL.	B&B	PER PLAN	BU GV	GREEN VELVET BOXWOOD	<i>Buxus x 'Green Velvet'</i>	24" HGT.	B&B	PER PLAN
AC RU	RED MAPLE	<i>Acer rubra</i>	2 1/2" CAL.	B&B	PER PLAN	HY AN	ANNABELLE HYDRANGEA	<i>Hydrangea arborescens 'Annabelle'</i>	36" HGT.	B&B	PER PLAN
AC SA	SUGAR MAPLES	<i>Acer saccharum</i>	2 1/2" CAL.	B&B	PER PLAN	JU KE	KETELEERI JUNIPER	<i>Juniper chinensis 'Keteleeri'</i>	6" HGT.	B&B	PER PLAN
GI BI	PRINCETON SENTRY GINKGO	<i>Ginkgo biloba 'Princeton Sentry'</i>	2 1/2" CAL.	B&B	PER PLAN	JU SG	SEA GREEN JUNIPER	<i>Juniper chinensis 'Sea Green'</i>	24" HGT.	B&B	PER PLAN
GL TR	THORNLESS HONEYLOCUST	<i>Gleditsia tricanthos var. inermis</i>	2 1/2" CAL.	B&B	PER PLAN	JU SC	WITCHITA BLUE JUNIPER	<i>Juniperus scopulorum 'Witchita Blue'</i>	6" HGT.	B&B	PER PLAN
PL AC	LONDON PLANETREE	<i>Plantanus x acerfolia 'Bloodgood'</i>	2 1/2" CAL.	B&B	PER PLAN	IL GL	INKBERRY	<i>Ilex glabra 'Shamrock'</i>	24" HGT.	B&B	PER PLAN
QU RU	RED OAK	<i>Quercus rubra</i>	2 1/2" CAL.	B&B	PER PLAN	IT VI	VIRGINIA SWEETSPIRE	<i>Itea virginica 'Henry's Garnet'</i>	24" HGT.	B&B	PER PLAN
QU SH	SHUMARD OAK	<i>Quercus shumardii</i>	2 1/2" CAL.	B&B	PER PLAN	RO RA	DOUBLE KNOCKOUT ROSE	<i>Rosa 'Radrizz'</i>	36" HGT.	B&B	PER PLAN
TI CO	GREENSPIRE LITTLELEAF LINDEN	<i>Tilia cordata 'Greenspire'</i>	2 1/2" CAL.	B&B	PER PLAN	SP LP	LITTLE PRINCESS SPIREA	<i>Spirea japonica 'Little Princess'</i>	24" HGT.	B&B	PER PLAN
ZE SE	GREEN VASE ZELKOVA	<i>Zelkova serrata 'Green Vase'</i>	2 1/2" CAL.	B&B	PER PLAN	SY ME	DWARF KOREAN LILAC	<i>Syringa meyeri 'Palibin'</i>	36" HGT.	B&B	PER PLAN
KO PA	GOLDEN RAIN TREE	<i>Koelreuteria paniculata</i>	2 1/2" CAL.	B&B	PER PLAN	TA DE	DENSE YEW	<i>Taxus x media 'Densiformis'</i>	24" HGT.	B&B	PER PLAN
CE JA	KATSURA TREE	<i>Cercidiphyllum japonicum</i>	2 1/2" CAL.	B&B	PER PLAN	VI BW	BURKWOOD VIBURNUM	<i>Viburnum x burkwoodii</i>	24" HGT.	#5 Cont.	PER PLAN
UL MO	MORTON ELM	<i>Ulmus 'morton'</i>	2 1/2" CAL.	B&B	PER PLAN	VI CA	KOREAN SPICE VIBURNUM	<i>Viburnum carlesii</i>	36" HGT.	B&B	PER PLAN
ORNAMENTAL TREES						WE WR	WINE AND ROSES WEIGELA	<i>Weigela florida 'Wine and Roses'</i>	36" HGT.	B&B	PER PLAN
AM CA	SERVICEBERRY	<i>Amelanchier canadensis</i>	6-8" HGT.	B&B	PER PLAN	ORNAMENTAL GRASSES, GROUND COVER, AND PERENNIALS					
MA PR	PRAIRIEFIRE CRABAPPLE	<i>Malus sp. 'Prairefire'</i>	1 1/2" CAL.	B&B	PER PLAN	CA KF	FEATHER REED GRASS	<i>Calamagrostis x acutiflora 'Karl Foerster'</i>	#2	CONTAINER	PER PLAN
MA ZU	REDBUD CRAB	<i>Malus zumi 'Calocarpa'</i>	1 1/2" CAL.	B&B	PER PLAN	HE HR	HAPPY RETURNS DAYLILY	<i>Hemerocallis 'Happy Returns'</i>	#1	CONTAINER	PER PLAN
MG VA	SWEETBAY MAGNOLIA	<i>Magnolia virginiana</i>	10' HGT.	B&B	PER PLAN	LI BB	BIG BLUE LILY TURF	<i>Liriope muscari 'Big Blue'</i>	#1	CONTAINER	PER PLAN
EVERGREEN TREES						PE HA	HAMELN DWARF FOUNTAIN GRASS	<i>Pennisetum alopecuroides 'Hamelni'</i>	#1	CONTAINER	PER PLAN
PI GL	COLORADO BLUE SPRUCE	<i>Picea pungens glauca</i>	6' HGT.	B&B	PER PLAN	PE AL	FOUNTAIN GRASS	<i>Pennisetum alopecuroides</i>	#2	CONTAINER	PER PLAN
PI AB	NORWAY SPRUCE	<i>Picea abies</i>	6' HGT.	B&B	PER PLAN	SA MN	MAY NIGHT SAGE	<i>Salvia x sylvestris 'May Night'</i>	#1	CONTAINER	PER PLAN
PI BB	BABY BLUE EYES SPRUCE	<i>Picea pungens 'Baby Blue Eyes'</i>	6' HGT.	B&B	PER PLAN	SE AF	AUTUMN FIRE SEDUM	<i>Sedum spectabile 'Autumn Fire'</i>	#2	CONTAINER	PER PLAN

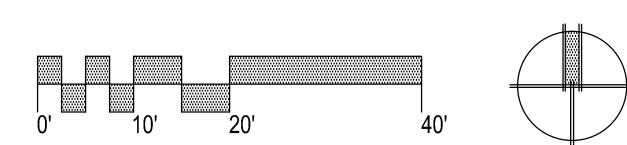


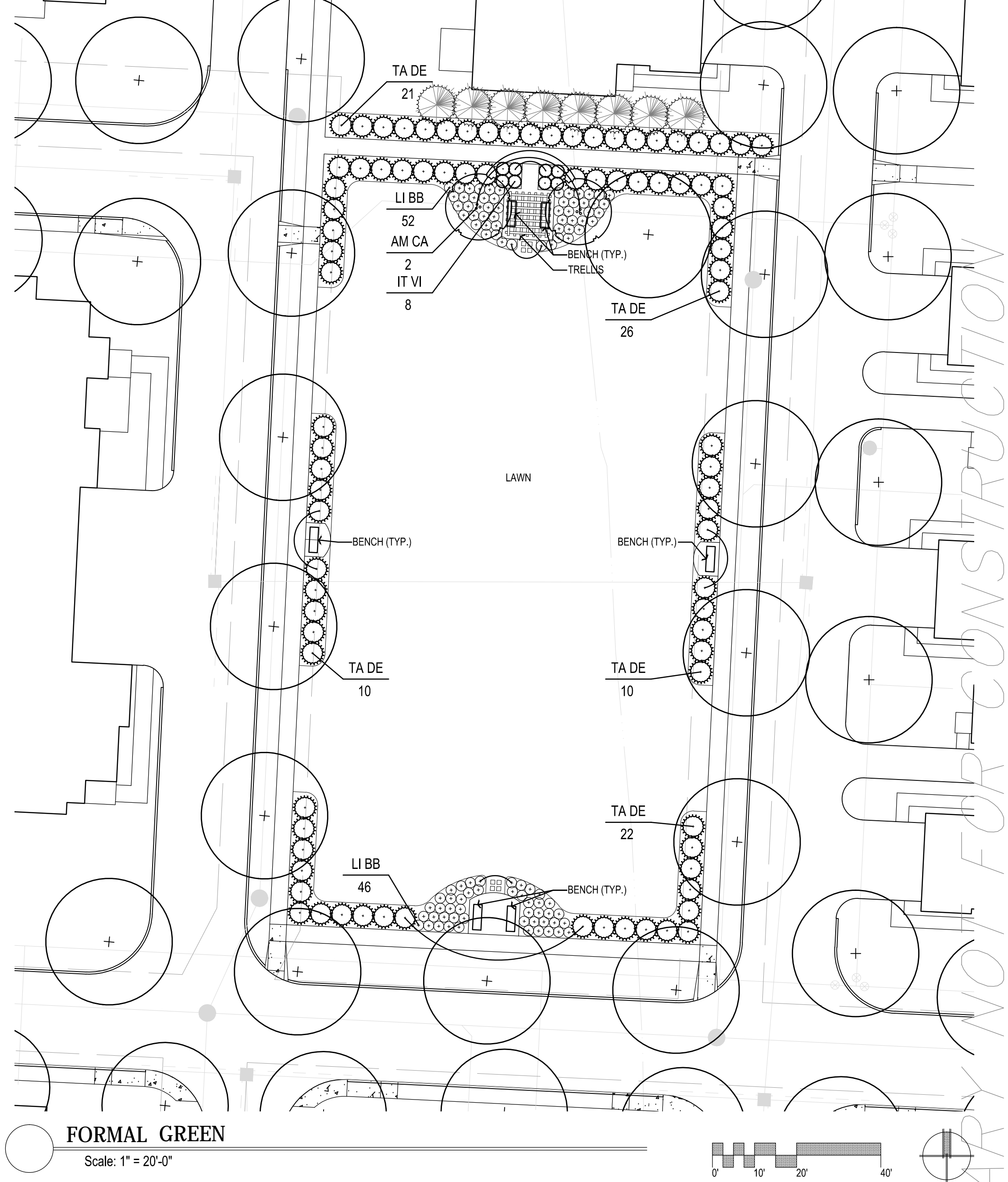
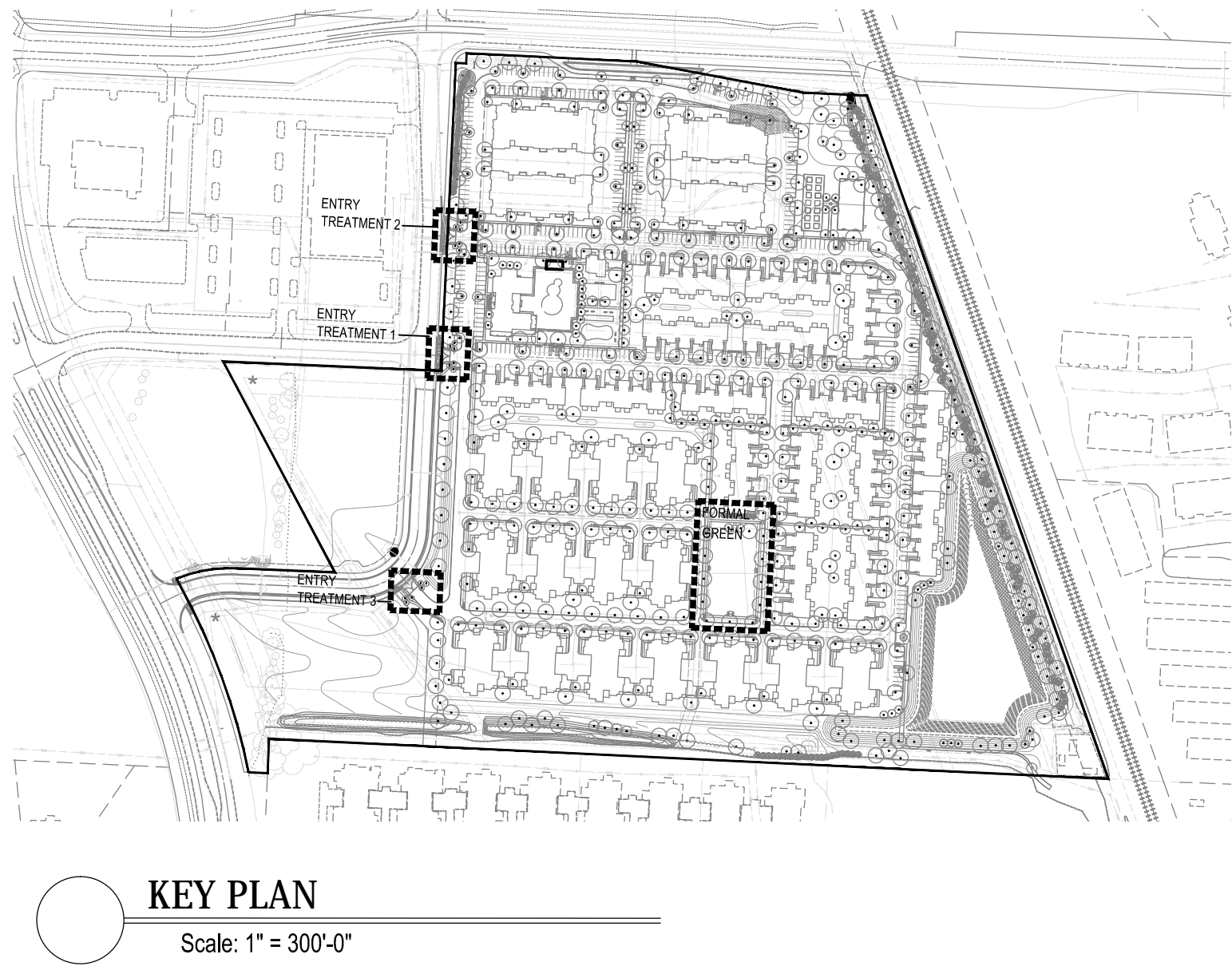
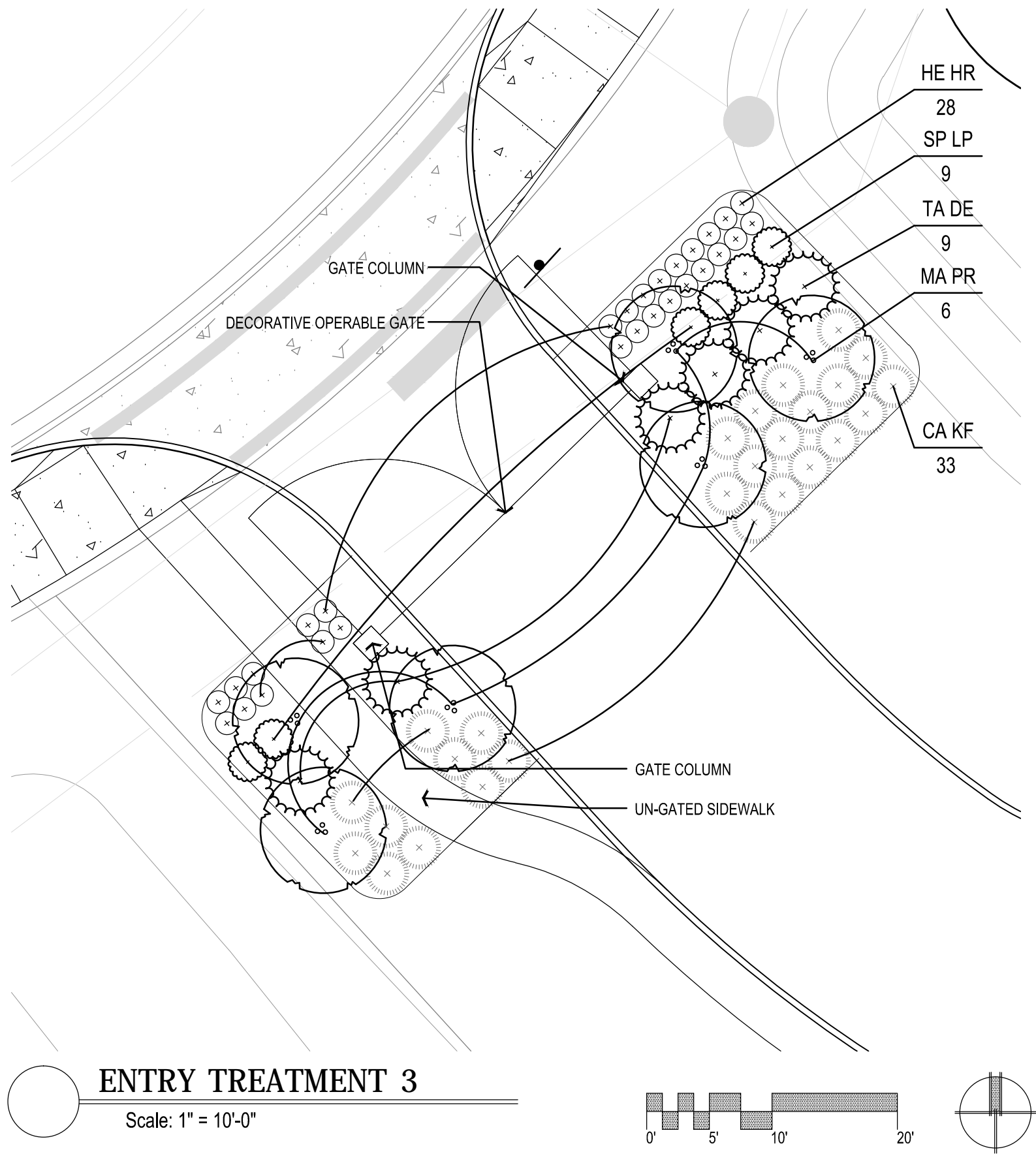
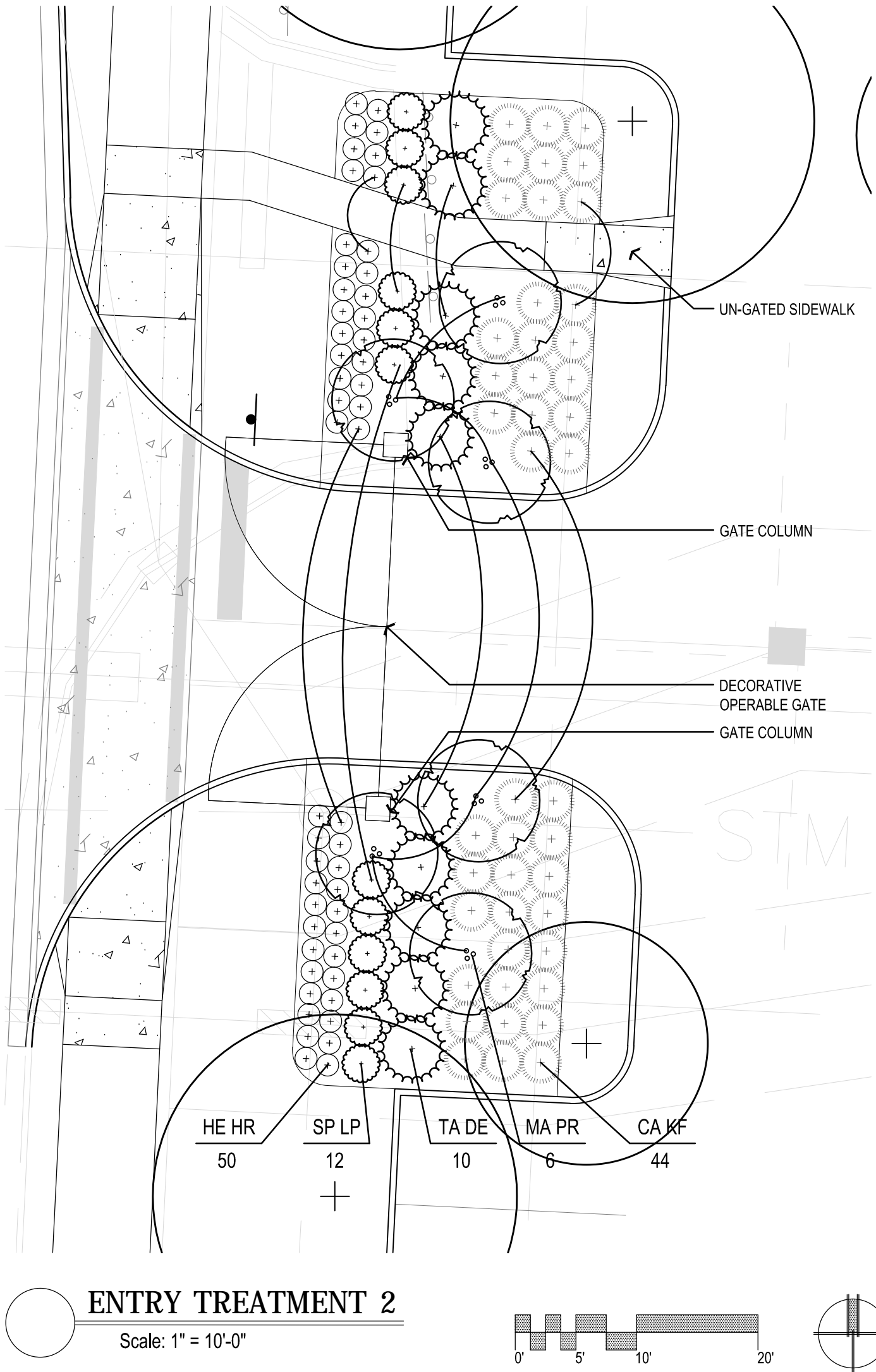
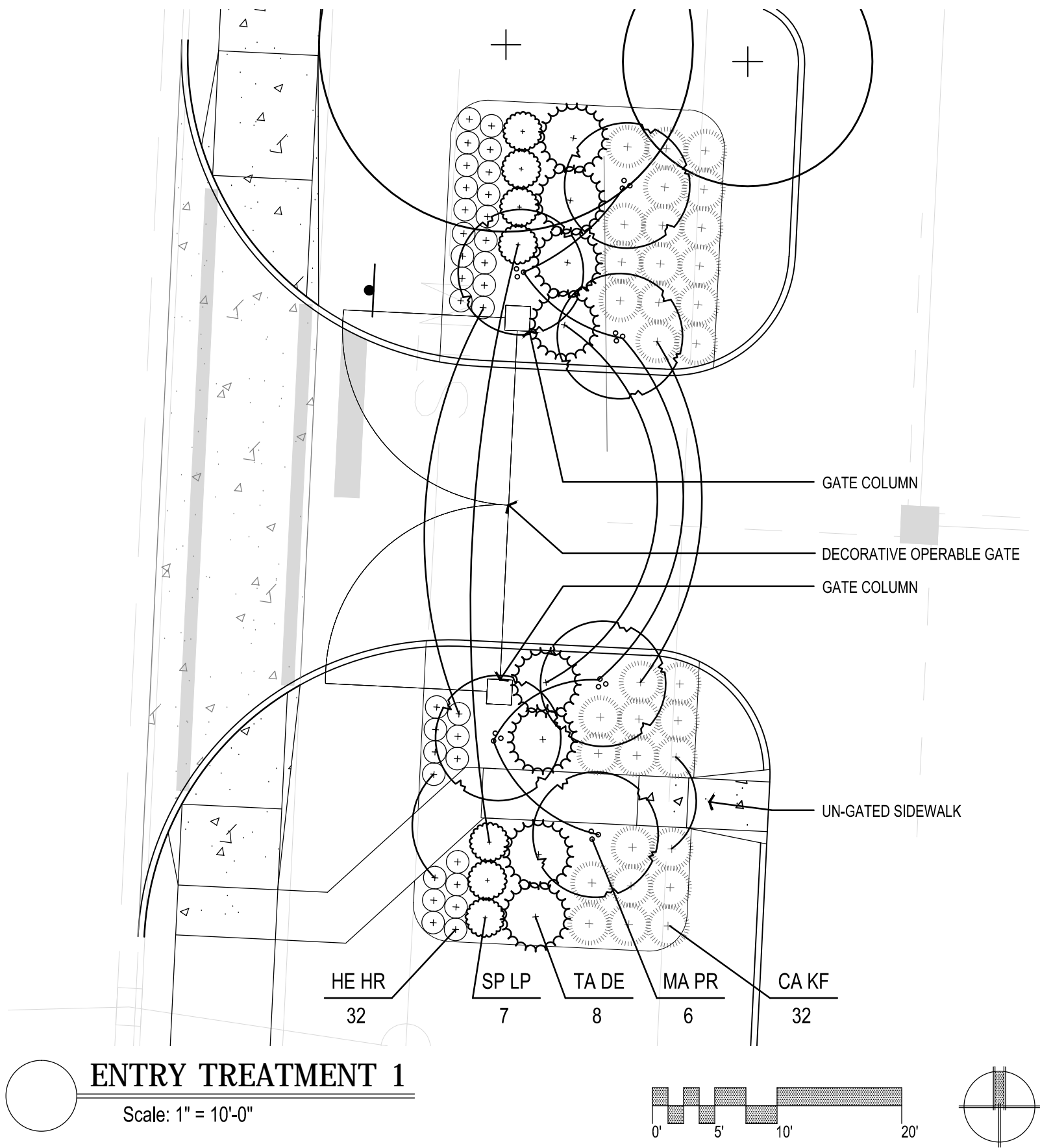
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Scale: 1" = 300'-0"

Scale: 1" = 20'-0"

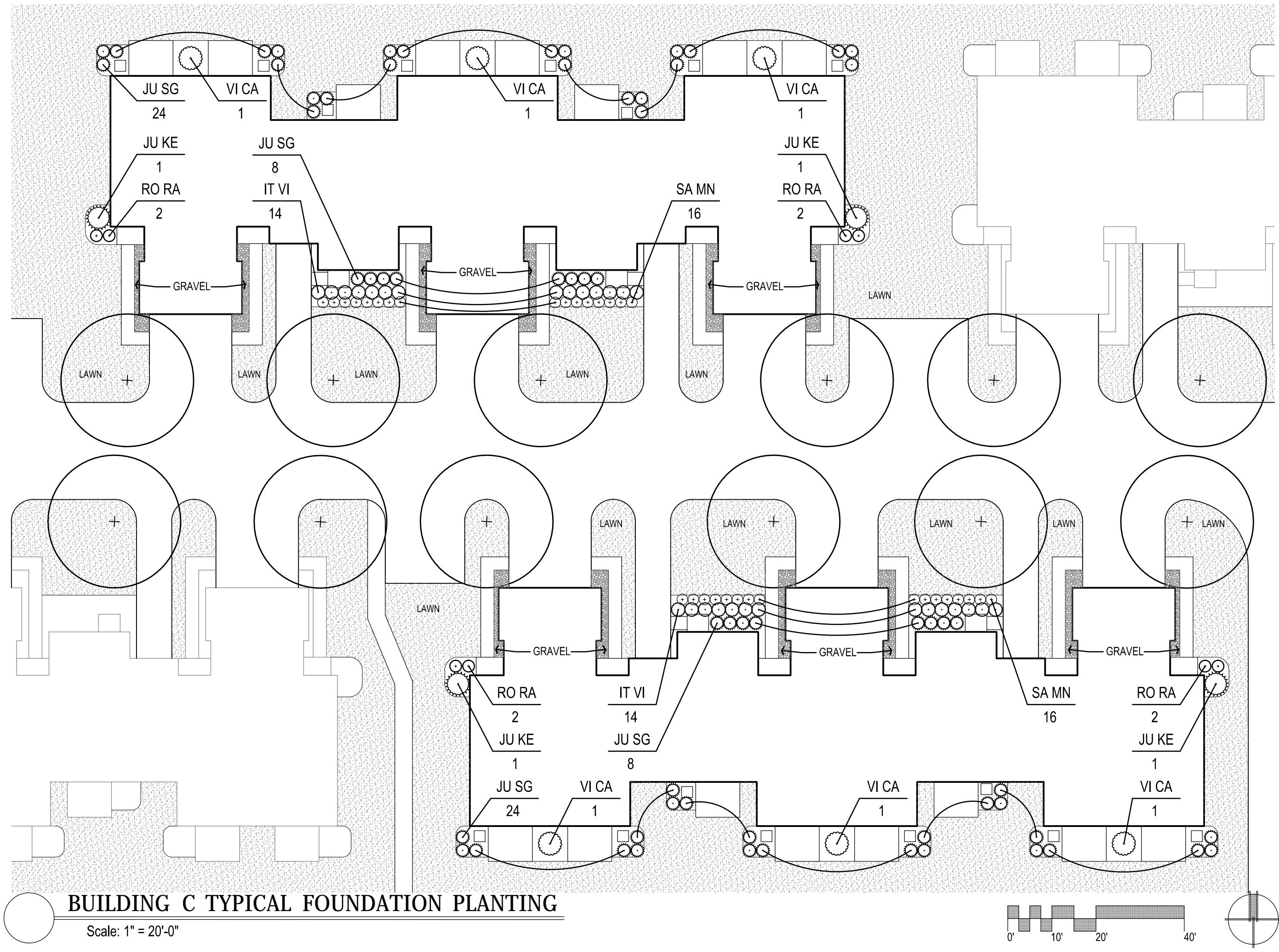




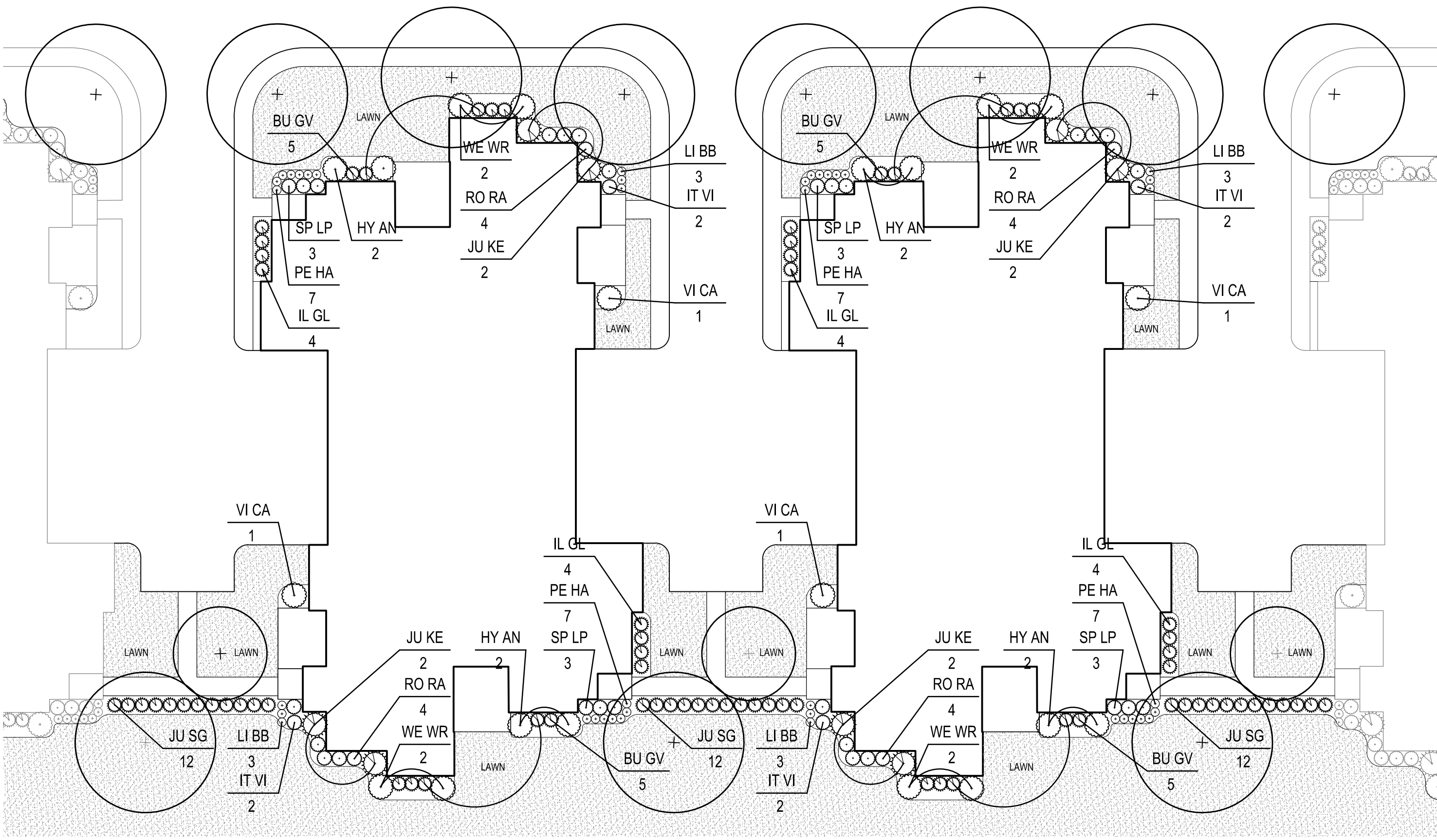
no.	revisions:	by:

job no: 6285150010
date: 09/02/2015
sheet:

BUILDING C TYPICAL FOUNDATION PLANTING
Scale: 1" = 20'-0"



BUILDING C TYPICAL FOUNDATION PLANTING
Scale: 1" = 20'-0"



BUILDING B TYPICAL FOUNDATION PLANTING
Scale: 1" = 20'-0"

Schottenstein Real Estate Group

Powell Grand

Powell, Ohio

Landscape Plan Enlargements

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101 mill street, suite 200
gahanna, ohio 43230
phone: 614.418.0600
www.ohm-advisors.com

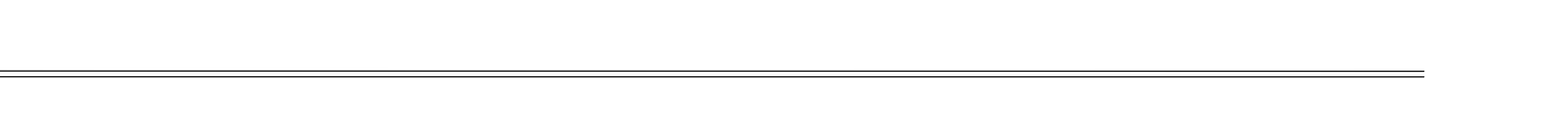
ΣΗΘ

job no: 6285150010
date: 09/02/2015
sheet:

G-5

1 of: 1

*ANYTHING NOT SPECIFIED AS PAVEMENT, LAWN, OR PLANTING SHALL BE MULCH.





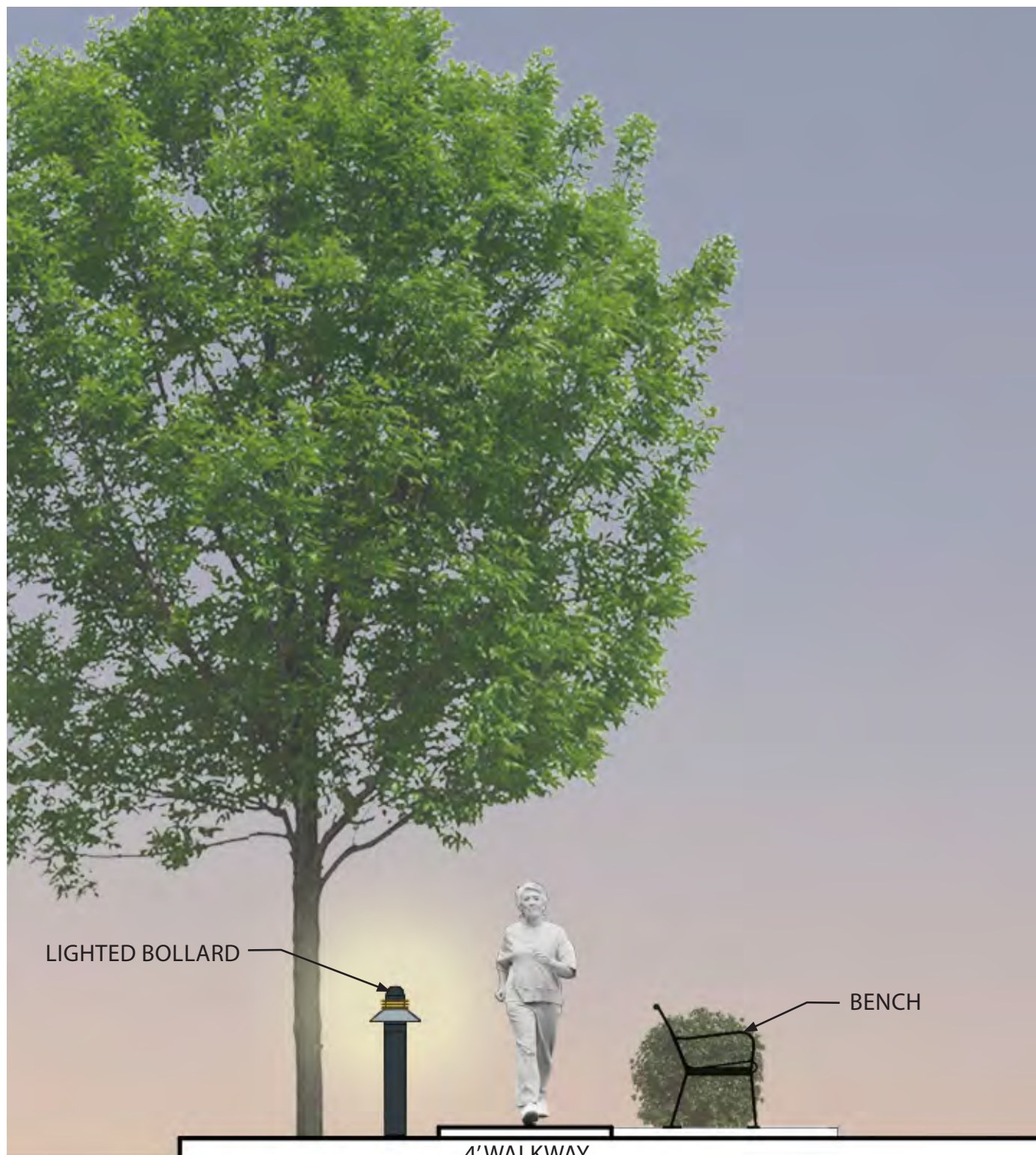
BENCH



LIGHTED BOLLARD



UNLIT BOLLARD AT BIKE PATH SITE CONNECTIONS



WALKWAY SECTION
N.T.S



PEDESTRIAN SCALE STREET LIGHT



PEDESTRIAN CIRCULATION DIAGRAM



“ACTIVE ADULT CLASS-A GATED COMMUNITY”

MARGELLO
DEVELOPMENT CO.

SCHOTTENSTEIN
REAL ESTATE GROUP





POOL AND FIRE PIT AREA



LOUNGERS AND POOL FENCE



TRELLIS



PUTTING GREEN



BOCCE BALL



PICKLEBALL



BLACK CHAIN-LINK DOG PARK FENCE

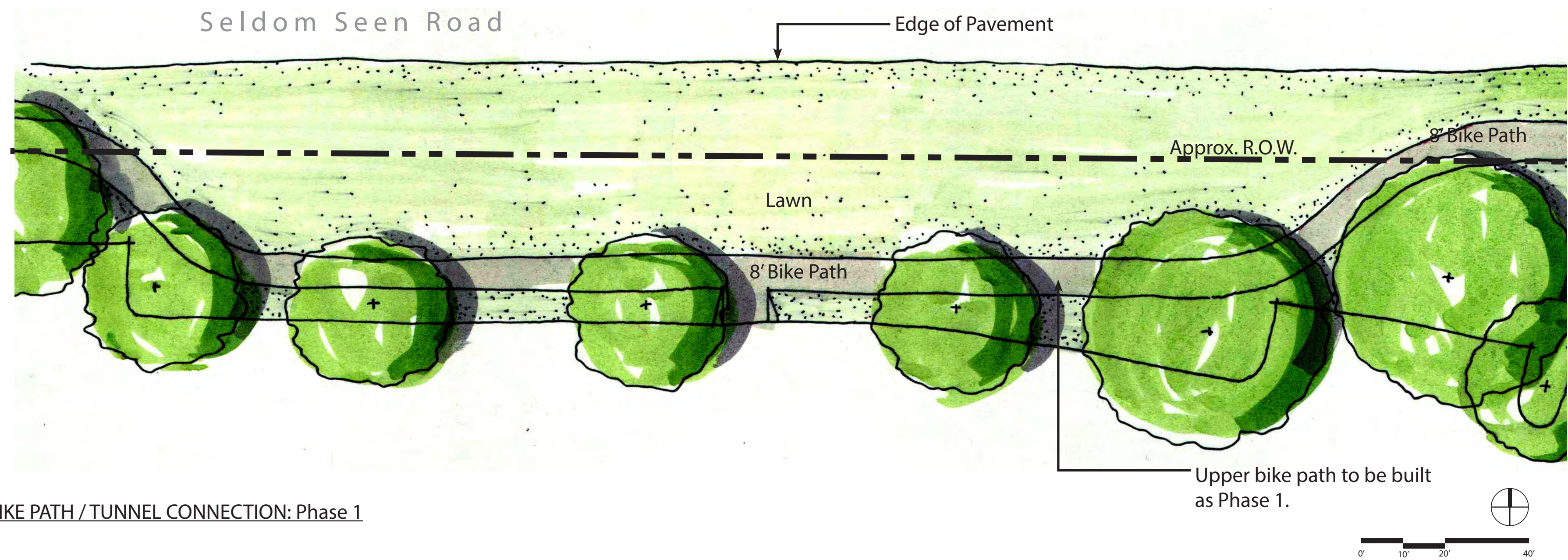


DOG PARK CORNER POST AND GATE POST

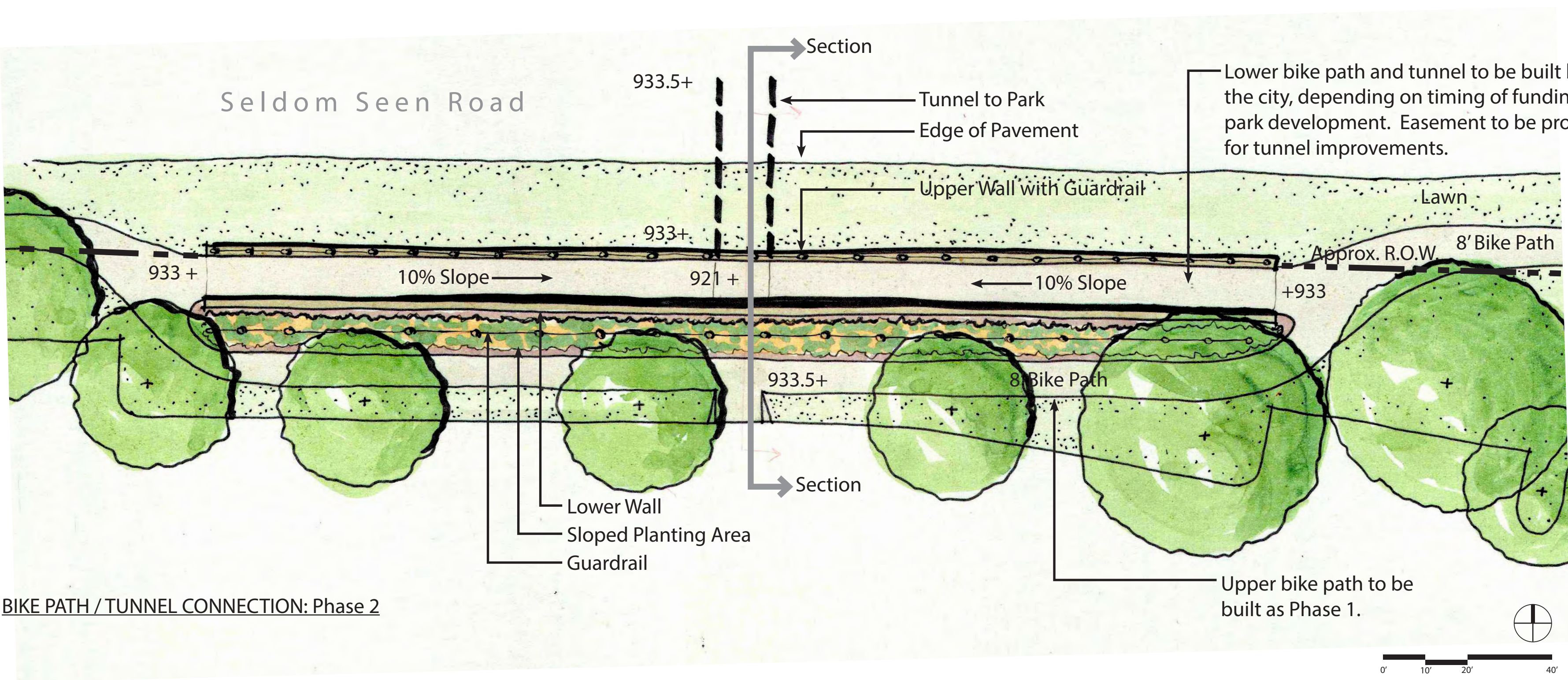
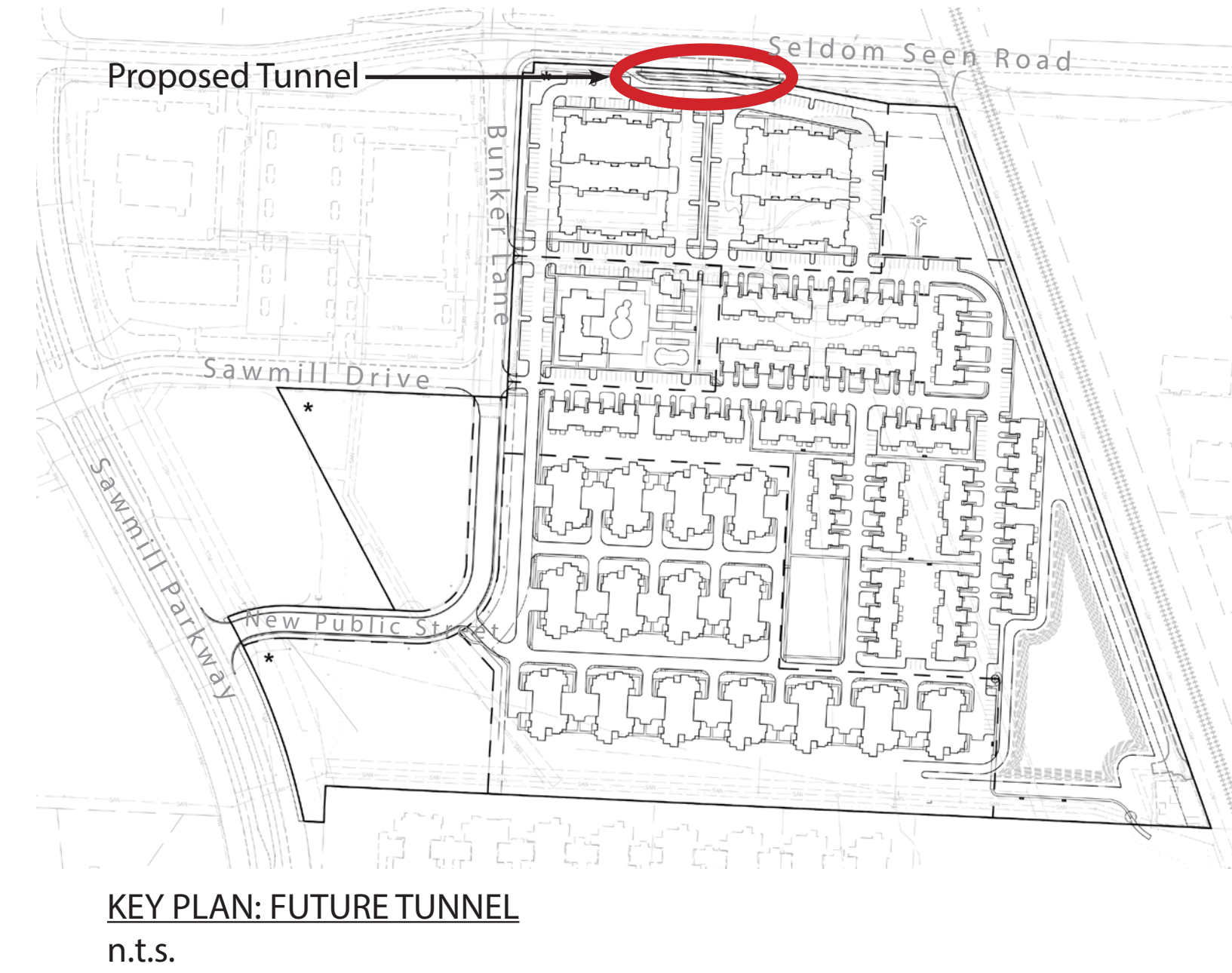


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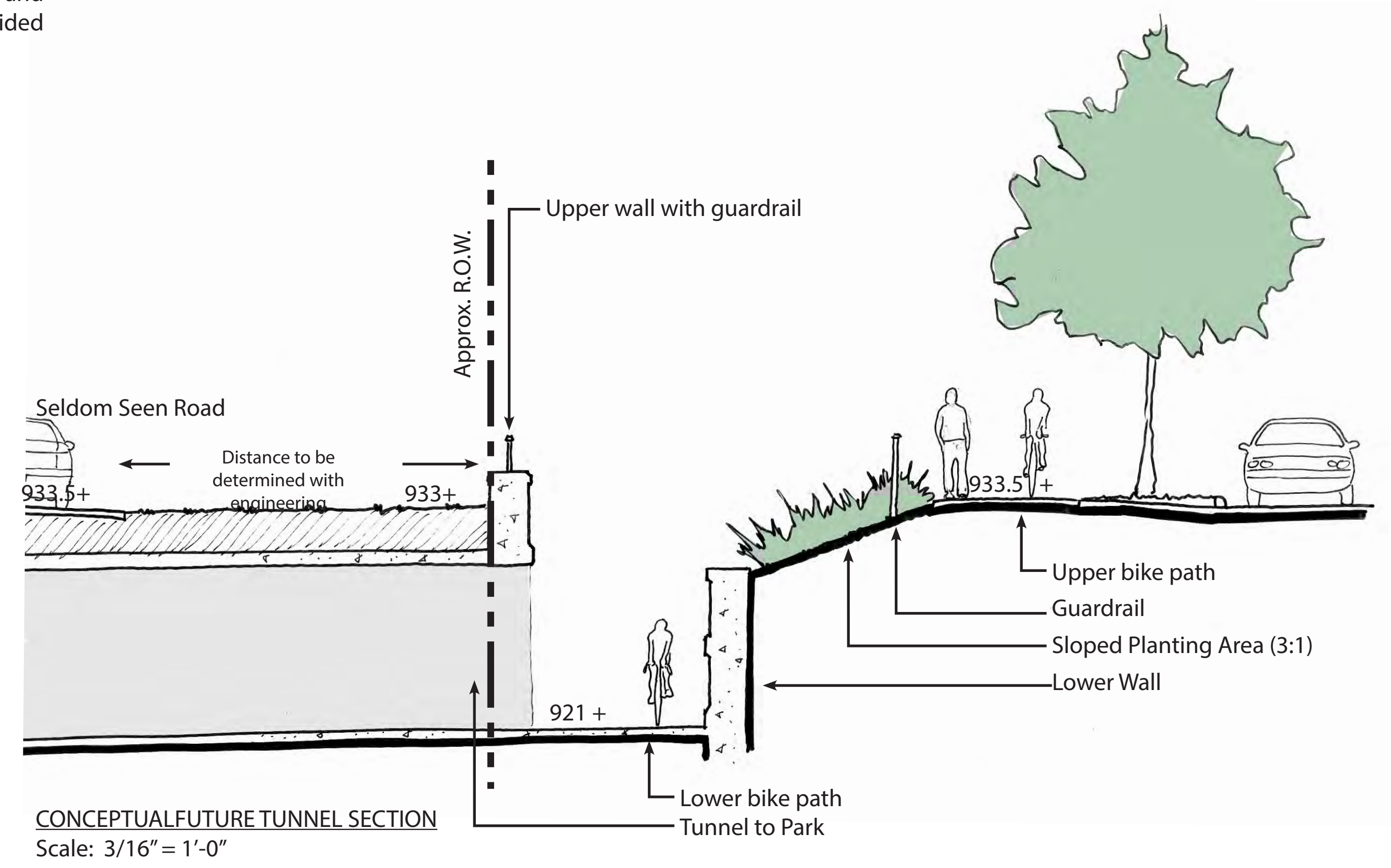
LANDSCAPE PLAN DETAILS



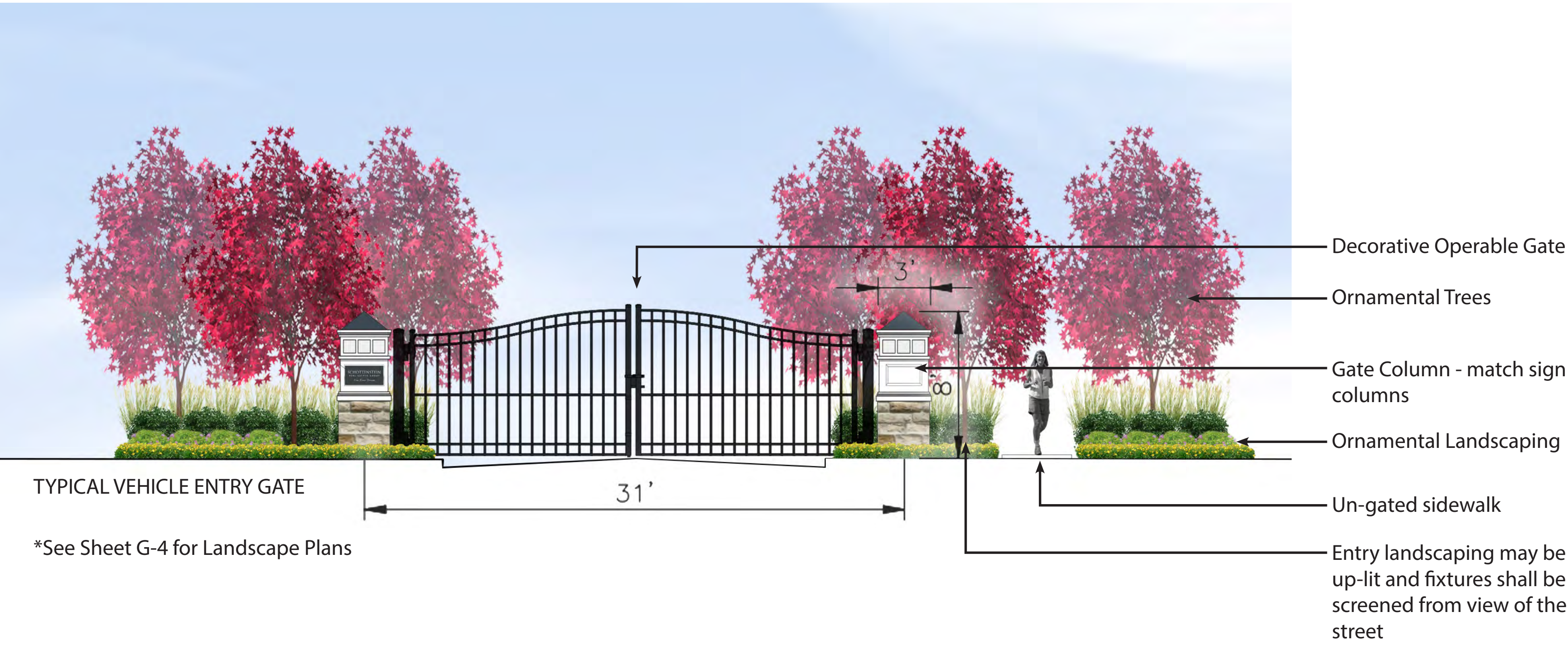
BIKE PATH / TUNNEL CONNECTION: Phase 1



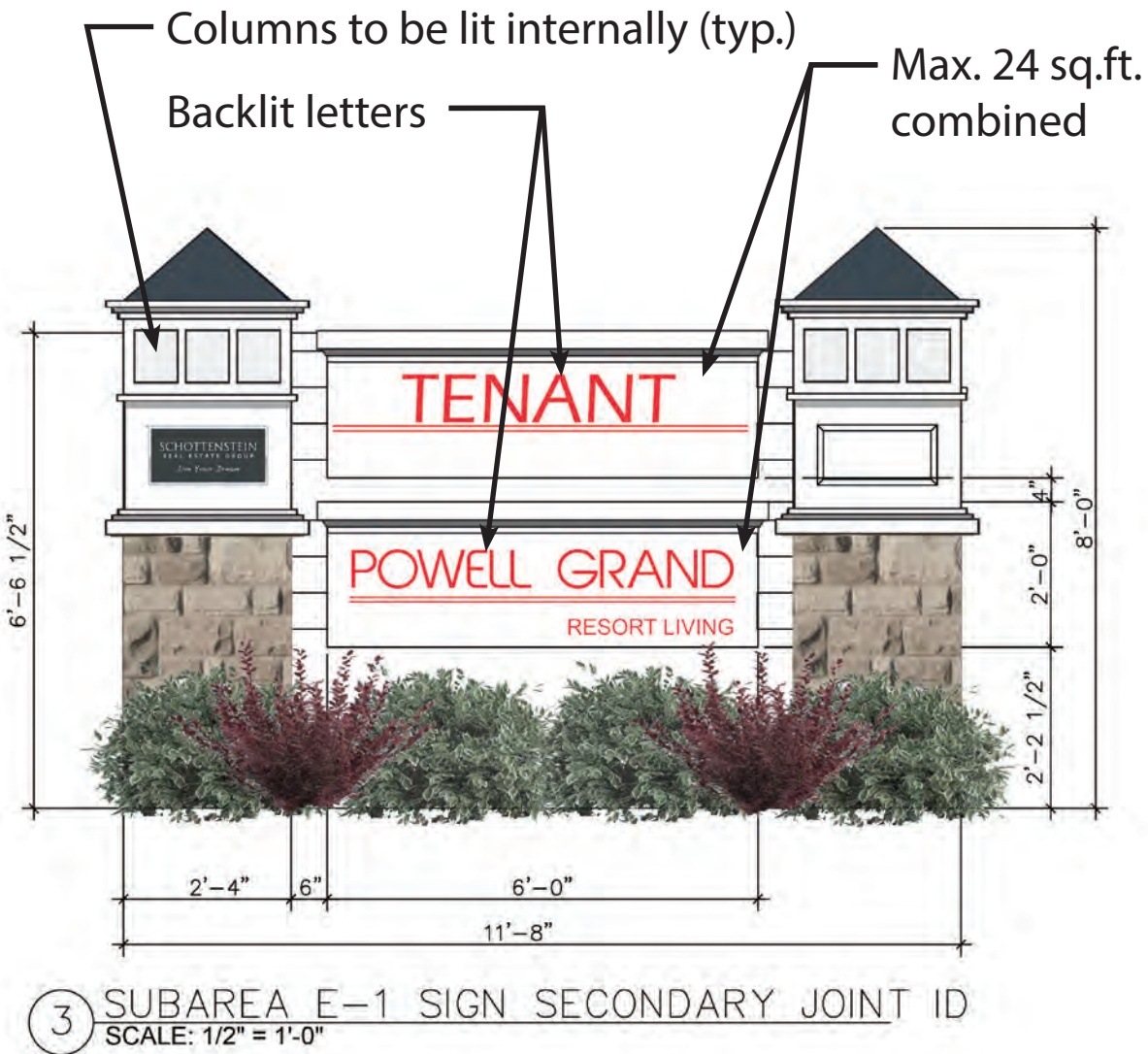
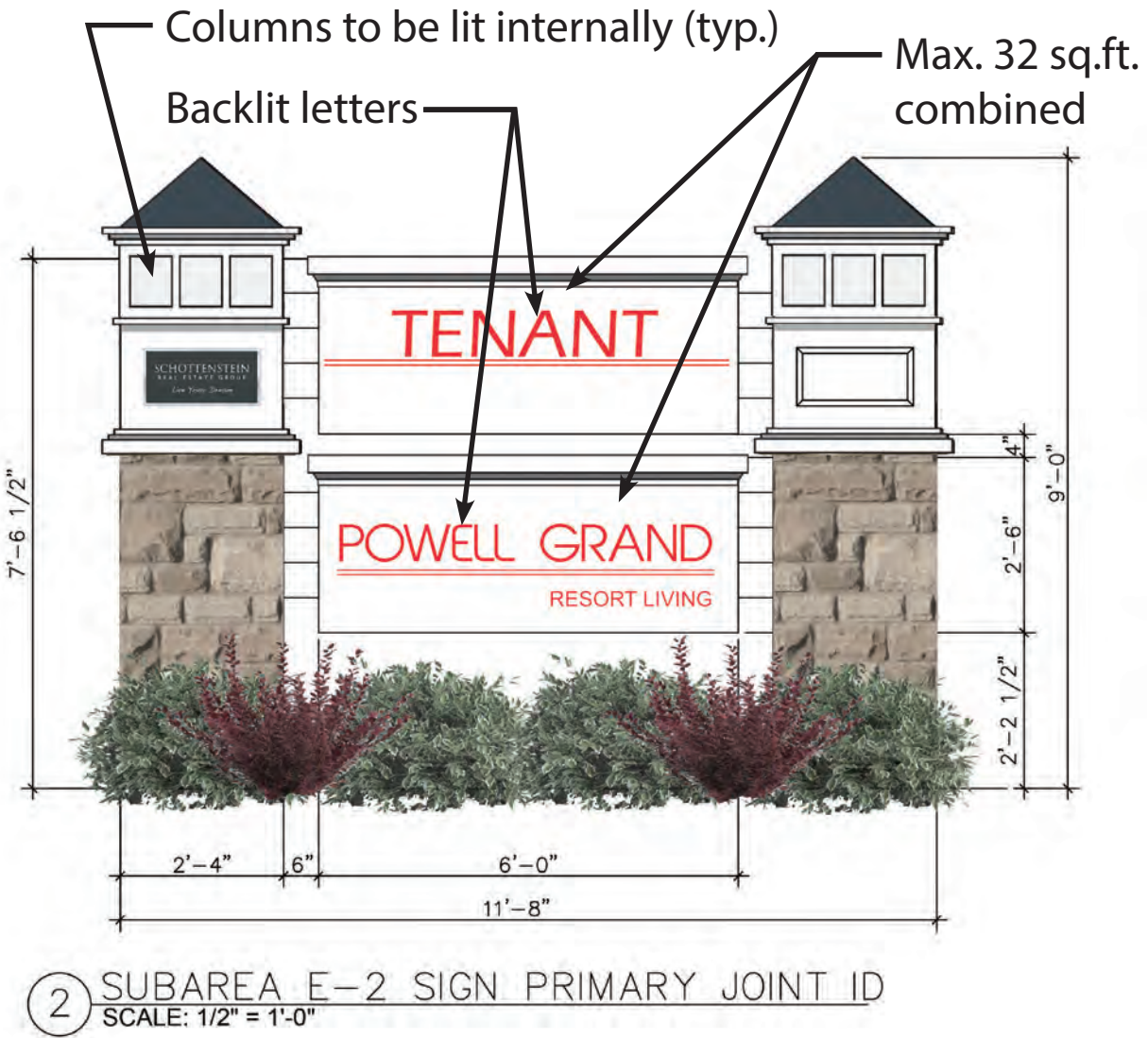
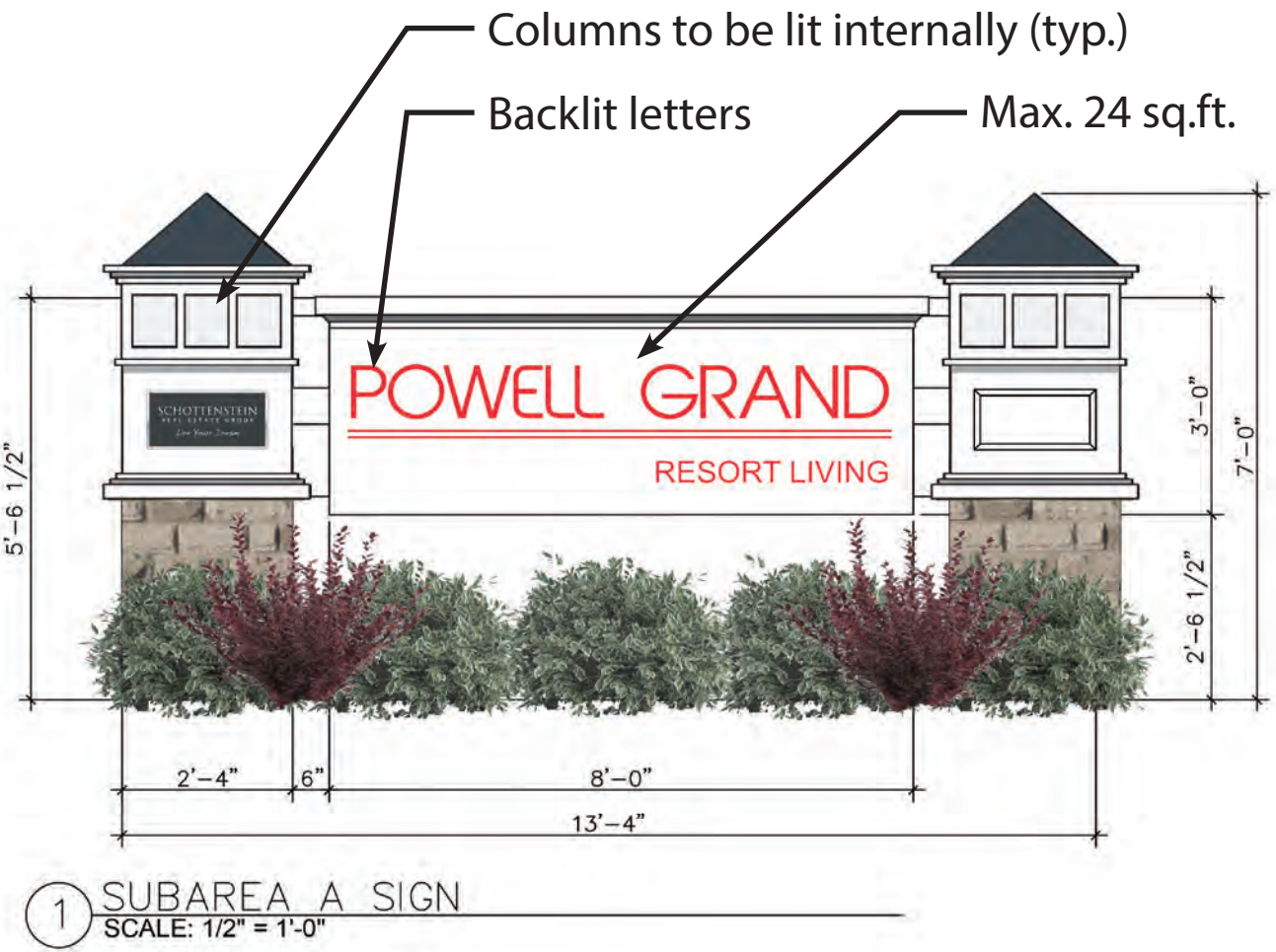
BIKE PATH / TUNNEL CONNECTION: Phase 2



FUTURE CONNECTION TO PARK



KEY PLAN: SIGNAGE
n.t.s.

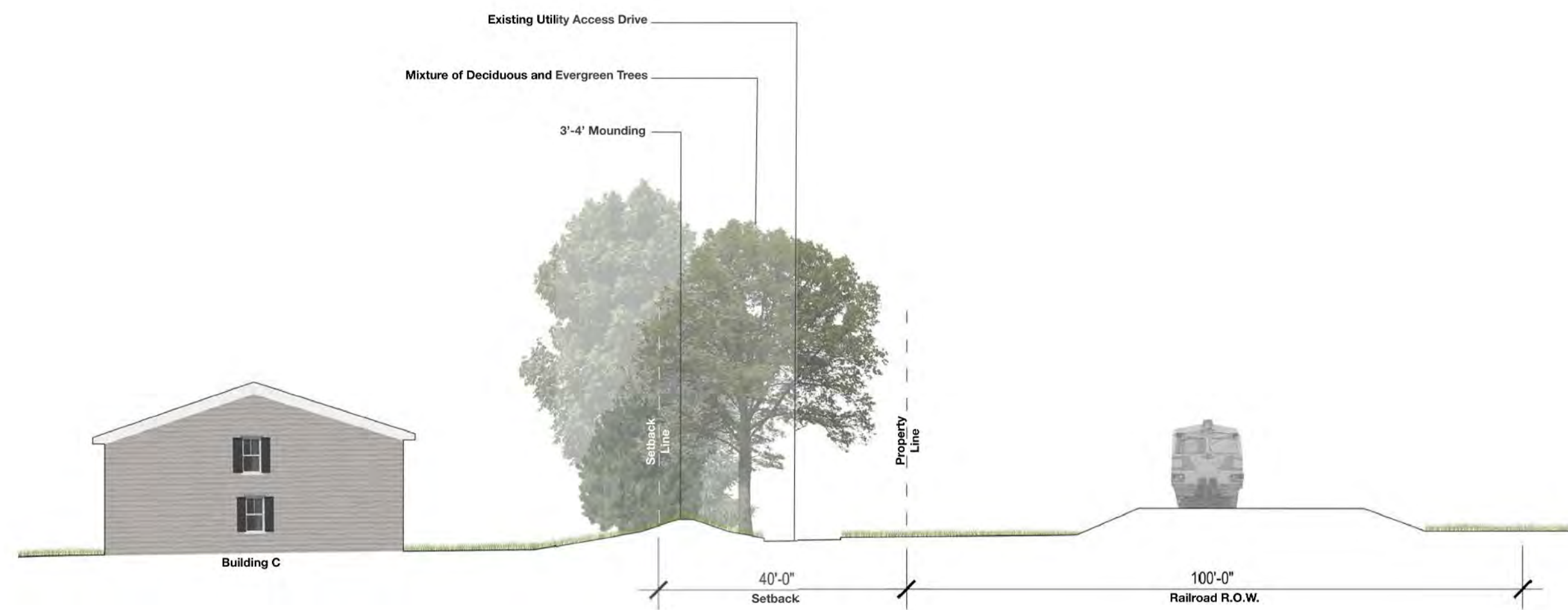


ENTRY GATES AND SIGNAGE



“ACTIVE ADULT CLASS-A GATED COMMUNITY”





TYPICAL EAST BUFFER TREATMENT SECTION
Scale: 1" = 20'-0"

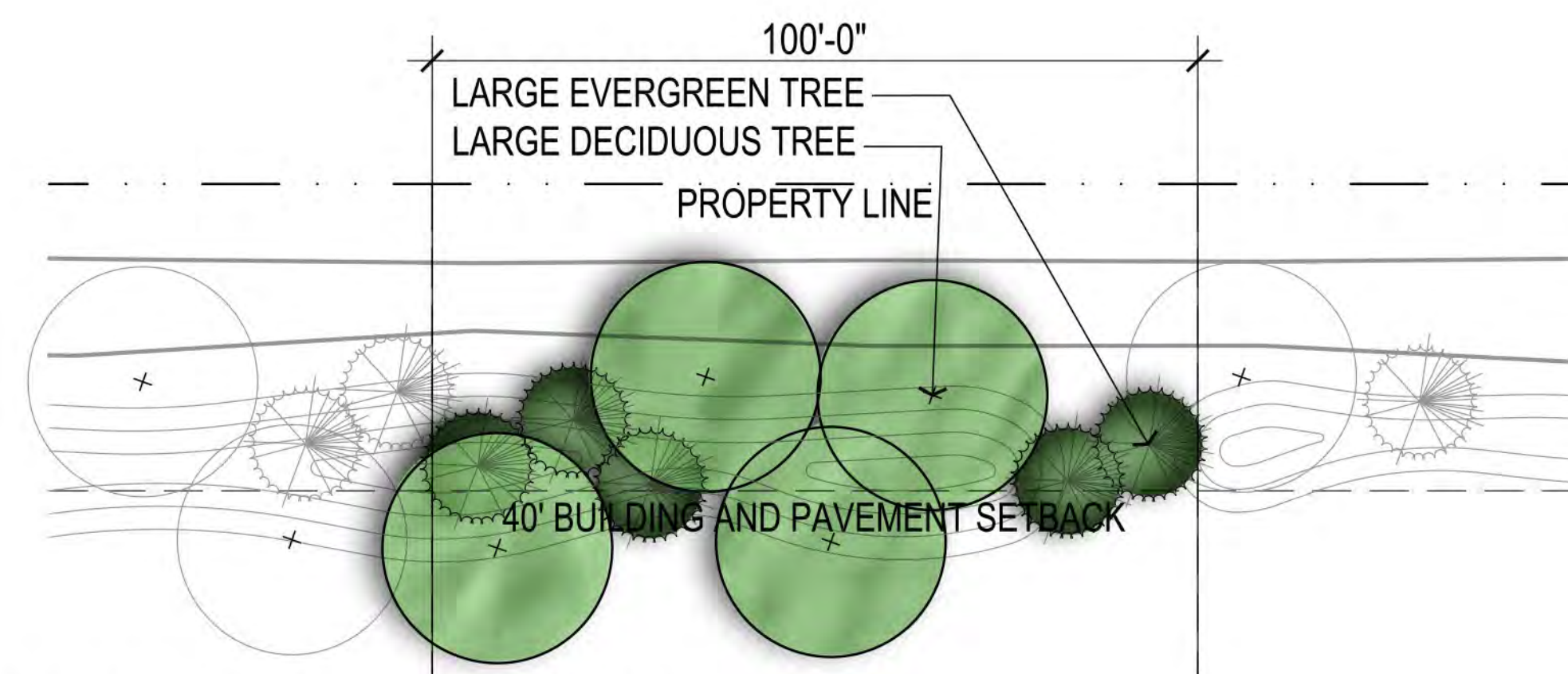


Existing Hedgerow Trees Beyond

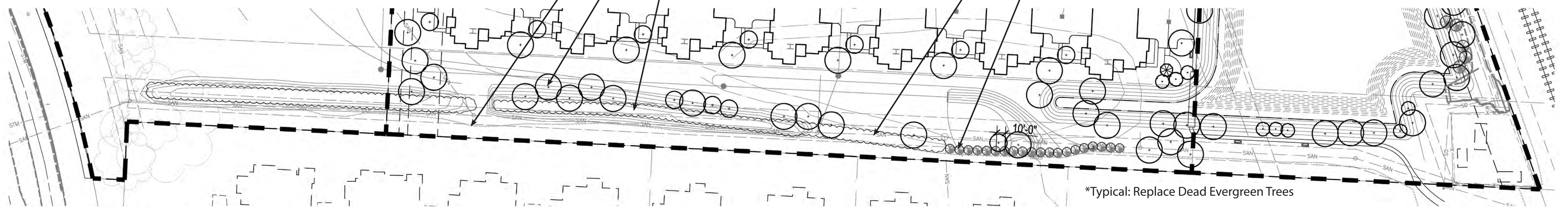
Existing Evergreen Trees

Existing Mound

EXISTING SOUTH BUFFER- VIEW LOOKING SOUTH



TYPICAL EAST BUFFER TREATMENT
Scale: 1" = 20'-0"



PROPOSED SOUTH BUFFER TREATMENT
Scale: 1" = 60'-0"

BUFFER TREATMENTS

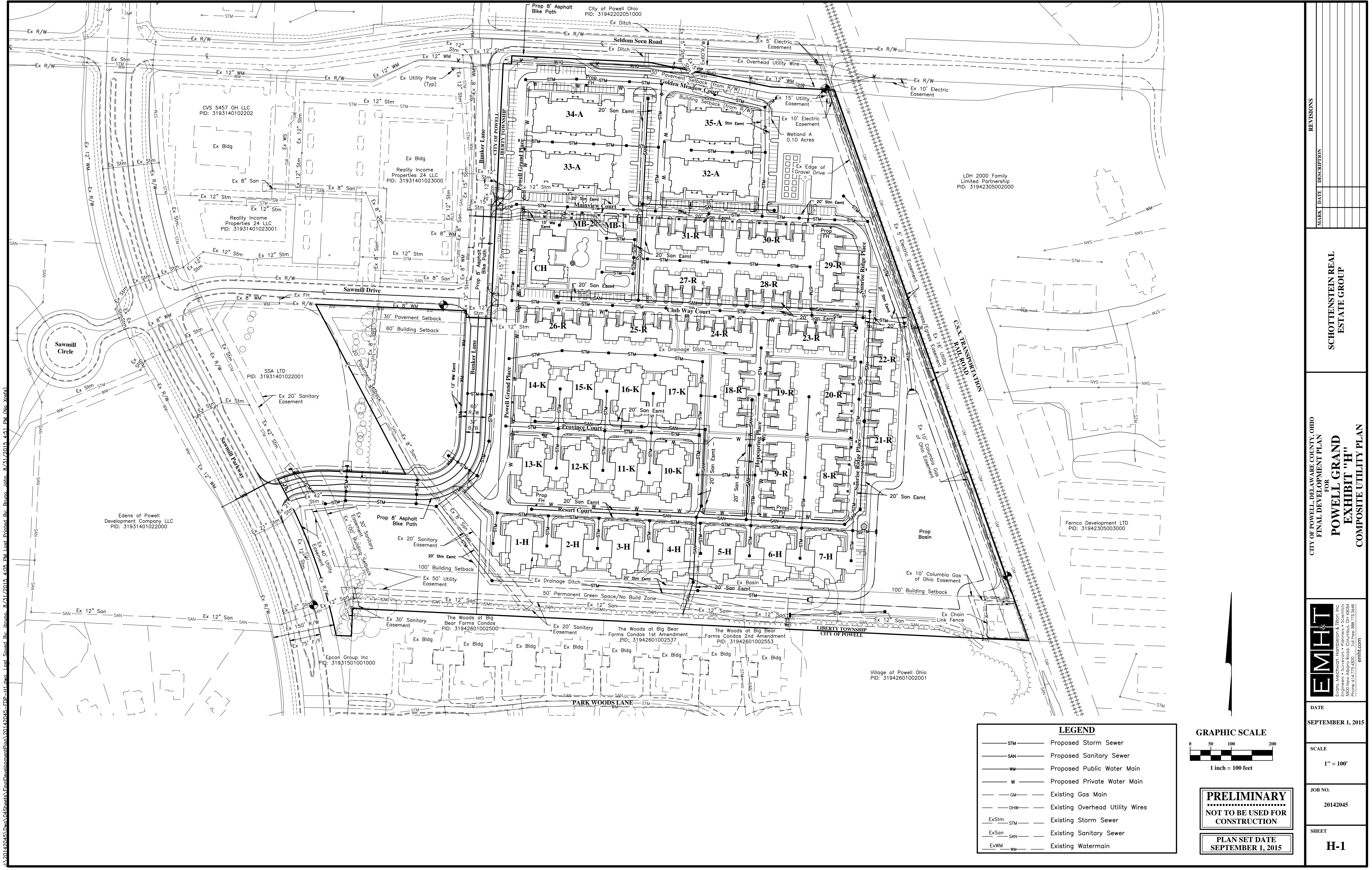
POWELL GRAND
RESORT LIVING

"ACTIVE ADULT CLASS-A GATED COMMUNITY"

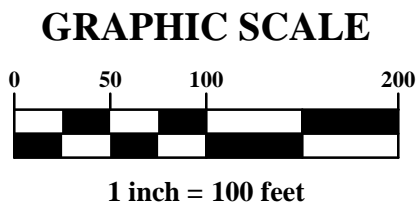
MARGELLO
DEVELOPMENT CO.

SCHOTTENSTEIN
REAL ESTATE GROUP

OHM
Advancing Communities™



LEGEND	
— STM —	Proposed Storm Sewer
— SAN —	Proposed Sanitary Sewer
— WM —	Proposed Public Water Main
— W —	Proposed Private Water Main
— GM —	Existing Gas Main
— OHW —	Existing Overhead Utility Wires
ExStm STM	Existing Storm Sewer
ExSan SAN	Existing Sanitary Sewer
ExWM WM	Existing Watermain



PRELIMINARY
NOT TO BE USED FOR
CONSTRUCTION

PLAN SET DATE
SEPTEMBER 1, 2015

REVISIONS	
MARK	DESCRIPTION

SCHOTTENSTEIN REAL
ESTATE GROUP

CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN
FOR
POWELL GRAND
EXHIBIT "H"
COMPOSITE UTILITY PLAN



DATE	SEPTEMBER 1, 2015
SCALE	1" = 100'
JOB NO.	20142045
SHEET	H-1



MEMO

Date: September 1, 2015
To: City of Powell
From: Justin Zampardi, PE
Subject: Powell Grand Exhibit "H" – Utility Feasibility Letter
Copies: Schottenstein Real Estate Group

The following is a summary of the public utility services for the above reference project located at the southeast corner of the intersection of Sawmill Parkway and Seldom Seen Road.

Stormwater Management

The site currently drains from north to southeast to an existing ditch located on The Woods at Big Bear Farms that is tributary to Bartholemew Run. There are two offsite drainage outlets onto the site as well. One storm crossing under Seldom Seen Road that is facilitated to the southeast corner of the site via incomplete infrastructure installed with a failed development of the site and a ditch; The second crossing is under Sawmill Parkway, which is also facilitated to the southeast corner of the site via a ditch.

Currently the stormwater management for the site is planned to be a wet basin. The wet basin will be required to accommodate Ohio EPA post construction water quality and storage requirements. Also, stormwater management will use appropriate measures for the Ohio EPA NPDES requirements during construction activities in the areas of the wet basins.

Furthermore, the two offsite outlets mentioned above will be passed through the site as is currently happening. This will be by new infrastructure which may include new storm sewer, swales, or a combination thereof.

Water Service

Currently, there is a 12-inch waterline along Sawmill Parkway and an 8-inch waterline along Seldom Seen Road. Additionally, there is an 8-inch waterline along Sawmill Drive and Bunker Lane. These lines are both owned and maintained by the Del-Co Water Company Inc. Per a letter dated March 27th, 2015 (attached) potable water is available for this development.

Sanitary Service

Currently, there is an 8-inch sanitary line along Sawmill Drive and Bunker Lane, and an 8-inch sanitary line that runs from Sawmill Drive southeast to a 12-inch sanitary line along the north edge of The Woods at Big Bear Farms. These lines are both owned and maintained by the Delaware County Regional Sewer District. Per the letter date September 1, 2015 (attached) sanitary service is available for this development.

Attachment: **Del-Co Water Availability Letter**
 Sanitary Service Availability Letter

Officers

TIMOTHY D. McNAMARA

President

BRUCE A. BLACKSTON

Vice President

ROBERT W. JENKINS

Secy-Treas.

GLENN MARZLUF

General Manager/CEO

SHANE CLARK

Deputy General Manager



6658 OLENTANGY RIVER ROAD

DELAWARE, OHIO 43015

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Phone (740) 548-7746 • Fax (740) 548-6203

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BRIAN P. COGHLAN

G. MICHAEL DICKEY

PERRY K. TUDOR

March 27, 2015

Tracy Foltz

EMH&T

5500 New Albany Road

Columbus, Ohio 43054

RE: Water Availability
Powell Grand Resort Living

Dear Ms. Foltz:

As requested, this is to inform you that Del-Co Water is able to provide water service to the site described below upon plan approval and payment of the required fees:

Development: Powell Grand Resort Living

Proposed Land Use: Condominium Community (± 308 units)

Location: Southeast corner of Sawmill Parkway and Seldom Seen Road

Acreage: ± 39.1 acres

This site can be served from existing 8 through 12-inch waterlines located on surrounding roads. Due to the close proximity of the units in this development, it will likely be required to be served by a master meter.

This letter of water availability is valid for a period of one year from the date of this letter. Del-Co makes no guarantee of water availability beyond this period. Contact our Engineering Department if you have any questions on the plan review process, or our Customer Service Department for information on tap fees.

Sincerely,
DEL-CO WATER COMPANY, INC.

Shane F. Clark, P.E.
Engineering Manager



DELAWARE COUNTY
DIVISION OF ENVIRONMENTAL SERVICES
CODE COMPLIANCE • REGIONAL SEWER DISTRICT • SOLID WASTE

TIFFANY A. JENKINS, P.E., DIRECTOR

September 1, 2015

EMH&T
5500 New Albany Rd
Columbus, OH 43054

Attn: Craig Bohning, P.E.

Re: **Powell Grand Resort Living revised**

Dear Craig,

Pursuant to your request dated March 26, 2015, for a sanitary sewer service availability letter for the above proposed development, we offer the following conditional sanitary sewer availability:

Availability

Sanitary sewer is available at the subject parcel. Availability means that new development on the subject parcel is permitted to connect to the County sewer system provided that there is sufficient capacity for the development, all requirements of the Sanitary Engineer's Office can be met, and the zoning expressly permits, and does not restrict the construction, use, operation, maintenance, repair, expansion, or replacement of all sanitary sewers, structures, and appurtenances.

Capacity

We understand that a total of 230.8 single family homes are sought to be built by the developer based on the development plan provided for Powell Grand Resort Living (48 one bedroom apartments, 228 two bedroom apartments, 32 three bedroom apartments, clubhouse and pool).

The sewer that serves this site has capacity for these 230.8 units as of the date of this letter.

Capacity is not reserved until such time that a subdivider's agreement is executed between the developer and the Board of Commissioners. Sewer capacity is dynamic and subject to decrease pending ongoing development.

Sewer Location

An existing 12" sanitary trunk sewer is located on the parcel.

Zoning Text / Development Plans

This confirmation of sanitary sewer availability is contingent on final zoning and environmental text for the development which permits, and does not restrict the construction, use, operation, maintenance, repair, expansion, or replacement of all sanitary sewers, structures, and appurtenances.

Jurisdictional Waters Report

To date, we have not received a copy of the Waters of the U.S. Report or a response from USACE. Following receipt of these items we may provide additional comments.

Landscaping / Entrance Features

As of the date of this letter, our office has not received landscaping and mounding plans or entrance feature locations. Following the receipt of these items we may provide additional comments which may affect these features.

Additional Comments

The Sanitary Engineer's Office may make additional comments upon review of any subsequent submittals. We are also contemplating a future surcharge on this area for downstream improvements.

If you have any questions, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Jack Smelker". The signature is written in a cursive, flowing style.

Jack Smelker

cc: File



March 30, 2015

Tracy Foltz
EMH&T
5500 New Albany Road, Columbus, OH 43054

Re: Powell Grand at the southwest corner of Bunker Lane and Seldom Seen Road in Powell, Ohio.

Thank you for your interest in clean, efficient natural gas. This letter is to confirm that Columbia Gas, Inc. currently has facilities in the vicinity of Bunker Lane and Seldom Seen Road. A map has been included showing our existing facilities. Our gas line is approximately 400' +/- to the east of the intersection of Bunker Lane and Seldom Seen Road.

This is a preliminary study only and is not a legally binding project (capital) cost commitment on behalf of Columbia. Any changes from the information submitted may change the study for the Facilities necessary to provide the service. **Other factors beyond Columbia's control, include, but are not limited to** upstream load requirements, and available capacity at the time an agreement is reached.

Once mechanical drawings are available, please forward them to my attention so that we may complete our feasibility study; as well as determine any costs that may be required. Please note that availability is contingent upon a cost benefit analysis. If the project is not deemed economically feasible for Columbia Gas, a deposit may be necessary

If you have any questions regarding availability, please feel free to contact me at 614.460.5416. I look forward to partnering with you on this and future projects.

Sincerely,

A handwritten signature in cursive script that reads "Donna Young".

Donna Young
New Business Development Manager
Columbia Gas of Ohio, Inc.
614-460-5416
donnayoung@nisource.com

P.O. Box 2553
Columbus, Ohio 43216
Tel. (614) 481-5263
Fax (614) 255-6428



April 7, 2015

Tracy Foltz
EMH&T
5500 New Albany Rd
Columbus, OH 43054

Dear Mr. Foltz:

This letter is to inform you that Time Warner Cable can provide Advanced CATV, High Speed Internet and Digital Phone services to the proposed Powell Grand Resort Living project in Powell, OH.

You will need to enter into a Right-of-Entry agreement with Time Warner Cable prior to TWC providing service. You may contact Will Andrews, Manager MDU Sales at 614-255-5177 to start that process.

I will be your primary Engineering and Construction contact for the project.

If you have any questions give me a call at 614-481-5263 and I will be happy to discuss this project with you.

Thank You!

A handwritten signature in black ink, appearing to read 'Kevin D. Rich'.

Kevin D. Rich
Construction Manager, Zone 7
kevin.rich@twcable.com



BUILDING A



HOUSING
STUDIO

333 West Trade Street, Suite 300
Charlotte, NC 28202
T: 704.333.7862 F: 980.237.3862

SCHOTTENSTEIN
POWELL GRAND
POWELL, OHIO

SCHOTTENSTEIN
REAL ESTATE GROUP
Live Your Dream

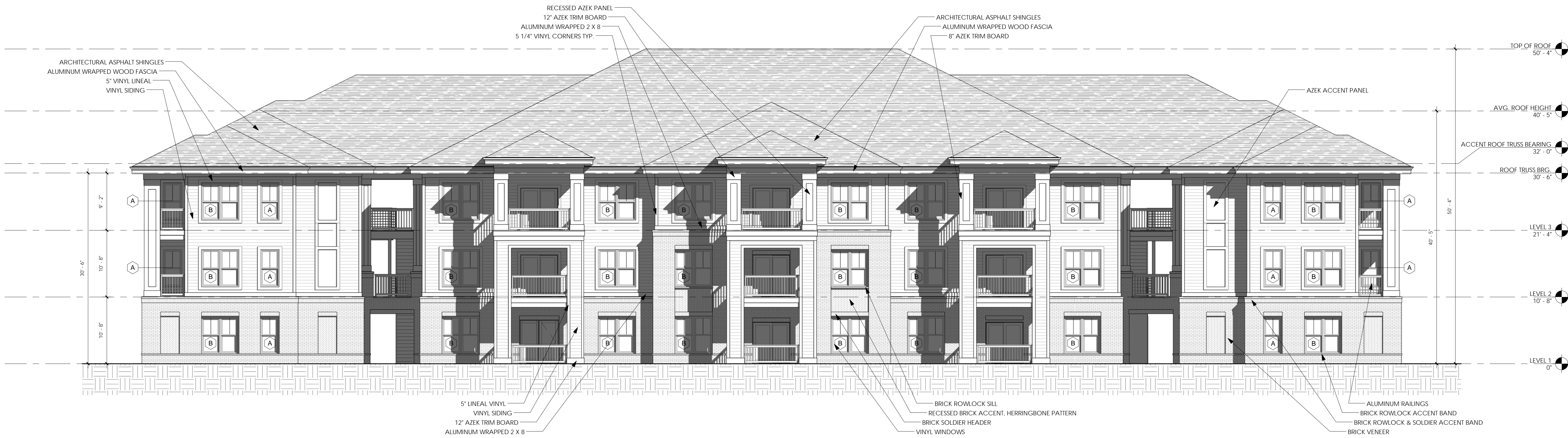
PROJECT #1504
JULY 24, 2015
PERMIT SET
Revisions

BUILDING
ELEVATIONS

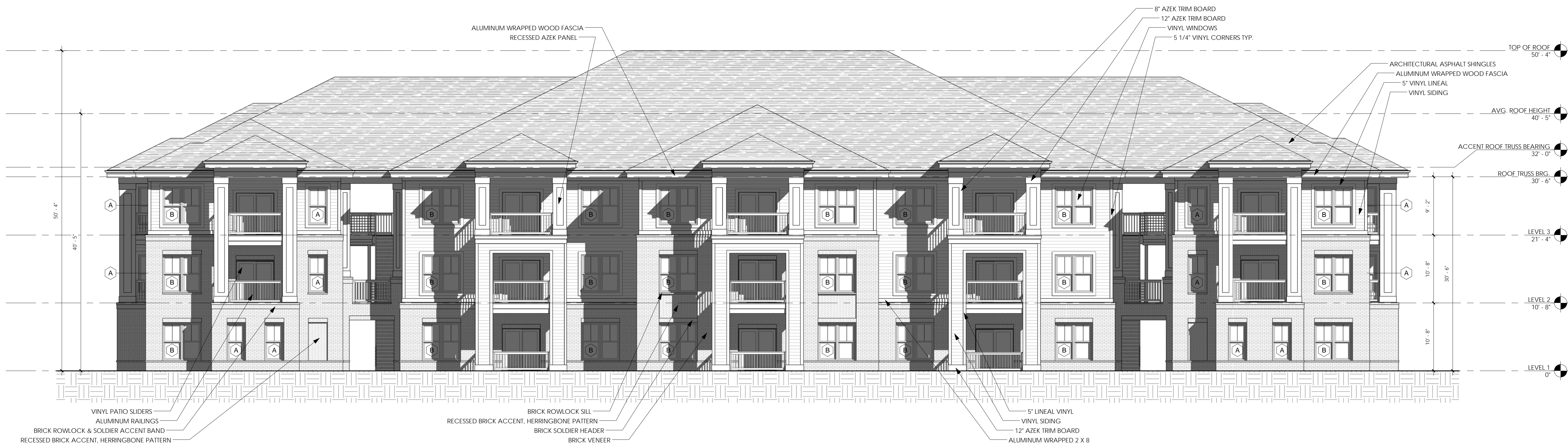
EXHIBIT I

A4.01

- BUILDING ELEVATION NOTES**
1. ALL RAILINGS ON GROUND LEVEL TO BE 36" MIN. IN HEIGHT. ALL RAILINGS ON LEVELS 2-3 TO BE 42" MIN. IN HEIGHT.
 2. REFERENCE A6-04 FOR BALCONY/PATIO DETAILS.
 3. GC TO COORDINATE BRICK ALIGNMENT AT EDGE OF SLOPED BALCONIES.



2 BACK ELEVATION
1/8" = 1'-0"



1 FRONT ELEVATION
1/8" = 1'-0"



HOUSING
STUDIO

333 West Trade Street, Suite 300
Charlotte, NC 28202
T: 704.333.7862 F: 980.237.3862

SCHOTTENSTEIN
POWELL GRAND
POWELL, OHIO

SCHOTTENSTEIN
REAL ESTATE GROUP
Live Your Dream

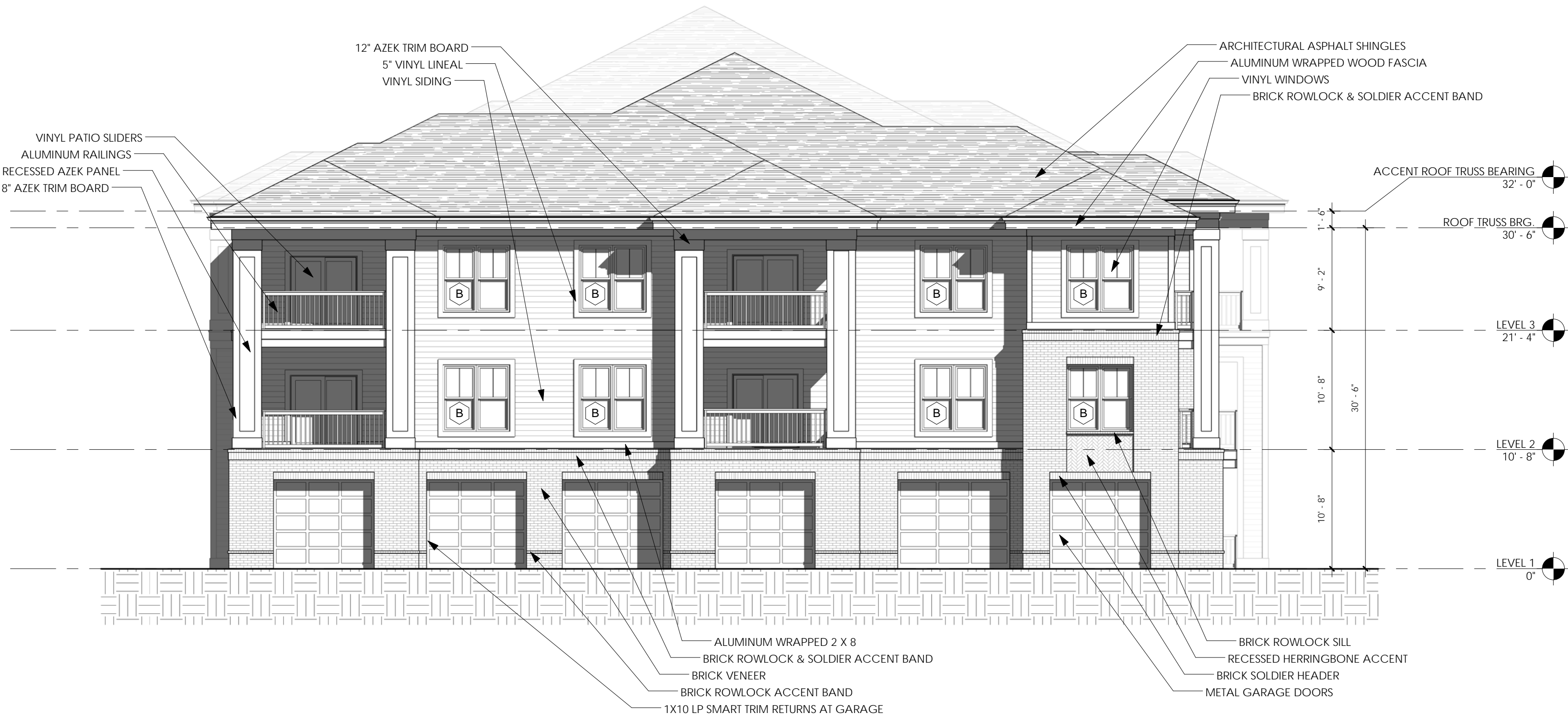
PROJECT #1504
JULY 24, 2015
PERMIT SET
Revisions

BUILDING
ELEVATIONS

EXHIBIT I

A4.02

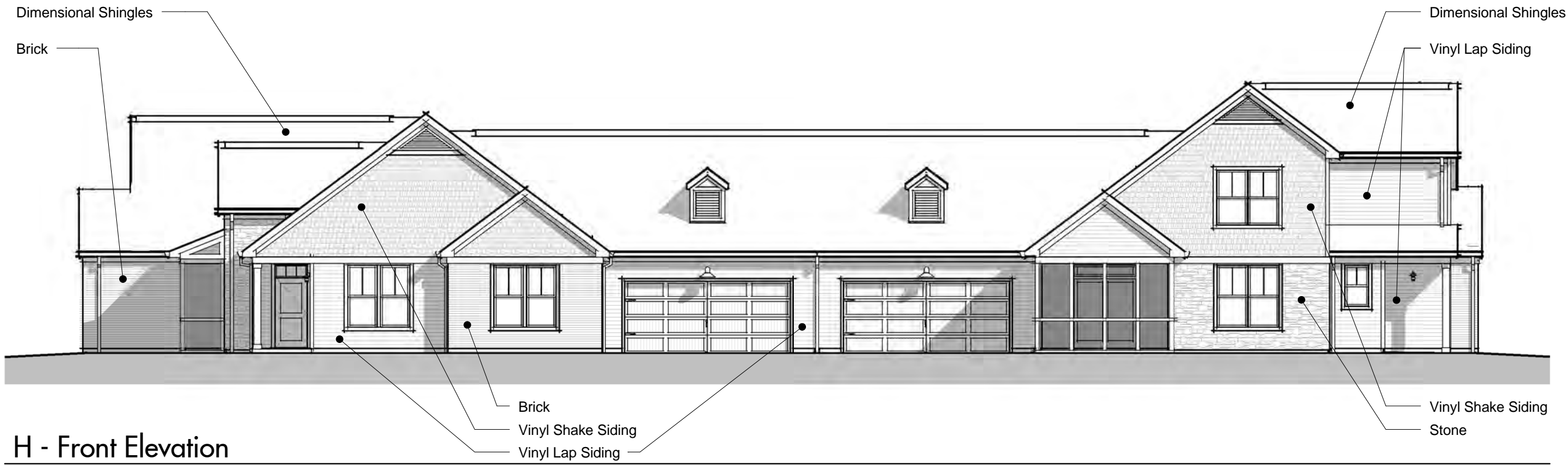
BUILDING ELEVATION NOTES
1. ALL RAILINGS ON GROUND LEVEL TO BE 36" MIN. IN HEIGHT. ALL RAILINGS ON LEVELS 2-3 TO BE 42" MIN. IN HEIGHT.
2. REFERENCE A6.04 FOR BALCONY/PATIO DETAILS.
3. GC TO COORDINATE BRICK ALIGNMENT AT EDGE OF SLOPED BALCONIES.



2 LEFT ELEVATION
1/8" = 1'-0"

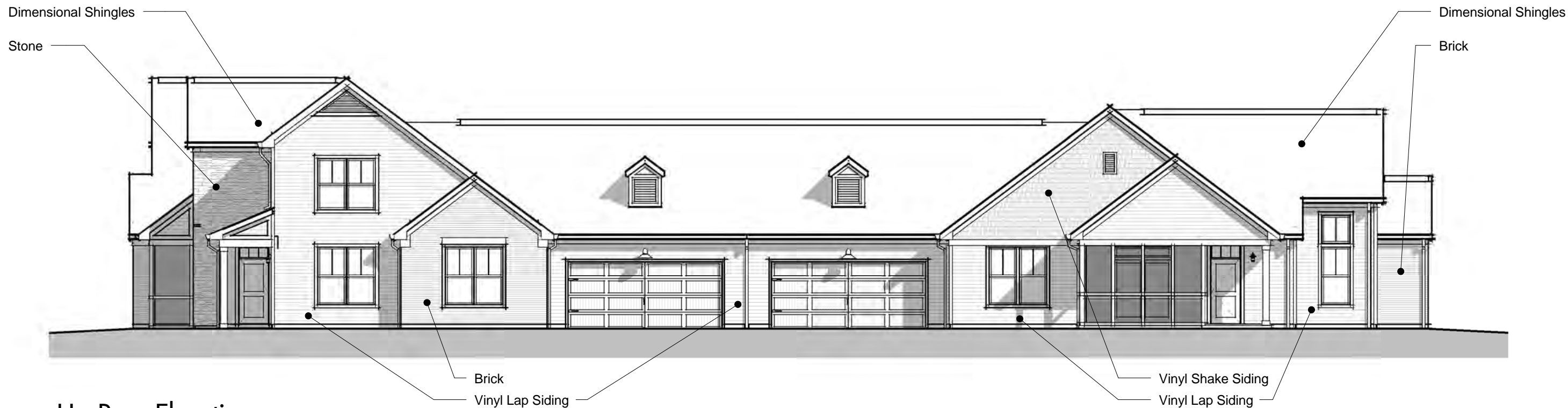


1 RIGHT ELEVATION
1/8" = 1'-0"



H - Front Elevation

3/32" = 1'-0"



H - Rear Elevation

3/32" = 1'-0"

SCHOTTENSTEIN
REAL ESTATE GROUP

Building H

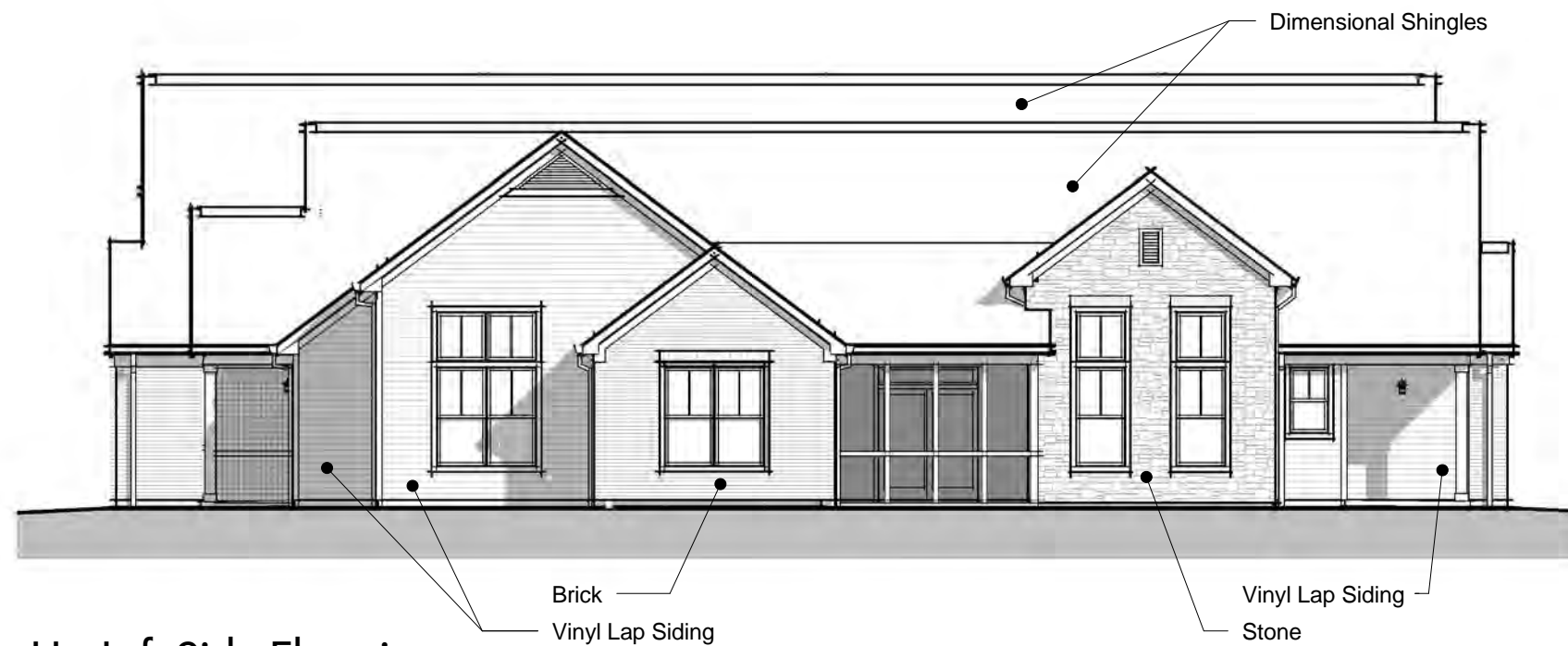
Attached Ranch

2015-08-31

EXHIBIT I

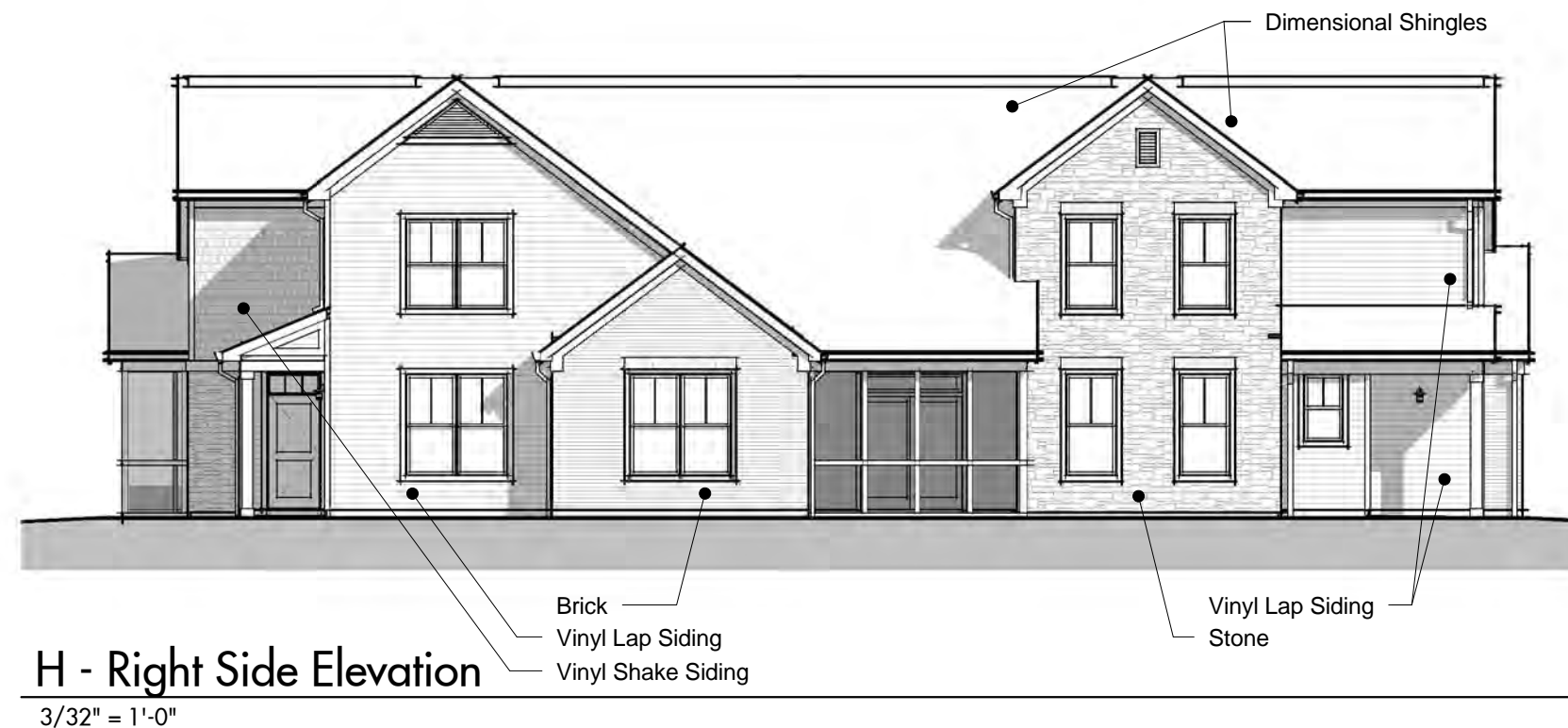


EXHIBIT I



H - Left Side Elevation

3/32" = 1'-0"





H - First Floor Plan

3/32" = 1'-0"



H - Second Floor Plan

3/32" = 1'-0"

Building H

Attached Ranch

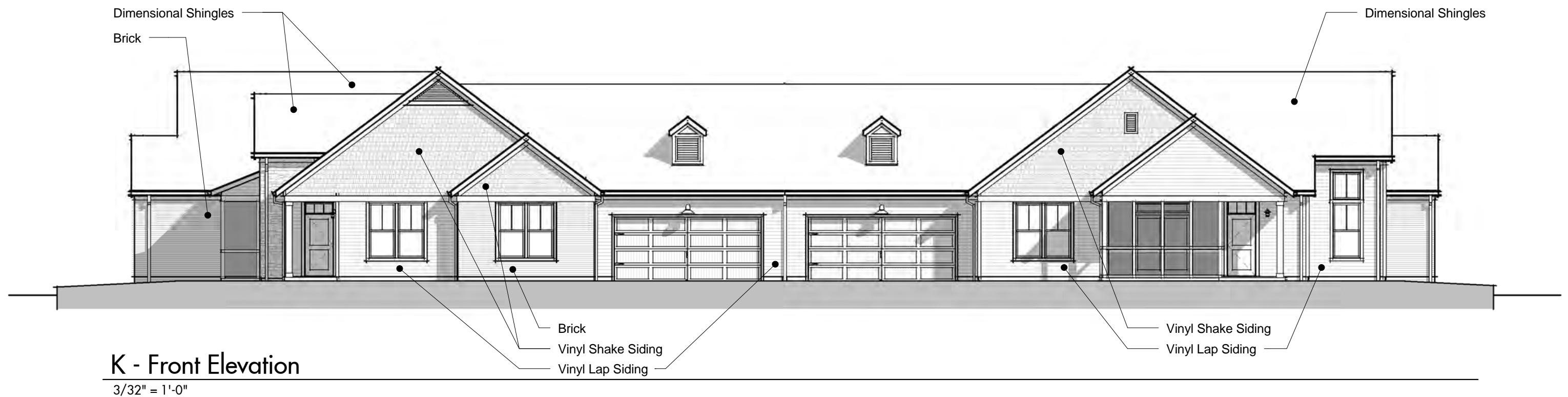
2015-08-31

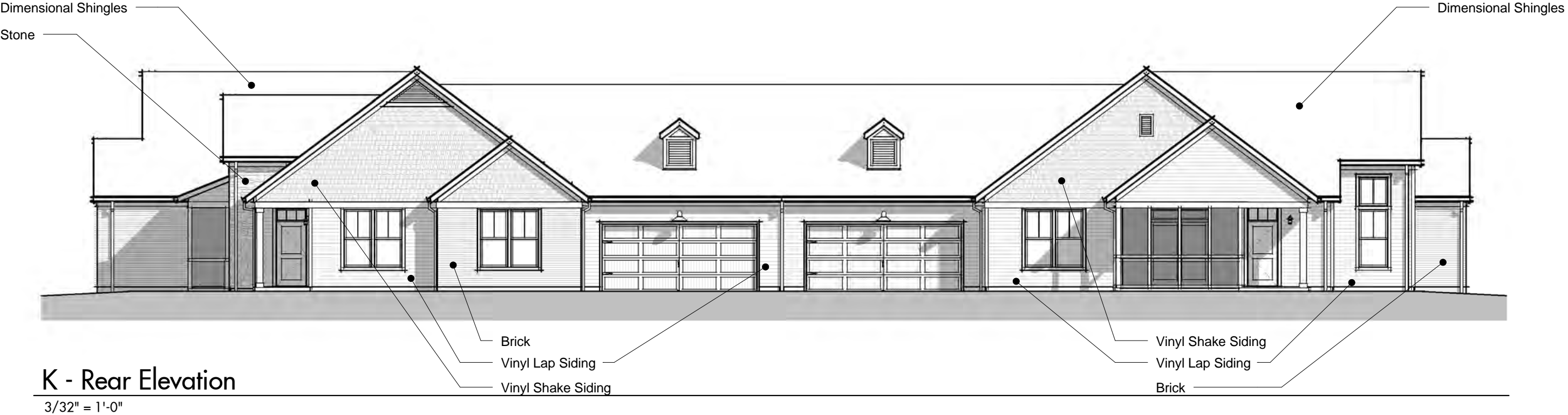
SCHOTTENSTEIN
REAL ESTATE GROUP

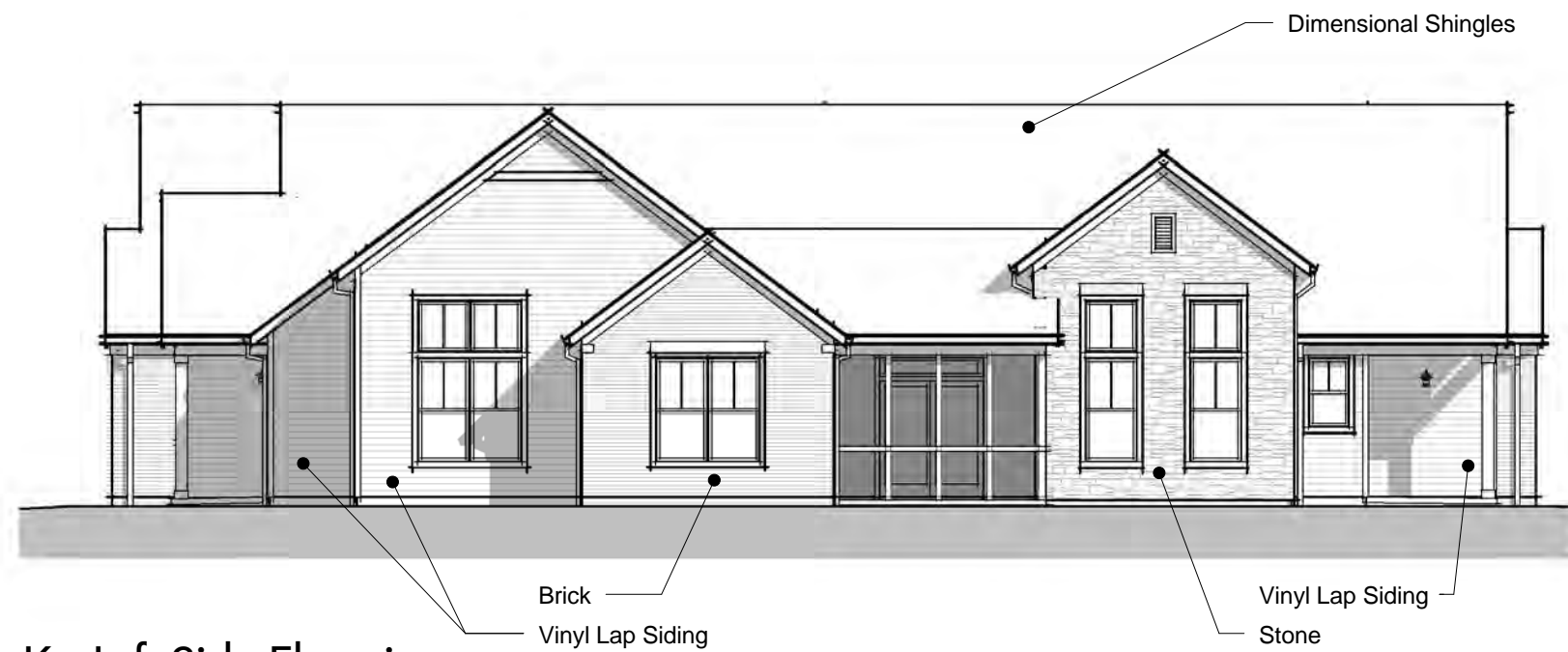
EXHIBIT I



EXHIBIT I

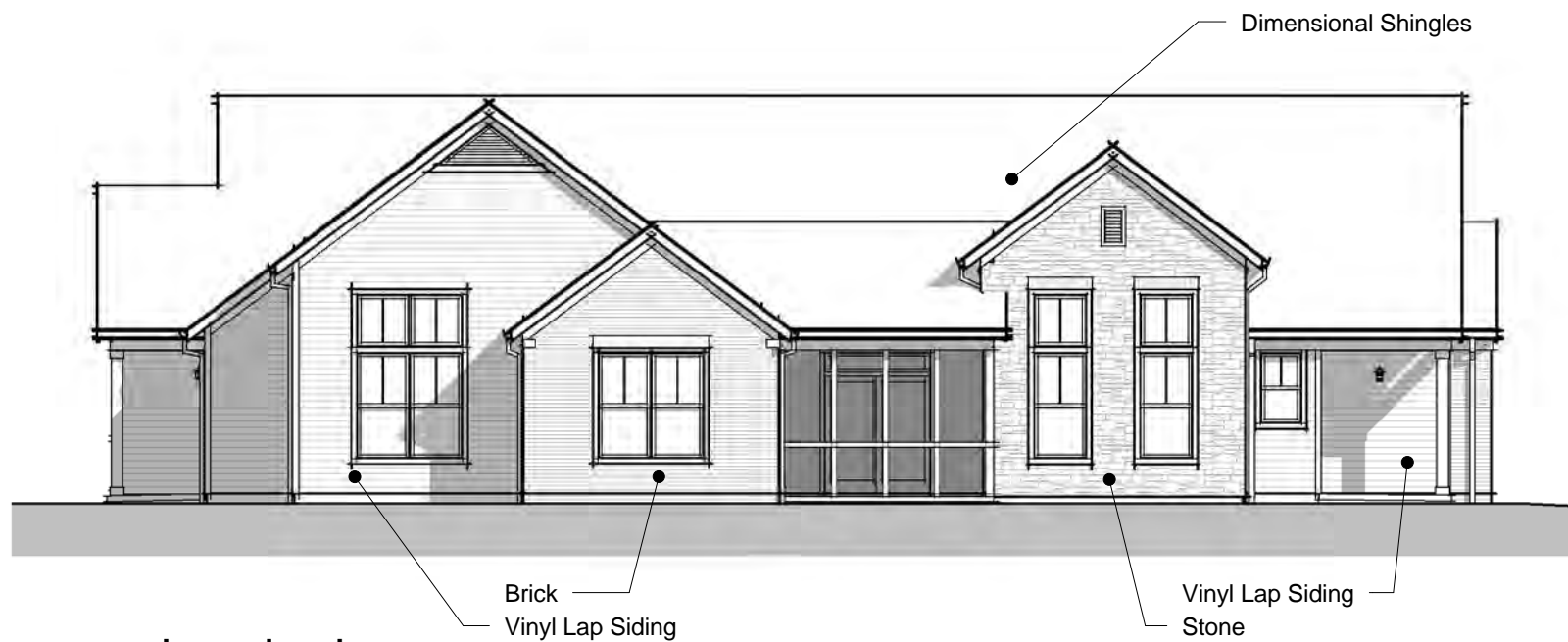






K - Left Side Elevation

3/32" = 1'-0"



K - Right Side Elevation

3/32" = 1'-0"



K - First Floor Plan

3/32" = 1'-0"

SCHOTTENSTEIN
REAL ESTATE GROUP

Building K

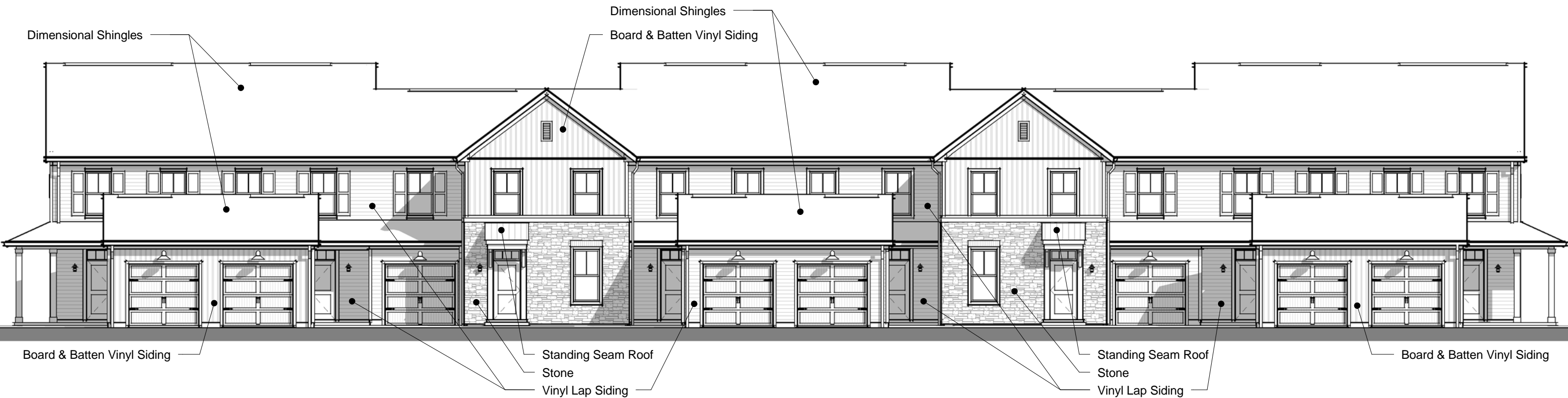
Attached Ranch

2015-08-31

EXHIBIT I

 **SULLIVAN BRUCK**
ARCHITECTS

EXHIBIT I



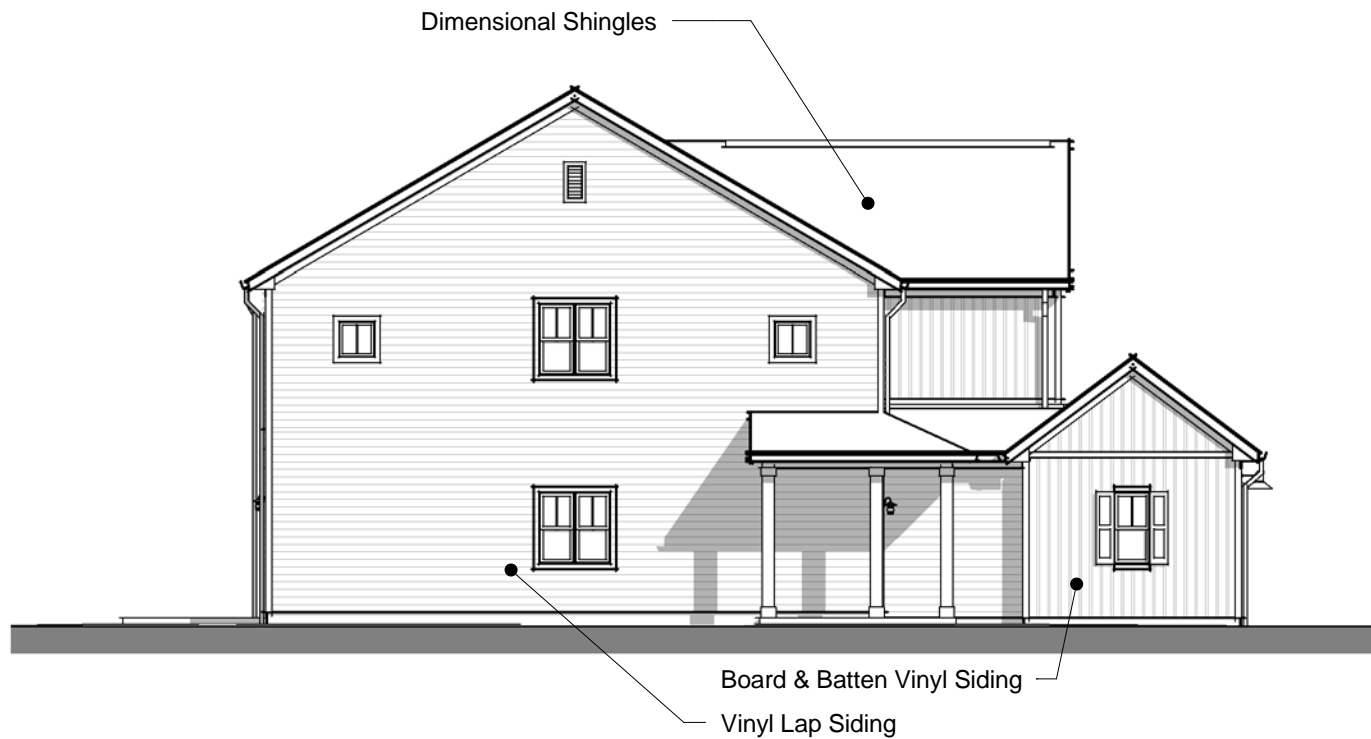
R - Front Elevation

3/32" = 1'-0"



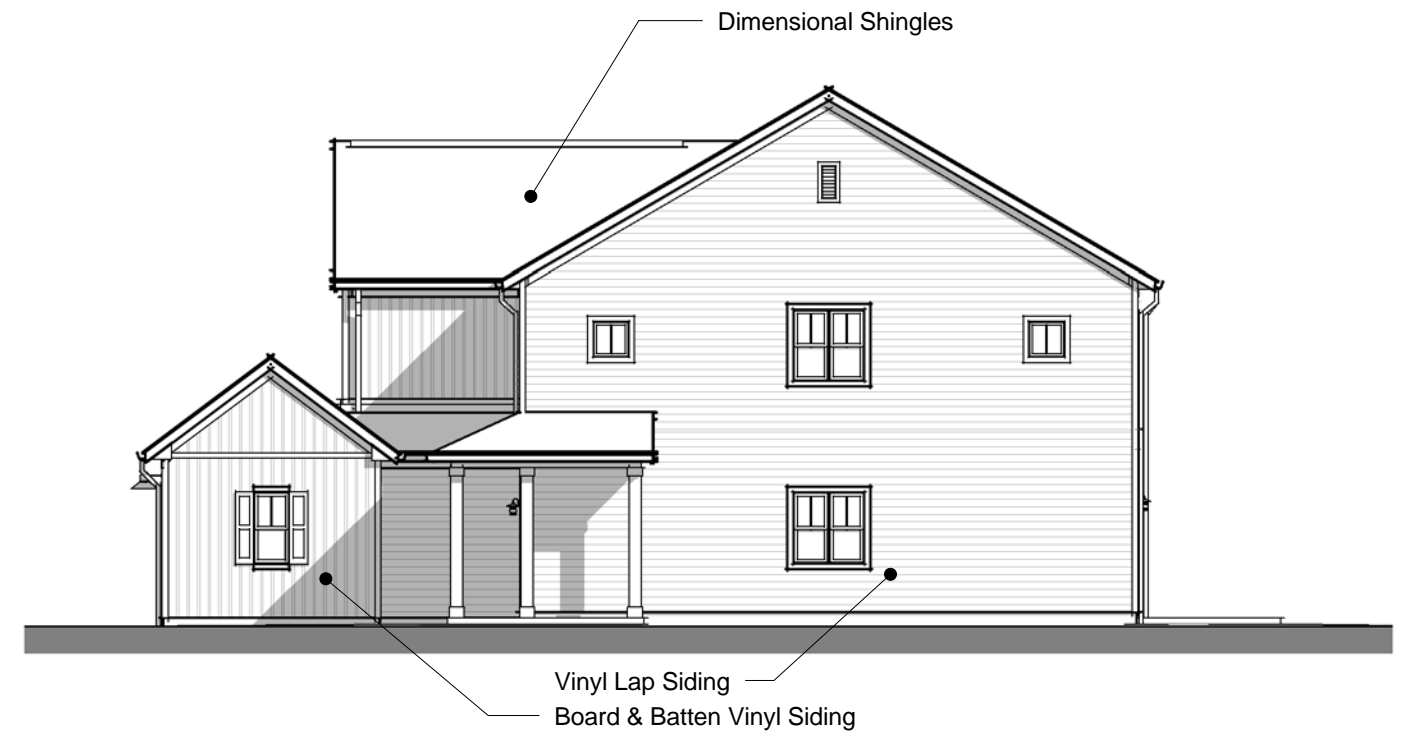
R - Rear Elevation

3/32" = 1'-0"



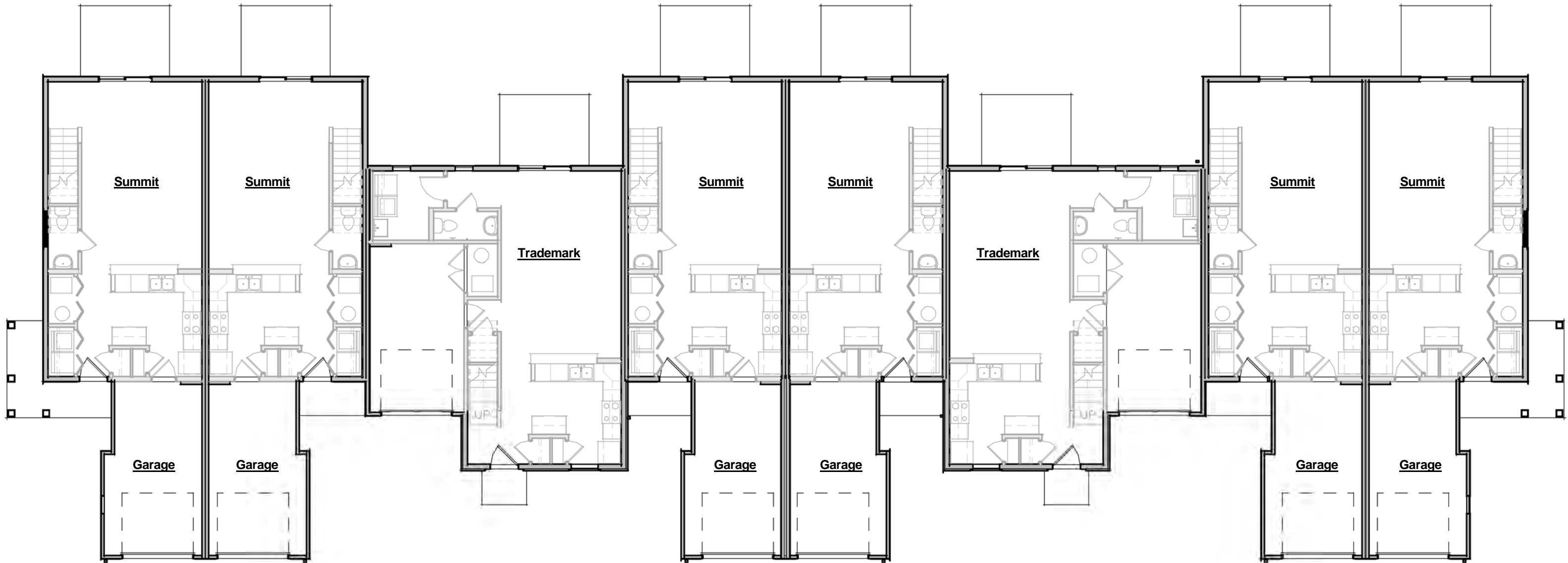
R - Left Elevation

3/32" = 1'-0"



R - Right Elevation

3/32" = 1'-0"



R - First Floor Plan

3/32" = 1'-0"

SCHOTTENSTEIN
REAL ESTATE GROUP

Building R

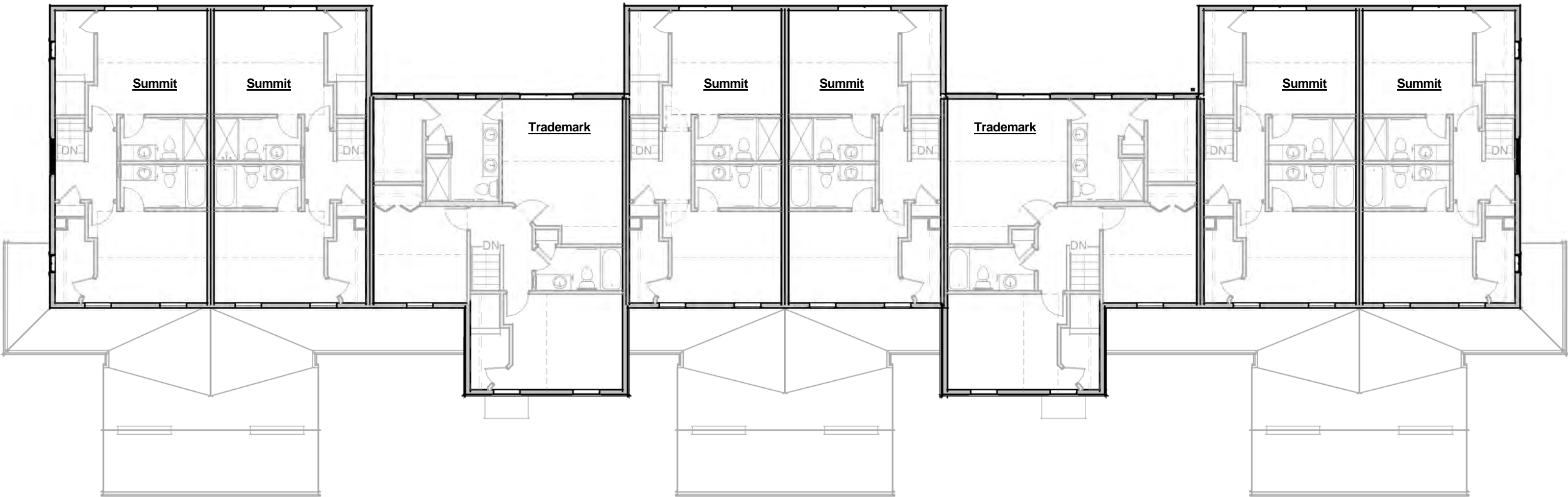
Townhomes with Garages

2015-08-31

EXHIBIT I

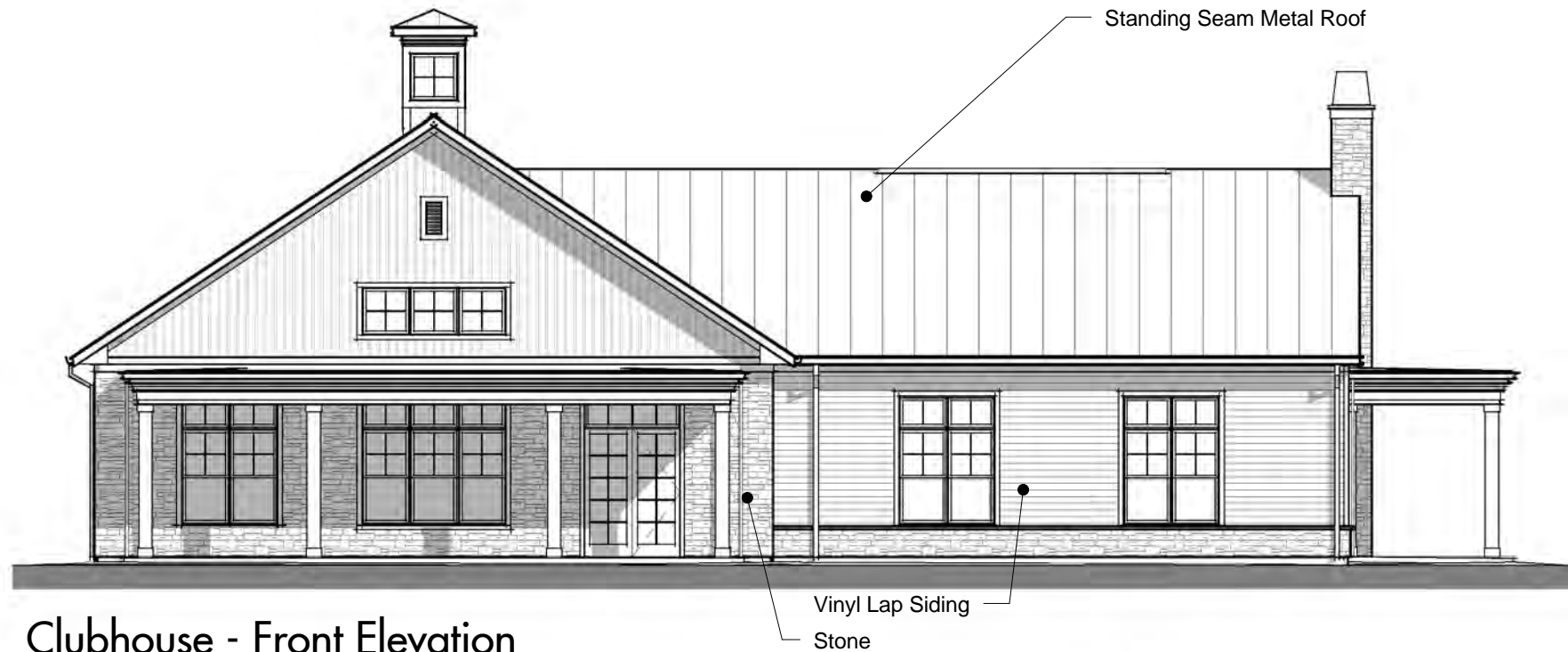
 **SULLIVAN BRUCK**
ARCHITECTS

EXHIBIT I



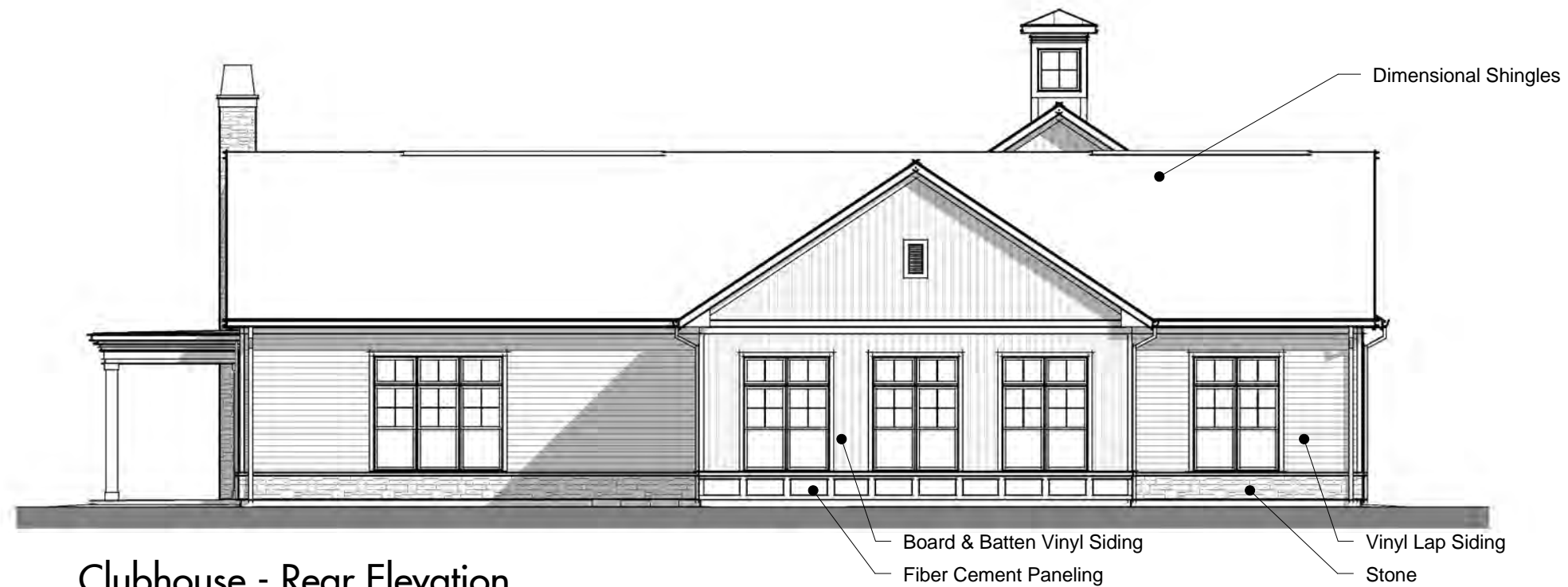
R - Second Floor Plan

3/32" = 1'-0"



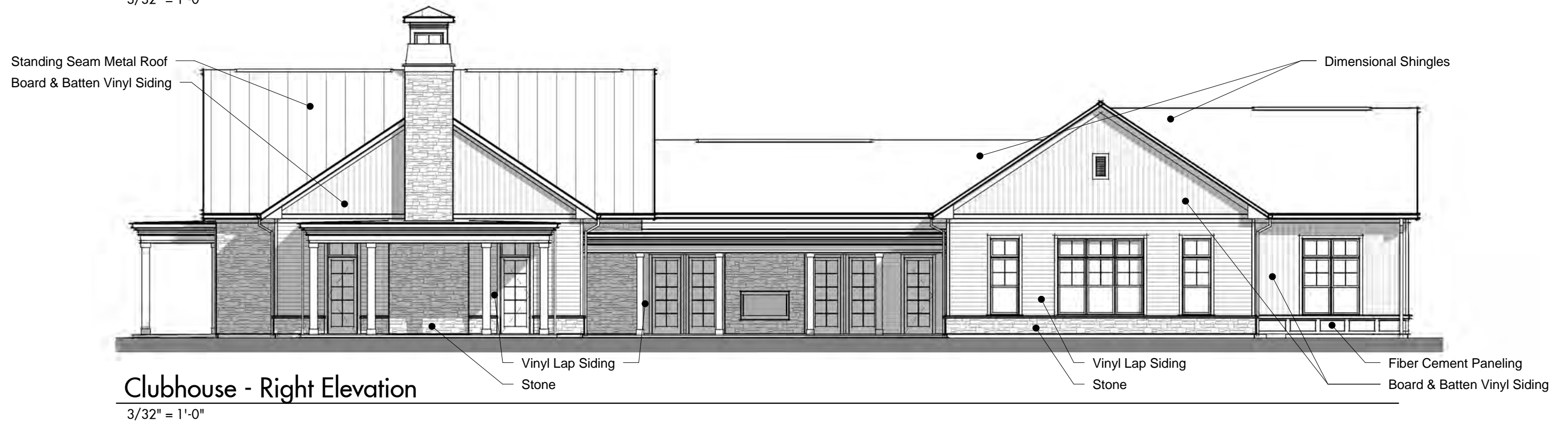
Clubhouse - Front Elevation

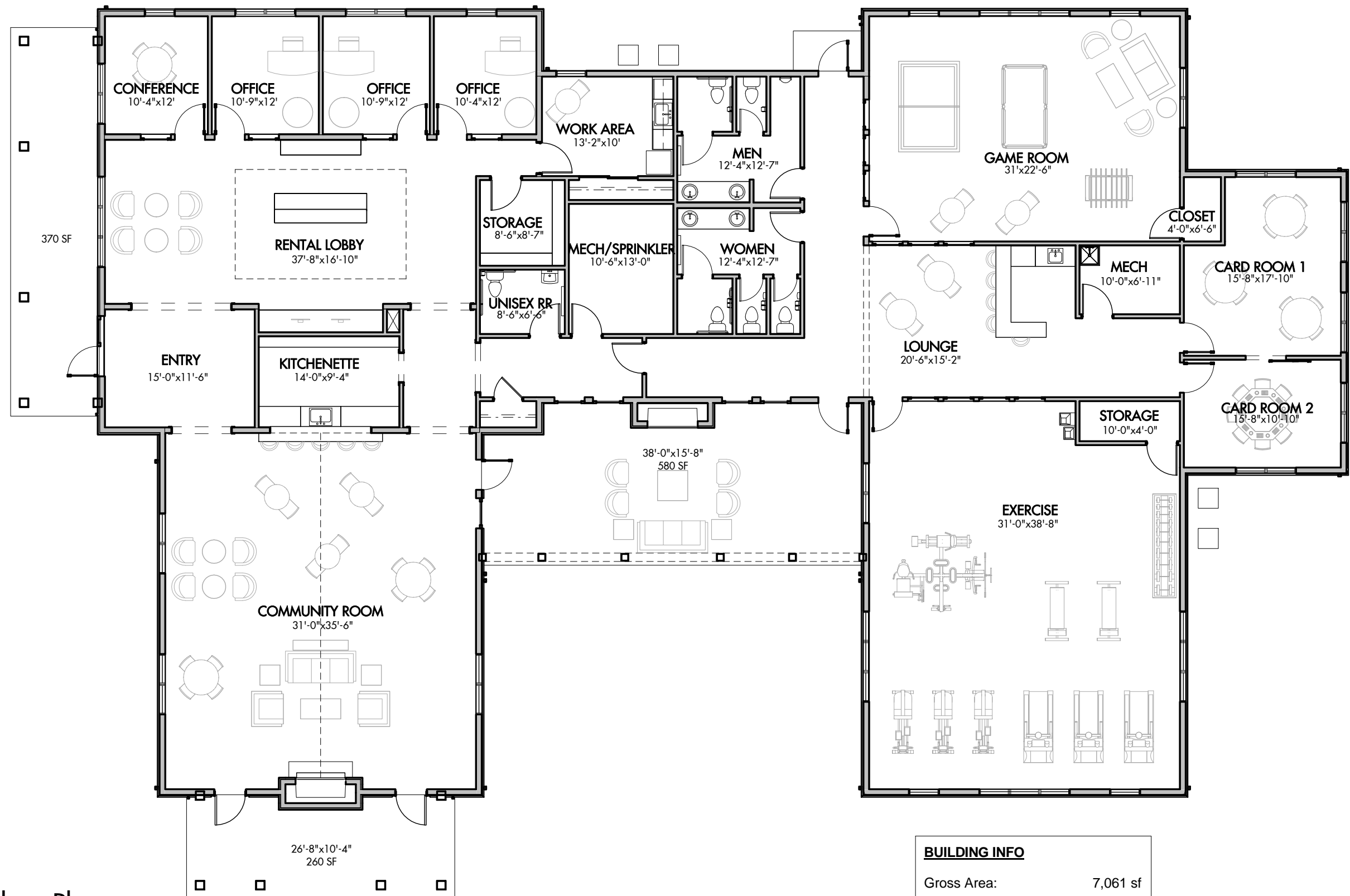
3/32" = 1'-0"



Clubhouse - Rear Elevation

3/32" = 1'-0"





BUILDING INFO	
Gross Area:	7,061 sf
Building Height:	33'-6"

Clubhouse Floor Plan
3/32" = 1'-0"

SCHOTTENSTEIN
REAL ESTATE GROUP

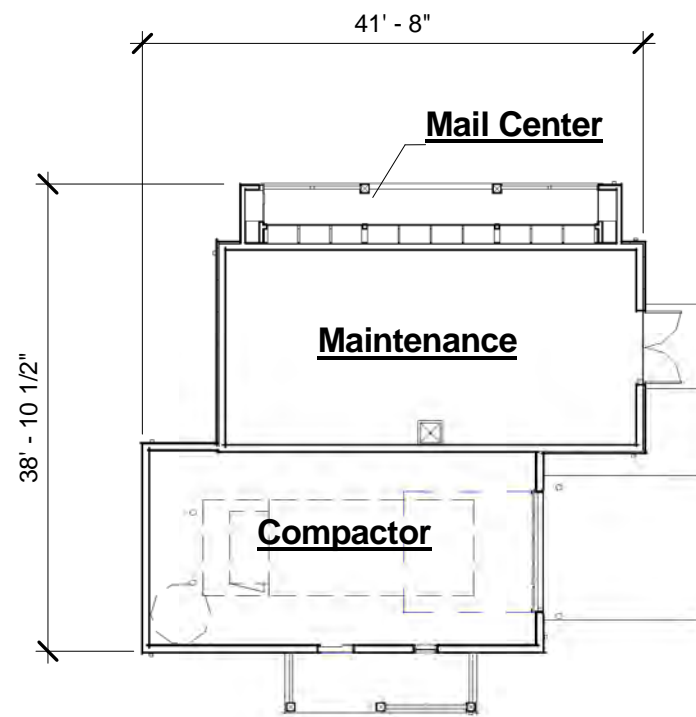
Powell Grand
Powell, Ohio
2015-08-31

EXHIBIT I

 **SULLIVAN BRUCK**
ARCHITECTS

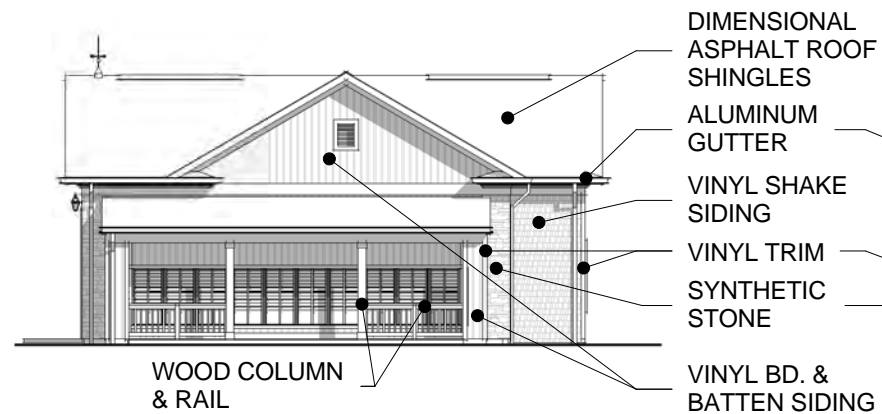
EXHIBIT I

BUILDING INFO	
Building Height:	18'-0"
Area:	1,298 sf



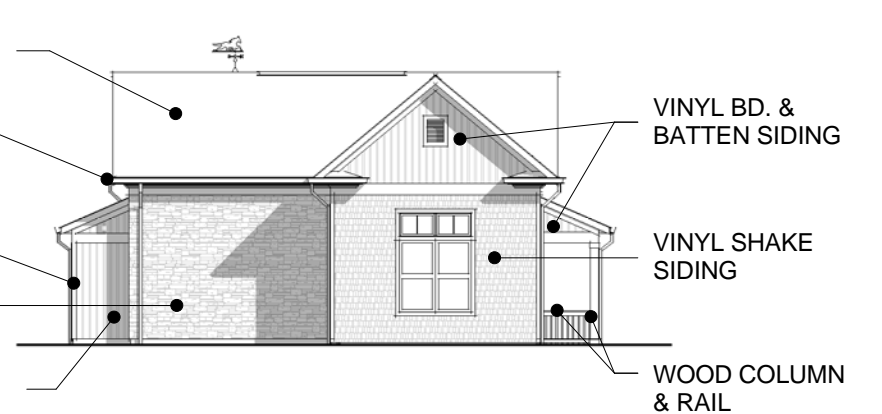
Utility Building - Floor Plan

1/16" = 1'-0"



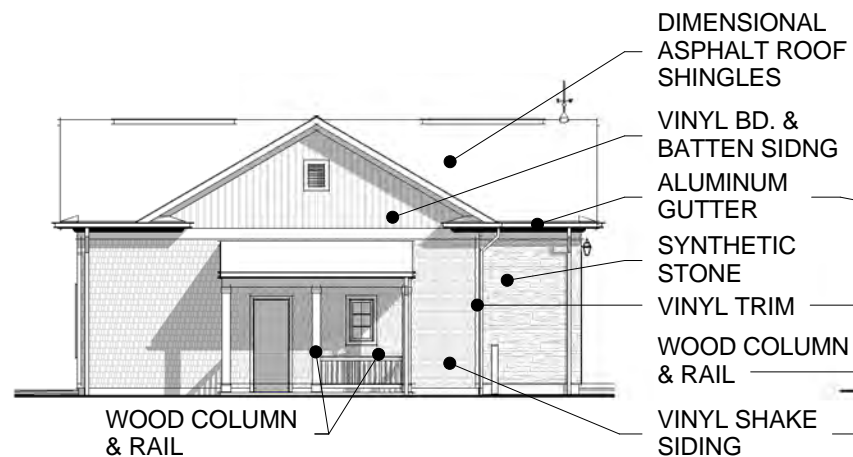
Utility Building - Right Elevation

1/16" = 1'-0"



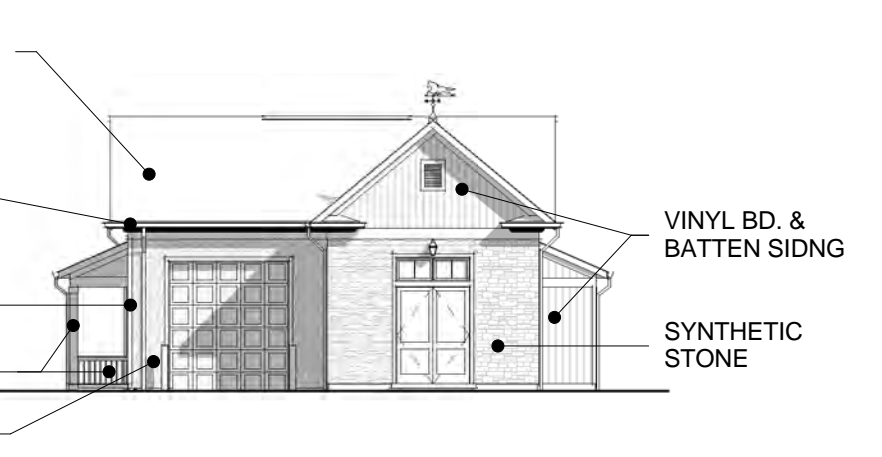
Utility Building - Rear Elevation

1/16" = 1'-0"



Utility Building - Left Elevation

1/16" = 1'-0"



Utility Building - Front Elevation

1/16" = 1'-0"



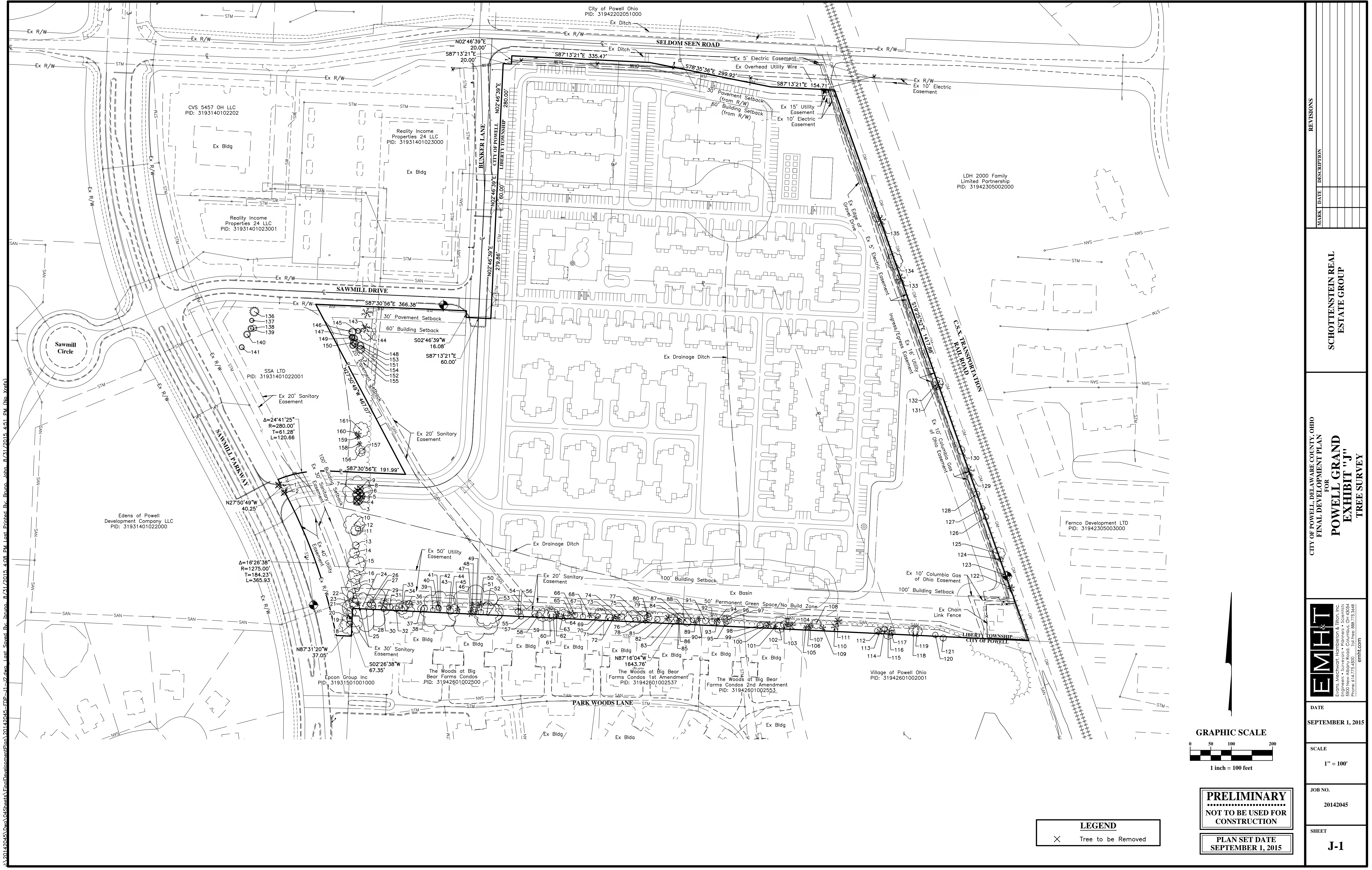
Building R		
Material	Manufacturer	Color / Model
Siding*	Alside Vinyl	Cape Cod Gray, Mystic Blue, or Maple
Board & Batten Siding	Alside Vinyl	Antique Parchment
Trim	Alside Vinyl	Glacier White
Windows	Alside Vinyl	White
Stone	Stonecraft	Heritage Series, Ohio
Shingles	Certainteed	Landmark Series, Georgetown Gray
Standing Seam Roof	DML DynaClad	Slate Gray

Buildings H & K		
Material	Manufacturer	Color / Model
Siding*	Alside Vinyl	Cape Cod Gray, Mystic Blue, or Maple
Board & Batten Siding	Alside Vinyl	Antique Parchment
Trim	Alside Vinyl	Glacier White
Windows	Alside Vinyl	White
Stone	Stonecraft	Heritage Series, Ohio
Shingles	Certainteed	Landmark Series, Georgetown Gray
Brick	Glen-Gery	Olde Detroit

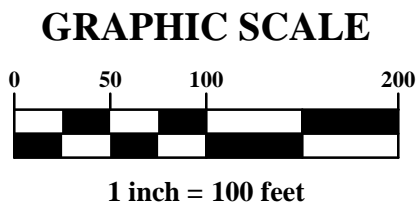
*Siding colors to be varied throughout the site.

Material Schedule

Powell Grand
Powell, Ohio
2015-07-01



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LEGEND
X Tree to be Removed

PRELIMINARY
NOT TO BE USED FOR
CONSTRUCTION

PLAN SET DATE
SEPTEMBER 1, 2015

REVISIONS	
MARK	DESCRIPTION

SCHOTTENSTEIN REAL
ESTATE GROUP

CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN
FOR
POWELL GRAND
EXHIBIT "J"
TREE SURVEY

EMHT
Evans, Meacham, Hamblen & Titon, Inc.
5500 New Albany Road, Columbus, OH 43254
Phone 614.775.4500 Toll Free 888.775.3448
emht.com

DATE
SEPTEMBER 1, 2015

SCALE
1" = 100'

JOB NO.
20142045

SHEET
J-1

A:\2014\2045\Draw\04\Sheets\FinalDevelopmentPlan_20142045-FDP--11--12.dwg, Last Saved By: btruno, 8/31/2015, 4:08 PM, Last Printed By: btruno, 8/31/2015, 4:51 PM (No Xrefs)

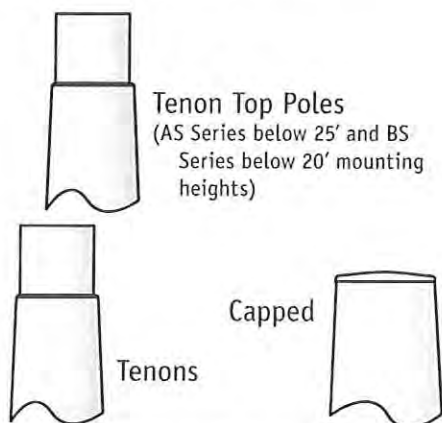
TREE SURVEY DATA TABLE									
TREE NO.	COMMON NAME	SCIENTIFIC NAME	SIZE (IN)	STEMS PER TREE	CONDITION	INDICATOR	REMOVE TREE	INCHES REMOVED	INCHES REPLACED
1	Eastern Cottonwood	Populus deltoides	6,6,6,6	4	Fair	Deciduous	x	24	24
2	Sycamore	Platanus occidentalis	6,7	2	Fair	Deciduous	x	13	13
3	Hackberry	Celtis occidentalis	8	1	Good	Deciduous	x	8	8
4	Hackberry	Celtis occidentalis	12	1	Fair	Deciduous	x	12	12
5	Hackberry	Celtis occidentalis	9	1	Good	Deciduous	x	9	9
6	Hackberry	Celtis occidentalis	13	1	Good	Deciduous	x	13	13
7	Hackberry	Celtis occidentalis	14	1	Good	Deciduous	x	14	14
8	Red Oak	Quercus rubra	36	1	Fair	Deciduous	x	36	36
9	Hackberry	Celtis occidentalis	8,6	2	Good	Deciduous	x	14	14
10	Red Oak	Quercus rubra	26,19	2	Good	Deciduous		0	0
11	American Elm	Ulmus americana	13	1	Poor	Deciduous		0	0
12	American Elm	Ulmus americana	7	1	Fair	Deciduous		0	0
13	White Oak	Quercus alba	9	1	Fair	Deciduous		0	0
14	White Oak	Quercus alba	13	1	Fair	Deciduous		0	0
15	White Oak	Quercus alba	23	1	Fair	Deciduous		0	0
16	White Oak	Quercus alba	17	1	Fair	Deciduous		0	0
17	White Oak	Quercus alba	18	1	Good	Deciduous		0	0
18	White Oak	Quercus alba	27	1	Poor	Deciduous		0	0
19	White Oak	Quercus alba	8	1	Fair	Deciduous		0	0
20	White Oak	Quercus alba	7	1	Poor	Deciduous		0	0
21	White Oak	Quercus alba	13	1	Fair	Deciduous		0	0
22	Mockernut Hickory	Carya tomentosa	12	1	Fair	Deciduous		0	0
23	Sugar Maple	Acer saccharum	6	1	Dead	Dead		0	0
24	White Oak	Quercus alba	32	1	Fair	Deciduous		0	0
25	White Oak	Quercus alba	58	1	Poor	Deciduous		0	0
26	Hackberry	Celtis occidentalis	6	1	Fair	Deciduous		0	0
27	Hackberry	Celtis occidentalis	10	1	Fair	Deciduous		0	0
28	Mockernut Hickory	Carya tomentosa	6	1	Good	Deciduous		0	0
29	Green Ash	Fraxinus pennsylvanica	12	1	Dead	Dead		0	0
30	American Elm	Ulmus americana	7	1	Fair	Deciduous		0	0
31	White Oak	Quercus alba	8	1	Fair	Deciduous		0	0
32	Red Oak	Quercus rubra	8	1	Fair	Deciduous		0	0
33	Red Oak	Quercus rubra	16	1	Good	Deciduous		0	0
34	Shagbark Hickory	Carya ovata	6	1	Good	Deciduous		0	0
35	Red Oak	Quercus rubra	21	1	Fair	Deciduous		0	0
36	Eastern Cottonwood	Populus deltoides	9	1	Good	Deciduous		0	0
37	Red Oak	Quercus rubra	9	1	Good	Deciduous		0	0
38	Red Oak	Quercus rubra	8	1	Good	Deciduous		0	0
39	Shagbark Hickory	Carya ovata	6	1	Fair	Deciduous		0	0
40	Shagbark Hickory	Carya ovata	6	1	Good	Deciduous		0	0
41	American Elm	Ulmus americana	7	1	Good	Deciduous		0	0
42	Red Oak	Quercus rubra	48	1	Fair	Deciduous		0	0
43	Shagbark Hickory	Carya ovata	6	1	Good	Deciduous		0	0
44	American Elm	Ulmus americana	9,6	2	Fair	Deciduous		0	0
45	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
46	Green Ash	Fraxinus pennsylvanica	8	1	Dead	Dead		0	0
47	Green Ash	Fraxinus pennsylvanica	6	1	Dead	Dead		0	0
48	American Elm	Ulmus americana	7	1	Dead	Dead		0	0
49	White Oak	Quercus alba	67	1	Fair	Deciduous		0	0
50	Green Ash	Fraxinus pennsylvanica	9	1	Dead	Dead		0	0
51	American Elm	Ulmus americana	7	1	Fair	Deciduous		0	0
52	Eastern Cottonwood	Populus deltoides	28	1	Poor	Deciduous		0	0
53	Eastern Cottonwood	Populus deltoides	34	1	Poor	Deciduous		0	0
54	Red Oak	Quercus rubra	8	1	Fair	Deciduous		0	0
55	Shagbark Hickory	Carya ovata	7	1	Fair	Deciduous		0	0
56	American Elm	Ulmus americana	6	1	Fair	Deciduous		0	0
57	Shagbark Hickory	Carya ovata	8,8	2	Good	Deciduous		0	0
58	American Elm	Ulmus americana	8	1	Good	Deciduous		0	0
59	Red Oak	Quercus rubra	16	1	Good	Deciduous		0	0
60	Red Oak	Quercus rubra	16	1	Fair	Deciduous		0	0
61	Red Oak	Quercus rubra	14	1	Fair	Deciduous		0	0
62	Green Ash	Fraxinus pennsylvanica	8	1	Dead	Dead		0	0
63	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
64	Sugar Maple	Acer saccharum	14	1	Fair	Deciduous		0	0
65	Green Ash	Fraxinus pennsylvanica	12	1	Dead	Dead		0	0
66	Shagbark Hickory	Carya ovata	7	1	Good	Deciduous		0	0
67	Shagbark Hickory	Carya ovata	7	1	Good	Deciduous		0	0
68	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
69	American Elm	Ulmus americana	6	1	Poor	Deciduous		0	0
70	Red Oak	Quercus rubra	16	1	Good	Deciduous		0	0
71	Shagbark Hickory	Carya ovata	8	1	Good	Deciduous		0	0
72	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
73	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
74	Shagbark Hickory	Carya ovata	8,6,6	3	Good	Deciduous		0	0
75	Shagbark Hickory	Carya ovata	20	1	Good	Deciduous		0	0
76	Shagbark Hickory	Carya ovata	6	1	Fair	Deciduous		0	0
77	Red Oak	Quercus rubra	14	1	Good	Deciduous		0	0
78	Green Ash	Fraxinus pennsylvanica	9	1	Dead	Dead		0	0
79	Red Oak	Quercus rubra	10	1	Good	Deciduous		0	0
80	Shagbark Hickory	Carya ovata	6	1	Good	Deciduous		0	0
81	Red Oak	Quercus rubra	7	1	Good	Deciduous		0	0
82	Green Ash	Fraxinus pennsylvanica	9	1	Dead	Dead		0	0
83	American Elm	Ulmus americana	13	1	Fair	Deciduous		0	0
84	Red Oak	Quercus rubra	14	1	Good	Deciduous		0	0

TREE SURVEY DATA TABLE									
TREE NO.	COMMON NAME	SCIENTIFIC NAME	SIZE (IN)	STEMS PER TREE	CONDITION	INDICATOR	REMOVE TREE	INCHES REMOVED	INCHES REPLACED
85	Green Ash	Fraxinus pennsylvanica	6	1	Dead	Dead		0	0
86	Red Oak	Quercus rubra	7	1	Fair	Deciduous		0	0
87	Red Oak	Quercus rubra	10	1	Fair	Deciduous		0	0
88	Red Oak	Quercus rubra	6	1	Good	Deciduous		0	0
89	Green Ash	Fraxinus pennsylvanica	6	1	Dead	Dead		0	0
90	Sugar Maple	Acer saccharum	6	1	Dead	Dead		0	0
91	Shagbark Hickory	Carya ovata	8	1	Good	Deciduous		0	0
92	Shagbark Hickory	Carya ovata	8	1	Good	Deciduous		0	0
93	Red Oak	Quercus rubra	8	1	Good	Deciduous		0	0
94	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
95	Shagbark Hickory	Carya ovata	6	1	Fair	Deciduous		0	0
96	Eastern Cottonwood	Populus deltoides	8	1	Fair	Deciduous		0	0
97	Eastern Cottonwood	Populus deltoides	11	1	Fair	Deciduous		0	0
98	Shagbark Hickory	Carya ovata	8	1	Fair	Deciduous		0	0
99	Shagbark Hickory	Carya ovata	7	1	Good	Deciduous		0	0
100	Green Ash	Fraxinus pennsylvanica	9	1	Dead	Dead		0	0
101	Green Ash	Fraxinus pennsylvanica	6	1	Dead	Dead		0	0
102	Osage-Orange	Maclura pomifera	13	1	Poor	Deciduous		0	0
103	Osage-Orange	Maclura pomifera	9	1	Poor	Deciduous		0	0
104	Green Ash	Fraxinus pennsylvanica	11	1	Dead	Dead		0	0
105	Green Ash	Fraxinus pennsylvanica	6	1	Dead	Dead		0	0
106	Green Ash	Fraxinus pennsylvanica	7	1	Dead	Dead		0	0
107	Yellow Buckeye	Aesculus flava	6	1	Fair	Deciduous		0	0
108	Red Oak	Quercus rubra	12	1	Fair	Deciduous		0	0
109	Green Ash	Fraxinus pennsylvanica	8,6	2	Dead	Dead		0	0
110	Green Ash	Fraxinus pennsylvanica	10	1	Dead	Dead		0	0
111	Green Ash	Fraxinus pennsylvanica	10	1	Dead	Dead		0	0
112	American Elm	Ulmus americana	9	1	Fair	Deciduous		0	0
113	Green Ash	Fraxinus pennsylvanica	9,6	2	Dead	Dead		0	0
114	Sugar Maple	Acer saccharum	7	1	Good	Deciduous		0	0
115	Red Oak	Quercus rubra	12	1	Good	Deciduous		0	0
116	Green Ash	Fraxinus pennsylvanica	13	1	Dead	Dead		0	0
117	Sugar Maple	Acer saccharum	7	1	Good	Deciduous		0	0
118	Red Oak	Quercus rubra	13	1	Good	Deciduous		0	0
119	Red Oak	Quercus rubra	13	1	Fair	Deciduous		0	0
120	Red Oak	Quercus rubra	7	1	Fair	Deciduous		0	0
121	American Elm	Ulmus americana	8	1	Poor	Deciduous		0	0
122	Green Ash	Fraxinus pennsylvanica	9	1	Dead	Dead		0	0
123	Green Ash	Fraxinus pennsylvanica	10	1	Poor	Deciduous		0	0
124	Slippery Elm	Ulmus rubra	6	1	Fair	Deciduous		0	0
125	Mockernut Hickory	Carya tomentosa	16	1	Fair	Deciduous		0	0
126	Box Elder	Acer negundo	7	1	Poor	Deciduous		0	0
127	Sugar Maple	Acer saccharum	6	1	Fair	Deciduous		0	0
128	Sweetgum	Liquidambar styraciflua	8	1	Fair	Deciduous		0	0
129	Green Ash	Fraxinus pennsylvanica	15	1	Dead	Dead		0	0
130	American Elm	Ulmus americana	10	1	Poor	Deciduous		0	0
131	Green Ash	Fraxinus pennsylvanica	13,13,13,13,12	5	Dead	Dead		0	0
132	Red Oak	Quercus rubra	15	1	Poor	Deciduous		0	0
133	Green Ash	Fraxinus pennsylvanica	13	1	Dead	Dead		0	0
134	Hackberry	Celtis occidentalis	20	1	Fair	Deciduous		0	0
135	Green Ash	Fraxinus pennsylvanica	14,14	2	Dead	Dead		0	0
136	White Pine	Pinus strobus	12	1	Fair	Coniferous		0	0
137	White Pine	Pinus strobus	6	1	Fair	Coniferous		0	0
138	Bradford Pear	Pyrus calleryana	8	1	Fair	Deciduous		0	0
139	White Pine	Pinus strobus	8	1	Good	Coniferous		0	0
140	White Pine	Pinus strobus	9	1	Good	Coniferous		0	0
141	White Pine	Pinus strobus	7	1	Good	Coniferous		0	0
142	White Ash	Fraxinus americana	13	1	Dead	Dead		0	0
143	White Ash	Fraxinus americana	13	1	Dead	Dead		0	0
144	White Ash	Fraxinus americana	12	1	Dead	Dead		0	0
145	Red Oak	Quercus rubra	17	1	Good	Deciduous		0	0
146	White Pine	Pinus strobus	7	1	Good	Coniferous		0	0
147	White Pine	Pinus strobus	10	1	Good	Coniferous		0	0
148	White Pine	Pinus strobus	7	1	Good	Coniferous		0	0
149	White Pine	Pinus strobus	8	1	Good	Coniferous		0	0
150	White Pine	Pinus strobus	8	1	Good	Coniferous		0	0
151	White Pine	Pinus strobus	8	1	Good	Coniferous		0	0
152	White Pine	Pinus strobus	9	1	Good	Coniferous		0	0
153	White Pine	Pinus strobus	8	1	Good	Coniferous		0	0
154	Norway Spruce	Picea abies	10	1	Good	Coniferous		0	0
155	Norway Spruce	Picea abies	11	1	Good	Coniferous		0	0
156	White Ash	Fraxinus americana	13	1	Dead	Dead		0	0
157	Hackberry	Celtis occidentalis	13	1	Fair	Deciduous		0	0
158	Hackberry	Celtis occidentalis	7	1	Good	Deciduous		0	0
159	White Ash	Fraxinus americana	6	1	Dead	Dead		0	0
160	White Ash	Fraxinus americana	6	1	Dead	Dead		0	0
161	White Ash	Fraxinus americana	8,7	2	Dead	Dead		0	0
162	White Oak	Quercus alba	19	1	Fair	Deciduous		0	0
			Total Inches Removed						51
			Total Inches To be Replaced (excludes dead/ poor condition trees)						51
			Number of 2.5" Caliper Trees Required for Replacement						20.4

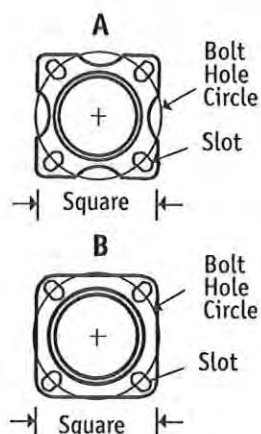
Round Tapered Composite Tuff-Poles®

Tenon Top and Capped

Direct Burial and Anchor Base

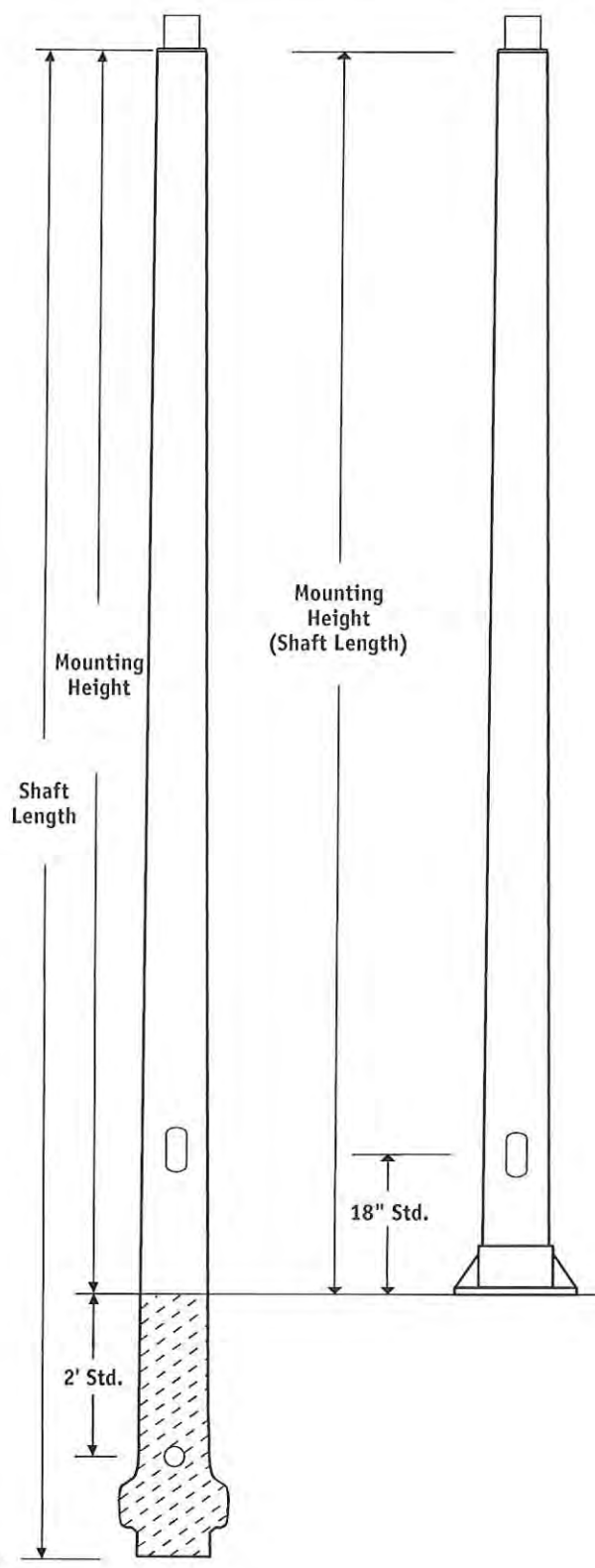
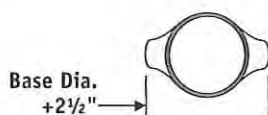


TENONS: 2 3/8", 3", 4" OD, if pole dimensions permit. Tenons are A356-T6 aluminum or hot-dipped galvanized steel, and are available in all standard sizes; for other optional tenons contact Shakespeare. Post top fixtures, flood lights, or brackets mount with ease.



Anchor Base Dimensions

Bolt Hole Circle	Drawing	Square	Slot
8"	A	7.75"	13/16" x 1 5/16"
8 1/2"	A	8.125"	13/16" x 1 5/16"
9 1/2"	A	8.8"	13/16" x 1 5/16"
11 1/2"	B	11"	1 1/4" x 1 3/4"
14"	B	12.9"	1 1/2" x 2"
14 1/2"	B	13.3"	1 1/2" x 2"
15"	B	13.5"	1 1/2" x 2"
15 1/2"	B	14"	1 1/2" x 2"



ANCHOR BASE: Cast A356-T6 aluminum, polyurethane coated to match pole color.

Hot dipped galvanized steel anchor bolts complete with nuts (2) and washers (2) are supplied standard (5/8" x 21" x 3", 1" x 30" x 4", or 1 1/4" x 36" x 6" depending on the pole specified).

MEM/MEL MODERN EPIC

50-400W

DECORATIVE AREA COLLECTION

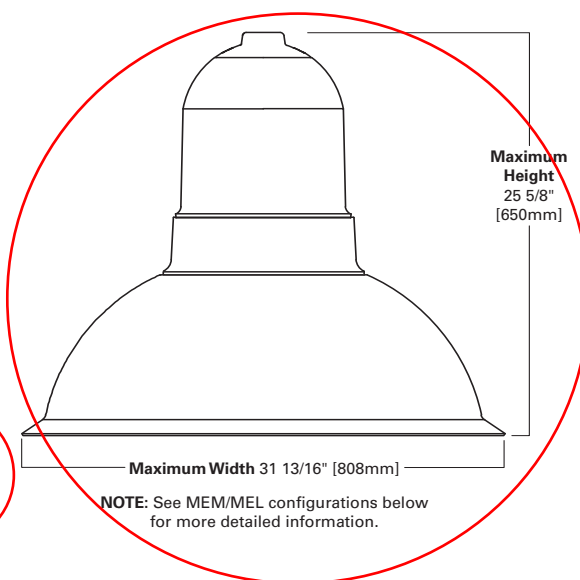


STREETWORKS

IP65 RATED

DARK SKY COMPLIANT **FCO**
Full Cutoff

NOTE: In all flat glass and solid mid sections configurations only



NOTE: See MEM/MEL configurations below for more detailed information.

SPECIFICATION FEATURES

TOP

Cast aluminum housing maintains sidewall thickness and attaches to mounting arm hub with four (4) stainless steel fasteners.

MIDSECTION

Milky white acrylic lens utilizes continuous silicone gaskets to seal lens to top casting and shade. Optional colored luminous rings available.

SHADES

Heavy-gauge precision spun aluminum shades offer superior surface finish and consistency in form.

DOORFRAME ASSEMBLY

Die-cast aluminum 1/8" thick door and doorframe seal to underside of shade with a thick wall continuous silicone gasket. Standard with flat glass.

OPTICAL SYSTEMS

Choice of five (5) high efficiency segmented optical systems constructed of premium 95% reflective anodized aluminum sheet and four (4) formed reflectors.

ELECTRICAL TRAY

Ballast and related electrical componentry are mounted to a reinforced one-piece tray with integral handle. Quick disconnect wiring plugs allow easy tray removal during routine maintenance.

FINISH

Housing finished in a 5 stage premium TGIC polyester powder coat paint, 2.5 mil nominal thickness for superior protection against fade and wear. Standard colors include black, bronze, grey, white, dark platinum, graphite metallic, and hartford green. RAL and custom color matches available. Consult your Streetworks Representative.

EPA [Effective Projected Area]:

MEM: Flat Lens .94 | Sag Lens 1.04

MEL: Flat Lens 1.55 | Sag Lens 1.75

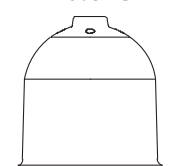
SHIPPING DATA [Approximate Net Weight]:

MEM: 37 lbs. [17 kgs.]

MEL: 50 lbs. [23 kgs.]

CONFIGURATIONS

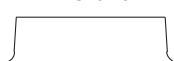
HOUSING



Modern

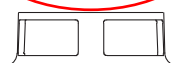
[MEM] 9.3" H x 8.8" W
[MEL] 12.8" H x 12.2" W

MID SECTION



Solid

[MEM] 3.4" H x 9.9" W
[MEL] 3.8" H x 13.4" W



Window

[MEM] 3.4" H x 9.9" W
[MEL] 3.8" H x 13.4" W



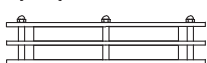
Louvered

[MEM] 3.4" H x 9.9" W
[MEL] 3.8" H x 13.4" W



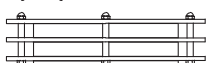
Slot

[MEM] 3.4" H x 9.9" W
[MEL] 3.8" H x 13.4" W



Solid Rings

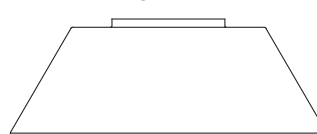
[MEM] 3.4" H x 12" W
[MEL] 3.8" H x 15.8" W



Luminous Rings

[MEM] 3.4" H x 12" W
[MEL] 3.8" H x 15.8" W

SHADE



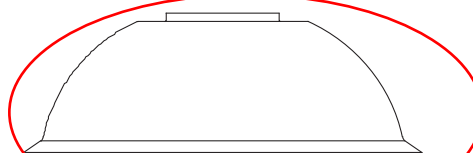
Straight Narrow

[MEM] 6.6" H x 19.1" W



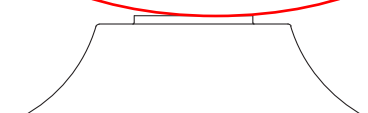
Straight Wide

[MEM] 5.1" H x 23.9" W
[MEL] 6.6" H x 30" W



Bell

[MEM] 8" H x 24" W
[MEL] 9" H x 30" W



Flute

[MEM] 6" H x 22.5" W
[MEL] 8.4" H x 31.8" W

FINIALS



Architectural



Modern



Nostalgic

ORDERING INFORMATION

SAMPLE NUMBER: MEM17MWW2SXSNBK

PRODUCT FAMILY ¹	LAMP WATTAGE ²	LAMP TYPE ⁵	BALLAST TYPE ⁵	VOLTAGE ⁵	DISTRIBUTION	MID SECTION TYPE	SHADE TYPE	COLOR	OPTIONS + ACCESSORIES
MEM=Modern	50=50W	M=Metal Halide	C=CWI	2=120V	MA=Milk White Acrylic Jar ⁶	X=Solid (Standard)	SN=Straight Narrow	(add as suffix/ must specify) ⁹	(See Below)
Epic	70=70W	P=Pulse Start	H=Reac./HPF	0=208V	2S=Type II Segmented	1=Window	SW=Straight Wide	AP=Grey	
Medium	10=100W	Metal Halide	K=10KV CWA	4=240V	3R=Type III Glass Refractor ⁷	2=Louvered	BL=Bell	BK=Black	
MEL=Modern	15=150W	S=High Pressure	N=Hi. Reac./NPF	7=277V	4S=Type IV Segmented	3=Slot	FL=Flute	BZ=Bronze	
Epic Large	17=175W	Sodium	P=Hi. Reac./HPF	8=480V	5R=Type V Glass Refractor ⁷	4=Solid Rings		DP=Dark Platinum	
	25=250W		R=Reac./NPF	9=347V	5S=Type V Segmented	5=Luminous Rings		GM=Graphite Metallic	
	32=320W ³		W=CWA	K=120/277V	SL=Spill Light Eliminator ⁸	Optional Mid Section Type		GN=Hartford Green	
	35=350W ³			L=277/120V	2F=Type II Formed	6=Luminous Rings	Red	WH=White	
	40=400W ⁴			wired 120V	3F=Type III Formed	7=Luminous Rings	Bright Blue		
				wired 277V	4F=Type IV Formed	8=Luminous Rings	Deep Green		
				N=Multi-Tap	5F=Type V Formed	9=Luminous Rings	Warm Orange		
				wired 277V					
				W=Multi-Tap					
				wired 120V					

OPTIONS + ACCESSORIES [Must be listed in the order shown]

OPTIONS (add as suffix)

1=Single Fuse (120 or 277V)
 2=Double Fuse (208, 240 or 480V)
 C=Emergency Quartz Separate Circuit ¹⁰
 E=Emergency Quartz with Time Delay ¹⁰
 FR=Frosted Flat Glass
 B=House-side Shield ¹¹
 L=Lamp Included
 M=Mogul-Base Socket (Type 3S Only)
 NG=No Glow Luminous Mid Section ¹²
 PMT=Post Mount Tenon
 PM-PCR=NEMA Type Photocontrol Receptacle (Post Mount Only)
 Q=Quartz Standby ¹⁰
 SGR=Frosted Sag Glass
 SG=Sag Glass
 V=Vandal Shield (100W Max.)
 W=Wire Guard

ACCESSORIES (order separately, replace XX with color suffix)

MEM MODERN EPIC MEDIUM ARMS

[see page 16-17 for details on arm accessories]

SA6105-XX=Bishop Single Pole Mount Arm
 SA6106-XX=Bishop Single Pole Mount Arm with Cross Rod
 SA6107-XX=Bishop Twin Pole Mount Arm
 SA6108-XX=Bishop Twin Pole Mount Arm with Cross Rods
 SA6109-XX=Traditional Single Pole Mount Arm
 SA6110-XX=Traditional Single Pole Mount Arm with Rounded Upper Bar
 SA6111-XX=Traditional Single Pole Mount Arm with Rounded Lower Bar ¹³
 SA6112-XX=Traditional Single Pole Mount Arm with 45° Upper Bar
 SA6113-XX=Traditional Single Pole Mount Arm with 45° Lower Bar ¹³
 SA6114-XX=Traditional Single Pole Mount Arm with 45° Upper Strap
 SA6116-XX=Traditional Twin Pole Mount Arm
 SA6117-XX=Traditional Twin Pole Mount Arm with Rounded Upper Bars
 SA6118-XX=Traditional Twin Pole Mount Arm with Rounded Lower Bars ¹³
 SA6119-XX=Traditional Twin Pole Mount Arm with 45° Upper Bars
 SA6120-XX=Traditional Twin Pole Mount Arm with 45° Lower Bars ¹³
 SA6121-XX=Traditional Twin Pole Mount Arm with 45° Upper Straps
 SA6122-XX=Tenon Adapter for 2 3/8" O.D. Horizontal Tenon

MEL MODERN EPIC LARGE ARMS

[see page 16-17 for details on arm accessories]

SA6005-XX=Bishop Single Pole Mount Arm
 SA6006-XX=Bishop Single Pole Mount Arm with Cross Rod
 SA6007-XX=Bishop Twin Pole Mount Arm
 SA6008-XX=Bishop Twin Pole Mount Arm with Cross Rods
 SA6009-XX=Traditional Single Pole Mount Arm
 SA6010-XX=Traditional Single Pole Mount Arm with Rounded Upper Bar
 SA6011-XX=Traditional Single Pole Mount Arm with Rounded Lower Bar ¹³
 SA6012-XX=Traditional Single Pole Mount Arm with 45° Upper Bar
 SA6013-XX=Traditional Single Pole Mount Arm with 45° Lower Bar ¹³
 SA6014-XX=Traditional Single Pole Mount Arm with 45° Upper Strap
 SA6016-XX=Traditional Twin Pole Mount Arm
 SA6017-XX=Traditional Twin Pole Mount Arm with Rounded Upper Bars
 SA6018-XX=Traditional Twin Pole Mount Arm with Rounded Lower Bars ¹³
 SA6019-XX=Traditional Twin Pole Mount Arm with 45° Upper Bars
 SA6020-XX=Traditional Twin Pole Mount Arm with 45° Lower Bars ¹³
 SA6021-XX=Traditional Twin Pole Mount Arm with 45° Upper Straps
 SA6022-XX=Tenon Adapter for 2 3/8" O.D. Horizontal Tenon

ACCESSORY ARM OPTIONS (add as suffix to accessory)

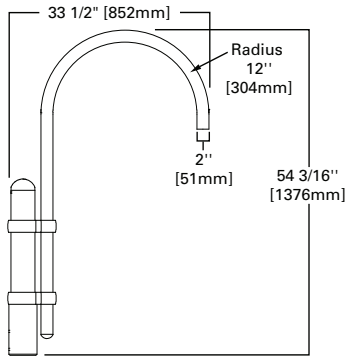
4=NEMA Twistlock Photocontrol Receptacle ¹⁴
 A=Architectural Finial ¹⁵
 M=Modern Finial ¹⁵
 N=Nostalgic Finial ¹⁵

NOTE: 1 Arms not included Order Separately See accessories 2 50-175W lamps are medium-base 150-400W lamps are mogul-base 3 320 and 350W Pulse Start Metal Halide only 4 400W MH requires reduced envelope ED28 Lamp 5 Refer to technical section for lamp/ballast/voltage compatibility 6 Vertical lamp option only 100W maximum in MEM, 250W maximum in MEL 7 MEM vertical lamp option only 8 SL only available with Solid Mid selection or with NG option 9 Custom and RAL color matching available upon request Consult your Cooper Lighting Representative for more information 10 Quartz options not available with SL optic or vertical lamped optical systems 10 Quartz options not available with SL optic or vertical lamps optical systems 11 House-side shield available on horizontally lamped 2S, 3S, and 4S optical systems only 12 NG option retains daytime appeal of window, louvered, slot, solid rings, or luminous rings mid section styles, but does not allow light into the upper chamber of the housing Mid section will not glow at night, maintaining the cutoff control associated with the standard solid mid section 13 Requires use of 4" O.D. round straight pole 14 Not compatible with finials 15 Traditional Arms only 16 Specifications and dimensions subject to change without notice

EPIC COLLECTION ARMS

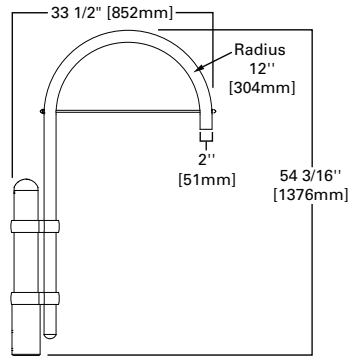
DECORATIVE AREA COLLECTION

ARMS SPECIFICATIONS

**BISHOP SINGLE POLE MOUNT ARM**

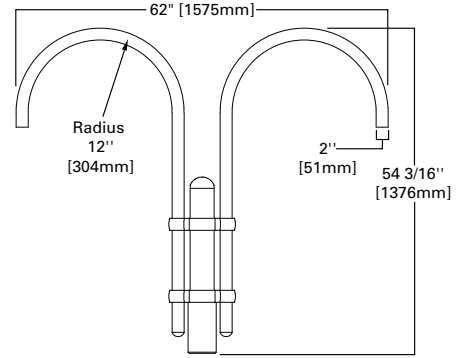
[SA6105, SA6154, SA6005, SA6054]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 24 lbs. **E.P.A.:** .92**BISHOP SINGLE POLE MOUNT ARM WITH CROSS ROD**

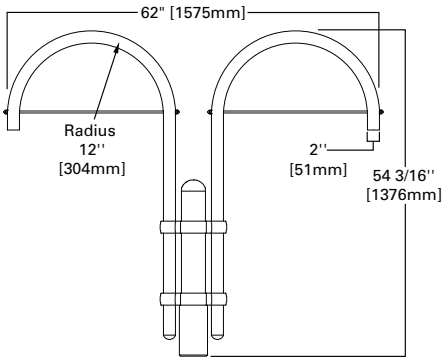
[SA6106, SA6155, SA6006, SA6055]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 25 lbs. **E.P.A.:** .98**BISHOP TWIN POLE MOUNT ARM**

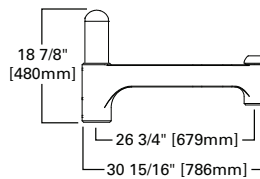
[SA6107, SA6156, SA6007, SA6056]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 37 lbs. **E.P.A.:** 1.43**BISHOP TWIN POLE MOUNT ARM WITH CROSS RODS**

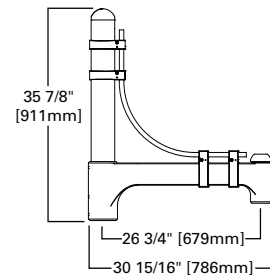
[SA6108, SA6157, SA6008, SA6057]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 39 lbs. **E.P.A.:** 1.55**TRADITIONAL SINGLE POLE MOUNT ARM**

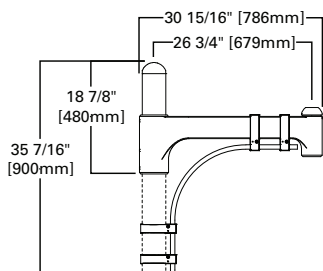
[SA6109, SA6158, SA6009, SA6058]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 20 lbs. **E.P.A.:** .86**TRADITIONAL SINGLE POLE MOUNT ARM WITH ROUNDED UPPER BAR**

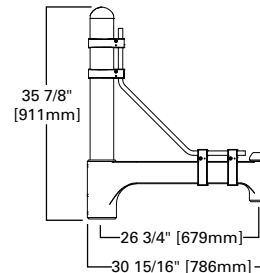
[SA6110, SA6159, SA6010, SA6059]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 28 lbs. **E.P.A.:** 1.4**TRADITIONAL SINGLE POLE MOUNT ARM WITH ROUNDED LOWER BAR**

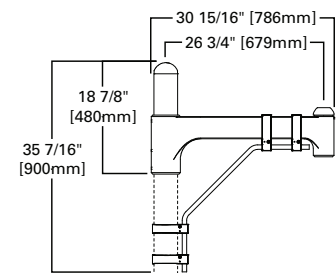
[SA6111, SA6160, SA6011, SA6060]

Slipfits over 4" round straight pole. Requires use of 4" O.D. Round Straight Pole

Weight: 25 lbs. **E.P.A.:** 1.16**TRADITIONAL SINGLE POLE MOUNT ARM WITH 45° UPPER BAR**

[SA6112, SA6161, SA6012, SA6061]

Slipfits over 4" round straight pole, or 4" O.D. by 6" tall tenon.

Weight: 28 lbs. **E.P.A.:** 1.38**TRADITIONAL SINGLE POLE MOUNT ARM WITH 45° LOWER BAR**

[SA6113, SA6162, SA6013, SA6062]

Slipfits over 4" round straight pole. Requires use of 4" O.D. Round Straight Pole

Weight: 25 lbs. **E.P.A.:** 1.14



MEMO

Date: August 31, 2015
To: City of Powell
From: Justin Zampardi, PE
Subject: Powell Grand Exhibit "M" – Existing & Proposed Easements
Copies: Schottenstein Real Estate Group

The following is a summary of the easements and right-of-way for the above referenced project located at the southeast corner of the intersection of Sawmill Parkway and Seldom Seen Road.

Existing Easements & Right-of-Way

An ALTA/ACSM Land Title Survey was prepared for the entire property, refer to Exhibit "B" – ALTA survey. On the north side of the subject property, right-of-way and easements were dedicated with the development of a previous project that was not completed. The existing 60' R/W for Revere Court will be vacated with the development for this project. The existing 20' Sanitary Easement, Item 31 on the ALTA survey, will also be vacated. All remaining existing easements indicated on the ALTA survey will remain in place.

Proposed Easements & Right-of-Way

A proposed 60' R/W will be dedicated for the extension of Bunker Lane to Sawmill Parkway as indicated in Exhibit "E" – Final Development Plan. The coordination of proposed sanitary and storm sewer easements will be established with the Final Engineering Plans.

Analysis of Fiscal Impact of “Powell Grand” Proposed Residential Complex in Powell

Prepared by Howard Fleeter & Associates

June 16, 2015

Project Overview

The proposed residential complex would construct a total of 308 one, two, and three bedroom rental units on approximately 39 acres of undeveloped land within the City of Powell. Developers estimate that the complex will be comprised of the following dwelling types:

- 120 large senior 1 or 2 bedroom suites with elevator
- 60 2 or 3 bedroom ranch homes with 2 car garages
- 128 2 or 3 bedroom 2 story attached rental homes with 1 car garages

Total occupancy is forecast to be 600 persons and the rental price per unit is expected to vary from \$900s to \$1,900s per month depending on the size and nature of the unit. The average household income of prospective renters is expected to be \$100,000 per year based on the findings of market study conducted by the developers. Developers characterize the complex as an “Active Adult Class-A Gated Community” and anticipate that there will be very few - if any - school-age children among the residents.

In addition, the complex will also include a 50,000 square foot office development that is currently proposed to be either a combination of retail (i.e. a drug store) and professional office space (i.e. legal, dental, financial) or medical office space. Assuming that the medical complex will employ 3 persons per 1,000 square feet at an average annual salary of \$65,000, the estimated annual payroll associated with the medical complex is \$9,750,000. The retail/professional building can be assumed to employ 50 persons at an average salary of \$50,000 per year. This scenario would generate \$2.5 million annually in payroll. The income generated by either of these office development scenarios will be subject to Powell Income Tax.

Finally, the development will also employ 7 full-time employees to manage and maintain the complex. These employees will earn an estimated \$350,000 annually, which will also be subject to the Powell Income Tax.

Property Tax Impact

Developers estimate that the completed project will have a market value of approximately \$40.0 million. At an assessment percentage of 35%, this translates into an estimated taxable value of \$14.0 million.

Developers currently forecast that construction of the residential component of the development (market value of \$35.0 million) will be completed by December 31, 2016 and that the commercial component (market value of \$5.0 million) will be completed by December 31, 2017. Thus the full \$14.0 million taxable of the development will be in place in Tax Year 2018.

Table 1 shows the increase in property tax revenue projected to result from the newly constructed apartments and medical complex for all of the different government jurisdictions with property taxes in the area of the proposed development. This includes the City of Powell, Liberty Township, Olentangy Local School District, The Delaware County Joint Vocational School District (JVSD), Delaware County, and several “special taxing districts” including the Delaware County Health Department, the Delaware-Morrow County Mental Health agency, and 9-1-1, library, and park districts. Property tax millage rates and estimated tax revenues are shown for each branch of local government and are shown separately for operating and permanent tax levies and bond levies.

Table 1: Estimated Annual Property Tax Revenue Deriving from the Proposed Powell Grand Project by Political Subdivision for Tax Years 2018 and Beyond

Taxing Authority	Commercial Property Tax Operating & P.I. Rate (in Mills)*	Property Tax Operating & P.I. Levy Revenue	Commercial Property Tax Bond & Debt Millage Rate*	Property Tax Bond & Debt Levy Revenue	Total Property Tax Revenue
Delaware County	5.7385	\$80,339	0.15	\$2,100	\$82,439
Liberty Township	6.5000	\$91,000	0.35	\$4,900	\$95,900
Powell City	1.2000	\$16,800	2.60	\$36,400	\$53,200
Olentangy LSD	44.1543	\$618,160	8.72	\$122,080	\$740,240
Delaware JVSD	2.4109	\$33,753	0.00	\$0	\$33,753
County Special Districts	3.6940	\$51,716	0.00	\$0	\$51,716
Total All Local Governments	63.6977	\$891,768	11.82	\$165,480	\$1,057,248

*** Note: Tax Rates are those currently in place for Tax Year 2014 and may change over time.**

Table 1 shows that when the proposed complex is fully developed (2018) the completed project will yield about \$16,800 for the City of Powell each year in new general fund property taxes. Olentangy LSD will receive an additional \$618,160 in additional operating revenue annually from the new development when it is completed. It is estimated that \$540,890 of the total \$618,160 in new operating tax revenue that would accrue to the Olentangy LSD would be derived from the residential component of the complex. Delaware County will receive \$80,339 in new operating revenue and Liberty Township will receive \$91,000. The bottom row of Table 1 shows the total millage rate and property tax revenue for all of the local subdivisions that will derive property tax revenue from the proposed development. This project is estimated to generate a total of \$891,768 in new property tax revenues across all of the local governments in the area.

Table 1 also shows revenue estimates for bond and debt service levies for each of the local governments. Bond levy revenue is shown separately from operating and permanent improvement levy revenues because bond levies are “fixed sum” levies that reduce in rate in order to raise the same amount of revenue when the local tax base is expanded as a result of new construction. Thus the effect of the proposed development on bond taxes will be to reduce the tax burden for other local taxpayers by the amount shown in the 2nd column from the right of Table 1 (total of \$165,480).

Powell City Income Tax

The City of Powell levies a 0.75% income tax. However, most Powell residents work in another city to which they must pay city income taxes based on place of employment. These residents qualify for a 0.25% credit for those taxes paid elsewhere. Therefore, most Powell City income taxpayers pay a residents' effective tax rate of 0.50% after claiming a credit for taxes paid to the city where they work.

A market analysis conducted by the project's developers estimates that the average annual household income for the residents of the apartment complex will equal approximately \$100,000. The \$100,000 average household income figure represents the average across all 308 rental units taking into account both the size distribution of the dwelling units (1, 2 and 3 bedrooms), and the assumption that 80% of the households will have W-2 income and 20% will have only 1099 income with no W-2 income.

The first column of Table 2 provides estimates of the total income and income taxes paid by residents of the proposed residential complex. Multiplication of the \$100,000 average household income figure by the number of residential units (308) yields \$30.8 million in total new taxable income. Multiplication of the additional taxable income by the one half percent income tax rate that applies to Powell residents working in another city yields a conservative estimate of \$154,000 in new income tax revenue resulting from the residential component of the proposed development. This estimate is considered to be conservative to the extent that some residents of the development may work in Powell or may work from home and thus pay the full 0.75% Powell Income Tax.

Table 2: Estimated Annual Additional City Income Tax Paid by Residents, Management Employees, and Proposed Retail & Professional or Medical Facility Employees Upon Completion of the Proposed Development

	Residential Complex	Residential Complex	A. Proposed Retail & Professional Building	B. Proposed Medical Building	Total
# of Income Taxpayers	308 Households	7 FTE Management Employees	50 FTE Employees	150 FTE Employees	365 to 465 New Taxpayers
Average Annual Income	\$100,000		\$50,000	\$65,000	--
Total New Taxable Income	\$30,800,000	\$300,000	\$2,500,000	\$9,750,000	\$33,600,000 to \$40,850,000
Tax Rate	0.50%	0.75%	0.75%	0.75%	--
Total Additional City Income Tax Paid	\$154,000	\$2,250	\$18,750	\$73,125	\$175,000 to \$229,375

In addition to income taxes paid by the residents of the apartment complex, Table 2 also provides estimates of the income taxes that will be paid to the City of Powell by the complex's management and maintenance employees and by those who work in the 50,000 square foot proposed retail/professional or medical facility. Because Ohio's municipal income tax is based first on place of employment, it does not matter whether the workers at the development and the office building live in Powell or elsewhere. The middle three columns of Table 2 show the estimated annual income tax that the City of Powell will receive due to ongoing employment at the residential complex and proposed office

building. Workers who live elsewhere may receive a credit for taxes paid to Powell but they must pay taxes at the full Powell income tax rate of 0.75%.

Table 2 provides estimates for the two scenarios proposed for utilization of the 50,000 square feet of office space. Under scenario “A” utilization of the space for retail and professional purposes will yield an estimated \$18,750 annually in income taxes for the City of Powell at the 0.75% rate. Under scenario “B” utilization of the space for medical offices will generate \$73,125 annually in income tax revenues at the 0.75% Powell tax rate. The 7 full-time management and maintenance employees will pay an estimated \$2,250 in income taxes to Powell annually.

When the estimated \$154,000 in taxes paid by apartment residents is added to the \$2,250 paid by the facility managers and the \$18,750 to \$73,125 in expected income tax paid by workers at the office building (depending on the scenario) are added to together, the total estimated income taxes to be received by the City of Powell can be expected to range from \$175,000 to \$229,375 annually. These figures are shown in the rightmost column of Table 2.

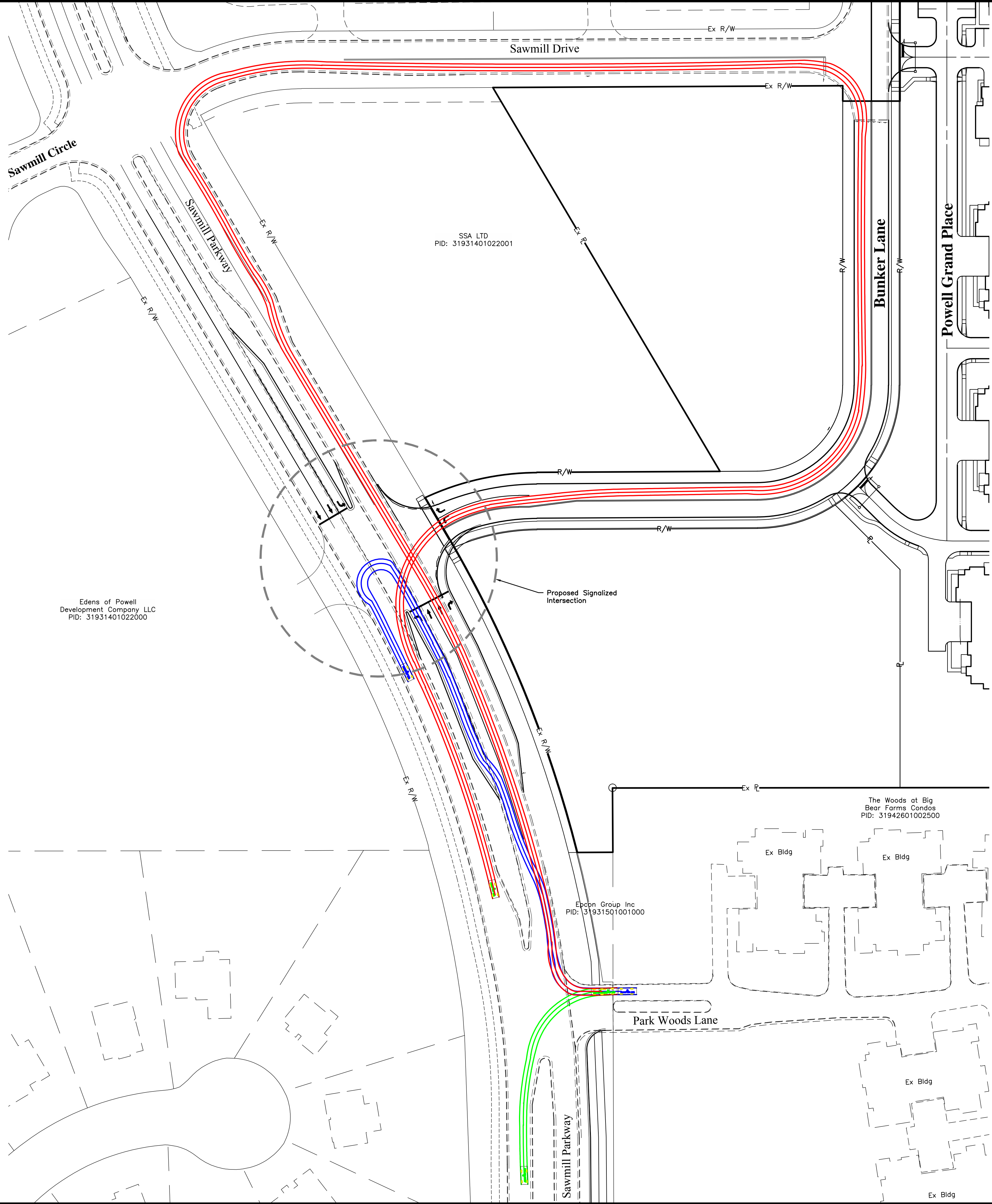
Finally, construction of the apartment complex is estimated to result in a total of **575 temporary construction jobs** (note that this figure is based on the number of construction jobs estimated for a previously proposed project of similar scope at this site). Bureau of Labor Statistics (BLS) data from May 2014 show average construction wages as \$17.19 per hour or about \$35,750 per year. 575 jobs at an average of \$35,750 in income results in a total of \$20.6 million in estimated construction earnings. Applying the City of Powell income tax rate of 0.75% results in **\$154,000** in “one-time” income tax revenues from construction of the apartment complex. Additional income tax revenues would be derived from the temporary jobs created by the construction of the proposed 50,000 square foot medical building. While more information is needed to prepare a precise estimate of the number of construction jobs relating to the office building, several unofficial “rules of thumb” used by economists suggest that the number of construction workers - and hence the amount of one-time income tax revenue generated – will be roughly one third to one half that generated by the residential component of the project.

Summary and Conclusion




The proposed new housing development will add substantial amounts of new income tax revenue for the City of Powell – approximately \$175,000 to \$229,000 - based on estimated occupancy and income levels for residents, salaries of management and maintenance employees, and estimated employment and salaries at the proposed medical building. Income tax revenues from construction workers will add roughly \$154,000 on a one-time basis from the apartment complex alone, and more when the 50,000 square foot office building is included.

The addition of the residential complex's 308 housing units will increase market value by an estimated \$35.0 million and taxable valuation by roughly \$12.25 million when the build-out finishes in 2016. The additional property valuation would yield \$541,000 per year in annual additional property tax revenue for Olentangy LSD while adding very few – if any – pupils. In addition, the proposed medical office building will add an additional \$5.0 million in market value (\$1.75 million in taxable value) and generate an estimated \$77,000 in property tax revenue for the school district without adding any additional pupils. Furthermore, when Delaware County, the City of Powell, Liberty Township, and other local government entities are included, the estimated total amount of new property tax revenue to be generated annually by the proposed development is nearly \$892,000. Finally, roughly \$165,000 in additional bond tax revenue will be generated by this project which will lower the amount of property

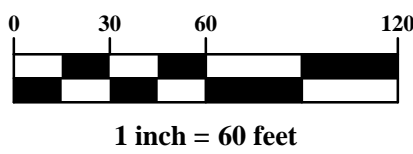
taxes paid toward bond levies by that same amount for current taxpayers.



LEGEND

-  Left turn from Park Woods Lane onto Sawmill Parkway.
-  Right turn from Park Woods Lane onto Sawmill Parkway. U-turn at signalized intersection of Sawmill Parkway and Bunker Lane.
-  Right turn from Park Woods Lane onto Sawmill Parkway. Right turn onto Sawmill Drive and Bunker Lane to signalized intersection at Sawmill Parkway. Left turn onto Sawmill Parkway.

GRAPHIC SCALE



1 inch = 60 feet

PRELIMINARY
.....
**NOT TO BE USED FOR
CONSTRUCTION**

**PLAN SET DATE
SEPTEMBER 1, 2015**

[illegible]

**SCHOTTENSTEIN REAL
ESTATE GROUP**

**CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN
FOR
POWELL GRAND**

**CITY OF POWELL, DELAWARE COUNTY, OHIO
FINAL DEVELOPMENT PLAN
FOR
POWELL GRAND
EXHIBIT "P"
WOODS AT BIG BEAR FARMS MOVEMENT EXHIBIT**



DATE _____

SEPTEMBER 1, 2015

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$$1'' = 60$$

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**POWELL GRAND SITE
TRAFFIC IMPACT STUDY**

**Schottenstein Real Estate Group/
Margello Development**

June 4, 2015

Engineers

Surveyors

Planners

Scientists

Traffic Impact Study
For
Powell Grand Site

Sawmill Parkway and Seldom Seen Road

Prepared For:
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2 Easton Oval
Columbus, Ohio 43219

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Columbus, Ohio 43054
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June 4, 2015

The traffic engineering data, analysis, findings, and recommendations contained herein and originally produced by EMH&T have been prepared in accordance with accepted Engineering practice and represent anticipated future conditions to the best of our knowledge and belief.



Douglas A. Bender, PE, PTOE
For EMH&T

6/4/15

Date

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1.0 INTRODUCTION

This study has been prepared to determine the transportation impact of developing the Powell Grand senior living site located in the southeast quadrant of the Sawmill Parkway/Seldom Seen Road intersection in Delaware County, Ohio as illustrated in **Figure 1**.

A previous project initiation meeting was held for this site on April 24, 2014 for a different developer and site plan with the following in attendance: Doug Riedel, John Piccin, Rob Riley and Mike Love with the Delaware County Engineer's Office, as well as Jeff Strung and Doug Bender with EMH&T. A previous memorandum of understanding (MOU) dated May 1, 2014 was prepared based on that meeting but has been subsequently updated for this new user and site plan. The updates to the MOU were based on email correspondence and a newly drafted MOU dated March 23, 2015. The MOU approved as the scope for this study update on March 30, 2015, and is included for reference in **Appendix A**.

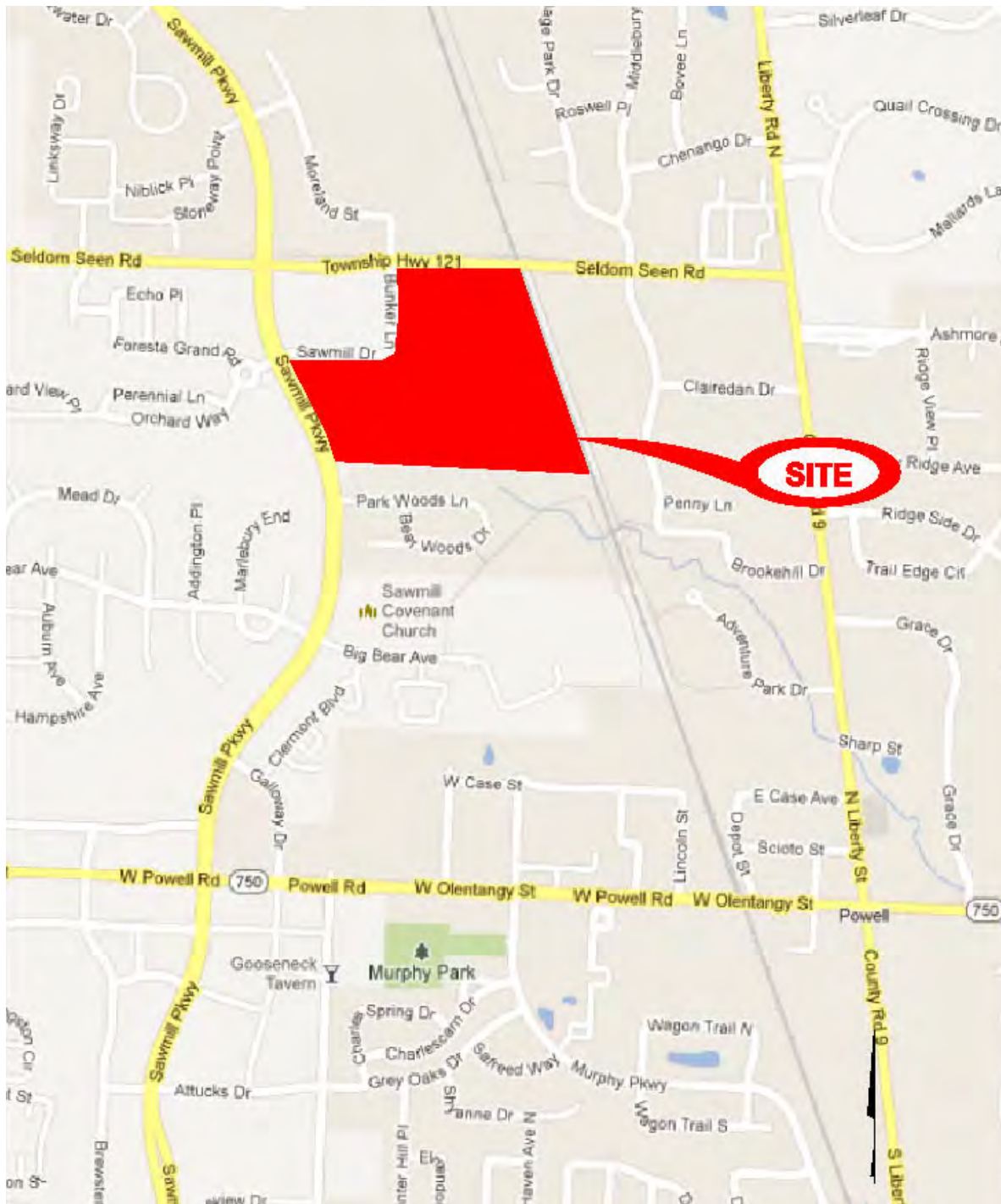
2.0 PROPOSED DEVELOPMENT AND ACCESS PLAN

Site development consists of 308 senior living units as well as a 50,000 square feet of office building space. Both existing access points to the site will remain, including one access to Sawmill Parkway via Sawmill Drive and one access to Seldom Seen Road via Bunker Lane. The study will also consider a new full movement, signalized access to Sawmill Parkway that will be coupled with restricting current Sawmill Drive access to right-in/right-out only operation. The proposed site layout is illustrated in **Exhibit 1**. Site access points are listed below for clarification:

- **Sawmill Parkway**
 - Sawmill Drive (existing full movement, restricted to right-in/right-out upon Site Drive 1 completion)
 - Site Drive 1 (proposed full movement, proposed signal)
- **Seldom Seen Road**
 - Bunker Lane (existing full movement, existing stop control to remain)

All vehicular circulation within the site is proposed on private roadways. At the time of this writing this includes extensions of Sawmill Drive and Bunker Lane as well as the addition of Site Drive 1 from its intersection with Sawmill Parkway into the property. The existing portions of Sawmill Drive and Bunker Lane will remain public, as they are today and the extensions of both of these roadways into the site are planned to be public roads as well. Some variances/adjustments to parking requirements may arise along the new portions of these roadways.

FIGURE 1: Site Location Map



3.0 EXISTING STUDY AREA CONDITIONS

The area of influence identified for this study includes the following intersections:

- Sawmill Parkway/Powell Road (SR 750)
- Sawmill Parkway/Big Bear Avenue
- Sawmill Parkway/Sawmill Drive (convert to Right-in/Right-out in site “Build” scenarios)
- Sawmill Parkway/Seldom Seen Road
- Seldom Seen Road/Bunker Lane
- Seldom Seen Road/Liberty Road
- Site Access to Sawmill Parkway (proposed full movement signalized intersection including future west leg)

A schematic representation of existing study area conditions has been documented in **Figure 2** and described below in further detail.

Sawmill Parkway is a four-lane, north/south Major Arterial roadway with a posted speed limit of 45 miles per hour. Seldom Seen Road is a Minor Collector roadway providing three lanes with a speed limit of 45 miles per hour in the vicinity of the Sawmill Parkway intersection. The speed limit on Seldom Seen Road transitions to 35 mph east of the CSX railroad tracks at the east edge of the site. Liberty Road is a two-lane, Minor Arterial roadway with a posted speed limit of 35 miles per hour. Seldom Seen Road intersects Liberty Road under stop control. Sawmill Parkway intersects Seldom Seen Road under traffic signal control.

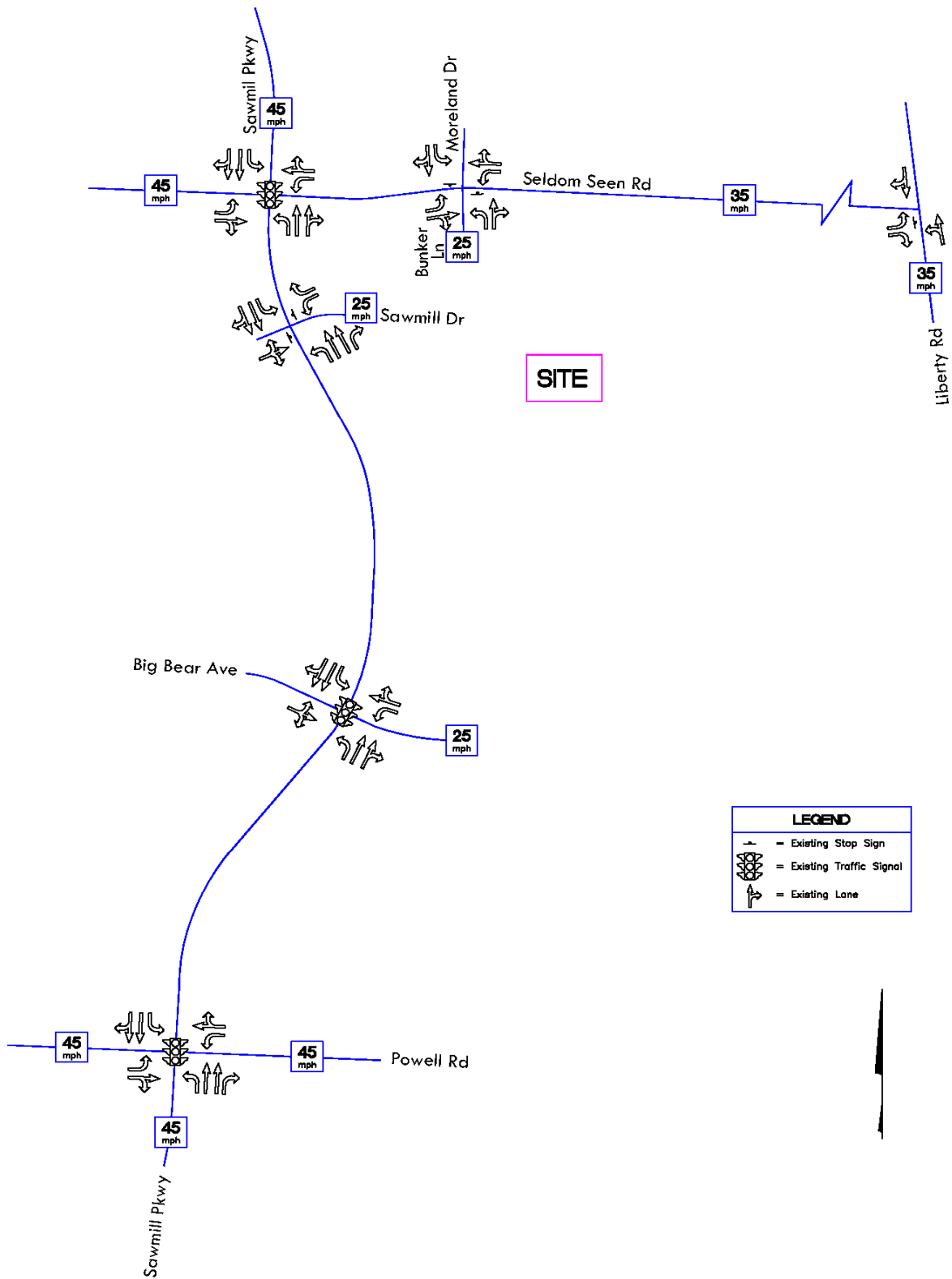
4.0 DATA COLLECTION

Manual turning movement counts were previously conducted by EMH&T personnel at the following intersections on November 7th and 8th, 2012, from 7 AM to 9 AM and 4 PM to 6 PM:

- Sawmill Parkway/Powell Road (SR 750)
- Sawmill Parkway/Big Bear Avenue
- Sawmill Parkway/Sawmill Drive
- Sawmill Parkway/Seldom Seen Road
- Seldom Seen Road/Bunker Lane

All counts were conducted on weekdays to represent average conditions, including the Seldom Seen Road/Liberty Road intersection on November 13, 2012 from 7 AM to 6 PM. An additional count was performed there December 13, 2012 from 6 PM to 8 PM to gather added hours of data. Traffic count data used in this study are included for reference in **Appendix A**.

FIGURE 2: Existing Study Area Conditions



5.0 TRAFFIC VOLUME PROJECTIONS

The impact of the Powell Grand development on the adjacent street network was determined by combining estimated site-generated trips with background traffic volumes and analyzing the street system under full build conditions. Traffic volumes were projected for the weekday morning and afternoon peak hour based on the development plan shown in **Exhibit 1**. Detailed traffic volume calculations have been included in **Appendix B** and are discussed in Section 5.1 below.

The proposed Powell Grand development represents a substantial decrease in the traffic generating potential of this property. This site is currently zoned for high density retail development that would generate traffic five times what is currently being proposed for the site. Trip generation potential for the current zoning on this site was estimated using ITE's Land Use Code 820 (Shopping Center) for a 400,000 S.F. retail center, resulting in 1,517 afternoon peak hour trip ends, which is illustrated in **Table 1** below:

TABLE 1: Existing Zoning Trip Generation Results

Time Period	Trip Type	Entering	Exiting	Total
ADT	Total	8,361	8,361	16,722
AM Peak Hour	Primary	200	122	322
	Pass-By	31	31	62
	Total	231	153	384
PM Peak Hour	Primary	539	584	1,123
	Pass-By	197	197	394
	Total	736	781	1,517

A background traffic growth rate was requested from the Mid-Ohio Regional Planning Commission (MORPC) and was submitted to the County Engineer for review and approval on January 10, 2013. The recommended growth rates for the study area provided by MORPC are:

- Sawmill Parkway- 3%
- Powell Road- 2%
- Seldom Seen Road- 2.5%
- Liberty Road- 3%

Opening day and design year, morning and afternoon peak hour traffic volumes were projected for a single build scenario that includes all proposed access with full development of the site. Opening Year for this study is 2016 and the Design Year is 2036. Traffic data was developed for the following scenarios:

- 2016 Background (site “no-build” condition, includes ‘other development traffic’)
- 2016 Full Build of Site with Proposed Access and warranted roadway improvements
- 2036 Background (site “no-build” condition, includes ‘other development traffic’)
- 2036 Full Build of Site with Proposed Access and warranted roadway improvements

5.1 Site Traffic Volumes

Morning and afternoon weekday peak hour site generated trip ends for the proposed development were forecast using trip generation rates for land use code #251 (Senior Adult Housing, Detached) and #710 (Office) as published in Trip Generation, 9th Edition (Institute of

Transportation Engineers, 2012). Trip generation for the residential component was based on the ‘detached’ senior housing rates since the exact mix of housing type that will be build it undetermined and the detached rate is more conservative than the attached senior living rate. Site generated trip ends were distributed to the adjacent street network according to patterns observed in the manual traffic count procedure and based on engineering judgment regarding likely origins and destinations of trips during peak hours.

Site generated trips were added to background traffic to determine full build traffic volumes. All site traffic was viewed as primary trip ends so no pass-by traffic was calculated for these land uses. **Table 2** below illustrates the expected trip generation for the Powell Grand site. Additionally, a planned daycare at the Sawmill Drive intersection with Sawmill Parkway was added as ‘other development’ traffic to the background condition. Detailed trip generation data for the site as well as other development (daycare and 5-acre office site) is included in **Appendix B** for reference. The proposed site is expected to generate 238 PM Peak trip ends while the current zoning for the site would permit high density retail that could generate up to 1,517 trip ends in the same PM Peak hour.

TABLE 2: Expected Trip Generation – Powell Grand Site

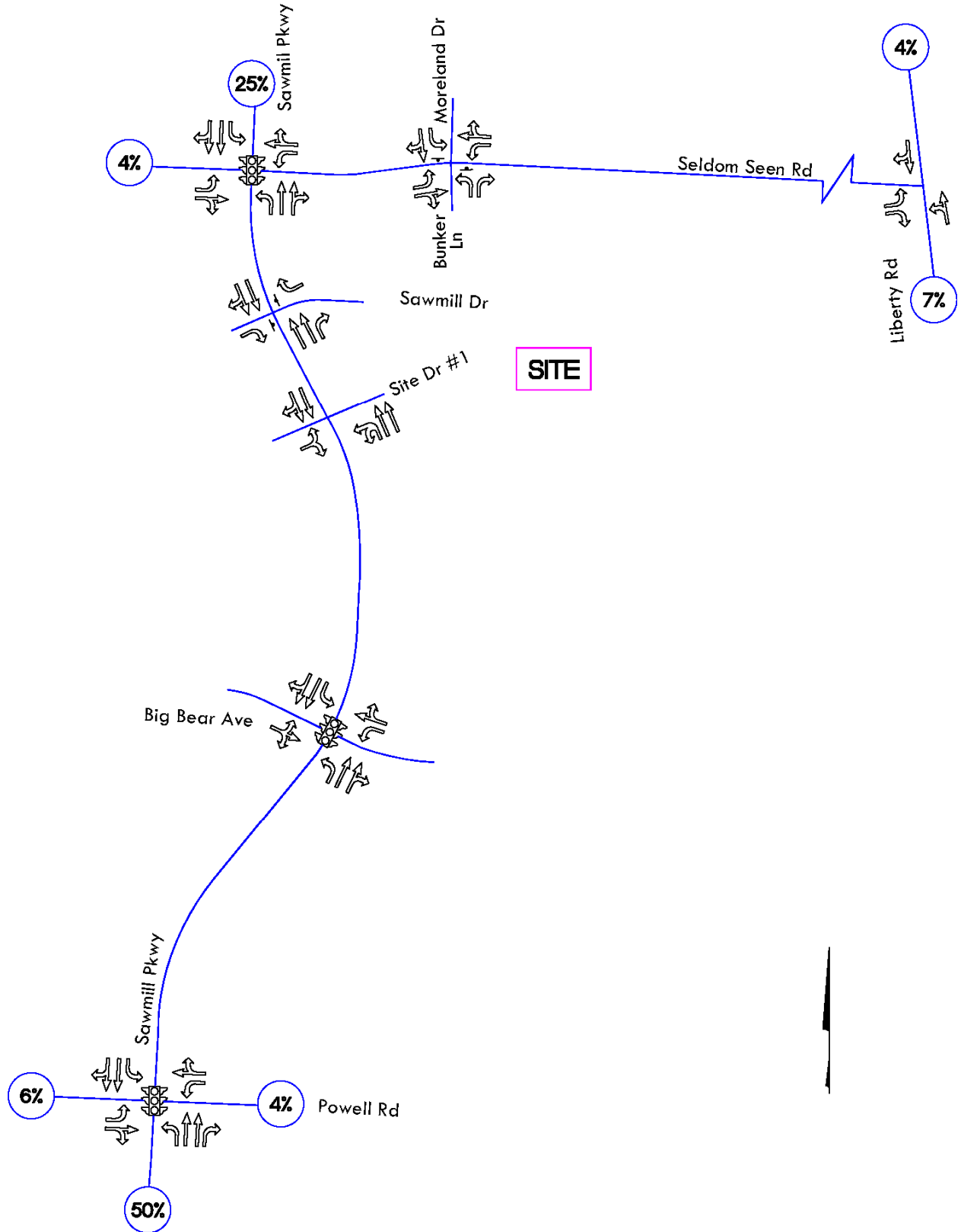
Land Use	Square Feet or Units	ITE Code	Time Period	ITE Formula	Total Trips	Trips Entering	Trips Exiting
Senior Adult Housing (Detached) (Use for Condo Communities)	308 units	251	ADT	$\ln(T)=0.89\ln(x)+2.06$	1,288	644	644
			AM Peak	$T=0.17(x)+29.95$	82	29	53
			PM Peak	$\ln(T)=0.75\ln(x)+0.35$	104	63	41
Office	50,000 sf	710	ADT	$\ln(T)=0.76\ln(x)+3.68$	776	388	388
			AM Peak	$\ln(T)=0.80\ln(x)+1.57$	110	97	13
			PM Peak	$T=1.12(x)+78.45$	134	23	111
Total			ADT		2,064	1,032	1,032
			AM Peak		192	126	66
			PM Peak		238	86	152

Trip distribution assumptions are based on the traffic count data, travel patterns in the study area and input from the Delaware County Engineers Office. The expected gateway distributions are listed below and included on the attached **Figure 3**:

- From/to Sawmill Parkway north – 25%
- From/to Sawmill Parkway south – 50%
- From/to Seldom Seen Road west – 4%
- From/to Liberty Road north – 4%
- From/to Liberty Road south – 7%
- From/to Powell Road east – 4%
- From/to Powell Road west – 6%

Proposed trip distribution and trip assignments were previously approved by the County Engineer under a prior traffic study and were re-approved on May 7, 2015, with the current Memorandum of Understanding. Global trip distribution percentages are illustrated on **Figure 3** and detailed trip assignments for site traffic are included in **Appendix B** for reference.

FIGURE 3: Global Trip Distribution



5.2 2016 No Build Traffic Volumes

Opening day 2016 background traffic volumes were derived by expanding counted traffic volumes with the MORPC recommended annual growth rate applied to Sawmill Parkway (3%), Seldom Seen Road (2.5%), Liberty Road (3%) and Powell Road (2%). Opening year 2016 peak hour traffic is illustrated on **Figures 4** and **5**. Detailed traffic volume assignments are provided for reference in **Appendix B**.

5.3 2016 Build Traffic Volumes (Full Build of Site with Proposed Access)

Traffic volumes developed per section 5.2 above were used as No Build Conditions and site generated trips for Powell Grand were added. Opening year 2016 Build peak hour traffic is illustrated on **Figures 4** and **5** and detailed traffic volume assignments are included for reference in **Appendix B**.

5.4 2036 No Build Traffic Volumes

Design year 2036 background traffic volumes were derived by expanding counted traffic volumes with the MORPC recommended annual growth rate applied to Sawmill Parkway (3%), Seldom Seen Road (2.5%), Liberty Road (3%) and Powell Road (2%). Projected design year 2036 peak hour traffic is illustrated on **Figures 6** and **7**. Detailed traffic volume assignments are provided in **Appendix B**. Comparing 2036 background volumes to 2016 background volumes indicates that MORPC estimates predict traffic volumes on Sawmill Parkway will grow by around 75% irrespective of site development. Two-way volumes passing by the site during the afternoon peak hour are projected to increase by over 2000 vehicles per hour according to the MORPC model which reflects an extension of Sawmill Parkway northwest to US 42.

5.5 2036 Build Traffic Volumes (Full Build of Site with Proposed Access)

Site generated traffic was added to 2036 background traffic volumes to determine 2036 Build volumes. Projected design year 2036 peak hour traffic is illustrated on **Figures 6** and **7**. Detailed traffic volume assignments are provided for reference in **Appendix B**.

FIGURE 4: 2016 Traffic Volumes - AM Peak Hour

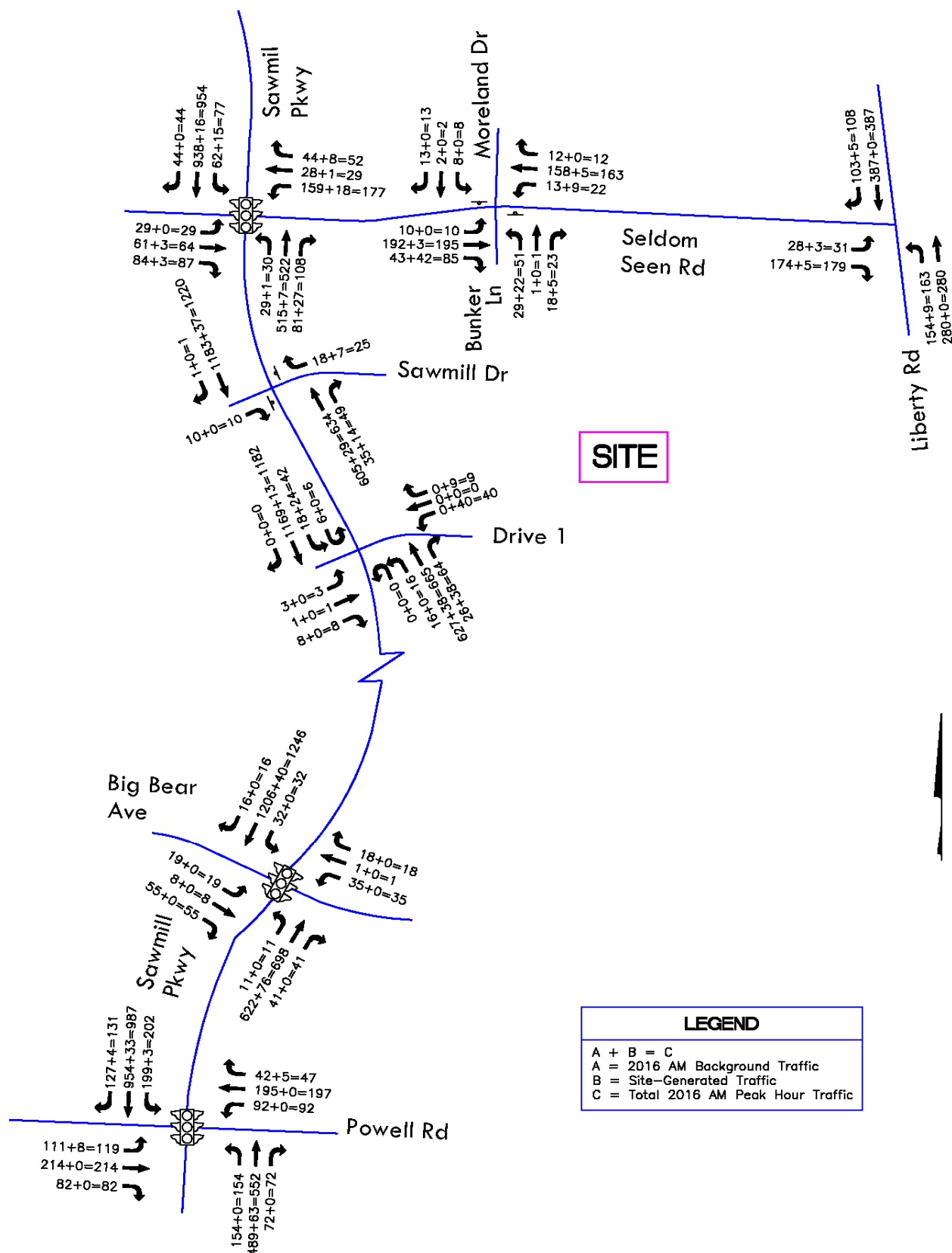


FIGURE 5: 2016 Traffic Volumes - PM Peak Hour

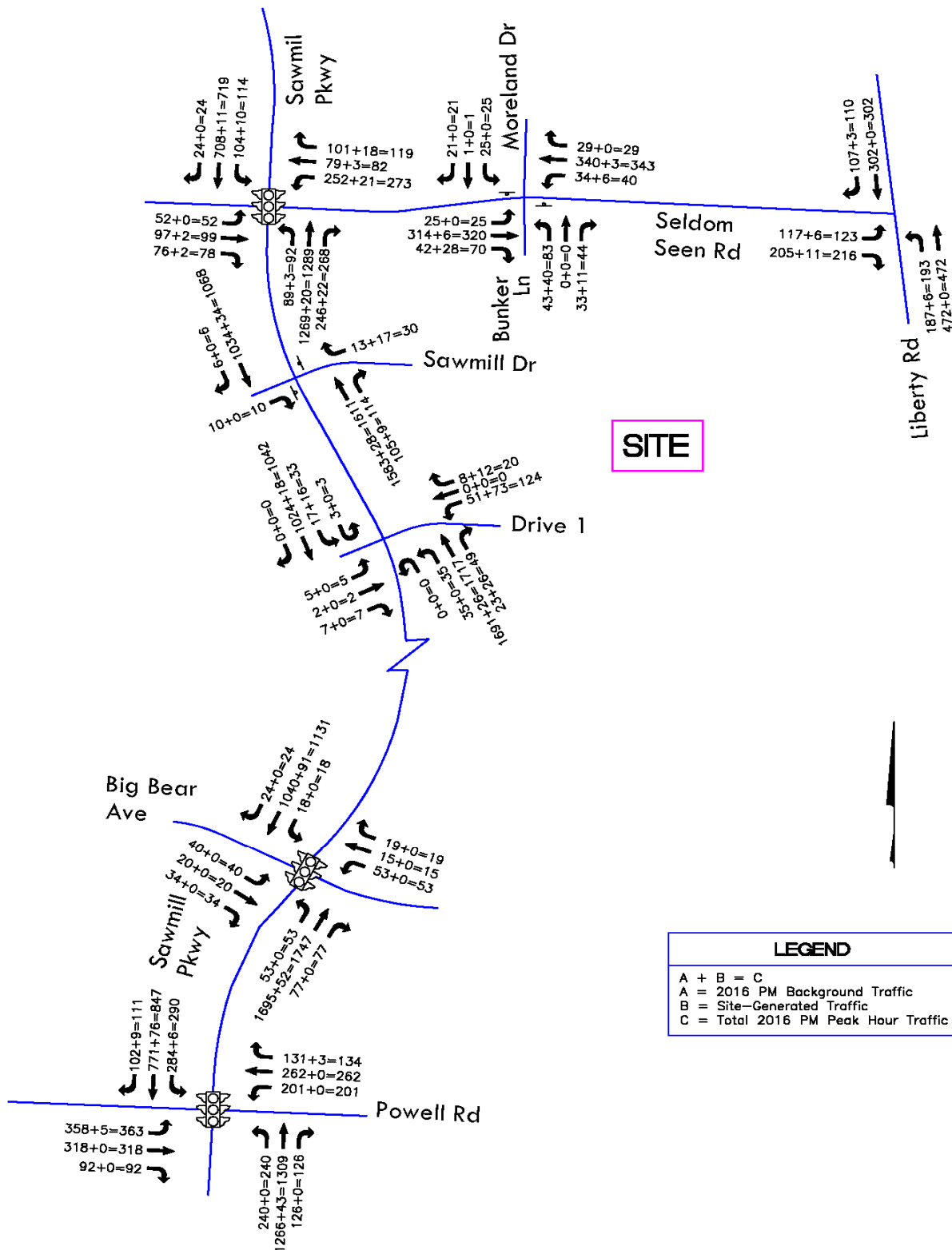


FIGURE 6: 2036 Traffic Volumes - AM Peak Hour

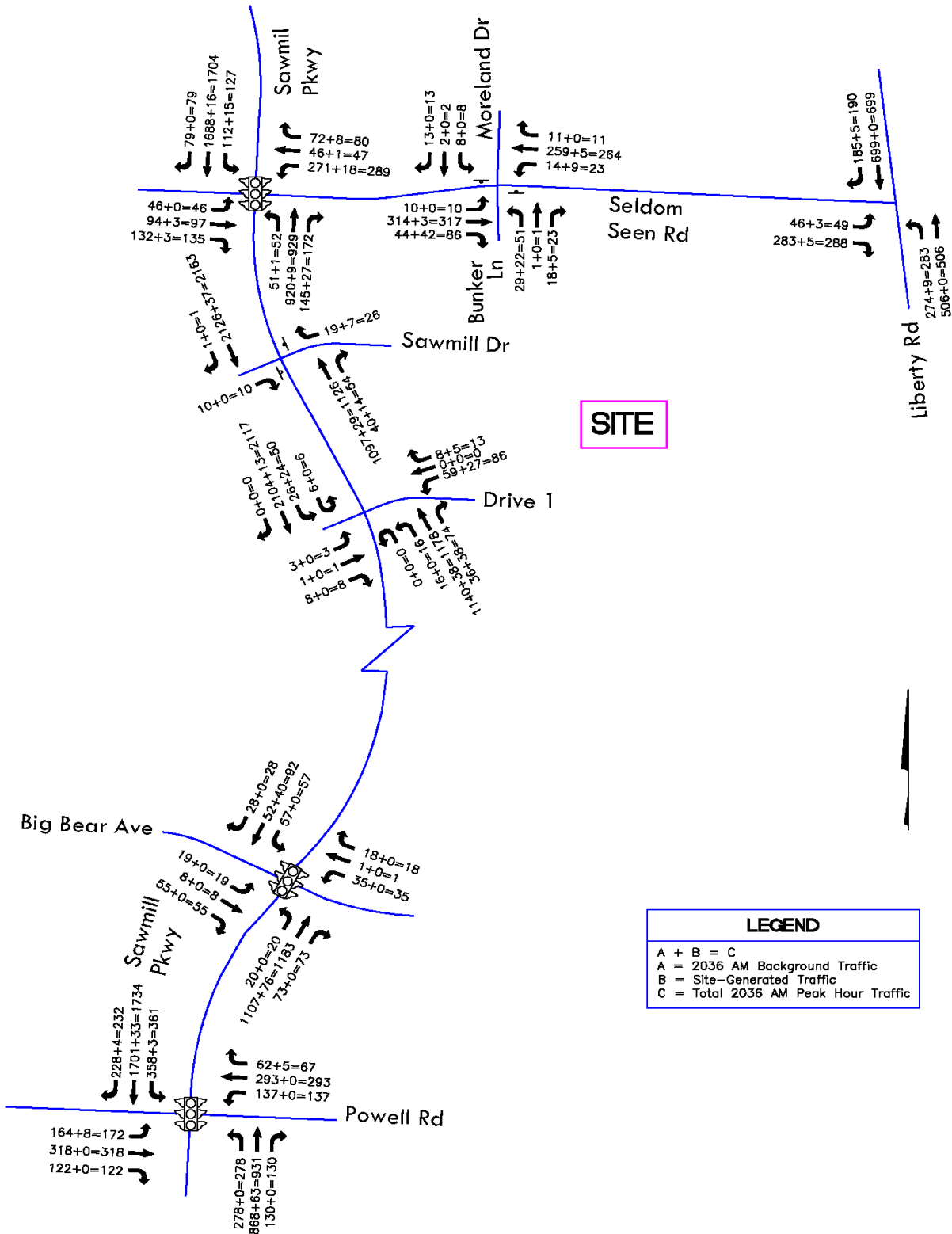
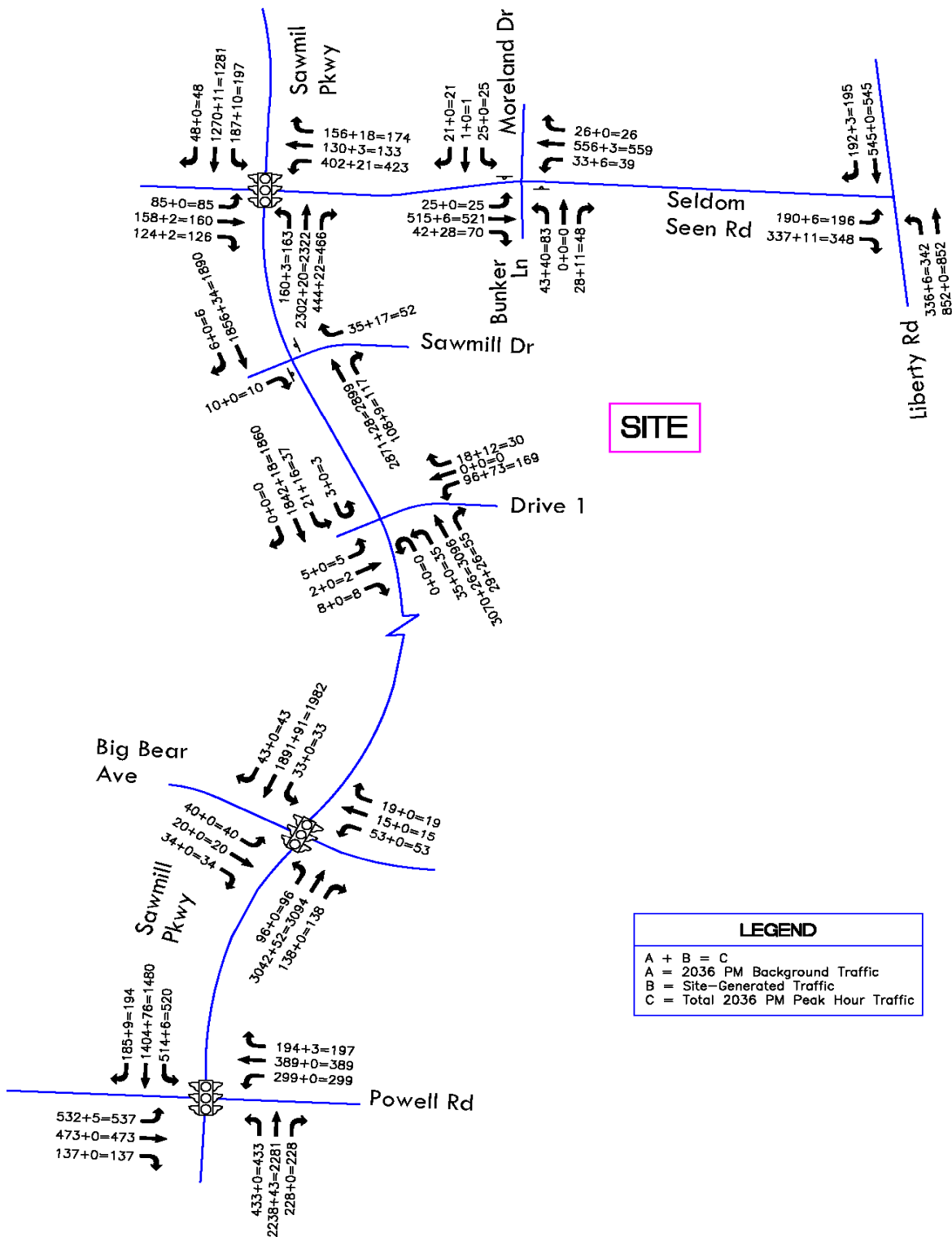


FIGURE 7: 2036 Traffic Volumes - PM Peak Hour



6.0 TRAFFIC ANALYSES

Weekday morning and afternoon peak hour traffic for each scenario was used to analyze the existing/future street network and proposed access plan. Analyses and results are detailed in the following sections and include traffic signal warrants, turn lane warrants, turn lane length calculations and intersection capacity analyses. Delaware County Engineer personnel provided local and system timing for the Sawmill Parkway signal system which includes all the study area intersections in that system. Considering the priority on coordinating north/south through movement in the Sawmill Parkway corridor, approach delays were not necessarily balanced in the analyses. Results of those analyses are provided in the following sections.

Opening Day conditions at the Sawmill Parkway/Powell Road intersection account for an Ohio Department of Transportation (ODOT) project to widen Powell Road to two through lanes in each direction, add right turn lanes on the southbound and eastbound approaches, and create dual left turn lanes on the northbound, southbound and eastbound approaches. This is a more significant improvement than discussed in the past and ODOT District 6 staff indicated the planned improvements are scheduled to be awarded for construction in mid-2015.

6.1 Traffic Signal Warrants

Traffic signal warrants were assessed using thresholds established by the Ohio Manual of Uniform Traffic Control Devices § 4C (Ohio Department of Transportation, 2012) (OMUTCD). At the Seldom Seen Road/Liberty Road intersection, fourteen hour count data was compared to volume criteria specified in Warrant 1 (Eight-Hour Warrant) as well as Warrant 2 (Four-Hour Warrant). The intersection satisfies warrant criteria for signalization regardless of site development in 2016.

At the Site Drive 1/Sawmill Parkway intersection, volume projections for the intersection indicate a traffic signal is warranted by 2036 Build conditions as a two-lane, side street approach. However, the Site Drive 1 intersection will meet warrants in the 2016 Build condition if just the Drive 1 left turn volume is compared to the single lane approach criteria. For that reason, the signal is expected to be warranted in the 2016 Build condition. At the Bunker Drive/Seldom Seen Road intersection, a traffic signal is not predicted to be warranted under future No Build or Build conditions, as estimated by the projected eighth-high hour volumes expected there. The signal warrant worksheets for each location are provided for reference in **Appendix C. Table 3** below illustrates the results of the warrant analyses.

TABLE 3: Signal Warrant Analysis Results

Intersection	Warrant 1 Eight-Hour	Warrant 2 Four-Hour
Seldom Seen Road/Liberty Road (Background)	YES (2016)	YES (2016)
Sawmill Pkwy/Drive 1 (Build)	YES (2016)	N/A
Seldom Seen Rd/Bunker Dr (Build)	NO (2036)	NO (2036)

6.2 Turn Lane Warrants

Left and right turn lane warrants were evaluated at Seldom Seen Road/Bunker pursuant to the requirements set forth in the Delaware County Traffic Impact Study Standards. An eastbound right turn lane is warranted on Seldom Seen Road at Bunker Lane and a northbound right turn lane is warranted on Sawmill Parkway at Drive 1 as site-related improvements in 2016. Turn lane warrant charts are provided for reference in **Appendix D**.

6.3 Turn Lane Length Calculations

Turn lane lengths were calculated for recommended turn lanes based on procedures outlined in the Location and Design Manual, Volume 1 (Ohio Department of Transportation, 2012). Results were used to size warranted turn lanes at the planned site driveways and at all needed turn lanes due to capacity. Turn lane length results are illustrated on **Figure 8** and **Figure 9**. Detailed lane-sizing calculations are provided in **Appendix D**. It should be noted that the existing northbound right turn lane at Sawmill Parkway/Sawmill Drive intersection is approximately 250 feet (deceleration taper included) and the required length is 250 feet in year 2036 due to addition of site traffic. Therefore, it is not necessary to make improvements to this turn lane.

6.4 Intersection Capacity Analyses

Synchro v.8 was used to evaluate operational characteristics of study area intersections. The analytical focus of the study was on investigating intersection capacity at the locations listed above. Capacity analyses used Synchro software to identify any degradation of intersection operations due to the addition of site generated traffic. The County Engineer provided current timings and operational data for the Sawmill Parkway signal system. This data was used for our capacity analyses, and updated volumes and intersection geometry were used as needed to reflect the analysis scenarios described above.

Levels of Service (LOS) are expressed in terms of letter grades with LOS A representing the highest quality traffic flow and minimal delay, and LOS F representing poor traffic operations and significant delay. Synchro analyses have been summarized for each intersection in **Table 4** and **Table 5**, including both morning and afternoon peak hours. The discussion below focuses on the PM Peak Hour results as that hour presents higher traffic volumes overall and controls the results. Detailed capacity analysis reports for 2016 conditions are provided in **Appendix E**. Detailed capacity analysis reports for 2036 conditions are provided in **Appendix F**.

6.4.1 Year 2016 No Build Conditions

The signalized intersection of Sawmill Parkway/Powell Road will be improved by ODOT starting in 2015 and expected to be complete by 2016. Planned improvements there include dual left-turn lanes northbound, southbound and eastbound, an additional eastbound and westbound through lane on Powell Road, and right turn lanes added on the eastbound and southbound approaches to the intersection. These opening year 2016 improvements have been included as 'background' conditions for 2016 analyses. With these improvements, the intersection is predicted to operate at LOS D or better.

The Sawmill Parkway/Big Bear Avenue signalized intersection is expected to operate at acceptable levels of service (LOS D or better). The Sawmill Drive intersection with Sawmill Parkway is currently stop-controlled with all movements permitted. The eastbound and westbound approaches operate at a LOS F during the PM peak hour. The Sawmill Parkway/Seldom Seen Road signalized intersection is expected to operate at overall LOS D, just past the LOS C threshold.

The Seldom Seen Road/Bunker Lane/Moreland Drive intersection is expected to operate at acceptable levels of service (LOS C or better) in its existing configuration under side street stop control. The Seldom Seen Road/Liberty Road currently meets warrants for a traffic signal and a northbound left turn lane. With those improvements assumed in the No Build condition, the intersection is predicted to operate at acceptable level of service.

6.4.2 2016 Build Conditions

The Sawmill Parkway/Powell Road intersection under build conditions was analyzed with planned ODOT improvements, consistent with the background analysis discussed above. With these improvements, the build condition is also predicted to operate at overall acceptable LOS D for the intersection. Similarly, the signalized Sawmill Parkway/Big Bear Avenue intersection is expected to operate at acceptable levels similar to the background 2016 condition.

The Sawmill Drive intersection with Sawmill Parkway will be converted to right-in/right-out operation and operate at LOS C under Build conditions. The Villages at Sawmill Parkway will construct the right-in/right-out improvements on the east side of Sawmill Parkway as part of the site construction. Site improvements will also connect to a new traffic signal at the Site Drive 1 intersection with Sawmill Parkway, all in support of the County access management plan for this area. Timing of the right-in/right-out improvements and connection to the traffic signal on the west side of Sawmill Parkway is unknown as that side of the roadway is controlled by a different property owner. The Sawmill Parkway/Drive 1 intersection is predicted to operate at LOS A overall with a left turn only lane and a through/right lane to serve expected site traffic volumes.

The Sawmill Parkway/Seldom Seen Road signalized intersection improves slightly to LOS C in the Build condition with existing lane assignments and signal phasing.

The Seldom Seen Road/Bunker Lane/Moreland Drive intersection is expected to operate acceptably with side street left turn movements operating at LOS D or better. Seldom Seen Road at Liberty Road is expected to operate at LOS B under signal control and site “build” conditions.

6.4.3 Year 2036 No Build Conditions

The growth rates provided by MORPC produce more than a 75% increase in Sawmill Parkway traffic over 20 years. The resulting peak hour forecast of over 4,000 vehicles (total of both directions) on Sawmill Parkway is consistent with a daily, ADT volume of 40,000 to 45,000 vehicles. These traffic levels strongly suggest that an added third through lane will be required in each direction on Sawmill Parkway, irrespective of site development. Delaware County Traffic Impact Study Standards state on page 5 *“Improvements necessary to accommodate the non-site traffic in the design year at LOS C in non-urban areas or LOS D in urban areas shall be determined even though the developer may not be required to undertake these improvements”*. Previous

submittals of this study determined additional lanes required to accommodate non-site traffic in the design year of 2036. County comments instructed us to remove those background improvements and perform a strict “no-build” versus “build” comparison on the existing roadway configuration plus committed improvements such as the ODOT project at Sawmill Parkway/Powell Road.

Without further improvements, most Sawmill Parkway intersections in the study area are expected to operate at LOS F in the design year, irrespective of site development. This includes the Sawmill Parkway/Powell Road intersection which is expected to operate at LOS F in the design year even after accounting for the improvements to be built by ODOT starting in 2015. If the overall intersection is not at LOS F (Sawmill Parkway/Big Bear Avenue is at LOS C overall), individual movements or approaches are at LOS F in the Sawmill Parkway corridor.

Seldom Seen Road intersections east of Sawmill Parkway were found to operate more acceptably in the design year background condition with the Bunker Lane/Moreland Drive intersection at LOS E or better and the Seldom Seen Road/Liberty Road intersection at LOS C with warranted turn lane and signal improvements discussed earlier in this report. Full reporting of “no-build” levels of service in the design year have been provided in **Table 5**.

6.4.4 2036 Build Conditions

In accordance with County comments, our “build” analysis returns intersection level of service to “no-build” levels or better. In the Sawmill Parkway corridor, that was achieved by 1) adding a westbound protected/permitted left turn phase at the Sawmill Parkway/Seldom Seen Road intersection and 2) adding an eastbound left turn lane on Big Bear Avenue at Sawmill Parkway by restriping existing pavement. The signalized Drive 1 intersection attained overall LOS D in the 2036 design year but some movements operate poorly, again due to the lack of through lane capacity on Sawmill Parkway. The right-in/right-out operation at Sawmill Parkway/Sawmill Drive is predicted to operate significantly better than in its current condition as a full movement, unsignalized intersection.

In the Seldom Seen Road corridor, the Bunker Lane/Moreland Drive intersection is predicted to operate acceptably overall but the sidestreet left turns are expected to operate poorly in the 2036 design year under stop sign control. As discussed above, this intersection is not predicted to meet signal warrants by the 2036 design year but alternate access is available including the proposed signalized intersection of Sawmill Parkway/Drive 1. The Seldom Seen Road/Liberty Road intersection maintains the No Build level of service for the intersection, but like the no-build condition, would benefit from area-wide through lane capacity along Sawmill Parkway. Please refer to **Table 5** for a detailed summary of results.

TABLE 4: 2016 AM/PM Peak Capacity Analysis Results

Time Period	Scenario	EBLT	EBTH	EBRT	APPROACH	WBLT	WBTH	WBRT	APPROACH	NBLT	NBTH	NBRT	APPROACH	SLBT	SBTH	SBRT	APPROACH	TOTAL
Sawmill Pkwy & Powell Rd																		
AM Peak Hour	No Build	D/46.7/0.51	D/41.3/0.50	C/33.8/0.27	D/41.3	C/34.9/0.36	D/42.4/0.54	D/42.8/0.55	D/40.5	D/48.1/0.64	A/9.2/0.29	A/6.9/0.09	B/17.4	A/9.7/0.19	B/12.0/0.57	A/7.6/0.16	B/11.2	C/20.8
	Build	D/47.5/0.54	D/41.3/0.50	C/33.8/0.27	D/41.6	C/34.9/0.36	D/42.7/0.55	D/43.2/0.57	D/40.7	D/48.1/0.64	A/9.5/0.33	A/6.9/0.09	B/16.9	A/9.8/0.21	B/12.3/0.59	A/7.6/0.16	B/11.4	C/20.8
PM Peak Hour																		
PM Peak Hour	No Build	E/63.7/0.84	D/49.6/0.62	D/35.8/0.24	D/54.5	D/39.8/0.62	E/66.8/0.82	E/72.1/0.84	E/59.4	E/58.1/0.75	D/40.7/0.90	B/14.5/0.16	D/41.3	E/64.8/0.81	C/26.1/0.53	B/13.2/0.12	C/34.5	D/44.4
	Build	E/74.4/0.91	D/49.2/0.62	D/35.6/0.24	E/59.4	D/41.7/0.65	E/66.6/0.81	E/71.9/0.84	E/60.0	E/58.1/0.75	D/39.4/0.90	B/14.1/0.16	D/40.2	E/78.2/0.90	C/26.5/0.58	B/13.4/0.13	D/37.4	D/45.6
Sawmill Pkwy & Big Bear Ave																		
AM Peak Hour	No Build		D/47.3/0.52		D/47.3	D/44.4/0.22		D/43.7/0.17	D/44.1	A/0.1/0.03	A/0.4/0.24	A/0.4/0.24	A/0.4	A/0.1/0.05	A/1.0/0.45	A/1.0/0.45	A/1.0	A/3.7
	Build		D/47.3/0.52		D/47.3	D/44.4/0.22		D/43.7/0.17	D/44.1	A/0.1/0.03	A/0.5/0.27	A/0.5/0.27	A/0.5	A/0.2/0.05	A/1.1/0.46	A/1.0/0.46	A/1.0	A/3.6
PM Peak Hour																		
PM Peak Hour	No Build		E/56.9/0.59		E/56.9	D/54.0/0.36		D/51.7/0.25	D/53.1	A/2.8/0.12	A/6.3/0.64	A/6.4/0.65	A/6.3	A/4.4/0.09	A/0.8/0.39	A/0.7/0.39	A/0.8	A/7.2
	Build		E/56.9/0.59		E/56.9	D/54.0/0.36		D/51.7/0.25	D/53.1	A/2.9/0.13	A/6.7/0.66	A/6.8/0.67	A/6.6	A/5.0/0.10	A/0.9/0.42	A/0.9/0.42	A/0.9	A/7.3
Sawmill Pkwy & Sawmill Dr																		
AM Peak Hour	No Build	D/25.9/0.121	D/25.9/0.121	D/25.9/0.121	D/25.9	F/89.5/0.625	B/10.6/0.04	B/10.6/0.04	F/65.4	B/11.8/0.031	N/A	N/A	0.3	A/9.0/0.028	N/A	N/A	0.2	N/A
	Build	N/A	N/A	B/14.2/0.027	B/14.2	N/A	N/A	B/10.8/0.041	B/10.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PM Peak Hour																		
PM Peak Hour	No Build	F/99.4/0.416	F/99.4/0.416	F/99.4/0.416	F/99.4	F/1710/3.656	C/18.1/0.102	C/18.1/0.102	F/1097	B/11.1/0.06	N/A	N/A	0.2	C/15.3/0.058	N/A	N/A	0.3	N/A
	Build	N/A	N/A	B/13.2/0.024	B/13.2	N/A	N/A	C/19.1/0.135	C/19.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Sawmill Pkwy & Drive 1																		
AM Peak Hour	No Build																	
	Build		D/42.4/0.02		D/42.2	D/46.9/0.48		D/42.2/0.09	D/46.4	A/2.4/0.04	A/3.3/0.28	A/3.2/0.28	A/3.2	A/0.5/0.08	A/1.0/0.44		A/1.0	A/4.1
PM Peak Hour																		
PM Peak Hour	No Build																	
	Build		D/48.4/0.02		D/47.6	E/56.6/0.62		D/47.8/0.12	E/55.3	A/3.4/0.08	A/8.5/0.67	A/8.5/0.67	A/8.4	A/7.7/0.19	A/0.8/0.39		A/1.0	A/8.2
Sawmill Pkwy & Seldom Seen Rd																		
AM Peak Hour	No Build	D/36.5/0.11		D/49.9/0.76	D/47.6	D/35.5/0.59		D/35.1/0.24	D/35.3	B/10.3/0.09	A/8.7/0.34	A/8.8/0.34	A/8.8	A/9.5/0.13	B/10.2/0.54	B/10.2/0.54	B/10.2	B/15.7
	Build	D/36.1/0.1		D/50.6/0.76	D/48.3	D/37.6/0.65		D/35.0/0.27	D/36.8	B/10.7/0.09	A/9.4/0.36	A/9.5/0.37	A/9.5	A/9.9/0.17	B/10.7/0.55	B/10.7/0.55	B/10.6	B/16.5
PM Peak Hour																		
PM Peak Hour	No Build	D/42.8/0.2		E/71.9/0.83	E/65.1	E/55.9/0.84		D/43.0/0.51	D/50.5	B/13.1/0.23	C/35.0/0.86	D/37.3/0.89	C/34.9	C/31.8/0.61	B/17.8/0.41	B/17.8/0.41	B/19.5	D/35.1
	Build	D/42.3/0.21		E/72.8/0.83	E/65.8	E/59.5/0.87		D/43.7/0.56	D/52.8	D/13.2/0.25	B/13.9/0.90	B/17.1/0.93	B/15.4	B/12.9/0.41	B/18.7/0.42	B/18.7/0.42	B/17.9	C/25.1
Bunker Ln & Seldom Seen Rd																		
AM Peak Hour	No Build	A/7.6/0.008	N/A	N/A	0.3	A/7.8/0.011	N/A	N/A	0.6	B/12.8/0.063	A/9.7/0.026	A/9.7/0.026	B/11.6	B/12.5/0.018	A/9.7/0.021	A/9.7/0.021	B/10.7	N/A
	Build	A/7.6/0.008	N/A	N/A	0.3	A/7.9/0.019	N/A	N/A	0.9	B/14.0/0.121	A/9.9/0.034	A/9.9/0.034	B/12.7	B/13.3/0.019	A/9.8/0.021	A/9.8/0.021	B/11.0	N/A
PM Peak Hour																		
PM Peak Hour	No Build	A/8.2/0.186	N/A	N/A	0.5	A/8.1/0.031	N/A	N/A	0.7	C/22.8/0.186	B/10.5/0.052	B/10.5/0.052	C/17.5	C/21.7/0.111	B/11.0/0.038	B/11.0/0.038	C/16.7	N/A
	Build	A/8.2/0.023	N/A	N/A	0.5	A/8.3/0.038	N/A	N/A	0.8	D/29.7/0.383	B/10.8/0.071	B/10.8/0.071	C/23.2	C/23.6/0.122	B/11.1/0.038	B/11.1/0.038	C/17.7	N/A
Liberty Rd & Seldom Seen Rd																		
AM Peak Hour	No Build	C/28.4/0.12	N/A	D/38.0/0.81	D/36.7		N/A		N/A	A/10.0/0.28	A/4.6/0.23	N/A	A/6.5	N/A	A/6.1/0.43		A/6.1	B/11.7
	Build	C/28.3/0.12	N/A	D/38.0/0.81	D/36.6		N/A		N/A	B/10.5/0.30	A/4.7/0.23	N/A	A/6.8	N/A	A/6.2/0.43		A/6.2	B/12.0
PM Peak Hour																		
PM Peak Hour	No Build	B/16.7/0.37	N/A	C/20.4/0.72	B/19.1		N/A		N/A	B/11.2/0.38	A/6.9/0.50	N/A	A/8.1	N/A	A/6.7/0.46		A/6.7	B/10.2
	Build	B/17.0/0.37	N/A	C/21.0/0.73	B/19.6		N/A		N/A	B/11.7/0.40	A/7.1/0.50	N/A	A/8.4	N/A	A/6.9/0.46		A/6.9	B/10.6

X/X/X = Overall LOS / Average Delay Per Vehicle/Volume to Capacity Ratio

N/A = Not Applicable, movement does not exist

TABLE 5: 2036 AM/PM Peak Capacity Analysis Results

Time Period	Scenario	EBLT	EBTH	EBRT	APPROACH	WBTLT	WBTH	WBRT	APPROACH	NBLT	NBTH	NBRT	APPROACH	SBLT	SBTH	SBRT	APPROACH	TOTAL
Sawmill Pkwy & Powell Rd																		
AM Peak Hour	No Build	E/56.3/0.73	D/39.4/0.58	C/31.5/0.34	D/42.4	C/34.6/0.55	D/41.2/0.64	D/41.7/0.65	D/39.6	F/123.8/1.09	B/15.5/0.58	B/10.2/0.18	D/38.5	B/13.8/0.51	F/74.9/1.10	B/10.7/0.30	E/58.9	D/49.1
	Build	E/59.6/0.77	D/39.3/0.58	C/31.4/0.33	D/43.4	C/34.4/0.54	D/41.2/0.64	D/41.6/0.66	D/39.5	F/123.8/1.09	B/16.3/0.62	B/10.3/0.18	D/38.0	B/14.7/0.54	F/85.1/1.13	B/10.8/0.30	E/66.8	D/52.9
PM Peak Hour																		
PM Peak Hour	No Build	F/307.0/1.53	E/79.5/0.96	D/35.2/0.34	F/180.2	F/211.0/1.32	F/199.7/1.27	F/208.5/1.29	F/206.4	F/120.1/1.08	F/250.7/1.48	B/15.2/0.28	F/213.1	F/333.2/1.59	D/46.8/0.96	B/15.6/0.23	F/114.1	F/177.4
	Build	F/312.9/1.55	E/79.5/0.96	D/36.1/0.35	F/183.5	F/211.0/1.32	F/202.4/1.28	F/211.2/1.29	F/208.2	F/149.5/1.16	F/263.1/1.51	B/15.2/0.28	F/227.5	F/340.8/1.61	D/52.7/0.99	B/15.2/0.24	F/117.7	F/184.7
Sawmill Pkwy & Big Bear Ave																		
AM Peak Hour	No Build		D/47.3/0.52		D/47.3	D/44.4/0.22		D/43.7/0.17	D/44.1	A/1.2/0.11	A/1.0/0.43	A/0.9/0.44	A/0.9	A/0.7/0.14	A/4.6/0.80	A/4.5/0.80	A/4.5	A/4.9
	Build		D/47.3/0.52		D/47.3	D/44.4/0.22		D/43.7/0.17	D/44.1	A/1.2/0.12	A/1.1/0.46	A/1.0/0.46	A/1.1	A/0.8/0.15	A/5.0/0.81	A/4.9/0.81	A/4.9	A/5.1
PM Peak Hour																		
PM Peak Hour	No Build		F/93.7/0.83		F/93.7	E/57.5/0.43		E/55.3/0.33	E/56.6	A/9.5/0.45	F/72.4/1.12	F/79.0/1.14	E/73.8	F/85.8/0.58	A/2.5/0.68	A/2.5/0.69	A/3.9	D/48.6
	Build		F/93.7/0.83		F/93.7	E/57.5/0.43		E/55.3/0.33	E/56.6	B/11.3/0.49	F/79.8/1.14	F/86.5/1.15	F/81.2	F/85.8/0.58	A/2.9/0.71	A/2.9/0.72	A/4.2	D/52.6
Sawmill Pkwy & Sawmill Dr																		
AM Peak Hour	No Build	D/25.1/0.06	D/25.1/0.06	D/25.1/0.06	D/25.1	B/13.4/0.05	B/13.4/0.05	B/13.4/0.05	B/13.4	A/0			0	A/0			0	
	Build			D/25.7/0.6	D/25.7			B/13.5/0.03	B/13.5	A/0			0	A/0			0	
PM Peak Hour																		
PM Peak Hour	No Build	C/21.0/0.05	C/21.0/0.05	C/21.0/0.05	C/21.0	F/58.1/0.36	F/58.1/0.36	F/58.1/0.36	F/58.1	A/0			0	A/0			0	
	Build			C/21.4/0.05	C/21.4			F/77.9/0.55	F/77.9	A/0			0	A/0			0	
Sawmill Pkwy & Drive 1																		
AM Peak Hour	No Build	D/44.4/0.02	D/44.4/0.1	D/44.4/0.1	D/44.4	D/48.1/0.41	D/44.3/0.09	D/44.3/0.09	D/47.6	A/0.8/0.08	A/0.9/0.43	A/1.0/0.43	A/1.0	A/0.3/0.07	A/3.9/0.76	A/3.9/0.76	A/3.8	A/3.8
	Build	D/42.4/0.02	D/42.0/0.07		D/42.1	D/47.0/0.49	D/42.2/0.1		D/46.3	A/3.3/0.08	A/4.6/0.47	A/4.6/0.47	A/4.6	A/2.2/0.16	A/4.7/0.79		A/4.5	A/5.8
PM Peak Hour																		
PM Peak Hour	No Build	D/50.5/0.03	D/49.6/0.07	D/49.6/0.07	D/49.9	E/56.3/0.56	D/50.0/0.13	D/50.0/0.13	E/55.3	A/4.2/0.16	F/83.9/1.14	F/85.0/1.14	F/83.5	E/65.8/0.38	A/2.6/0.68	A/2.6/0.68	A/3.3	D/53.6
	Build	D/50.9/0.03	D/49.1/0.07		D/49.7	F/107.1/0.95	D/50.2/0.2		F/98.6	A/1.5/0.16	F/83.1/1.18	A/0.1/0.05	F/80.8	F/93.9/0.67	A/2.8/0.69		A/4.5	D/54.0
Sawmill Pkwy & Seldom Seen Rd																		
AM Peak Hour	No Build	C/34.6/0.17	F/122.9/1.07		F/108.1	F/159.9/1.20		D/36.8/0.39	F/121.9	C/24.7/0.38	B/14.2/0.63	B/14.3/0.63	B/14.7	B/12.5/0.35	D/41.7/0.99	F/44.8/1.00	D/41.5	D/46.8
	Build	D/35.6/0.19	F/166.4/1.19		F/145.1	F/239.1/1.39		D/39.3/0.48	F/177.0	C/24.1/0.36	B/13.1/0.64	B/13.4/0.64	B/13.7	B/11.9/0.39	C/33.8/0.96	D/36.2/0.98	C/33.5	D/51.5
PM Peak Hour																		
PM Peak Hour	No Build	D/52.5/0.61	F/259.1/1.40		F/211.4	F/373.5/1.70		F/81.5/0.94	F/252.0	C/22.1/0.64	F/220.5/1.48	F/257.0/1.56	F/227.3	F/231.3/1.35	C/26.9/0.74	C/26.8/0.74	D/52.3	F/181.2
	Build	E/55.5/0.68	F/141.9/1.12		F/122.1	F/662.2/2.34		F/100.2/1.01	F/426.0	C/23.6/0.65	F/230.7/1.50	F/269.1/1.59	F/237.9	F/251.4/1.4	C/27.3/0.74	C/27.2/0.75	E/56.3	F/205.3
Bunker Ln & Seldom Seen Rd																		
AM Peak Hour	No Build	A/7.9/0.008			0.2	A/8.1/0.013			0.4	C/16.7/0.09	B/10.7/0.03	B/10.7/0.03	B/14.3	C/16.1/0.03	B/10.7/0.03	B/10.7/0.03	B/12.6	
	Build	A/7.9/0.008			0.2	A/8.3/0.02			0.6	C/19.0/0.18	B/10.9/0.04	B/10.9/0.04	C/16.4	C/17.2/0.03	B/10.9/0.03	B/10.9/0.03	B/13.1	
PM Peak Hour																		
PM Peak Hour	No Build	A/8.9/0.03			0.4	A/8.8/0.04			0.5	F/52.1/0.38	B/12.5/0.08	B/12.5/0.08	D/33.8	E/45.2/0.23	B/13.5/0.05	B/13.5/0.05	D/30.4	
	Build	A/8.9/0.03			0.4	A/9.0/0.04			0.6	F/106/0.79	B/12.9/0.10	B/12.9/0.10	F/71.9	F/51.3/0.26	B/13.7/0.05	B/13.7/0.05	D/33.7	
Liberty Rd & Seldom Seen Rd																		
AM Peak Hour	No Build	C/31.5/0.16	N/A	F/113.6/1.08	F/102.2		N/A		N/A	F/109.6/1.07	A/7.2/0.42	N/A	D/43.2	N/A		B/14.2/0.78	B/14.2	D/40.1
	Build	C/31.6/0.16	N/A	F/120.5/1.10	F/107.8		N/A		N/A	F/125.8/1.12	A/7.2/0.42	N/A	D/49.7	N/A		B/14.4/0.78	B/14.4	D/43.8
PM Peak Hour																		
PM Peak Hour	No Build	C/34.8/0.57	N/A	F/131.2/1.14	F/96.4		N/A		N/A	F/88.3/1.03	B/12.2/0.74	N/A	C/33.7	N/A		B/10.6/0.67	B/10.6	D/40.2
	Build	D/37.3/0.63	N/A	F/173.9/1.25	F/124.6		N/A		N/A	F/83.6/1.02	B/11.3/0.73	N/A	C/32.0	N/A		A/9.9/0.67	A/9.9	D/45.8
X/X/X = Overall LOS / Average Delay Per Vehicle/Volume to Capacity Ratio																		
N/A = Not Applicable, movement does not exist																		

7.0 CONCLUSION AND RECOMMENDATIONS

The current Powell Grand land use plan is a much lower traffic generator than potential retail development that could be developed under existing zoning. The impact of the current land use plan does cause the need for some off-site improvements that are limited to planned site driveways immediately adjacent to the site. This plan is also an improvement over previous residential uses proposed for this site due to the smaller number of units and the focus on senior living patrons.

The Powell Grand development is predicted to generate 86 inbound trips and 152 outbound trips in the afternoon peak hour. These vehicle trips are distributed among three access points and four directions of travel on two public roadways providing access to the site. Because the site access and surrounding road system provides a high degree of flexibility for accessing the site, the impact to any one movement or intersection is attenuated. In general, the number of site generated trips added to most intersection movements such as a left turns, through or right turns throughout the study area ranges from the single digits to 76 vehicles in the peak hour. This is just over one vehicle per minute and significantly less than that at many locations.

Some intersections in the study area are already challenged with high traffic volumes, and the Mid-Ohio Regional Planning Commission forecasts high rates of traffic growth through 2036. The 3% compound annual growth rate provided by MORPC for Sawmill Parkway predicts an increase in traffic volumes exceeding 75% during the next 20 years, irrespective of site development. Sawmill Parkway traffic is estimated to exceed 40,000 vehicles per day by the design year implying a general demand for an additional through lane in each direction. This finding is unrelated to site development and is supported by our capacity analysis of background conditions where we found a need for a third northbound through lane at Powell Road and at Seldom Seen Road by 2036.

Site related impacts to be mitigated in conjunction with site development were determined for opening day conditions and illustrated in **Figure 8**. A graphical summary of the 2036 conditions we analyzed are illustrated in **Figure 9**.

7.1 Site Mitigation Improvements

Development of the Powell Grand site requires modification of the existing road system by the developer, as follows:

1. Signalize the proposed Drive 1 access to Sawmill Parkway and provide a minimum three lane east leg on the Powell Grand site consisting of separate left and right turn lanes outbound and one inbound lane. Installation of the traffic signal will require a maintenance agreement between the County and the developer. Outbound turn lanes should provide a minimum of 100 feet of storage and should be aligned so the right turn lane can be converted to a through-right lane in the future.
2. The northbound right turn lane on Sawmill Parkway at Site Drive 1 should be 175 feet to meet storage and deceleration requirements. “No Block” conditions caused by through lane traffic would require a longer lane but Park Woods Lane limits the length of the northbound right turn lane for Site Drive 1 to approximately 300 feet.
3. Open the median at the Drive 1 access point and provide a southbound left turn lane into Powell Grand and a northbound left turn lane that will be used to accommodate northbound U-Turns at the signal. Future improvements by others will establish an access on the west side of Sawmill Parkway that will also use the northbound left turn lane. The southbound left turn lane should be 225 feet long (including a 50 foot long drop taper) and the northbound left turn lane should be 175 feet based on storage and deceleration requirements. However, to help address “No Block” conditions caused by through lane traffic, these two turn lanes should be extended to the extent that space is available between Sawmill Drive and Park Woods Lane. With only two through lanes on Sawmill Parkway, the no block calculations yield a length of 1550’ for southbound through traffic and 1850’ for northbound through traffic which is not possible to provide.
4. Modify Sawmill Drive east of Sawmill Parkway to permit only right turn movements to and from Sawmill Parkway when Drive 1 signalization is completed. Remove the southbound left turn lane and enlarge the existing curbed median to replace the current left turn lane area there.
5. Retain Seldom Seen Road at Bunker Lane/Moreland Drive as a two-way, stop-controlled intersection since future traffic projections are not expected to reach warrant levels in 20 years. Add an eastbound right turn lane on Seldom Seen Road, 175 feet in length including storage and deceleration.
6. Addition of site traffic at study-area intersections was not found to lengthen existing turn lanes based on ODOT lane sizing calculations except at the Sawmill Parkway/Seldom Seen Road intersection. Turn lane lengths are shown for both “background” and “site” conditions on Figures 8 and 9. The comparison of the turn lane lengths shown indicates the only incremental difference due to site development is an added 25 feet for the southbound and westbound left turn movements at the Seldom Seen intersection.

A graphical summary of improvements has been provided as **Figure 8** and **Figure 9**. All necessary public roadway improvements associated with the development, including any off-site improvements, shall be constructed with the first phase of construction except as agreed upon by the Delaware County Engineer.

7.2 No Build (Non-Site) Improvements

The following are improvements related to No Build conditions that should be considered regardless of the proposed site or potential roadway network modifications and should not be considered the responsibility of the developer:

1. Install a traffic signal and northbound left turn lane at the Liberty Road/Seldom Seen Road intersection. This intersection meets a signal warrant now and experiences poor level of service in the eastbound left turn movement. The northbound left turn lane is warranted now and should be part of the signalization project. A southbound right turn lane is also warranted at this time as a background improvement but is not needed for capacity even in the design year with signalization. A roundabout could also be considered as an alternative improvement.
2. While not a part of this traffic study effort, previous concerns voiced by local residents accessing Sawmill Parkway via Parkwood Lane just south of Powell Grand suggest a northbound right turn lane should be constructed on Sawmill Parkway at Parkwood Lane.
3. Delaware County should coordinate with ODOT and MORPC to ensure that the MORPC projections of future traffic growth reflected in this study are carried forward and that public agencies partner to consider additional network-wide improvements to support anticipated background traffic growth.
4. Long range growth in the Sawmill Parkway corridor, as forecast by MORPC, will produce an 80% increase in traffic volumes by 2036. The resultant north/south volumes are consistent with three lanes in each direction. Local agencies should begin planning for those improvements, particularly as Sawmill Parkway is extended north to US 42 as intended.

Though not committed improvements at this time, projected future conditions to address the 2036 traffic forecast have been illustrated on **Figure 9**.

FIGURE 8: 2016 Recommended Improvements

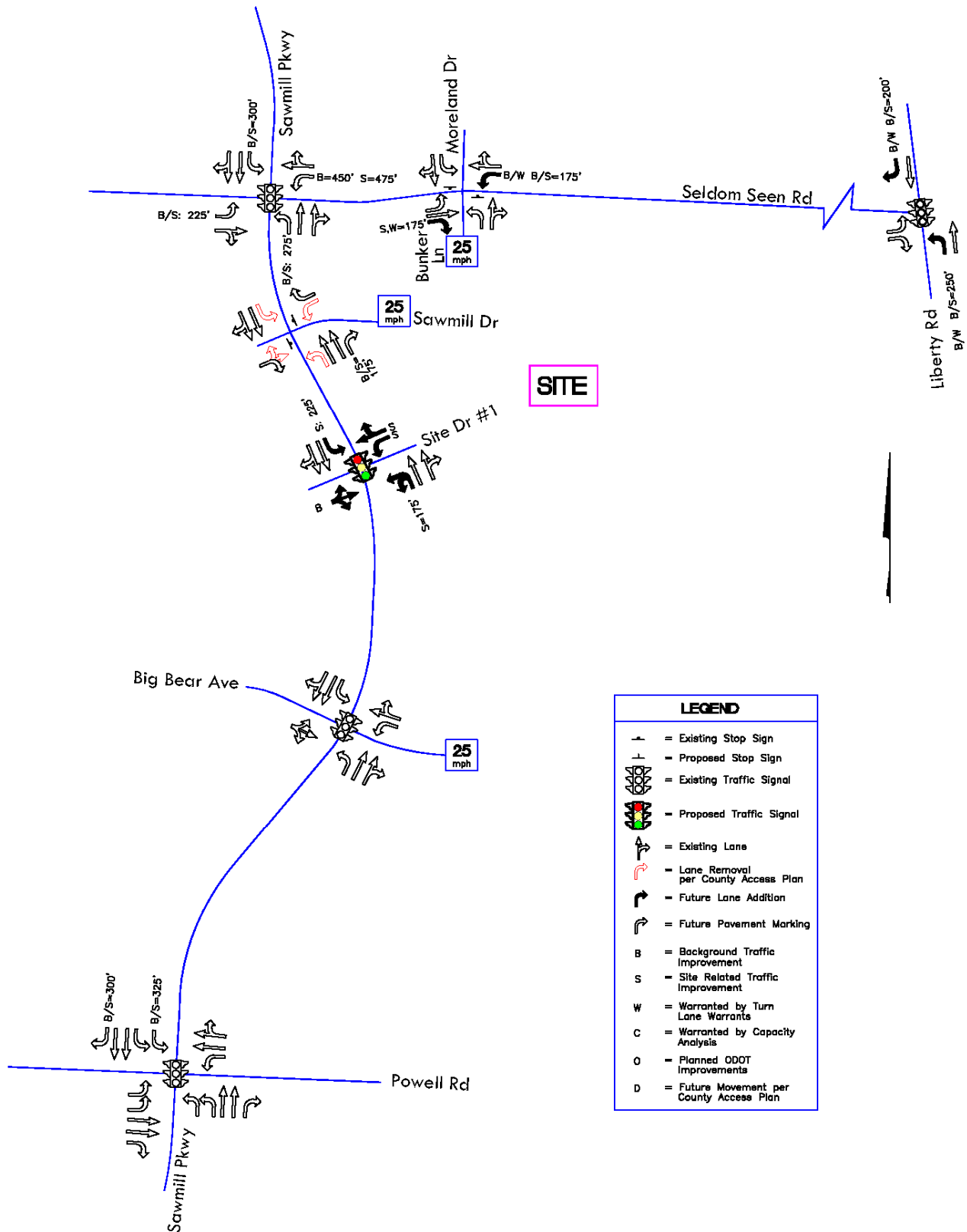
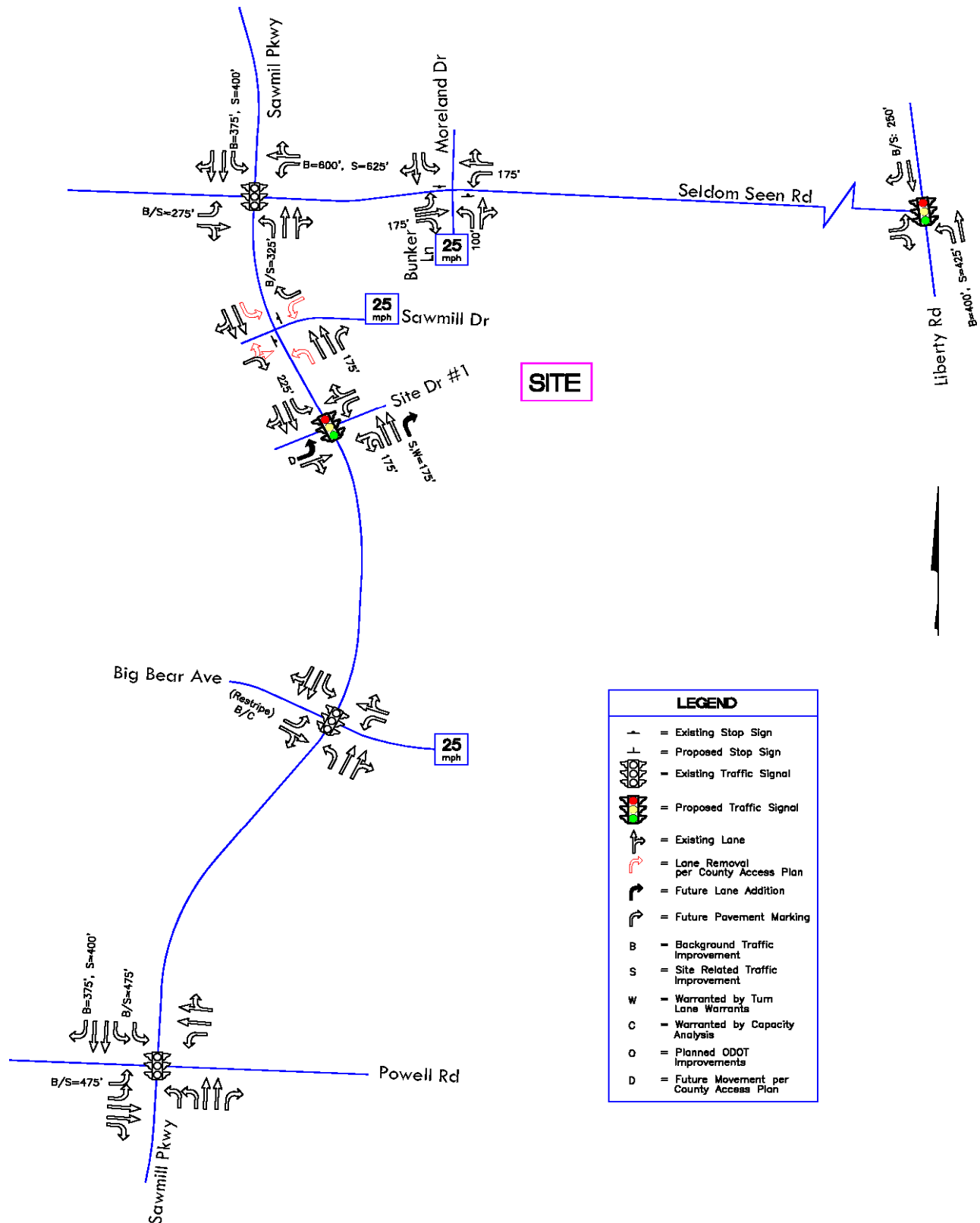


FIGURE 9: 2036 Expected Future Conditions





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EXHIBIT 1:

Site Plan



PLAN
Scale: 1" = 100'-0"

OVERALL SITE DATA	
TOTAL SITE AREA	+/- 39.1 AC
R.O.W. DEDICATION (BUNKER LANE)	+/- 1.2 AC
NET SITE AREA	+/- 37.9 AC
TOTAL UNITS	308 D.U.
OVERALL DENSITY	
PERMITTED	(1143.09 (6) (5) A) 39.1 AC x 2.5 = 97.8 UNITS (1142.15 (P) (P) (ANNEXED RESIDENCE DISTRICT) "NOT TO EXCEED 9 DWELLING UNITS PER GROSS ACRE"
PROVIDED	+/- 8.1 DU / AC
OVERALL OPEN SPACE	
REQUIRED (20%)	+/- 6.6 AC
PROVIDED (32%)	+/- 10.6 AC
OVERALL PARKING	
REQUIRED (3 spaces/1 unit)	924 spaces
PROVIDED (3 spaces/1 unit)	947 spaces
CLUBHOUSE PARKING	84 spaces
BUILDING COVERAGE (SUBAREA A, B, C, D-1, D-2)	21.8 %
COVERAGE BY BUILDING, VEHICULAR USE AREA, AND SIDEWALK (SUBAREA A, B, C, D-1, D-2)	47.9 %

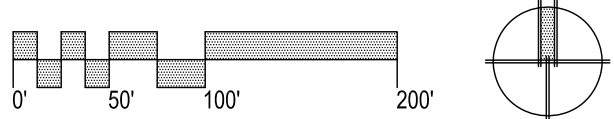
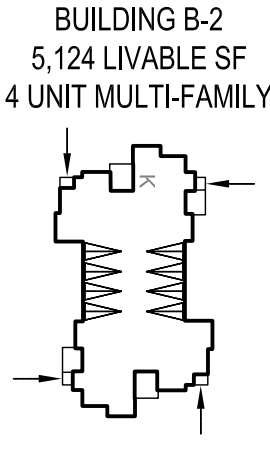
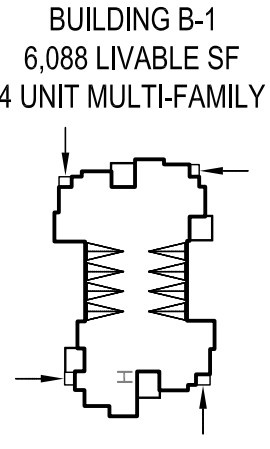
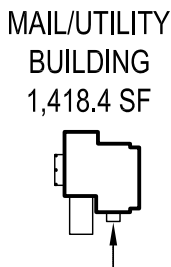
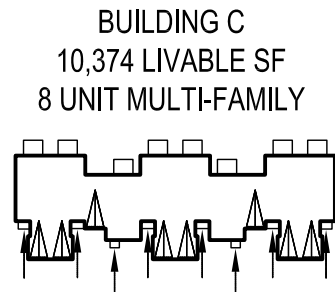
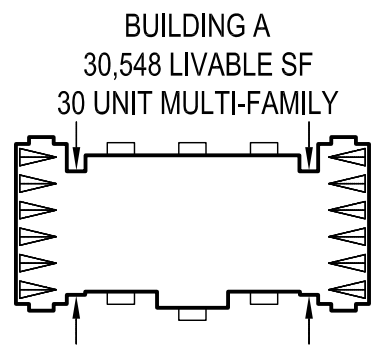
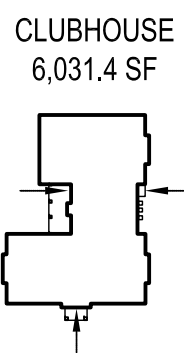
SUBAREA-SITE DATA	
SUBAREA A - RESIDENTIAL	
ACREAGE	+/-5.24 AC
UNITS	120 D.U.
PARKING PROVIDED	300 spaces (2.5 spaces/unit)
SUBAREA B - RESIDENTIAL	
ACREAGE	+/-10.1 AC
UNITS	60 D.U.
PARKING PROVIDED	246 spaces (4 spaces/unit)
SUBAREA C - RESIDENTIAL	
ACREAGE	+/-14.2 AC
UNITS	128 D.U.
PARKING PROVIDED	401 spaces (3 spaces/unit)
SUBAREA D-1 - OPEN SPACE	
ACREAGE	+/-1.35 AC
SUBAREA D-2 - CLUBHOUSE/AMENITIES	
ACREAGE	+/-2.1 AC
SUBAREA E-1 - COMMERCIAL	
ACREAGE	+/-2.3 AC
SUBAREA E-2 - COMMERCIAL	
ACREAGE	+/-2.6 AC

CODED NOTES	
1	COMBINED MAIL/UTILITY/COMPACTOR BUILDING
2	8' ASPHALT BIKE PATH (TYP.)
3	CLUBHOUSE
4	POOL
5	PATIO/ENTERTAINMENT SPACE
6	PUTTING GREEN
7	COMMUNITY GARDEN
8	DOG PARK
9	GAZEBO/PATIO
10	4' CONCRETE SIDEWALK (TYP.)
11	ENTRY GATE

PHASING
SUBAREA A, B, C, D-1, AND D-2 ARE EXPECTED TO BE DEVELOPED AS ONE PHASE AND SUBAREA E-1 AND E-2 MAY BE DEVELOPED AS SEPARATE PHASES.

PROPOSED STRUCTURES

- ENTRANCEWAYS
- GARAGES



PRELIMINARY NOT FOR CONSTRUCTION

Schottenstein Real Estate Group
Powell Grand
Powell, Ohio

no.	revisions:	by:

job no: 6285150010
date: 05/20/2015
sheet:

E-1



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APPENDIX A:

Approved MOU
Data Collected



Engineers, Surveyors, Planners, Scientists

March 23, 2015

Mr. John A. Piccin, PE, PS
Deputy Development Engineer
Delaware County Engineer's Office
50 Channing Street
Delaware, OH 43015

*Approved as
Noted
3/30/15
MAL*

Subject: Seldom Seen Acres Senior Living Site TIS
Memorandum of Understanding

Dear Mr. Piccin,

This Memorandum of Understanding has been prepared to document the scope of the above captioned traffic study for a new development that we have been discussing. The site is located in the southeast quadrant of the Sawmill Road/Seldom Seen Road Intersection in Delaware County, Ohio. In accordance with County standards our pre-meeting conversation was held via email on March 6, 2015 with the staff of Delaware County Engineer's Office. Following your concurrence, EMH&T will prepare an impact study in accordance with the methodologies and assumptions described below.

Proposed Development & Access Plan

The study will be prepared to determine the transportation impact associated with developing 308 senior living condominiums in three distinct styles. The site is also expected to include five acres of space that could be developed at up to 50,000 square feet of commercial space. The site access will be analyzed and compared to No Build conditions to identify site-related impacts. Both existing public street access points to the site will remain, one access to Sawmill Parkway via Sawmill Drive which will be converted to right-in/right-out only access, and one access to Seldom Seen Road via Bunker Lane. The study will analyze one (1) access scenario that utilizes only one (1) additional access comprised of a new full movement, signalized access point to Sawmill Parkway south of Sawmill Drive with no additional access to Seldom Seen Road.

Data Collection

Per our conversations, we plan to re-use the manual turning movement counts used in the previous study at this location. These previous counts were conducted by EMH&T personnel at the following intersections in November, 2012 during the 7-9 AM and 4-6 PM peak hours:

- Sawmill Parkway/Powell Road (SR 750)
- Sawmill Parkway/Big Bear Avenue
- Sawmill Parkway/Sawmill Drive
- Sawmill Parkway/Seldom Seen Road
- Seldom Seen Road/Bunker Lane

March 23, 2015

The Seldom Seen Road & Liberty Road manual turning movement count was conducted from 7 AM to 6 PM in November, 2012 to complete signal warrant analyses. Additional counts were performed in December, 2012 from 6-8 PM. Traffic count data to be used in preparing this study is attached for reference.

Traffic Volume Projections

Background traffic growth rates were previously provided by the Mid-Ohio Regional Planning Commission (MORPC) on January 10, 2013. Recommended growth rates for the study area provided by MORPC included:

- Sawmill Parkway- 3%
- Powell Road- 2%
- Seldom Seen Road- 2.5%
- Liberty Road- 3%

Opening day and design year, morning and afternoon peak hour traffic volumes will be projected for a single build scenario that includes all proposed access with the full buildout scenario. Opening Year is assumed as Year 2016 and the Design Year will be Year 2036. Traffic data will be developed for the following scenarios:

- 2016 Background (existing conditions) *→ w/ day care, only*
- 2016 Full Build with Proposed Access
- 2036 Background *→ w/ day care & office*
- 2036 Full Build with Proposed Access

- 2016 Full Build w/ proposed access w/ any roadway improvements
- 2036 Full Build w/ proposed access w/ any roadway improvements

Morning and afternoon weekday peak hour site generated trip ends for the proposed development will be forecast using trip generation rates for land use code #251 (Senior Housing - Attached), #252 (Senior Housing - Detached) and #710 (Office) as published in Trip Generation, 9th Edition (Institute of Transportation Engineers, 2012). Site generated trip ends will be distributed to the adjacent street network according to patterns observed in the manual traffic count procedure and engineering judgment regarding likely destinations for work-based trips during peak hours. Other development traffic will be included in the background condition for the adjacent daycare facility and office parcel along the Sawmill Parkway frontage and the site on the west side of Sawmill Parkway, which the County is expected to provide trip data for. Site-generated trips will be added to background traffic to determine full build traffic volumes.

We will re-use trip distribution assumptions from the previous efforts that includes input from Delaware County Engineer personnel. The expected gateway distributions are listed below:

- From/to Sawmill Parkway north - 25%
- From/to Sawmill Parkway south - 50%
- From/to Seldom Seen Road west - 4%
- From/to Liberty Road north - 4%
- From/to Liberty Road south - 7%
- From/to Powell Road east - 4%
- From/to Powell Road west - 6%

March 23, 2015

Reports and Documentation

A detailed report including applicable figures and tables will be prepared to summarize study methodologies, analysis, findings and recommendations. The report will be submitted to the Delaware County Engineer for review. Please signify your concurrence with the scope of work outlined herein by signing below and returning this Memorandum of Understanding to me. Should questions or comments arise during your review of this memorandum or if I may be of further assistance in this matter, please contact me directly at (614) 775-4650.

Sincerely,



Douglas A. Bender, PE, PTOE
Senior Traffic Engineer

Copies: Don Hunter, Schottenstein Real Estate Group
Vince Margello, Margello Development

ACCEPTANCE AND APPROVAL OF MEMORANDUM OF UNDERSTANDING

By: Michael A. Howe

Date: 3/30/15

Seldom Seen Acres Senior Living
Traffic Impact Study
Trip Generation Calculations
Institute of Transportation Engineers, 9th Edition

Off site

Land Use	Square Feet or Units	ITE Code	Time Period	ITE Formula	Total Trips	Trips Entering	Trips Exiting
<u>Day Care Center</u>	10,000 sf	565	ADT	Average Rate = 74.06	742	371	370
			AM Peak	Average Rate = 12.18	122	65	57
			PM Peak	Average Rate = 12.34	123	58	65
<u>Office</u>	9,000 sf	710	ADT	$\ln(T)=0.76\ln(x)+3.68$	212	106	106
			AM Peak	$\ln(T)=0.80\ln(x)+1.57$	28	25	3
			PM Peak	$T=1.12(x)+78.45$	89	15	74
Total			ADT		954	477	476
			AM Peak		150	90	60
			PM Peak		212	73	139

EMH&T
5500 New Albany Rd.
Columbus, OH 43054
emht.com

File Name : Sawmill Pkwy - Powell
Site Code : 00000000
Start Date : 11/7/2012
Page No : 1

Groups Printed- Cars - Trucks

Start Time	SAWMILL PKWY Southbound					POWELL Westbound					SAWMILL PKWY Northbound					POWELL Eastbound					Intl. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
*** BREAK ***																					
07:00 AM	41	208	12	0	261	10	34	15	0	59	23	93	13	0	129	18	32	16	0	66	515
07:15 AM	48	210	29	0	287	19	41	11	0	71	33	81	17	0	131	23	46	18	0	87	576
07:30 AM	36	193	27	0	256	22	56	5	0	83	43	117	13	0	173	27	48	16	0	91	603
07:45 AM	48	222	24	0	294	21	43	10	0	74	31	120	15	0	166	22	58	24	0	104	638
Total	173	833	92	0	1098	72	174	41	0	287	130	411	58	0	599	90	184	74	0	348	2332
08:00 AM	43	197	30	0	270	23	42	10	0	75	30	87	19	0	136	27	46	18	0	91	572
08:15 AM	42	188	12	0	242	38	35	12	0	85	31	90	20	0	141	17	59	18	0	94	562
08:30 AM	52	194	19	0	265	36	49	11	0	96	49	97	15	0	161	38	59	27	0	124	646
08:45 AM	40	176	30	0	246	25	57	13	0	95	35	109	23	0	167	31	55	29	0	115	623
Total	177	755	91	0	1023	122	183	46	0	351	145	383	77	0	605	113	219	92	0	424	2403
*** BREAK ***																					
04:00 PM	50	113	19	0	182	59	58	20	0	137	41	176	26	0	243	52	60	25	0	137	699
04:15 PM	49	144	12	0	205	37	70	18	0	125	55	206	26	0	287	65	80	29	0	174	791
04:30 PM	66	130	14	0	210	31	59	24	0	114	45	292	24	0	361	58	60	33	0	151	836
04:45 PM	50	160	15	0	225	46	64	26	0	136	44	248	23	0	315	69	61	31	0	161	837
Total	215	547	60	0	822	173	251	88	0	512	185	922	99	0	1206	244	261	118	0	623	3163
05:00 PM	61	166	16	0	243	48	51	25	0	124	50	294	31	0	375	78	71	20	0	169	911
05:15 PM	60	167	19	0	246	50	56	34	0	140	40	257	32	0	329	97	88	19	0	204	919
05:30 PM	63	163	23	0	249	45	65	28	0	138	59	290	20	0	369	66	59	18	0	143	899
05:45 PM	66	160	29	0	255	43	70	32	0	145	64	258	29	0	351	87	76	28	0	191	942
Total	250	656	87	0	993	186	242	119	0	547	213	1099	112	0	1424	328	294	85	0	707	3671
Grand Total	815	2791	330	0	3936	553	850	294	0	1697	673	2815	346	0	3834	775	958	369	0	2102	11569
Apprch %	20.7	70.9	8.4	0		32.6	50.1	17.3	0		17.6	73.4	9	0		36.9	45.6	17.6	0		
Total %	7	24.1	2.9	0	34	4.8	7.3	2.5	0	14.7	5.8	24.3	3	0	33.1	6.7	8.3	3.2	0	18.2	
Cars	795	2763	322	0	3880	551	834	289	0	1674	656	2759	341	0	3756	763	950	356	0	2069	11379
% Cars	97.5	99	97.6	0	98.6	99.6	98.1	98.3	0	98.6	97.5	98	98.6	0	98	98.5	99.2	96.5	0	98.4	98.4
Trucks	20	28	8	0	56	2	16	5	0	23	17	56	5	0	78	12	8	13	0	33	190
% Trucks	2.5	1	2.4	0	1.4	0.4	1.9	1.7	0	1.4	2.5	2	1.4	0	2	1.5	0.8	3.5	0	1.6	1.6

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File Name : Sawmill Pkwy - Big Bear Ave
Site Code : 00000000
Start Date : 11/7/2012
Page No : 1

Groups Printed- Cars - Trucks

Start Time	SAWMILL PRKWY Southbound					BIG BEAR AVE Westbound					SAWMILL PRKWY Northbound					BIG BEAR AVE Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	4	217	3	1	225	8	1	2	0	11	1	170	7	0	178	14	0	22	0	36	450
07:15 AM	4	250	4	1	259	10	0	5	0	15	2	108	5	0	115	7	2	17	1	27	416
07:30 AM	5	249	5	0	259	9	0	2	0	11	3	128	4	0	135	3	1	14	0	18	423
07:45 AM	9	282	3	0	294	10	0	6	0	16	2	146	8	0	156	6	3	9	0	18	484
Total	22	998	15	2	1037	37	1	15	0	53	8	552	24	0	584	30	6	62	1	99	1773
08:00 AM	10	282	2	0	294	6	1	5	1	13	3	136	19	1	159	3	2	15	0	20	486
08:15 AM	3	248	1	0	252	13	0	5	0	18	4	105	10	0	119	1	0	11	1	13	402
08:30 AM	17	242	3	0	262	5	1	2	4	12	3	109	26	1	139	4	7	15	0	26	439
08:45 AM	11	222	2	0	235	45	10	22	3	80	5	118	19	0	142	2	5	14	1	22	479
Total	41	994	8	0	1043	69	12	34	8	123	15	468	74	2	559	10	14	55	2	81	1806
*** BREAK ***																					
04:00 PM	7	169	2	1	179	8	1	4	1	14	12	239	13	1	265	11	2	9	1	23	481
04:15 PM	4	194	7	0	205	4	1	4	0	9	8	285	6	0	299	8	2	10	0	20	533
04:30 PM	2	177	4	0	183	5	0	5	0	10	12	372	11	0	395	15	0	16	0	31	619
04:45 PM	10	231	8	2	251	7	2	4	0	13	13	333	19	0	365	6	6	10	2	24	653
Total	23	771	21	3	818	24	4	17	1	46	45	1229	49	1	1324	40	10	45	3	98	2286
05:00 PM	3	190	7	0	200	7	3	4	1	15	12	378	10	1	401	8	5	10	0	23	639
05:15 PM	5	249	6	0	260	18	2	2	0	22	12	384	22	0	418	8	4	6	2	20	720
05:30 PM	5	197	3	0	205	12	5	6	1	24	12	373	11	2	398	14	5	11	0	30	657
05:45 PM	3	247	5	1	256	16	5	7	2	30	11	340	25	1	377	10	6	7	1	24	687
Total	16	883	21	1	921	53	15	19	4	91	47	1475	68	4	1594	40	20	34	3	97	2703
Grand Total	102	3646	65	6	3819	183	32	85	13	313	115	3724	215	7	4061	120	50	196	9	375	8568
Apprch %	2.7	95.5	1.7	0.2		58.5	10.2	27.2	4.2		2.8	91.7	5.3	0.2		32	13.3	52.3	2.4		
Total %	1.2	42.6	0.8	0.1	44.6	2.1	0.4	1	0.2	3.7	1.3	43.5	2.5	0.1	47.4	1.4	0.6	2.3	0.1	4.4	
Cars	94	3583	62	6	3745	179	30	73	13	295	114	3646	206	7	3973	117	50	195	9	371	8384
% Cars	92.2	98.3	95.4	100	98.1	97.8	93.8	85.9	100	94.2	99.1	97.9	95.8	100	97.8	97.5	100	99.5	100	98.9	97.9
Trucks	8	63	3	0	74	4	2	12	0	18	1	78	9	0	88	3	0	1	0	4	184
% Trucks	7.8	1.7	4.6	0	1.9	2.2	6.2	14.1	0	5.8	0.9	2.1	4.2	0	2.2	2.5	0	0.5	0	1.1	2.1

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File Name : Sawmill Pkwy - Sawmill Dr
Site Code : 11071201
Start Date : 11/7/2012
Page No : 1

Groups Printed- Cars - Trucks

Start Time	SAWMILL PKWY Southbound					SAWMILL DR Westbound					SAWMILL PKWY Northbound					SAWMILL DR Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	2	226	1	0	229	5	0	3	0	8	1	153	3	1	158	3	0	9	0	12	407
07:15 AM	1	244	0	0	245	5	0	0	0	5	3	110	3	0	116	2	0	3	1	6	372
07:30 AM	1	231	0	0	232	7	0	2	0	9	3	144	1	0	148	1	0	8	1	10	399
07:45 AM	2	297	1	0	300	1	0	2	0	3	3	154	7	0	164	0	0	7	0	7	474
Total	6	998	2	0	1006	18	0	7	0	25	10	561	14	1	586	6	0	27	2	35	1652
08:00 AM	2	268	0	0	270	10	0	3	0	13	7	121	5	0	133	0	1	0	1	2	418
08:15 AM	1	234	2	0	237	6	1	0	0	7	3	94	7	0	104	1	0	9	0	10	358
08:30 AM	2	234	0	0	236	1	0	1	0	2	2	116	9	0	127	3	1	7	0	11	376
08:45 AM	2	227	3	0	232	6	0	1	0	7	3	116	13	0	132	3	0	7	1	11	382
Total	7	963	5	0	975	23	1	5	0	29	15	447	34	0	496	7	2	23	2	34	1534

*** BREAK ***

04:00 PM	0	166	2	0	168	0	0	0	0	0	3	234	15	2	254	0	0	4	3	7	429
04:15 PM	0	207	2	0	209	3	0	0	0	3	5	288	11	1	305	0	1	5	0	6	523
04:30 PM	0	163	4	0	167	3	0	0	3	6	6	368	19	3	396	0	0	8	0	8	577
04:45 PM	1	225	1	0	227	6	0	2	3	11	7	318	12	0	337	1	0	6	1	8	583
Total	1	761	9	0	771	12	0	2	6	20	21	1208	57	6	1292	1	1	23	4	29	2112
05:00 PM	0	191	0	1	192	5	0	3	0	8	10	381	16	0	407	2	1	5	2	10	617
05:15 PM	3	257	1	0	261	3	0	2	0	5	11	343	27	0	381	1	0	3	3	7	654
05:30 PM	0	200	1	4	205	2	0	2	2	6	7	364	26	0	397	1	0	3	2	6	614
05:45 PM	0	220	4	0	224	2	0	0	0	2	7	298	21	0	326	1	1	6	1	9	561
Total	3	868	6	5	882	12	0	7	2	21	35	1386	90	0	1511	5	2	17	8	32	2446

*** BREAK ***

Grand Total	17	3590	22	5	3634	65	1	21	8	95	81	3602	195	7	3885	19	5	90	16	130	7744
Apprch %	0.5	98.8	0.6	0.1		68.4	1.1	22.1	8.4		2.1	92.7	5	0.2		14.6	3.8	69.2	12.3		
Total %	0.2	46.4	0.3	0.1	46.9	0.8	0	0.3	0.1	1.2	1	46.5	2.5	0.1	50.2	0.2	0.1	1.2	0.2	1.7	
Cars	17	3534	21	5	3577	65	1	21	8	95	76	3527	195	7	3805	19	5	87	16	127	7604
% Cars	100	98.4	95.5	100	98.4	100	100	100	100	100	93.8	97.9	100	100	97.9	100	100	96.7	100	97.7	98.2
Trucks	0	56	1	0	57	0	0	0	0	0	5	75	0	0	80	0	0	3	0	3	140
% Trucks	0	1.6	4.5	0	1.6	0	0	0	0	0	6.2	2.1	0	0	2.1	0	0	3.3	0	2.3	1.8

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File Name : Sawmill Pkwy - Seldom Seen
Site Code : 00000000
Start Date : 11/8/2012
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Groups Printed- Cars - Trucks

Start Time	SAWMILL Southbound					SELDOM SEEN Westbound					SAWMILL Northbound					SELDOM SEEN Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
*** BREAK ***																					
07:00 AM	16	192	25	0	233	34	9	15	0	58	8	131	8	0	147	16	7	19	0	42	480
07:15 AM	11	183	15	0	209	21	4	9	0	34	6	98	4	0	108	6	12	19	0	37	388
07:30 AM	11	222	3	0	236	49	6	10	0	65	6	90	21	0	117	10	13	18	0	41	459
07:45 AM	14	176	19	0	209	44	8	16	0	68	9	115	26	0	150	5	13	20	0	38	465
Total	52	773	62	0	887	148	27	50	0	225	29	434	59	0	522	37	45	76	0	158	1792
08:00 AM	19	178	2	0	199	39	7	5	0	51	3	85	19	0	107	5	16	18	0	39	396
08:15 AM	15	167	4	0	186	38	11	6	0	55	10	89	18	0	117	6	9	18	0	33	391
08:30 AM	16	187	4	0	207	48	8	13	0	69	10	114	33	0	157	6	17	20	0	43	476
08:45 AM	22	149	1	0	172	27	14	11	0	52	9	95	28	0	132	5	10	14	0	29	385
Total	72	681	11	0	764	152	40	35	0	227	32	383	98	0	513	22	52	70	0	144	1648
*** BREAK ***																					
04:00 PM	24	115	5	0	144	30	15	18	0	63	23	186	44	0	253	8	20	18	0	46	506
04:15 PM	26	114	15	0	155	59	13	31	0	103	14	192	39	0	245	4	12	18	0	34	537
04:30 PM	14	141	3	0	158	53	12	17	0	82	13	206	63	0	282	7	17	13	0	37	559
04:45 PM	16	151	3	0	170	51	18	23	0	92	18	243	51	0	312	4	19	16	0	39	613
Total	80	521	26	0	627	193	58	89	0	340	68	827	197	0	1092	23	68	65	0	156	2215
05:00 PM	21	111	6	0	138	50	11	27	0	88	24	265	45	0	334	8	25	15	0	48	608
05:15 PM	28	159	4	0	191	65	28	22	0	115	17	274	65	0	356	11	21	19	0	51	713
05:30 PM	20	177	6	0	203	60	11	16	0	87	16	279	56	0	351	14	23	16	0	53	694
05:45 PM	23	179	5	0	207	56	22	21	0	99	19	268	50	0	337	14	18	18	0	50	693
Total	92	626	21	0	739	231	72	86	0	389	76	1086	216	0	1378	47	87	68	0	202	2708
Grand Total	296	2601	120	0	3017	724	197	260	0	1181	205	2730	570	0	3505	129	252	279	0	660	8363
Approch %	9.8	86.2	4	0		61.3	16.7	22	0		5.8	77.9	16.3	0		19.5	38.2	42.3	0		
Total %	3.5	31.1	1.4	0	36.1	8.7	2.4	3.1	0	14.1	2.5	32.6	6.8	0	41.9	1.5	3	3.3	0	7.9	
Cars	289	2566	114	0	2969	716	197	257	0	1170	201	2681	563	0	3445	123	249	278	0	650	8234
% Cars	97.6	98.7	95	0	98.4	98.9	100	98.8	0	99.1	98	98.2	98.8	0	98.3	95.3	98.8	99.6	0	98.5	98.5
Trucks	7	35	6	0	48	8	0	3	0	11	4	49	7	0	60	6	3	1	0	10	129
% Trucks	2.4	1.3	5	0	1.6	1.1	0	1.2	0	0.9	2	1.8	1.2	0	1.7	4.7	1.2	0.4	0	1.5	1.5

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File Name : Seldom Seen - Bunker
Site Code : 11081201
Start Date : 11/8/2012
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Groups Printed- Cars - Trucks

Start Time	Bunker Ln Southbound					SELDOM SEEN RD Westbound					BUNKER LN Northbound					SELDOM SEEN RD Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
*** BREAK ***																					
07:15 AM	1	1	4	0	6	2	28	0	0	30	7	1	2	0	10	5	27	8	0	40	86
07:30 AM	3	0	3	0	6	2	30	2	0	34	8	0	2	0	10	2	46	9	0	57	107
07:45 AM	3	1	2	0	6	2	37	5	0	44	5	0	6	0	11	2	59	17	0	78	139
Total	7	2	9	0	18	6	95	7	0	108	20	1	10	0	31	9	132	34	0	175	332
08:00 AM	1	0	4	0	5	0	47	4	0	51	9	0	4	0	13	1	40	8	0	49	118
08:15 AM	1	1	1	0	3	0	35	1	0	36	7	0	6	0	13	2	45	11	0	58	110
08:30 AM	1	0	3	0	4	2	48	2	0	52	5	1	7	0	13	4	49	2	0	55	124
08:45 AM	5	0	2	0	7	4	37	3	0	44	6	2	6	0	14	4	41	14	0	59	124
Total	8	1	10	0	19	6	167	10	0	183	27	3	23	0	53	11	175	35	0	221	476
*** BREAK ***																					
04:00 PM	4	0	3	2	9	3	66	7	0	76	4	0	6	0	10	3	61	9	3	76	171
04:15 PM	4	0	8	0	12	4	60	5	0	69	10	0	4	0	14	8	76	14	1	99	194
04:30 PM	6	0	5	0	11	9	72	2	0	83	5	0	7	0	12	7	56	3	1	67	173
04:45 PM	3	0	6	0	9	6	62	4	0	72	8	0	6	0	14	16	61	13	0	90	185
Total	17	0	22	2	41	22	260	18	0	300	27	0	23	0	50	34	254	39	5	332	723
05:00 PM	8	0	5	2	15	4	87	4	0	95	17	0	4	0	21	4	74	11	0	89	220
05:15 PM	5	1	5	0	11	8	74	8	0	90	10	0	10	0	20	4	72	9	1	86	207
05:30 PM	7	0	4	0	11	6	77	8	0	91	8	0	9	0	17	10	71	13	0	94	213
05:45 PM	5	0	7	0	12	8	69	6	0	83	8	0	5	0	13	7	65	8	0	80	188
Total	25	1	21	2	49	26	307	26	0	359	43	0	28	0	71	25	282	41	1	349	828
*** BREAK ***																					
06:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	57	4	62	4	127	60	830	61	0	951	117	4	84	0	205	79	843	149	6	1077	2360
Apprch %	44.9	3.1	48.8	3.1		6.3	87.3	6.4	0		57.1	2	41	0		7.3	78.3	13.8	0.6		
Total %	2.4	0.2	2.6	0.2	5.4	2.5	35.2	2.6	0	40.3	5	0.2	3.6	0	8.7	3.3	35.7	6.3	0.3	45.6	
Cars	57	4	62	4	127	59	818	61	0	938	117	4	84	0	205	79	832	146	6	1063	2333
% Cars	100	100	100	100	100	98.3	98.6	100	0	98.6	100	100	100	0	100	100	98.7	98	100	98.7	98.9
Trucks	0	0	0	0	0	1	12	0	0	13	0	0	0	0	0	0	11	3	0	14	27
% Trucks	0	0	0	0	0	1.7	1.4	0	0	1.4	0	0	0	0	0	0	1.3	2	0	1.3	1.1

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File Name : Sawmill Pkwy - Park Woods Ln
Site Code : 00000000
Start Date : 11/7/2012
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Groups Printed- Cars - Trucks

Start Time	SAWMILL PKWY Southbound					PARK WOODS LN Westbound					SAWMILL PKWY Northbound					PARK WOODS LN Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	242	0	2	244	1	0	0	0	1	0	156	1	0	157	0	0	0	0	0	402
07:15 AM	0	261	0	0	261	1	0	0	1	2	0	128	1	0	129	0	0	0	0	0	392
07:30 AM	0	258	0	0	258	6	0	0	0	6	0	144	0	0	144	0	0	0	0	0	408
07:45 AM	1	300	0	1	302	1	0	0	0	1	0	167	0	0	167	0	0	0	0	0	470
Total	1	1061	0	3	1065	9	0	0	1	10	0	595	2	0	597	0	0	0	0	0	1672
08:00 AM	0	267	0	0	267	5	0	0	1	6	0	121	0	0	121	0	0	0	0	0	394
08:15 AM	0	252	0	0	252	3	0	0	0	3	0	100	12	0	112	0	0	0	0	0	367
08:30 AM	0	244	0	0	244	4	0	1	0	5	0	120	2	1	123	0	0	0	0	0	372
08:45 AM	0	235	0	1	236	2	0	1	0	3	0	146	2	0	148	0	0	0	0	0	387
Total	0	998	0	1	999	14	0	2	1	17	0	487	16	1	504	0	0	0	0	0	1520
*** BREAK ***																					
04:00 PM	0	192	0	2	194	0	0	0	0	0	0	256	3	0	259	0	0	0	0	0	453
04:15 PM	0	201	0	0	201	4	0	2	0	6	0	329	6	0	335	0	0	0	0	0	542
04:30 PM	2	194	0	0	196	1	0	1	0	2	0	393	3	3	399	0	0	0	0	0	597
04:45 PM	2	223	0	1	226	3	0	0	0	3	0	353	3	3	359	0	0	0	0	0	588
Total	4	810	0	3	817	8	0	3	0	11	0	1331	15	6	1352	0	0	0	0	0	2180
05:00 PM	1	221	0	4	226	1	0	0	0	1	0	401	1	0	402	0	0	0	0	0	629
05:15 PM	0	259	0	1	260	3	0	1	1	5	0	375	3	1	379	0	0	0	0	0	644
05:30 PM	0	218	0	4	222	1	0	0	0	1	0	384	5	1	390	0	0	0	0	0	613
05:45 PM	0	246	0	2	248	1	0	2	0	3	0	355	5	0	360	0	0	0	0	0	611
Total	1	944	0	11	956	6	0	3	1	10	0	1515	14	2	1531	0	0	0	0	0	2497
Grand Total	6	3813	0	18	3837	37	0	8	3	48	0	3928	47	9	3984	0	0	0	0	0	7869
Apprch %	0.2	99.4	0	0.5	77.1	0	16.7	6.2			0	98.6	1.2	0.2		0	0	0	0		
Total %	0.1	48.5	0	0.2	48.8	0.5	0	0.1	0	0.6	0	49.9	0.6	0.1	50.6	0	0	0	0	0	
Cars	5	3723	0	18	3746	37	0	8	3	48	0	3825	47	9	3881	0	0	0	0	0	7675
% Cars	83.3	97.6	0	100	97.6	100	0	100	100	100	0	97.4	100	100	97.4	0	0	0	0	0	97.5
Trucks	1	90	0	0	91	0	0	0	0	0	0	103	0	0	103	0	0	0	0	0	194
% Trucks	16.7	2.4	0	0	2.4	0	0	0	0	0	0	2.6	0	0	2.6	0	0	0	0	0	2.5

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File Name : Seldom Seen - Liberty
Site Code : 00000000
Start Date : 11/13/2012
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Groups Printed- Cars - Trucks																					
Start Time	LIBERTY					SELDOM SEEN					LIBERTY					SELDOM SEEN					Int. Total
	Southbound					Westbound					Northbound					Eastbound					
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
07:00 AM	0	86	14	0	100	0	0	0	0	0	20	60	0	0	80	4	0	34	0	38	218
07:15 AM	0	94	10	0	104	0	0	0	0	0	24	47	0	0	71	1	0	46	0	47	222
07:30 AM	0	88	24	0	112	0	0	0	0	0	39	82	0	0	121	6	0	39	0	45	278
07:45 AM	0	86	38	0	124	0	0	0	0	0	38	75	0	0	113	8	0	37	0	45	282
Total	0	354	86	0	440	0	0	0	0	0	121	264	0	0	385	19	0	156	0	175	1000
08:00 AM	0	76	17	0	93	0	0	0	0	0	31	45	0	0	76	9	0	32	0	41	210
08:15 AM	0	59	16	0	75	0	0	0	0	0	32	42	0	0	74	8	0	46	1	55	204
08:30 AM	0	69	21	0	90	0	0	0	0	0	37	43	0	0	80	7	0	31	0	38	208
08:45 AM	0	60	33	0	93	0	0	0	0	0	23	54	0	0	77	11	0	25	0	36	206
Total	0	264	87	0	351	0	0	0	0	0	123	184	0	0	307	35	0	134	1	170	828
09:00 AM	0	52	23	0	75	0	0	0	0	0	21	57	0	0	78	14	0	30	1	45	198
09:15 AM	0	39	17	0	56	0	0	0	0	0	32	37	0	0	69	15	0	18	0	33	158
09:30 AM	0	55	16	0	71	0	0	0	0	0	19	37	0	0	56	14	0	26	0	40	167
09:45 AM	0	32	18	0	50	0	0	0	0	0	21	42	0	0	63	5	0	8	0	13	126
Total	0	178	74	0	252	0	0	0	0	0	93	173	0	0	266	48	0	82	1	131	649
10:00 AM	0	37	15	0	52	0	0	0	0	0	15	41	0	0	56	10	0	16	0	26	134
10:15 AM	0	38	12	0	50	0	0	0	0	0	14	30	0	0	44	12	0	27	0	39	133
10:30 AM	0	42	18	0	60	0	0	0	1	1	17	31	0	0	48	19	0	18	0	37	146
10:45 AM	0	42	15	0	57	0	0	0	1	1	18	33	0	0	51	9	0	30	0	39	148
Total	0	159	60	0	219	0	0	0	2	2	64	135	0	0	199	50	0	91	0	141	561
11:00 AM	0	49	17	0	66	0	0	0	0	0	15	34	0	0	49	10	0	23	0	33	148
11:15 AM	0	45	14	0	59	0	0	0	0	0	11	34	0	0	45	10	0	22	0	32	136
11:30 AM	0	47	19	0	66	0	0	0	0	0	21	38	0	0	59	7	0	26	0	33	158
11:45 AM	0	32	16	0	48	0	0	0	0	0	23	37	0	0	60	10	0	18	0	28	136
Total	0	173	66	0	239	0	0	0	0	0	70	143	0	0	213	37	0	89	0	126	578
12:00 PM	0	40	9	0	49	0	0	0	0	0	9	36	0	0	45	7	0	15	0	22	116
12:15 PM	0	41	6	0	47	0	0	0	0	0	19	43	0	0	62	7	0	35	0	42	151
12:30 PM	0	34	10	0	44	0	0	0	0	0	21	42	0	0	63	10	0	25	0	35	142
12:45 PM	0	47	9	0	56	0	0	0	0	0	21	30	0	0	51	13	0	22	0	35	142
Total	0	162	34	0	196	0	0	0	0	0	70	151	0	0	221	37	0	97	0	134	551
01:00 PM	0	49	20	0	69	0	0	0	0	0	15	33	0	0	48	16	0	20	0	36	153
01:15 PM	0	49	7	0	56	0	0	0	0	0	21	31	0	0	52	13	0	31	0	44	152
01:30 PM	0	37	13	0	50	0	0	0	0	0	18	52	0	0	70	14	0	23	0	37	157
01:45 PM	0	36	7	0	43	0	0	0	0	0	17	43	0	0	60	22	0	33	1	56	159
Total	0	171	47	0	218	0	0	0	0	0	71	159	0	0	230	65	0	107	1	173	621
02:00 PM	0	37	10	0	47	0	0	0	0	0	17	39	0	0	56	11	0	13	1	25	128
02:15 PM	0	35	20	0	55	0	0	0	0	0	28	48	0	0	76	21	0	25	0	46	177
02:30 PM	0	57	15	0	72	0	0	0	0	0	23	42	0	0	65	13	0	39	0	52	189
02:45 PM	0	91	14	0	105	0	0	0	0	0	22	59	0	0	81	15	0	33	0	48	234
Total	0	220	59	0	279	0	0	0	0	0	90	188	0	0	278	60	0	110	1	171	728
03:00 PM	0	68	14	0	82	0	0	0	0	0	39	65	0	1	105	18	0	47	0	65	252
03:15 PM	0	72	17	0	89	0	0	0	0	0	35	57	0	0	92	13	0	27	0	40	221
03:30 PM	0	57	16	0	73	0	0	0	0	0	33	87	0	0	120	21	0	31	0	52	245
03:45 PM	0	60	14	0	74	0	0	0	0	0	25	86	0	0	111	20	0	37	0	57	242
Total	0	257	61	0	318	0	0	0	0	0	132	295	0	1	428	72	0	142	0	214	960
04:00 PM	0	63	24	0	87	0	0	0	0	0	51	75	0	0	126	17	0	37	0	54	267
04:15 PM	0	65	21	0	86	0	0	0	0	0	40	66	0	0	106	13	0	37	0	50	242
04:30 PM	0	70	23	0	93	0	0	0	0	0	35	78	0	0	113	25	0	35	0	60	266
04:45 PM	0	76	19	0	95	0	0	0	0	0	41	110	0	0	151	17	0	43	0	60	306
Total	0	274	87	0	361	0	0	0	0	0	167	329	0	0	496	72	0	152	0	224	1081

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Columbus, OH 43054
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File Name : Seldom Seen - Liberty
Site Code : 00000000
Start Date : 11/13/2012
Page No : 2

Groups Printed- Cars - Trucks																					
Start Time	LIBERTY Southbound					SELDOM SEEN Westbound					LIBERTY Northbound					SELDOM SEEN Eastbound					Int. Total
	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	
05:00 PM	0	82	25	0	107	0	0	0	0	0	44	112	0	0	156	21	0	53	0	74	337
05:15 PM	0	69	26	0	95	0	0	0	0	0	53	94	0	0	147	19	0	42	0	61	303
05:30 PM	0	54	27	0	81	0	0	0	0	0	34	91	0	0	125	30	0	44	0	74	280
05:45 PM	0	63	15	0	78	0	0	0	0	0	32	122	0	0	154	33	0	42	0	75	307
Total	0	268	93	0	361	0	0	0	0	0	163	419	0	0	582	103	0	181	0	284	1227
Grand Total	0	2480	754	0	3234	0	0	0	2	2	1164	2440	0	1	3605	598	0	1341	4	1943	8784
Apprch %	0	76.7	23.3	0		0	0	0	100		32.3	67.7	0	0		30.8	0	69	0.2		
Total %	0	28.2	8.6	0	36.8	0	0	0	0	0	13.3	27.8	0	0	41	6.8	0	15.3	0	22.1	
Cars	0	2403	735	0	3138	0	0	0	2	2	1155	2368	0	1	3524	579	0	1318	3	1900	8564
% Cars	0	96.9	97.5	0	97	0	0	0	100	100	99.2	97	0	100	97.8	96.8	0	98.3	75	97.8	97.5
Trucks	0	77	19	0	96	0	0	0	0	0	9	72	0	0	81	19	0	23	1	43	220
% Trucks	0	3.1	2.5	0	3	0	0	0	0	0	0.8	3	0	0	2.2	3.2	0	1.7	25	2.2	2.5

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Columbus, OH 43054
emht.com

File Name : Seldom Seen-Liberty 12-13
Site Code : 00000000
Start Date : 12/13/2012
Page No : 1

Groups Printed- Cars - Trucks																					
	LIBERTY					SELDOM SEEN					LIBERTY					SELDOM SEEN					Inl. Total
	Southbound					Westbound					Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Inl. Total
06:00 PM	0	58	20	0	78	0	0	0	0	0	47	97	0	0	144	23	0	47	0	70	292
06:15 PM	0	65	22	0	87	0	0	0	0	0	41	79	0	0	120	20	0	39	0	59	266
06:30 PM	0	50	35	0	85	0	0	0	0	0	39	85	0	0	124	22	0	42	0	64	273
06:45 PM	0	59	25	0	84	0	0	0	0	0	31	70	0	0	101	23	0	43	0	66	251
Total	0	232	102	0	334	0	0	0	0	0	158	331	0	0	489	88	0	171	0	259	1082
07:00 PM	0	50	22	0	72	0	0	0	0	0	43	74	0	0	117	32	0	37	0	69	258
07:15 PM	0	48	18	0	66	0	0	0	0	0	29	61	0	0	90	25	0	31	0	56	212
07:30 PM	0	25	17	0	42	0	0	0	0	0	25	52	0	0	77	23	0	31	0	54	173
07:45 PM	0	21	10	0	31	0	0	0	0	0	21	38	0	0	59	16	0	23	0	39	129
Total	0	144	67	0	211	0	0	0	0	0	118	225	0	0	343	96	0	122	0	218	772
Grand Total	0	376	169	0	545	0	0	0	0	0	276	556	0	0	832	184	0	293	0	477	1854
Apprch %	0	69	31	0		0	0	0	0		33.2	66.8	0	0		38.6	0	61.4	0		
Total %	0	20.3	9.1	0	29.4	0	0	0	0	0	14.9	30	0	0	44.9	9.9	0	15.8	0	25.7	
Cars	0	375	167	0	542	0	0	0	0	0	275	555	0	0	830	183	0	292	0	475	1847
% Cars	0	99.7	98.8	0	99.4	0	0	0	0	0	99.6	99.8	0	0	99.8	99.5	0	99.7	0	99.6	99.6
Trucks	0	1	2	0	3	0	0	0	0	0	1	1	0	0	2	1	0	1	0	2	7
% Trucks	0	0.3	1.2	0	0.6	0	0	0	0	0	0.4	0.2	0	0	0.2	0.5	0	0.3	0	0.4	0.4

Alford, Jennifer

From: Humenny, Justin
Sent: Thursday, December 06, 2012 2:07 PM
To: Alford, Jennifer
Cc: Creed, Larry
Subject: FW: Sawmill Pkwy / Seldom Seen Growth Rate

Here are the growth rates I received from MORPC.

From: Chandra Parasa [mailto:cparasa@morpc.org]
Sent: Thursday, December 06, 2012 10:15 AM
To: Humenny, Justin
Cc: Nick Gill
Subject: RE: Sawmill Pkwy / Seldom Seen Growth Rate

Justin,

We have completed your request for the overall growth rates for this study area, between Sawmill Parkway & Powell Road, to Seldom Seen Road & Liberty Road.

Please use a compounded annual growth rates for this study area as follows:

3% for all of Sawmill Parkway
2% for Powell Road
2.5% for Seldom Seen Road
3% for Liberty Road

Please note that the growth rates do reflect Sawmill Parkway being extended all the way to US 42.

Thanks,
Chad

From: Chandra Parasa
Sent: Tuesday, December 04, 2012 11:06 AM
To: 'Humenny, Justin'
Cc: Nick Gill
Subject: RE: Sawmill Pkwy / Seldom Seen Growth Rate

Justin,

We have almost completed processing this request. We are currently reviewing, will contact you soon.

Thanks,
Chad

From: Humenny, Justin [mailto:jhumenny@emht.com]
Sent: Tuesday, December 04, 2012 9:48 AM
To: Chandra Parasa
Subject: RE: Sawmill Pkwy / Seldom Seen Growth Rate

Chad,

Do you have a timetable on when this growth rate will be ready? We are being asked to submit our volumes to Delaware County as soon as we can. If there is any way you can make this a high priority it would be greatly appreciated. Thanks again for your assistance. Please let me know if you need anything else from me.

Justin

From: Chandra Parasa [<mailto:cparasa@morpc.org>]
Sent: Monday, November 26, 2012 4:21 PM
To: Humenny, Justin
Cc: Nick Gill
Subject: RE: Sawmill Pkwy / Seldom Seen Growth Rate

Justin,
Thanks for your email.
I was not in during thanksgiving holidays, got back today.
We are currently working on your request. I will keep you posted on status.

Thanks,
Chad

From: Humenny, Justin [<mailto:jhumenny@emht.com>]
Sent: Monday, November 26, 2012 3:47 PM
To: Chandra Parasa
Subject: Sawmill Pkwy / Seldom Seen Growth Rate

Chad,

Can you please give an update on the status of the requested growth rate for Sawmill Parkway and Seldom Seen Rd area? Please let me know if you need any additional information.

Also, we have received some concerns from the neighboring condo community, regarding the impact of the future extension of Sawmill Parkway to Rt 42. Will this be accounted for in the growth rate? If not, can you please provide comments on how volumes on Sawmill Parkway will be affected by this future extension? Thanks for your assistance, it is greatly appreciated.

Justin Humenny, E.I.
Traffic Engineer Intern

EMH&T

Engineers, Surveyors, Planners, Scientists
5500 New Albany Road, Columbus, OH 43054
v. 614.775.4647 | jhumenny@emht.com
emht.com

From: Humenny, Justin [<mailto:jhumenny@emht.com>]
Sent: Tuesday, November 20, 2012 7:44 AM
To: Chandra Parasa
Subject: RE: Growth rate request

Chad, I have attached a folder containing count data as excel files. Please let me know if you need anything else.

Thanks,
Justin

From: Chandra Parasa [<mailto:cparasa@morpc.org>]
Sent: Monday, November 19, 2012 4:23 PM
To: Humenny, Justin
Subject: RE: Growth rate request

Is it possible to send to us, selectable text in pdf or excel. We usually upload this in our database.

Thanks,
Chad

From: Humenny, Justin [<mailto:jhumenny@emht.com>]
Sent: Monday, November 19, 2012 2:33 PM
To: Chandra Parasa
Subject: RE: Growth rate request

We did not conduct 24 hour counts. An 8 hour signal warrant count was taken at Seldom Seen Rd & Liberty Rd. AM and PM turning movement counts were taken at the following intersections:

- Sawmill Parkway & Powell Rd
- Sawmill Parkway & Big Bear Ave
- Sawmill Parkway & Park Woods Ln
- Sawmill Parkway & Sawmill Dr
- Sawmill Parkway & Seldom Seen Rd
- Seldom Seen Rd & Bunker Ln

These are all of the intersections in our study area. We would just like an overall growth rate for this study area.

Thanks,
Justin

From: Chandra Parasa [<mailto:cparasa@morpc.org>]
Sent: Monday, November 19, 2012 2:15 PM
To: Humenny, Justin
Subject: RE: Growth rate request

Just curious if there were 24 hour counts conducted.

Are Growth rates needed for Sawmill Parkway and Seldom Seen Road, or, please advise what other additional roadway segments.

Thanks,
Chad

From: Humenny, Justin [<mailto:jhumenny@emht.com>]
Sent: Monday, November 19, 2012 1:30 PM
To: Chandra Parasa
Subject: RE: Growth rate request

Chad,
I have attached count data for the 7 intersections in the Powell area. Please let me know if you need anything else.

Thanks,
Justin

From: Chandra Parasa [<mailto:cparasa@morpc.org>]
Sent: Monday, November 19, 2012 12:55 PM
To: Humenny, Justin
Cc: Nick Gill; Hwashik Jang; Zhuojun Jiang
Subject: RE: Growth rate request

Hi Justin,
Please email to us traffic counts that you have collected in that area.
We would be using these data in our computations.

Thanks,
Chad

From: Humenny, Justin [<mailto:jhumenny@emht.com>]
Sent: Monday, November 19, 2012 12:52 PM
To: Chandra Parasa
Subject: Growth rate request

Chad,

I am working on a traffic study for a Lifestyle Communities development in Powell near the intersection of Sawmill Parkway and Seldom Seen Road. Could you please provide a background traffic growth rate for this area? We just finished a series of counts in the area, and I need to project these volumes to an opening year 2013, and horizon year 2033. If you need any additional information or have any questions please let me know.

Thanks,

Justin Humenny, E.I.
Traffic Engineer Intern

EMH&T

Engineers, Surveyors, Planners, Scientists
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APPENDIX B:

Traffic Volume Calculations

[illegible]

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2012 Balanced Volumes										AM Peak Hour at			
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
39	819	55	143	55	143	13	2	8	11	142	6	89	344
Seldom Seen Rd													
LT	TH	LT	TH	LT	TH	LT	TH	LT	TH	LT	TH	LT	TH
26	54	75	24	445	70	10	172	42	29	1	14	194	24
1037	1037	7	539	539	RT	RT	RT	RT	RT	RT	RT	RT	154
Sowmill Dr													
1	1030	6	23	16	16	11	142	6	11	142	6	89	344
TH	TH	LT	TH	TH	RT	TH	TH	LT	TH	TH	LT	TH	TH
RT	18	561	1	561	RT	RT	RT	RT	RT	RT	RT	RT	RT
1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071
TH	TH	LT	TH	TH	RT	TH	TH	LT	TH	TH	LT	TH	TH
1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071	1071
Drive 1													
TH	TH	LT	TH	TH	RT	TH	TH	LT	TH	TH	LT	TH	TH
560	560	560	560	560	560	560	560	560	560	560	560	560	560
Big Bear Ave													
14	1041	28	35	10	518	36	10	518	36	10	518	36	10
TH	TH	LT	TH	TH	RT	TH	TH	LT	TH	TH	LT	TH	TH
RT	55	55	55	55	55	55	55	55	55	55	55	55	55
Powell Rd													
110	822	175	85	182	TH	182	TH	182	TH	182	TH	182	TH
TH	TH	LT	TH	TH	RT	TH	TH	LT	TH	TH	LT	TH	TH
RT	76	76	76	76	76	76	76	76	76	76	76	76	76

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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2016 Background Traffic Volumes Sawmill Parkway & Liberty Road Growth Rate: 3.0%										Powell Road Growth Rate: 2.0% Seldom Seen Road Growth Rate: 2.5%										AM Peak Hour b = a(1+g)^N									
Sawmill Dr					Liberty Rd					Bunker Lane					Drive 2					Drive 1									
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT									
44	28	158	44	28	157	12	7	8	176	387	100	149	280	170															
922	62	499	922	62	499	29	1	14	214	26	26	149	280	170															
TH	60	TH	TH	60	TH	TH	1	TH	TH	RT	RT	TH	TH	TH															
RT	83	RT	RT	83	RT	RT	42	RT	RT	RT	RT	RT	RT	RT															
7	0	TH	7	0	TH	7	0	TH																					
1	1159	6	23	LT	Sawmill Dr	23	LT	16																					
LT	3	16	595	16		16																							
TH	1	LT	TH	RT		LT	TH	RT																					
RT	18	RT	RT	18		RT	RT																						
TH	LT	TH	TH	LT	Drive 1	TH	LT	Drive 1																					
1205			630			630																							
TH	18	RT	TH	18		TH	18	RT																					
RT	TH	LT	RT	TH		RT	TH	LT																					
16	1172	32	35	LT	Big Bear Ave	35	LT	41																					
LT	19	11	583	41		11	583	41																					
TH	8	LT	TH	RT		LT	TH	RT																					
RT	55	RT	RT	55		RT	RT																						
TH	LT	TH	TH	LT		TH	LT																						
124	925	197	92	LT	Powell Rd	92	LT	72																					
LT	107	154	456	72		154	456	72																					
TH	214	LT	TH	RT		LT	TH	RT																					
RT	82	RT	RT	82		RT	RT																						

2016 Background Traffic Volumes Rt/RO @ Sawmill Dr										2016 Background Traffic Volumes Rt/RO @ Sawmill Dr														
Sawmill Dr					Liberty Rd					Bunker Lane					Drive 2					Drive 1				
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT				
44	28	138	44	28	138	12	7	8	176	387	100	149	280	170										
922	62	499	922	62	499	29	1	14	214	26	26	149	280	170										
TH	60	TH	TH	60	TH	TH	1	TH	TH	RT	RT	TH	TH	TH										
RT	83	RT	RT	83	RT	RT	42	RT	RT	RT	RT	RT	RT	RT										
7	0	TH	7	0	TH	7	0	TH																
1	1165	x	1	1165	x	16																		
LT	3	x	LT	x	x	16																		
TH	1	TH	TH	1	TH	TH	1	TH																
RT	18	RT	RT	18		RT	RT																	
TH	LT	TH	TH	LT	Drive 1	TH	LT	Drive 1																
1205			630			630																		
TH	18	RT	TH	18		TH	18	RT																
RT	TH	LT	RT	TH		RT	TH	LT																
16	1172	32	35	LT	Big Bear Ave	35	LT	41																
LT	19	11	583	41		11	583	41																
TH	8	LT	TH	RT		LT	TH	RT																
RT	55	RT	RT	55		RT	RT																	
TH	LT	TH	TH	LT		TH	LT																	
124	925	197	92	LT	Powell Rd	92	LT	72																
LT	107	154	456	72		154	456	72																
TH	214	LT	TH	RT		LT	TH	RT																
RT	82	RT	RT	82		RT	RT																	

Seldom Seen Acres Senior Living
 Traffic Impact Study
 Traffic Volume Calculations

Off site: Office and Day care Trip Distribution - Primary Trips Inbound										AM Peak Hour c1	
RT	TH	LT	2%	RT	TH	LT	RT	TH	LT	TH	TH
	TH	2%	LT	TH	RT	0%	Seldom Seen Rd	RT	TH	RT	TH
	RT	2%	RT	TH	RT	0%	TH	TH	RT	TH	TH
	RT	TH	2%	RT	TH	2%	RT	TH	RT	TH	TH
RT	TH	29%	0%	RT	TH	0%	Sawmill Dr	TH	RT	TH	TH
	TH	29%	0%	RT	TH	0%	TH	RT	TH	RT	TH
	RT	29%	0%	RT	TH	0%	TH	RT	TH	RT	TH
	RT	29%	0%	RT	TH	0%	TH	RT	TH	RT	TH
RT	TH	U	0%	RT	TH	0%	Drive 1	TH	RT	TH	TH
	TH	U	0%	RT	TH	0%	TH	RT	TH	RT	TH
	RT	U	0%	RT	TH	0%	TH	RT	TH	RT	TH
	RT	U	0%	RT	TH	0%	TH	RT	TH	RT	TH
RT	TH	LT	60%	RT	TH	60%	Big Bear Ave	TH	RT	TH	TH
	TH	LT	60%	RT	TH	60%	TH	RT	TH	RT	TH
	RT	LT	60%	RT	TH	60%	TH	RT	TH	RT	TH
	RT	LT	60%	RT	TH	60%	TH	RT	TH	RT	TH
RT	TH	LT	4%	RT	TH	4%	Powell Rd	TH	RT	TH	TH
	TH	LT	4%	RT	TH	4%	TH	RT	TH	RT	TH
	RT	LT	4%	RT	TH	4%	TH	RT	TH	RT	TH
	RT	LT	4%	RT	TH	4%	TH	RT	TH	RT	TH
OFF SITE										N	

[illegible]

Seldom Seen Acres Senior Living
 Traffic Impact Study
 Traffic Volume Calculations

2016 Total off-site trips										AM Peak Hour c5=c3+c4									
Seldom Seen					Bunker Lone					Drive 2					Liberty Rd				
RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	16	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	1	TH	1	LT	TH	RT	2	TH	RT	TH	RT	6	TH	RT	4	TH	RT	4	TH
RT	1	RT	1	RT	RT	RT	1	RT	RT	RT	1	RT	RT	1	RT	RT	1	RT	1
Sawmill Dr					Drive 1					Powell Rd					Liberty Rd				
RT	TH	LT	18	RT	TH	LT	34	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	TH	0	TH	TH	RT	39	TH	RT	TH	RT	39	TH	RT	39	TH	RT	39	TH
RT	0	RT	0	RT	RT	RT	0	RT	RT	RT	0	RT	RT	0	RT	RT	0	RT	0
Sawmill Dr					Drive 1					Powell Rd					Liberty Rd				
RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	TH	0	TH	TH	RT	39	TH	RT	TH	RT	39	TH	RT	39	TH	RT	39	TH
RT	0	RT	0	RT	RT	RT	0	RT	RT	RT	0	RT	RT	0	RT	RT	0	RT	0
Sawmill Dr					Drive 1					Powell Rd					Liberty Rd				
RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	TH	0	TH	TH	RT	39	TH	RT	TH	RT	39	TH	RT	39	TH	RT	39	TH
RT	0	RT	0	RT	RT	RT	0	RT	RT	RT	0	RT	RT	0	RT	RT	0	RT	0
Sawmill Dr					Drive 1					Powell Rd					Liberty Rd				
RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	TH	0	TH	TH	RT	39	TH	RT	TH	RT	39	TH	RT	39	TH	RT	39	TH
RT	0	RT	0	RT	RT	RT	0	RT	RT	RT	0	RT	RT	0	RT	RT	0	RT	0
Sawmill Dr					Drive 1					Powell Rd					Liberty Rd				
RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	TH	0	TH	TH	RT	39	TH	RT	TH	RT	39	TH	RT	39	TH	RT	39	TH
RT	0	RT	0	RT	RT	RT	0	RT	RT	RT	0	RT	RT	0	RT	RT	0	RT	0

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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

[illegible]

[illegible]

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2036 Total off site trips												AM Peak Hour d3=d1+d2	
			Seldom Seen Rd			Bunker Lane			Drive 2				
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
0	23	0	0	1	0	0	0	0	0	0	0	0	0
LT	0	1	LT	0	1	LT	0	1	LT	0	1	LT	0
TH	1	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	2	0	RT	0	0	RT	0	0	RT	0	0	RT	0
OFF SITE													
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
0	26	0	0	0	0	0	0	0	0	0	0	0	0
LT	0	0	LT	0	0	LT	0	0	LT	0	0	LT	0
TH	0	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	0	0	RT	0	0	RT	0	0	RT	0	0	RT	0
Sawmill Dr													
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
0	26	0	0	0	0	0	0	0	0	0	0	0	0
LT	0	0	LT	0	0	LT	0	0	LT	0	0	LT	0
TH	0	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	0	0	RT	0	0	RT	0	0	RT	0	0	RT	0
Drive 1													
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
0	0	26	0	0	0	0	0	0	0	0	0	0	0
LT	0	0	LT	0	0	LT	0	0	LT	0	0	LT	0
TH	0	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	0	0	RT	0	0	RT	0	0	RT	0	0	RT	0
Big Bear Ave													
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
0	36	0	0	0	0	0	0	0	0	0	0	0	0
LT	0	0	LT	0	0	LT	0	0	LT	0	0	LT	0
TH	0	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	0	0	RT	0	0	RT	0	0	RT	0	0	RT	0
Powell Rd													
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH
4	30	2	0	0	0	0	0	0	0	0	0	0	0
LT	0	0	LT	0	0	LT	0	0	LT	0	0	LT	0
TH	0	0	TH	0	0	TH	0	0	TH	0	0	TH	0
RT	0	0	RT	0	0	RT	0	0	RT	0	0	RT	0
												↑ N	

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

Site Trip Assignment- Primary Trips Inbound										AM Peak Hour d3			
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Seldom Seen Rd													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Sawmill Dr													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Drive 1													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Parkwoods Ln													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Big Bear Ave													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Powell Rd													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
Liberty Rd													
<div> <div>RT</div> <div>TH</div> <div>LT</div> <div>U</div> </div>	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
	0	RT	0	TH	5	LT	0	RT	0	TH	5	LT	0
In 126													
SITE													
Drive 2													
Bunker Lane													
Sawmill Pkwy													
N													

\\CMHDATA01\Project01\20142045\Calculations\Traffic\TripGen\2014 2045 Trip Gen.xls

5/6/2015
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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

Site										AM Peak Hour d5=d3+d4									
Total Site Trips																			
RT 0	TH	16	15	1	TH	8	RT	Seldom Seen Rd		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	1	TH	1	TH	9	27	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	3	3	3	LT	3	LT	3	RT	RT	0	TH	3	LT	42	TH	3	LT	0
	RT	0	0	0	RT	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
RT 0	TH	37	0	0	TH	7	RT	Sawmill Dr		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	0	TH	0	TH	0	14	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	0	0	0	LT	0	LT	0	RT	RT	0	TH	0	LT	0	TH	0	TH	0
	RT	0	0	0	RT	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
RT 0	TH	13	24	0	U	5	RT	Drive 1		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	0	U	0	TH	0	38	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	0	0	0	U	0	LT	0	TH	RT	0	TH	0	LT	0	TH	0	TH	0
	RT	0	0	0	RT	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
RT 0	TH	40	0	0	TH	0	RT	Parkwoods Ln		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	0	TH	0	TH	0	76	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	0	0	0	TH	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
	RT	0	0	0	TH	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
RT 0	TH	40	0	0	TH	0	RT	Big Bear Ave		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	0	TH	0	TH	0	76	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	0	0	0	TH	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
	RT	0	0	0	TH	0	RT	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
RT 4	TH	33	3	0	TH	5	RT	Powell Rd		RT	0	TH	0	LT	0	TH	0	TH	0
	LT	0	0	0	TH	0	TH	0	0	RT	0	TH	0	LT	0	TH	0	TH	0
	TH	0	0	0	TH	0	TH	0	63	RT	0	TH	0	LT	0	TH	0	TH	0
	RT	0	0	0	TH	0	TH	0	0	RT	0	TH	0	LT	0	TH	0	TH	0

↑ N

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2036 Background Traffic Volumes										AM Peak Hour e=a(1+g) ^N	
Sawmill Parkway & Liberty Road Growth Rate: 3.0%					Powell Road Growth Rate: 2.0%						
Sawmill Parkway & Liberty Road Growth Rate: 2.5%					Seldom Seen Road Growth Rate: 2.5%						
RT	TH	LT	RT	TH	LT	TH	RT	TH	LT	TH	RT
79	1665	112	259	13	2	8	6	181	699		
LT	47	98	49	905	142	1	14	43	279	268	506
TH	98	136	TH	311	RT	TH	RT	RT	279	LT	TH
RT	136		RT	42							
RT	TH	LT	0	TH	Sawmill Dr						
1	2094	6	23	16	1075	16					
TH	1	1	LT	TH	RT						
RT	18										
TH	LT	0	RT	LT	Drive 1						
2177	0	1138	0	TH	RT						
RT	TH	LT	18	RT							
28	2116	57	35	1	TH						
LT	19	20	1053	73	Big Bear Ave						
TH	8	LT	TH	RT							
RT	55										
RT	TH	LT	58	RT							
224	1671	356	137	293	TH						
LT	159	278	823	130	Powell Rd						
TH	318	LT	TH	RT							
RT	122										

↑ N

2036 Background Traffic Volumes									
R/RO @ Sawmill Dr									
RT	TH	LT	72	RT					
79	1665	112	259	45	TH	Seldom Seen Rd			
LT	47	98	49	905	142				
TH	98	136	TH	311	RT				
RT	136		RT	42					
RT	TH	LT	7	RT					
1	2100	x	x	x	TH	Sawmill Dr			
TH	x	x	x	1089	22				
RT	10		LT	TH	RT				
TH	LT	U	0	RT					
2104	0	6	23	0	TH	Drive 1			
TH	1	U	0	16	1122	0			
RT	8		TH	LT	TH	RT			

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2016 Background plus off-site										AM Peak Hour f=b+c5			
RT	TH	LT	RT	TH	LT	RT	TH	LT	TH	RT	TH	RT	TH
44	938	62	159	13	2	8	13	1	183	0	0	103	387
LT	29	29	513	81	RT	TH	10	29	TH	220	0	RT	28
TH	61	RT	TH	TH	RT	TH	192	LT	RT	RT	0	RT	174
RT	84		RT	RT		RT	43					LT	280
RT	TH	LT	RT	TH	LT	RT	TH	LT	TH	RT	TH	RT	TH
1	1159	24	57	16	595	55							
LT	3	LT	TH	TH	RT								
TH	1	RT											
RT	18												
TH	TH	LT	TH	TH	LT	TH	TH	LT	TH	TH	TH	TH	TH
1239	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	TH	LT	TH	TH	LT	TH	TH	LT	TH	TH	TH	TH	TH
0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	TH	LT	TH	TH	LT	TH	TH	LT	TH	TH	TH	TH	TH
0	0	0	0	0	0	0	0	0	0	0	0	0	0
RT	TH	LT	RT	TH	LT	RT	TH	LT	TH	RT	TH	RT	TH
16	1206	32	35	11	622	41							
LT	19	LT	TH	TH	RT								
TH	8	RT											
RT	55												
RT	TH	LT	RT	TH	LT	RT	TH	LT	TH	RT	TH	RT	TH
127	954	199	92	111	154	489	72						
LT	111	LT	TH	TH	RT								
TH	214	RT											
RT	82												

Off site consists of Day care

Drive 2

Bunker Lane

Liberty Rd

N

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2016 Full Build with proposed access										AM Peak Hour fj=bt+c+d5			
RT		TH	LT	52	RT	TH	Seldom Seen Rd	RT	TH	LT	12	RT	TH
44		954	77	177	LT	13	2	8	22	LT	163	TH	387
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	25	RT	TH	Sawmill Dr	RT	TH	LT	227	0	0
1		1220	#VALUE!	#####	#####	LT	634	49	RT	TH	227	0	0
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	12	RT	TH	Drive 1	RT	TH	LT	163	TH	387
0		1182	42	6	84	LT	665	64	RT	TH	51	1	23
LT		TH	LT	3	U	LT	665	64	RT	TH	51	1	23
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	18	RT	TH	Big Bear Ave	RT	TH	LT	163	TH	387
16		1246	32	35	LT	11	698	41	RT	TH	51	1	23
LT		TH	LT	19	LT	TH	RT		LT	85	TH	227	0
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	47	RT	TH	Powell Rd	RT	TH	LT	163	TH	387
131		987	202	92	LT	154	552	72	RT	TH	51	1	23
LT		TH	LT	119	LT	TH	RT		LT	85	TH	227	0
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	197	RT	TH	Powell Rd	RT	TH	LT	163	TH	387
131		987	202	92	LT	154	552	72	RT	TH	51	1	23
LT		TH	LT	119	LT	TH	RT		LT	85	TH	227	0
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0
RT		TH	LT	197	RT	TH	Powell Rd	RT	TH	LT	163	TH	387
131		987	202	92	LT	154	552	72	RT	TH	51	1	23
LT		TH	LT	119	LT	TH	RT		LT	85	TH	227	0
TH		64	87	30	522	108	RT	TH	195	RT	51	1	23
RT				LT	TH	RT		LT	85	TH	227	0	0

↑ N

Background plus off-site with proposed access										AM Peak Hour g=e+d3			
2036													
RT	TH	LT	72	RT	TH	LT	11	RT	TH	LT	274	RT	TH
	79	1688	112	45	TH	260	LT	259	TH	18	46	LT	506
TH	99	99	51	LT	TH	920	145	10	TH	340	0	RT	TH
	RT	138	RT	TH	RT	TH	RT	314	RT	0	RT	283	LT
RT	TH	LT	19	RT	TH	LT	11	RT	TH	LT	274	RT	TH
	1	2126	44	TH	TH	1097	40	14	TH	340	0	RT	TH
TH	2104	26	6	LT	TH	1140	36	10	TH	340	0	RT	TH
	RT	8	RT	TH	RT	TH	RT	44	RT	0	RT	283	LT
RT	TH	LT	18	RT	TH	LT	11	RT	TH	LT	274	RT	TH
	28	2152	57	35	LT	1107	73	10	TH	340	0	RT	TH
TH	8	8	LT	TH	RT	TH	RT	314	RT	0	RT	283	LT
	RT	55	RT	TH	RT	TH	RT	44	RT	0	RT	283	LT
RT	TH	LT	62	RT	TH	LT	11	RT	TH	LT	274	RT	TH
	228	1701	358	137	LT	1107	73	10	TH	340	0	RT	TH
TH	164	164	LT	TH	RT	TH	RT	314	RT	0	RT	283	LT
	RT	122	RT	TH	RT	TH	RT	44	RT	0	RT	283	LT

Off site consists of Day care and office

← N

2036 Full build with proposed access										AM Peak Hour g1=g+d5			
RT 0	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	79	170.4	127	46	278	1.3	2	8	23	264	11	RT
	LT	47	102	52	929	172	RT	LT	10	51	1	23	TH
	RT	141						TH	317	86	RT	0	TH
										Bunker Lane			
RT 1	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	1	216.3	0	0	1126	5.4	0	10	51	1	23	TH
	LT	0	102	52	929	172	RT	LT	10	51	1	23	TH
	RT	141						TH	317	86	RT	0	TH
										Sawmill Dr			
RT 0	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	211.7	50	6	86	16	Drive 1	LT	3	0	16	1178	7.4
	LT	1	TH	1	U	0	TH	TH	1	U	0	TH	RT
	RT	8						RT					
										Off site consists of Day care and office			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH	TH	8	LT	TH	RT	RT
	RT	55						RT					
										Powell Rd			
RT 232	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	232	1734	361	137	67	293	137	137	278	931	130	RT
	LT	172	TH	318	LT	TH	TH	TH	172	TH	TH	RT	RT
	RT	122											
										Liberty Rd			
RT 28	TH	LT	TH	LT	TH	LT	TH	LT	TH	TH	TH	TH	TH
	RT	28	2192	57	35	18	Big Bear Ave	LT	19	20	1183	73	RT
	LT	19	TH	8	LT	TH	TH						

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2012 Count Volumes (5:00-6:00)										PM Peak Hour a			
RT 21	TH 626	LT 92	RT 72	TH 231	LT 21	RT 21	TH 1	LT 25	TH 282	RT 41	TH 359	LT X	TH 103
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 163
RT 87	TH 656	LT 250	RT 68	TH 1378	LT 7	RT 1398	TH 0	LT 12	TH 35	RT 90	TH 19	LT 15	TH 16

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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2016 Background Traffic Volumes Sawmill Parkway & Liberty Road												PM Peak Hour $b = a(1+g)^N$	
Sawmill Parkway				Liberty Road				Powell Road				Growth Rates	
3.0%				2.0%				2.5%					
RT	TH	LT	95	RT	TH	LT	95	RT	TH	LT	95	RT	TH
24	693	104	79	TH	339	TH	29	TH	396	TH	105	302	183
LT	52	86	1253	243	LT	25	43	0	28	TH	370	RT	114
TH	96	LT	TH	RT	TH	311	LT	TH	RT	TH	RT	200	472
RT	75	RT	75	RT	RT	41	RT	RT	RT	RT	RT	RT	TH
<div> <div>Site</div> <div>Drive 2</div> <div>Liberty Rd</div> </div>													
RT	TH	LT	7	RT	TH	LT	7	RT	TH	LT	7	RT	TH
6	1014	3	12	LT	35	1570	90	LT	TH	RT	1017	x	x
TH	2	LT	TH	RT	TH	17	RT	TH	RT	TH	TH	TH	TH
<div> <div>Site</div> <div>Drive 1</div> <div>Liberty Rd</div> </div>													
TH	LT	RT	LT	TH	RT	LT	TH	RT	TH	LT	TH	TH	TH
1047	1711	TH	RT	TH	RT	TH	RT	TH	RT	TH	TH	TH	TH
TH	19	RT	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
24	1001	18	53	LT	53	1660	77	LT	TH	RT	1024	0	35
TH	20	LT	TH	RT	TH	RT	TH	RT	TH	RT	TH	TH	TH
RT	34	RT	TH	RT	TH	RT	TH	RT	TH	RT	TH	TH	TH
<div> <div>Site</div> <div>Drive 1</div> <div>Liberty Rd</div> </div>													
RT	TH	LT	129	RT	TH	LT	129	RT	TH	LT	129	RT	TH
98	738	281	262	TH	TH	TH	262	TH	TH	TH	1024	0	35
TH	318	LT	201	LT	TH	TH	201	LT	TH	TH	TH	TH	TH
RT	92	RT	355	TH	RT	RT	355	TH	RT	RT	TH	TH	TH

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2016 Background Traffic Volumes R/RO @ Sawmill Dr											
RT	TH	LT	95	RT	TH	LT	95	RT	TH	LT	95
24	693	104	79	TH	339	TH	29	TH	396	TH	105
LT	52	86	1253	243	LT	25	43	0	28	TH	370
TH	96	LT	TH	RT	TH	311	LT	TH	RT	TH	RT
RT	75	RT	75	RT	RT	41	RT	RT	RT	RT	RT
<div> <div>Site</div> <div>Drive 2</div> <div>Liberty Rd</div> </div>											
RT	TH	LT	7	RT	TH	LT	7	RT	TH	LT	7
6	1017	x	x	LT	35	1575	93	LT	TH	RT	1017
TH	2	LT	TH	RT	TH	17	RT	TH	RT	TH	TH
<div> <div>Site</div> <div>Drive 1</div> <div>Liberty Rd</div> </div>											
TH	LT	RT	LT	TH	RT	LT	TH	RT	TH	LT	TH
1024	1711	TH	RT	TH	RT	TH	RT	TH	RT	TH	TH
TH	19	RT	TH	TH	TH	TH	TH	TH	TH	TH	TH
24	1001	18	53	LT	53	1679	77	LT	TH	RT	1024
TH	20	LT	TH	RT	TH	RT	TH	RT	TH	RT	TH
RT	34	RT	TH	RT	TH	RT	TH	RT	TH	RT	TH
<div> <div>Site</div> <div>Drive 1</div> <div>Liberty Rd</div> </div>											
RT	TH	LT	129	RT	TH	LT	129	RT	TH	LT	129
98	738	281	262	TH	TH	TH	262	TH	TH	TH	1024
TH	318	LT	201	LT	TH	TH	201	LT	TH	TH	1024
RT	92	RT	355	TH	RT	RT	355	TH	RT	RT	1024

Off site: Office and Day care Trip Distribution - Primary Trips Inbound														PM Peak Hour c1			
RT		TH	LT	RT		TH	LT	RT		TH	LT	RT		TH	LT	TH	
RT		25%		RT		2%		RT		0%		RT		4%		7%	
TH			2%	TH			2%	TH			2%	TH					
RT			2%	RT			2%	RT			2%	RT					
RT		29%	0%	RT				RT				RT					
TH				TH				TH				TH					
LT				LT				LT				LT					
TH		29%	0%	TH				TH				TH					
RT				RT				RT				RT					
TH				TH				TH				TH					
LT				LT				LT				LT					
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TH				TH				TH									

Off site: Office and Day care										PM Peak Hour			
Trip Distribution - Primary Trips Outbound										c2			
RT	TH	LT	RT	TH	LT	Seldom Seen Rd	RT	TH	LT	RT	TH	RT	TH
LT	TH	RT	LT	TH	RT	4%	25%	4%	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	4%	25%	4%	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	20%	RT		LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	0%			LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	13%	TH	RT	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	13%	TH	RT	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	60%	LT	Drive 1	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	U	LT	TH	RT	LT	TH	LT	TH
RT	TH	RT	LT	TH	RT	60%	LT	Big Bear Ave	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	50%	4%	Powell Rd	LT	TH	RT	LT	TH
RT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH



[illegible]

[illegible]

2016 Total off site trips										PM Peak Hour c5=c3+c4									
Seldom Seen					Sawmill Dr					Bunker Lane					Drive 2				
RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	TH	LT
0	15	0	1	LT	0	16	3	RT	0	0	0	5	LT	0	0	0	0	0	0
TH	1	LT	TH	RT	TH	1	LT	TH	RT	TH	3	LT	RT	TH	0	0	0	0	0
RT	1	TH	RT	TH	RT	1	TH	RT	TH	RT	1	TH	RT	TH	0	0	0	0	0
22 RT					35 RT					0 RT					0 RT				
RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	TH	LT
0	0	17	39	LT	0	0	0	LT	0	0	0	0	0	0	0	0	0	0	0
TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	0	0	0
RT	0	TH	RT	TH	RT	0	TH	RT	TH	RT	0	TH	RT	TH	0	0	0	0	0
0 RT					0 RT					0 RT					0 RT				
RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	TH	LT
0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	0	0	0
RT	0	TH	RT	TH	RT	0	TH	RT	TH	RT	0	TH	RT	TH	0	0	0	0	0
0 RT					0 RT					0 RT					0 RT				
RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	TH	LT
0	39	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	0	0	0
RT	0	TH	RT	TH	RT	0	TH	RT	TH	RT	0	TH	RT	TH	0	0	0	0	0
2 RT					0 RT					0 RT					0 RT				
RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	RT	TH	RT	TH	LT	TH	LT
4	33	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	LT	TH	RT	TH	0	0	0	0
RT	0	TH	RT	TH	RT	0	TH	RT	TH	RT	0	TH	RT	TH	0	0	0	0	0

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2016 Total off site trips with proposed access												PM Peak Hour c6=c3+c4			
RT	TH	LT	0	RT	0	TH	0	RT	0	TH	0	RT	0	TH	0
	LT	0	1	LT	0	TH	0	LT	0	TH	0	LT	0	TH	0
	TH	1	3	TH	16	TH	3	TH	0	TH	0	TH	0	TH	0
	RT	1	1	LT	3	TH	RT	RT	1	TH	RT	RT	1	TH	RT
Seldom Seen Rd															
RT	TH	LF	0	TH	13	TH	0	TH	0	TH	0	TH	0	TH	0
	LT	0	0	LF	0	TH	0	LF	0	TH	0	LF	0	TH	0
	TH	0	0	LF	0	TH	0	LF	0	TH	0	LF	0	TH	0
	RT	0	0	LF	0	TH	0	LF	0	TH	0	LF	0	TH	0
Sawmill Dr															
RT	TH	U	0	TH	8	TH	0	TH	0	TH	0	TH	0	TH	0
	LT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	TH	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	RT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
Drive 1															
RT	TH	U	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	LT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	TH	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	RT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
Big Bear Ave															
RT	TH	U	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	LT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	TH	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	RT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
Powell Rd															
RT	TH	U	0	TH	2	TH	0	TH	0	TH	0	TH	0	TH	0
	LT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	TH	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0
	RT	0	0	TH	0	TH	0	TH	0	TH	0	TH	0	TH	0



[illegible]

[illegible]

2036 Total off site trips										PM Peak Hour d3=d1+d2			
RT		TH	LT	0	RT	TH	LT	0	RT	TH	LT	0	RT
0		18	0	2	LT	0	0	0	0	0	0	0	0
TH		1	1	6	TH	5	RT	0	0	0	0	0	0
RT		1	1	1	LT	5	RT	0	0	0	0	0	0
RT		TH	LT	28	RT	TH	LT	0	0	0	0	0	0
0		21	0	0	TH	18	15	0	0	0	0	0	0
TH		TH	LT	0	TH	18	15	0	0	0	0	0	0
RT		0	0	0	LT	0	0	0	0	0	0	0	0
RT		TH	LT	18	RT	TH	LT	0	0	0	0	0	0
0		0	21	0	0	0	0	0	0	0	0	0	0
LT		0	0	0	LT	0	0	0	0	0	0	0	0
TH		0	0	0	TH	0	0	0	0	0	0	0	0
RT		0	0	0	RT	0	0	0	0	0	0	0	0
RT		TH	LT	0	RT	TH	LT	0	0	0	0	0	0
0		84	0	0	LT	0	0	0	0	0	0	0	0
LT		0	0	0	LT	0	0	0	0	0	0	0	0
TH		0	0	0	TH	0	0	0	0	0	0	0	0
RT		0	0	0	RT	0	0	0	0	0	0	0	0
RT		TH	LT	0	RT	TH	LT	0	0	0	0	0	0
0		84	0	0	LT	0	0	0	0	0	0	0	0
LT		0	0	0	LT	0	0	0	0	0	0	0	0
TH		0	0	0	TH	0	0	0	0	0	0	0	0
RT		0	0	0	RT	0	0	0	0	0	0	0	0
RT		TH	LT	3	RT	TH	LT	0	0	0	0	0	0
8		70	6	0	LT	0	0	0	0	0	0	0	0
TH		0	0	0	TH	0	0	0	0	0	0	0	0
RT		0	0	0	RT	0	0	0	0	0	0	0	0

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13 of 20

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5/6/2015
14 of 20

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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

Site										PM Peak Hour d5=d3+d4									
Total site trips																			
RT	TH	LT	18	RT	TH	LT	3	TH	RT	TH	LT	0	RT	TH	LT	0	RT	TH	LT
	TH	LT	21	TH	LT	21	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	2	TH	LT	2	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
RT	TH	LT	17	RT	TH	LT	0	TH	RT	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
RT	TH	LT	12	RT	TH	LT	0	TH	RT	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
RT	TH	LT	91	RT	TH	LT	0	TH	RT	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
RT	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
RT	TH	LT	9	RT	TH	LT	0	TH	RT	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH
	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH	LT	0	TH

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Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2036 Background Traffic Volumes										PM Peak Hour e=af(1+g)/N	
Sawmill Parkway & Liberty Road Growth Rate: 3.0%					Powell Road Growth Rate: 2.0%						
Sawmill Parkway & Liberty Road Growth Rate: 2.5%					Seldom Seen Road Growth Rate: 2.5%						
RT	TH	LT	RT	TH	LT	TH	LT	TH	LT	TH	LT
43	1252	187	43	1252	187	43	1252	187	43	1252	187
LT	85	154	2267	439	RT	LT	85	154	2267	439	RT
TH	157	RT	123	RT	607	TH	157	RT	123	607	TH
RT	123	RT	123	RT	607	RT	123	RT	123	607	RT
RT	TH	LT	0	TH	Sawmill Dr	RT	TH	LT	0	TH	Sawmill Dr
6	1832	3	12	LT	90	6	1832	3	12	LT	90
LT	5	35	2836	90	RT	LT	5	35	2836	90	RT
TH	2	LT	TH	RT	RT	TH	2	LT	TH	RT	RT
RT	17	RT	17	RT	RT	RT	17	RT	17	RT	RT
TH	LT	RT	LT	Drive 1	Drive 1	TH	LT	RT	LT	Drive 1	Drive 1
1890	X	3090	X	RT	RT	1890	X	3090	X	RT	RT
TH	LT	RT	LT	RT	RT	TH	LT	RT	LT	RT	RT
43	1807	33	53	LT	Big Bear Ave	43	1807	33	53	LT	Big Bear Ave
LT	40	96	2998	138	RT	LT	40	96	2998	138	RT
TH	20	LT	TH	RT	RT	TH	20	LT	TH	RT	RT
RT	34	RT	34	RT	RT	RT	34	RT	34	RT	RT
RT	TH	LT	RT	TH	Powell Rd	RT	TH	LT	RT	TH	Powell Rd
177	1334	508	299	LT	228	177	1334	508	299	LT	228
LT	528	433	2234	228	RT	LT	528	433	2234	228	RT
TH	473	LT	TH	RT	RT	TH	473	LT	TH	RT	RT
RT	137	RT	137	RT	RT	RT	137	RT	137	RT	RT

2036 Background Traffic Volumes									
R/O @ Sawmill Dr									
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT
43	1252	187	43	1252	187	43	1252	187	43
LT	85	154	2267	439	RT	LT	85	154	2267
TH	157	RT	123	RT	607	TH	157	RT	123
RT	123	RT	123	RT	607	RT	123	RT	123
RT	TH	LT	0	TH	Sawmill Dr	RT	TH	LT	0
6	1832	3	12	LT	90	6	1832	3	12
LT	5	35	2836	90	RT	LT	5	35	2836
TH	2	LT	TH	RT	RT	TH	2	LT	TH
RT	17	RT	17	RT	RT	RT	17	RT	17
TH	LT	RT	LT	Drive 1	Drive 1	TH	LT	RT	LT
1890	X	3090	X	RT	RT	1890	X	3090	X
TH	LT	RT	LT	RT	RT	TH	LT	RT	LT
43	1807	33	53	LT	Big Bear Ave	43	1807	33	53
LT	40	96	2998	138	RT	LT	40	96	2998
TH	20	LT	TH	RT	RT	TH	20	LT	TH
RT	34	RT	34	RT	RT	RT	34	RT	34
RT	TH	LT	RT	TH	Powell Rd	RT	TH	LT	RT
177	1334	508	299	LT	228	177	1334	508	299
LT	528	433	2234	228	RT	LT	528	433	2234
TH	473	LT	TH	RT	RT	TH	473	LT	TH
RT	137	RT	137	RT	RT	RT	137	RT	137

Seldom Seen Acres Senior Living
Traffic Impact Study
Traffic Volume Calculations

2016 Background plus off-site										PM Peak Hour f=b+c5			
Background					Off-site					Liberty Rd			
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	RT	TH	TH
24	708	104	245	1	25	34	34	34	107	117	107	117	302
LT	52	89	1269	246	RT	TH	TH	TH	RT	TH	RT	TH	TH
TH	97	LT	TH	RT	TH	TH	TH	TH	RT	TH	RT	TH	TH
RT	76	RT	TH	RT	TH	TH	TH	TH	RT	TH	RT	TH	TH
Sawmill Dr					Bunker Lane					Drive 2			
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	RT	TH	TH
6	1014	20	51	125	25	43	43	43	377	0	377	0	472
LT	5	35	1570	125	TH	TH	TH	TH	RT	TH	RT	TH	TH
TH	2	LT	TH	RT	TH	TH	TH	TH	RT	TH	RT	TH	TH
RT	17	RT	TH	RT	TH	TH	TH	TH	RT	TH	RT	TH	TH
Drive 1					Off site consists of Day care					Liberty Rd			
TH	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	RT	TH	TH
1086	0	0	0	1746	0	1746	0	1746	0	1746	0	1746	0
LT	0	0	0	1746	0	1746	0	1746	0	1746	0	1746	0
TH	0	0	0	1746	0	1746	0	1746	0	1746	0	1746	0
RT	0	0	0	1746	0	1746	0	1746	0	1746	0	1746	0
Big Bear Ave					Powell Rd					Liberty Rd			
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	RT	TH	TH
24	1040	18	53	1695	77	1695	77	1695	77	1695	77	1695	77
LT	40	20	34	1695	77	1695	77	1695	77	1695	77	1695	77
TH	20	34	1695	77	1695	77	1695	77	1695	77	1695	77	77
RT	34	1695	77	1695	77	1695	77	1695	77	1695	77	1695	77
Powell Rd					Liberty Rd					Liberty Rd			
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	RT	TH	TH
102	771	284	201	126	126	126	126	126	126	126	126	126	126
LT	358	240	1266	126	126	126	126	126	126	126	126	126	126
TH	318	126	1266	126	126	126	126	126	126	126	126	126	126
RT	92	126	1266	126	126	126	126	126	126	126	126	126	126

↑ N

2016 Full Build with proposed access																PM Peak Hour f1=b+c+d5									
RT		TH	LT	113	RT	Seldom Seen Rd		RT	TH	LT	29	RT	TH	RT	TH	TH	TH								
24		719	114	82	266	LT		21	1	25	40	LT	0	0	411	0	0								
LT		52	92	92	1289	268	RT	RT	LT	25	83	0	44	TH	394	0	0								
TH		99	78	LT	TH	TH	RT	TH	TH	320	LT	TH	RT	RT	0	0	0								
RT									RT	70															
RT		TH	LT	37	RT	TH	TH	Off site consists of Day care																	
6		1068	####	####	####	LT	Sawmill Dr	RT	TH	TH															
LT		####	####	####	####	LT		1611	114	RT															
TH		####	####	####	####	TH	RT	1611	114	TH															
RT		10																							
RT		0	1042	33	3	124	LT	20	RT																
LT		5						0	35	1717	49														
TH		2						0	35	1717	49														
RT		8						0	35	1717	49														
						</																			

← N

2036 Background plus off-site with proposed access											PM Peak Hour g=e+d3
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
43	1270	187	402	130	156	21	21	25	556	26	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
6	1856	10	2871	108	35	35	35	3070	29	RT	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
0	1842	21	3	96	18	0	0	35	3070	29	RT
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
43	1891	33	53	15	19	43	43	3042	138	RT	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
185	1404	514	299	15	194	185	185	3042	138	RT	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
185	1404	514	299	15	194	185	185	3042	138	RT	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH
RT	TH	LT	RT	TH	LT	RT	TH	LT	RT	TH	TH
185	1404	514	299	15	194	185	185	3042	138	RT	TH
LT	85	160	2302	444	444	RT	TH	LT	33	43	LT
TH	158	160	2302	444	444	RT	TH	LT	515	0	TH
RT	124	160	2302	444	444	RT	TH	LT	42	0	LT
											TH

Liberty Rd

Drive 2

Bunker Lane

Sawmill Dr

Off site consists of Day care and office

Drive 1

Big Bear Ave

Powell Rd

↑ N

2036 Full build with proposed access										PM Peak Hour g1=g+d5			
RT		TH	LT	174	RT	TH	Seldom Seen Rd	RT	TH	LT	26	RT	TH
43		1281	197	133	TH	423	LT	21	1	25	39	LT	TH
		TH	85	163	2322	466	RT	RT	TH	594	0	0	342
		TH	160	LT	TH	TH	TH	TH	TH	RT	RT	TH	852
		RT	126	LT	TH	RT	RT	RT	TH	RT	RT	TH	TH
RT		TH	LT	52	RT	TH	TH	TH	TH	TH	TH	TH	TH
6		1890	0	0	TH	0	TH	TH	TH	TH	TH	TH	TH
		TH	0	0	TH	2899	117	RT	TH	TH	TH	TH	TH
		TH	0	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
		RT	10	RT	TH	RT	RT	RT	TH	TH	TH	TH	TH
RT		TH	LT	30	RT	TH	TH	TH	TH	TH	TH	TH	TH
0		1860	37	0	TH	0	TH	TH	TH	TH	TH	TH	TH
		TH	2	169	LT	Drive 1	TH	TH	TH	TH	TH	TH	TH
		TH	2	0	TH	35	3096	55	TH	TH	TH	TH	TH
		RT	8	U	LT	TH	TH	RT	TH	TH	TH	TH	TH
RT		TH	LT	19	RT	TH	TH	TH	TH	TH	TH	TH	TH
43		1982	33	53	LT	Big Bear Ave	TH	TH	TH	TH	TH	TH	TH
		TH	40	96	3094	138	TH	TH	TH	TH	TH	TH	TH
		TH	20	LT	TH	RT	TH	TH	TH	TH	TH	TH	TH
		RT	34	LT	TH	RT	TH	TH	TH	TH	TH	TH	TH
RT		TH	LT	197	RT	TH	TH	TH	TH	TH	TH	TH	TH
194		1480	520	389	TH	TH	TH	TH	TH	TH	TH	TH	TH
		TH	537	433	2314	228	TH	TH	TH	TH	TH	TH	TH
		TH	473	LT	TH	RT	TH	TH	TH	TH	TH	TH	TH
		RT	137	LT	TH	RT	TH	TH	TH	TH	TH	TH	TH

Off site consists of Day care and office

Liberty Rd

Drive 2

Bunker Lane

↑ N



A legacy of **experience**. A reputation for **excellence**.

APPENDIX C:

Signal Warrant Analyses

SIGNAL WARRANT WORKSHEET
OMUTCD Warrant 1
Liberty Road & Seldom Seen Road

2016 Background Traffic - No RT Reduction

CONDITION	# OF LANES	LIBERTY RD			SELDOM SEEN RD			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	1-WAY	1-WAY	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1			X			X	500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1							350	105	280	84	525	53	420	42
High Speed	2+							420	140	336	112	630	70	504	56
7-8 AM		434	490	924	202		202	YES	YES	YES	YES	YES	YES	YES	YES
8-9 AM		346	391	737	196		196	YES	YES	YES	YES	NO	YES	YES	YES
9-10 AM		300	281	580	151		151	YES	YES	YES	YES	NO	YES	NO	YES
10-11 AM		224	244	468	163		163	NO	YES	YES	YES	NO	YES	NO	YES
11-12 NOON		240	266	506	145		145	YES	NO	YES	YES	NO	YES	NO	YES
12-1 PM		250	222	472	152		152	NO	YES	YES	YES	NO	YES	NO	YES
1-2 PM		260	247	507	196		196	YES	YES	YES	YES	NO	YES	NO	YES
2-3 PM		315	316	631	194		194	YES	YES	YES	YES	NO	YES	YES	YES
3-4 PM		485	360	845	243		243	YES	YES	YES	YES	YES	YES	YES	YES
4-5 PM		562	409	971	254		254	YES	YES	YES	YES	YES	YES	YES	YES
5-6 PM		659	409	1068	322		322	YES	YES	YES	YES	YES	YES	YES	YES
6-7 PM		554	378	932	294		294	YES	YES	YES	YES	YES	YES	YES	YES
7-8 PM		388	239	627	247		247	YES	YES	YES	YES	NO	YES	YES	YES
Hours Met								11	12	13	13	5	13	8	13
Hours Warrant Met								10		13		5		8	
Warrant Satisfied ?								YES		YES		NO		YES	

Condition A : MET
Condition B : NOT MET
80% of Condition A and B : NOT APPLICABLE

Year 2012 Hourly volumes at Seldom Seen Road/Liberty Road			
Hour	Northbound	Southbound	Eastbound
7am-8am	385	440	175
8am-9am	307	351	170
9am-10am	266	252	131
10am-11am	199	219	141
11am-noon	213	239	126
noon-1pm	221	196	134
1pm-2pm	230	218	173
2pm-3pm	278	279	171
3pm-4pm	428	318	214
4pm-5pm	496	361	224
5pm-6pm	582	361	284
6pm-7pm	489	334	259
7pm-8pm	343	211	218

Projected Year 2016 No-Build Hourly volumes at Seldom Seen Road/Liberty Road			
Hour	Northbound	Southbound	Eastbound
7am-8am	434	490	202
8am-9am	346	391	196
9am-10am	300	281	151
10am-11am	224	244	163
11am-noon	240	266	145
noon-1pm	250	222	152
1pm-2pm	260	247	196
2pm-3pm	315	316	194
3pm-4pm	485	360	243
4pm-5pm	562	409	254
5pm-6pm	659	409	322
6pm-7pm	554	378	294
7pm-8pm	388	239	247

SIGNAL WARRANT WORKSHEET

Warrant 1 Seldom Seen Road & Bunker Drive

2016 BUILD - Estimated 8th High Hour (2-3PM): Not met

CONDITION	# OF LANES	SELDOM SEEN RD			BUNKER DRIVE			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	1-WAY	1-WAY	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1							500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1			X			X	350	105	280	84	525	53	420	42
High Speed	2+							420	140	336	112	630	70	504	56
7-8 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
8-9 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
9-10 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
10-11 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
11-12 NOON							0	NO	NO	NO	NO	NO	NO	NO	NO
12-1 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
1-2 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
2-3 PM		246	244	490	49		49	YES	NO	YES	NO	NO	NO	YES	YES
3-4 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
4-5 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
5-6 PM		415	412	827	83		83	YES	NO	YES	NO	YES	YES	YES	YES
6-7 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
7-8 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
Based on hourly variation at Seldom Seen/Liberty								2	0	2	0	1	1	2	2
59.30%								0		0		1		2	
Hours Met								Hours Warrant Met							
Warrant Satisfied ?								Warrant Satisfied ?							

Condition A : NOT MET
 Condition B : NOT MET
 80% of Condition A and B : NOT MET

SIGNAL WARRANT WORKSHEET

Warrant 1 Seldom Seen Road & Bunker Drive

2036 BUILD - Estimated 8th High Hour (2-3PM): NOT MET

CONDITION	# OF LANES	SELDOM SEEN RD			BUNKER DRIVE			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	1-WAY	1-WAY	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1							500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1			X			X	350	105	280	84	525	53	420	42
High Speed	2+							420	140	336	112	630	70	504	56
7-8 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
8-9 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
9-10 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
10-11 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
11-12 NOON							0	NO	NO	NO	NO	NO	NO	NO	NO
12-1 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
1-2 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
2-3 PM		370	365	735	49		49	YES	NO	YES	NO	YES	NO	YES	YES
3-4 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
4-5 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
5-6 PM		624	616	1240	83		83	YES	NO	YES	NO	YES	YES	YES	YES
6-7 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
7-8 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
Based on hourly variation at Seldom Seen/Liberty								2	0	2	0	2	1	2	2
59.30%								0		0		1		2	
Hours Met								NO		NO		NO		NO	
Hours Warrant Met															
Warrant Satisfied ?															

Condition A : NOT MET
Condition B : NOT MET
80% of Condition A and B : NOT MET

SIGNAL WARRANT WORKSHEET

Warrant 1 Seldom Seen Road & Bunker Drive

2036 BACKGROUND - Estimated 8th High Hour (2-3PM): NOT MET

CONDITION	# OF LANES	SELDOM SEEN RD			BUNKER DRIVE			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	1-WAY	1-WAY	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1							500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1			X			X	350	105	280	84	525	53	420	42
High Speed	2+							420	140	336	112	630	70	504	56
7-8 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
8-9 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
9-10 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
10-11 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
11-12 NOON							0	NO	NO	NO	NO	NO	NO	NO	NO
12-1 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
1-2 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
2-3 PM		365	345	710	47		47	YES	NO	YES	NO	YES	NO	YES	YES
3-4 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
4-5 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
5-6 PM		615	582	1197	80		80	YES	NO	YES	NO	YES	YES	YES	YES
6-7 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
7-8 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
Based on hourly variation at Seldom Seen/Liberty								2	0	2	0	2	1	2	2
59.30%								0		0		1		2	
Hours Met								NO		NO		NO		NO	
Hours Warrant Met															
Warrant Satisfied ?															

Condition A : NOT MET
Condition B : NOT MET
80% of Condition A and B : NOT MET

SIGNAL WARRANT WORKSHEET

Warrant 1 Sawmill Parkway & Drive 1

2016 BUILD - Estimated 8th High Hour (2-3PM): MET

CONDITION	# OF LANES	SAWMILL PARKWAY			DRIVE 1			Condition A				Condition B			
		1-WAY	1-WAY	2-WAY	1-WAY	1-WAY	1-WAY	MAJ	MIN	MAJ	MIN	MAJ	MIN	MAJ	MIN
Standard	1							500	150	400	120	750	75	600	60
Standard	2+							600	200	480	160	900	100	720	80
High Speed	1						X	350	105	280	84	525	53	420	42
High Speed	2+			X				420	140	336	112	630	70	504	56
7-8 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
8-9 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
9-10 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
10-11 AM							0	NO	NO	NO	NO	NO	NO	NO	NO
11-12 NOON							0	NO	NO	NO	NO	NO	NO	NO	NO
12-1 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
1-2 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
2-3 PM		1081.632	639	1721	54		54	YES	NO	YES	NO	YES	YES	YES	YES
3-4 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
4-5 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
5-6 PM		1824	1078	2902	91		91	YES	NO	YES	YES	YES	YES	YES	YES
6-7 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
7-8 PM							0	NO	NO	NO	NO	NO	NO	NO	NO
Based on hourly variation at Seldom Seen/Liberty								2	0	2	1	2	2	2	2
59.3%								0		1		2		2	
Hours Met								NO		NO		NO		NO	
Hours Warrant Met															
Warrant Satisfied ?															

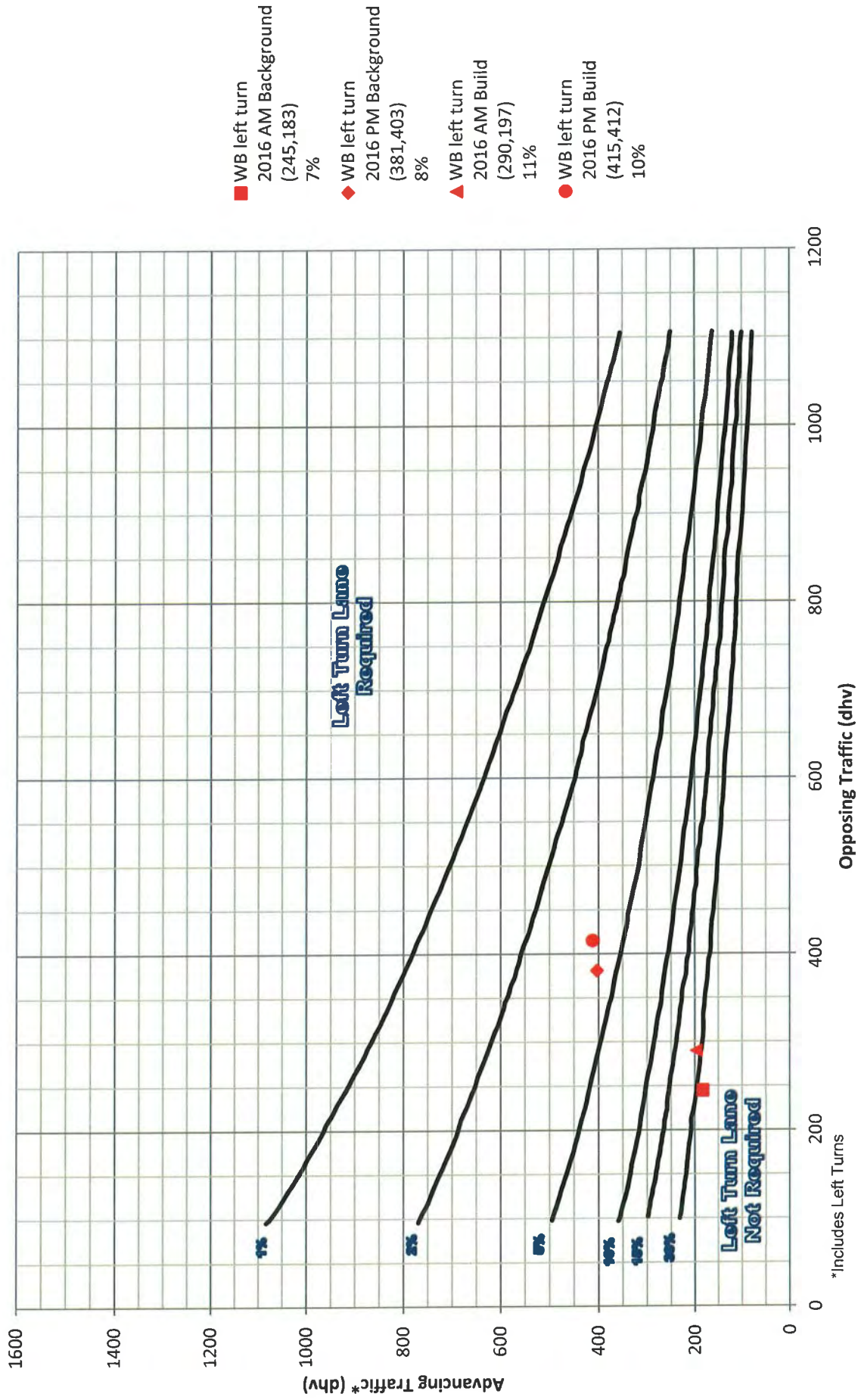


A legacy of experience. A reputation for excellence.

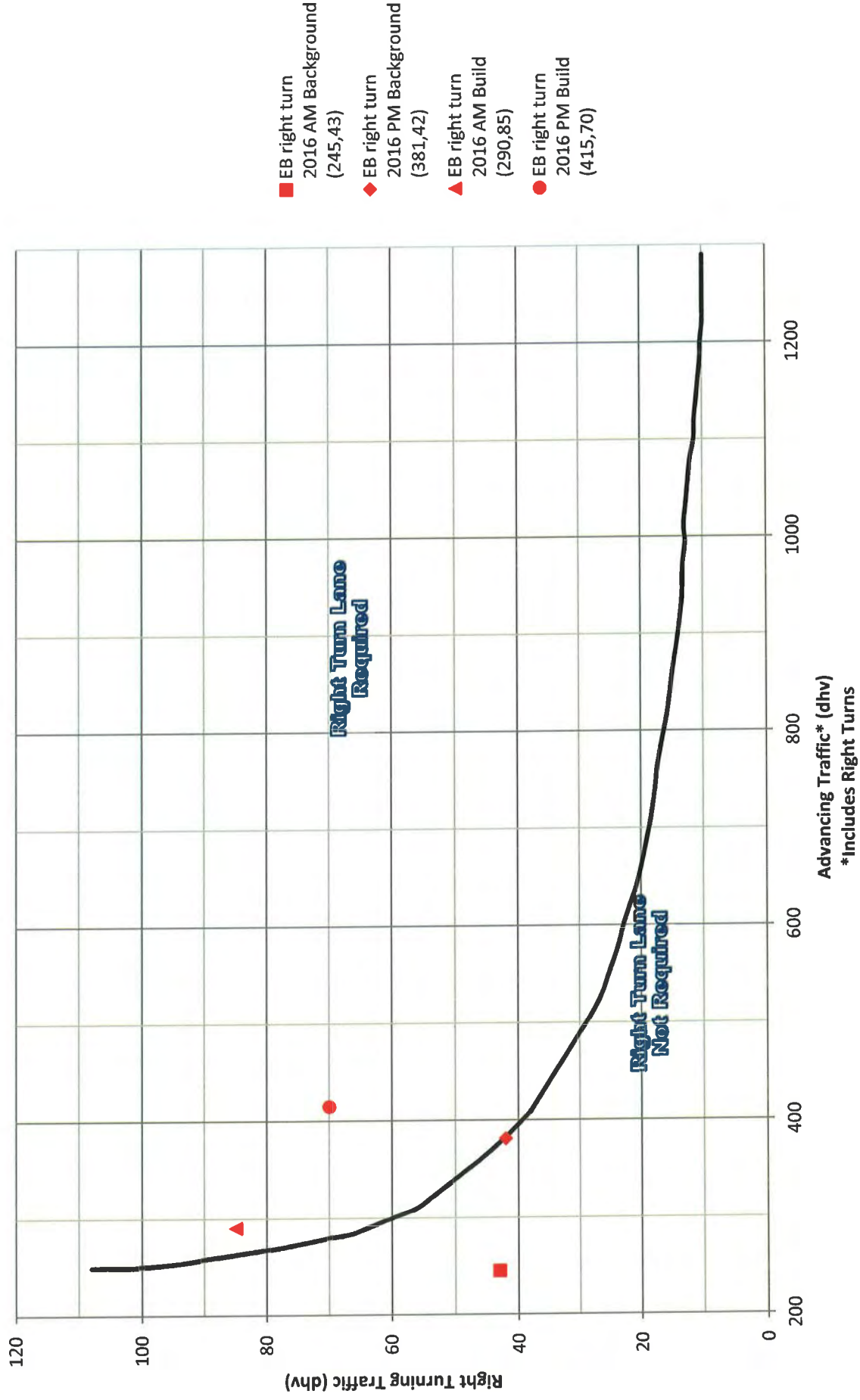
APPENDIX D:

Turn Lane Warrants / Length Calculations

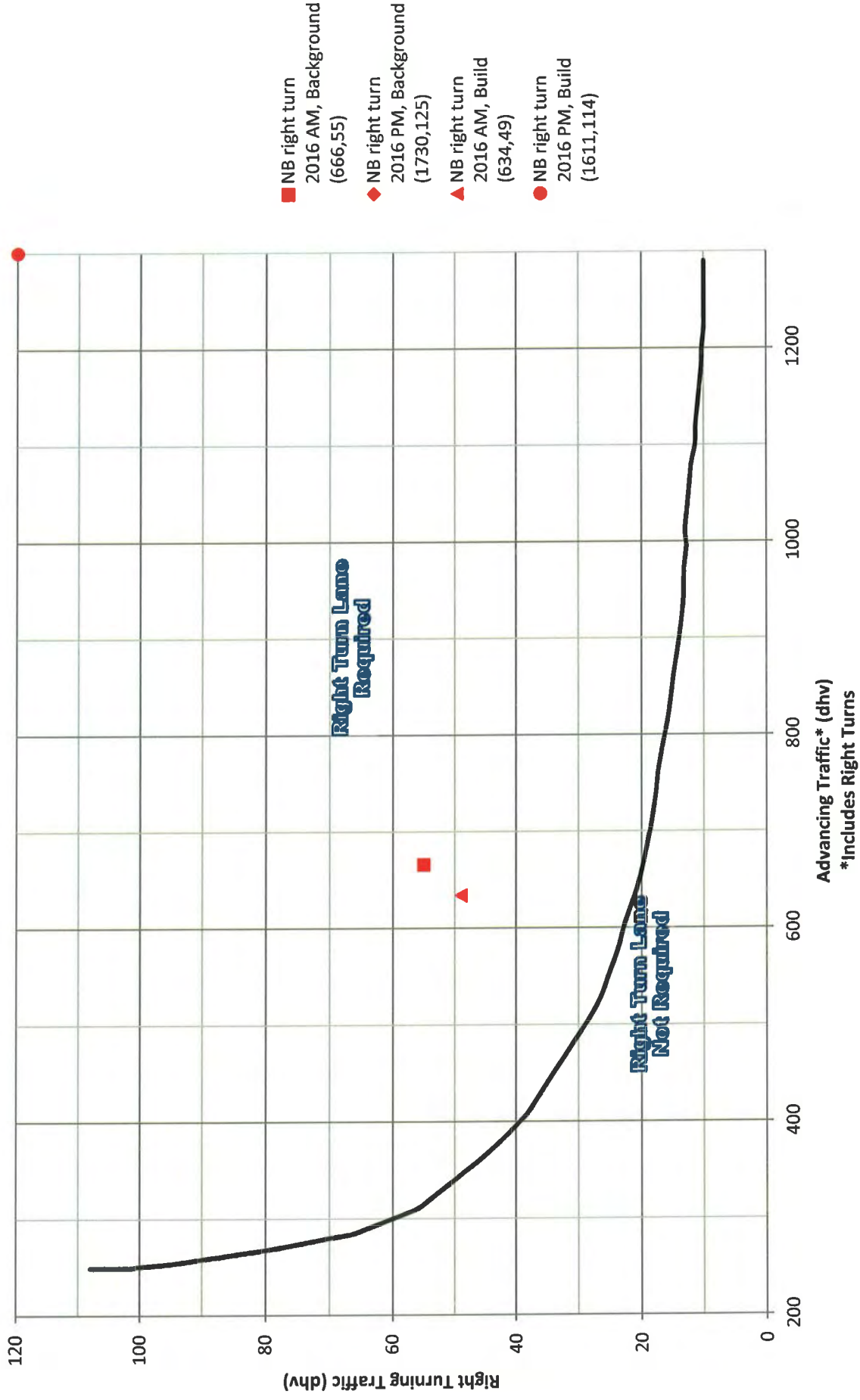
Seldom Seen Road @ Bunker Lane
2-Lane Highway Left Turn Lane Warrant
 >40 mph or 70 kph Posted Speed



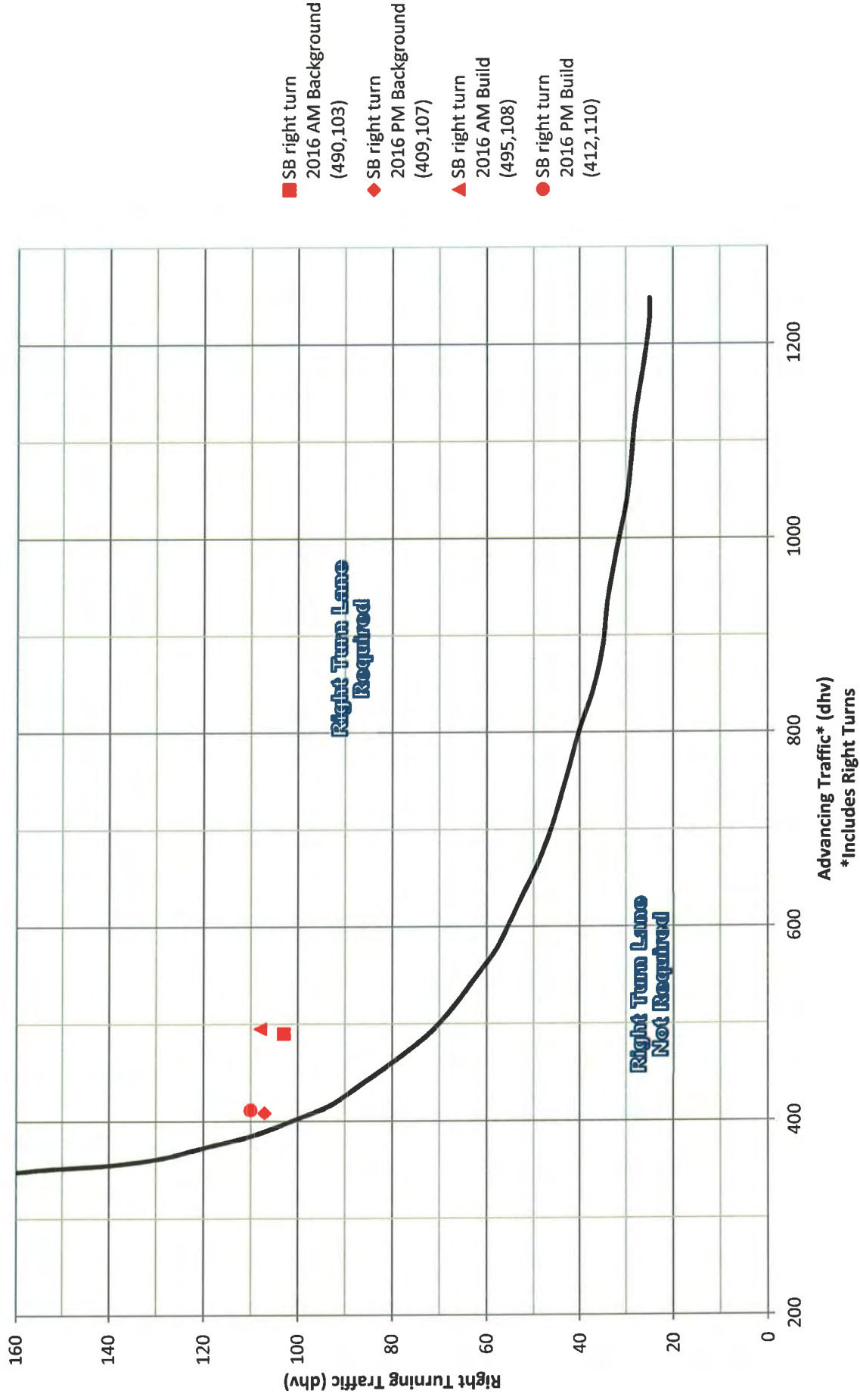
Seldom Seen Road @ Bunker Lane
2-Lane Highway Right Turn Lane Warrant
 >40 mph or 70 kph Posted Speed



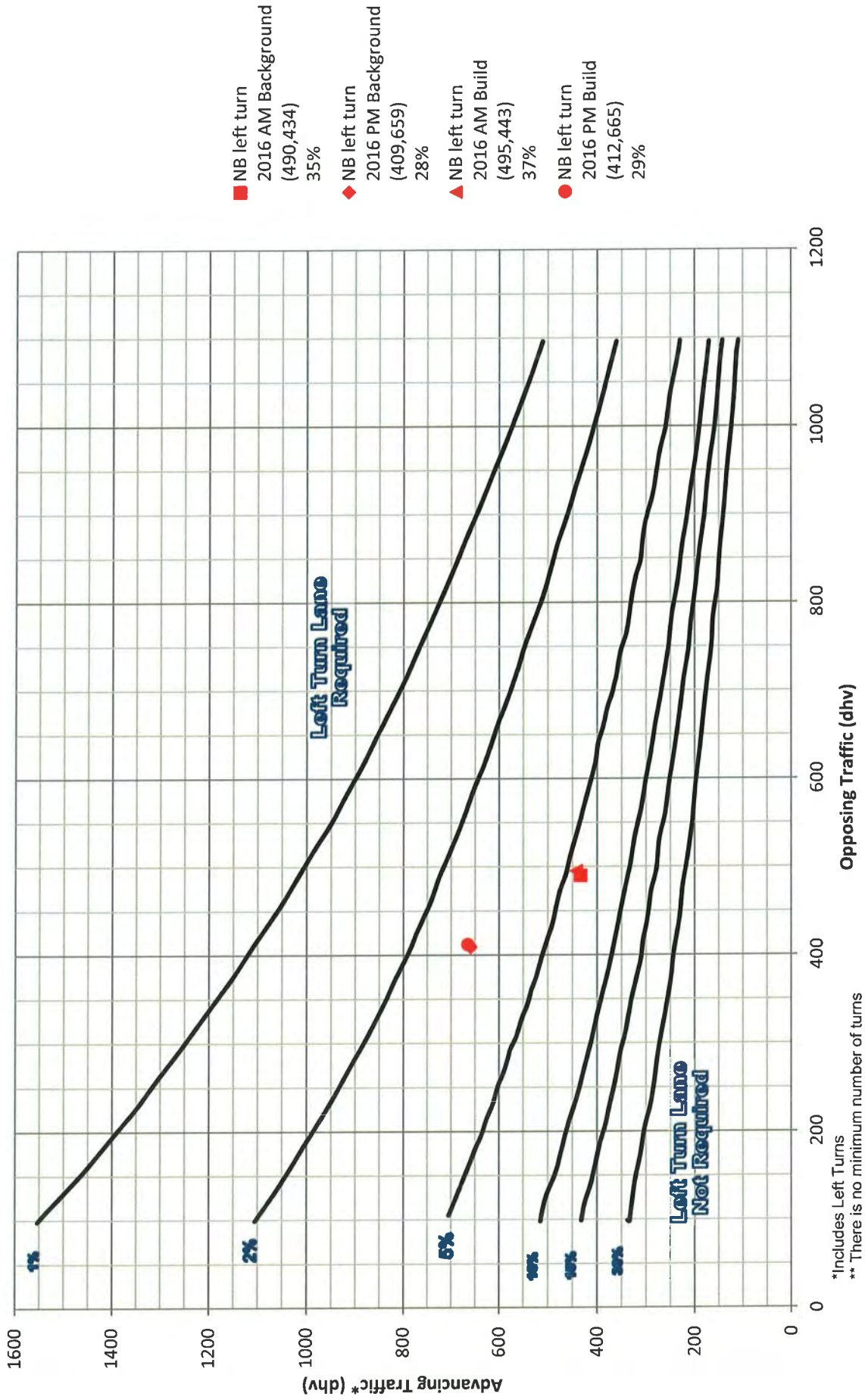
Sawmill Parkway @ Sawmill Drive 2-Lane Highway Right Turn Lane Warrant >40 mph or 70 kph Posted Speed



Seldom Seen Road @ Liberty Road
2-Lane Highway Right Turn Lane Warrant
 =<40 mph or 70 kph Posted Speed



Seldom Seen Road @ Liberty Road
2-Lane Highway Left Turn Lane Warrant
 =<40 mph or 70 kph Posted Speed



**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	318	vph	
Number of Through Lanes	2		
Turning Volume	164	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	34%		
Vehicles Per Cycle	2.3		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	175	feet	
No Block Turn Lane Length	225	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	473	vph	
Number of Through Lanes	2		
Turning Volume	532	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	53%		
Vehicles Per Cycle	8.9		
Storage Length	350	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	475	feet	
No Block Distance	325	feet	
No Block Turn Lane Length	475	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	318	vph	
Number of Through Lanes	2		
Turning Volume	172	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	2.4		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	175	feet	
No Block Turn Lane Length	225	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	473	vph	
Number of Through Lanes	2		
Turning Volume	540	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	53%		
Vehicles Per Cycle	9.0		
Storage Length	350	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	475	feet	
No Block Distance	325	feet	
No Block Turn Lane Length	475	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	954	vph	
Number of Through Lanes	2		
Turning Volume	127	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	3.5		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	987	vph	
Number of Through Lanes	2		
Turning Volume	131	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	3.6		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	500	feet	
No Block Turn Lane Length	500	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	771	vph	
Number of Through Lanes	2		
Turning Volume	102	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	3.4		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	847	vph	
Number of Through Lanes	2		
Turning Volume	111	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	3.7		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	500	feet	
No Block Turn Lane Length	500	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1701	vph	
Number of Through Lanes	2		
Turning Volume	228	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	6.3		
Storage Length	250	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	375	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1404	vph	
Number of Through Lanes	2		
Turning Volume	185	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	6.2		
Storage Length	250	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	375	feet	
No Block Distance	775	feet	
No Block Turn Lane Length	775	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1734	vph	
Number of Through Lanes	2		
Turning Volume	232	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	6.4		
Storage Length	250	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	375	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBRT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1480	vph	
Number of Through Lanes	2		
Turning Volume	194	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	12%		
Vehicles Per Cycle	6.5		
Storage Length	275	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	400	feet	
No Block Distance	825	feet	
No Block Turn Lane Length	825	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	954	vph	
Number of Through Lanes	2		
Turning Volume	199	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	17%		
Vehicles Per Cycle	2.8		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	771	vph	
Number of Through Lanes	2		
Turning Volume	284	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	27%		
Vehicles Per Cycle	4.7		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	987	vph	
Number of Through Lanes	2		
Turning Volume	202	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	17%		
Vehicles Per Cycle	2.8		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	500	feet	
No Block Turn Lane Length	500	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	847	vph	
Number of Through Lanes	2		
Turning Volume	290	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	26%		
Vehicles Per Cycle	4.8		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	500	feet	
No Block Turn Lane Length	500	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1701	vph	
Number of Through Lanes	2		
Turning Volume	358	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	17%		
Vehicles Per Cycle	5.0		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1404	vph	
Number of Through Lanes	2		
Turning Volume	514	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	27%		
Vehicles Per Cycle	8.6		
Storage Length	350	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	475	feet	
No Block Distance	775	feet	
No Block Turn Lane Length	775	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1734	vph	
Number of Through Lanes	2		
Turning Volume	361	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	17%		
Vehicles Per Cycle	5.0		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Powell Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1480	vph	
Number of Through Lanes	2		
Turning Volume	520	vph	
Number of Turning Lanes	2		
Design Condition	C	A, B, or C	
Turning Percentage	26%		
Vehicles Per Cycle	8.7		
Storage Length	350	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	475	feet	
No Block Distance	825	feet	
No Block Turn Lane Length	825	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	NBRT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1178	vph	
Number of Through Lanes	2		
Turning Volume	74	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	6%		
Vehicles Per Cycle	2.1		
Storage Length	100	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	550	feet	
No Block Turn Lane Length	550	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	NBRT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	3096	vph	
Number of Through Lanes	2		
Turning Volume	55	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	2%		
Vehicles Per Cycle	1.8		
Storage Length	100	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	1550	feet	
No Block Turn Lane Length	1550	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1182	vph	
Number of Through Lanes	2		
Turning Volume	42	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	3%		
Vehicles Per Cycle	1.2		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	550	feet	
No Block Turn Lane Length	550	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1042	vph	
Number of Through Lanes	2		
Turning Volume	36	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	3%		
Vehicles Per Cycle	1.2		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	600	feet	
No Block Turn Lane Length	600	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	2117	vph	
Number of Through Lanes	2		
Turning Volume	56	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	3%		
Vehicles Per Cycle	1.6		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	975	feet	
No Block Turn Lane Length	975	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Drive 1			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1860	vph	
Number of Through Lanes	2		
Turning Volume	40	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	2%		
Vehicles Per Cycle	1.3		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	975	feet	
No Block Turn Lane Length	975	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour

2016 with Site traffic

Sawmill Parkway & Drive 1			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	652	vph	
Number of Through Lanes	2		
Turning Volume	16	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	2%		
Vehicles Per Cycle	0.4		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	350	feet	
No Block Turn Lane Length	350	feet	

PM Peak Hour

2016 with Site traffic

Sawmill Parkway & Drive 1			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1716	vph	
Number of Through Lanes	2		
Turning Volume	35	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	2%		
Vehicles Per Cycle	1.2		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	975	feet	
No Block Turn Lane Length	975	feet	

AM Peak Hour

2036 with Site traffic

Sawmill Parkway & Drive 1			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1165	vph	
Number of Through Lanes	2		
Turning Volume	16	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	1%		
Vehicles Per Cycle	0.4		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	550	feet	
No Block Turn Lane Length	550	feet	

PM Peak Hour

2036 with Site traffic

Sawmill Parkway & Drive 1			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	3095	vph	
Number of Through Lanes	2		
Turning Volume	35	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	1%		
Vehicles Per Cycle	1.2		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	1550	feet	
No Block Turn Lane Length	1550	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Sawmill Drive			
Movement	NBRT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	1126	vph	
Number of Through Lanes	2		
Turning Volume	54	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	0.9		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Sawmill Drive			
Movement	NBRT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	2899	vph	
Number of Through Lanes	2		
Turning Volume	117	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	4%		
Vehicles Per Cycle	2.0		
Storage Length	100	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	513	vph	
Number of Through Lanes	2		
Turning Volume	29	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	275	feet	
No Block Turn Lane Length	275	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1269	vph	
Number of Through Lanes	2		
Turning Volume	89	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	3.0		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	725	feet	
No Block Turn Lane Length	725	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	522	vph	
Number of Through Lanes	2		
Turning Volume	30	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	275	feet	
No Block Turn Lane Length	275	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1289	vph	
Number of Through Lanes	2		
Turning Volume	92	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	3.1		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	725	feet	
No Block Turn Lane Length	725	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	920	vph	
Number of Through Lanes	2		
Turning Volume	51	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	1.4		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	929	vph	
Number of Through Lanes	2		
Turning Volume	52	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	1.4		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	2302	vph	
Number of Through Lanes	2		
Turning Volume	160	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	6%		
Vehicles Per Cycle	5.3		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	1250	feet	
No Block Turn Lane Length	1250	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	NBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	2322	vph	
Number of Through Lanes	2		
Turning Volume	163	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	5.4		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	1250	feet	
No Block Turn Lane Length	1250	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	938	vph	
Number of Through Lanes	2		
Turning Volume	62	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	6%		
Vehicles Per Cycle	1.7		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	708	vph	
Number of Through Lanes	2		
Turning Volume	104	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	13%		
Vehicles Per Cycle	3.5		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	450	feet	
No Block Turn Lane Length	450	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	954	vph	
Number of Through Lanes	2		
Turning Volume	77	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	2.1		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	719	vph	
Number of Through Lanes	2		
Turning Volume	114	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	14%		
Vehicles Per Cycle	3.8		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	450	feet	
No Block Turn Lane Length	450	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1688	vph	
Number of Through Lanes	2		
Turning Volume	112	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	6%		
Vehicles Per Cycle	3.1		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	775	feet	
No Block Turn Lane Length	775	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1704	vph	
Number of Through Lanes	2		
Turning Volume	127	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	3.5		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1270	vph	
Number of Through Lanes	2		
Turning Volume	187	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	13%		
Vehicles Per Cycle	6.2		
Storage Length	250	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	375	feet	
No Block Distance	725	feet	
No Block Turn Lane Length	725	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	SBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	1281	vph	
Number of Through Lanes	2		
Turning Volume	197	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	13%		
Vehicles Per Cycle	6.6		
Storage Length	275	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	400	feet	
No Block Distance	725	feet	
No Block Turn Lane Length	725	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	28	vph	
Number of Through Lanes	1		
Turning Volume	159	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	85%		
Vehicles Per Cycle	4.4		
Storage Length	175	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	300	feet	
No Block Distance	0	feet	
No Block Turn Lane Length	300	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	79	vph	
Number of Through Lanes	1		
Turning Volume	245	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	76%		
Vehicles Per Cycle	8.2		
Storage Length	325	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	450	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	450	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	29	vph	
Number of Through Lanes	1		
Turning Volume	177	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	86%		
Vehicles Per Cycle	4.9		
Storage Length	200	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	0	feet	
No Block Turn Lane Length	325	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	82	vph	
Number of Through Lanes	1		
Turning Volume	266	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	76%		
Vehicles Per Cycle	8.9		
Storage Length	350	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	475	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	475	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	45	vph	
Number of Through Lanes	1		
Turning Volume	260	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	85%		
Vehicles Per Cycle	7.2		
Storage Length	275	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	400	feet	
No Block Distance	50	feet	
No Block Turn Lane Length	400	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	46	vph	
Number of Through Lanes	1		
Turning Volume	278	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	86%		
Vehicles Per Cycle	7.7		
Storage Length	325	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	450	feet	
No Block Distance	50	feet	
No Block Turn Lane Length	450	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	130	vph	
Number of Through Lanes	1		
Turning Volume	402	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	76%		
Vehicles Per Cycle	13.4		
Storage Length	475	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	600	feet	
No Block Distance	175	feet	
No Block Turn Lane Length	600	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	133	vph	
Number of Through Lanes	1		
Turning Volume	423	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	76%		
Vehicles Per Cycle	14.1		
Storage Length	500	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	625	feet	
No Block Distance	175	feet	
No Block Turn Lane Length	625	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	61	vph	
Number of Through Lanes	1		
Turning Volume	29	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	32%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	100	feet	
No Block Turn Lane Length	175	feet	

PM Peak Hour			
2016 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	97	vph	
Number of Through Lanes	1		
Turning Volume	52	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	1.7		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	225	feet	

AM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	64	vph	
Number of Through Lanes	1		
Turning Volume	29	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	31%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	100	feet	
No Block Turn Lane Length	175	feet	

PM Peak Hour			
2016 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	99	vph	
Number of Through Lanes	1		
Turning Volume	52	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	34%		
Vehicles Per Cycle	1.7		
Storage Length	100	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	225	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	99	vph	
Number of Through Lanes	1		
Turning Volume	47	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	32%		
Vehicles Per Cycle	1.3		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	175	feet	

PM Peak Hour			
2036 w/o Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	158	vph	
Number of Through Lanes	1		
Turning Volume	85	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	2.8		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	200	feet	
No Block Turn Lane Length	275	feet	

AM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	102	vph	
Number of Through Lanes	1		
Turning Volume	47	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	32%		
Vehicles Per Cycle	1.3		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	150	feet	
No Block Turn Lane Length	175	feet	

PM Peak Hour			
2036 with Site traffic			
Sawmill Parkway & Seldom Seen Road			
Movement	EBLT		
Design Speed	45	mph	
Cycle Length	120	seconds	
Control (Stop or Signal)	Signal		
Through Volume	161	vph	
Number of Through Lanes	1		
Turning Volume	85	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	2.8		
Storage Length	150	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	275	feet	
No Block Distance	200	feet	
No Block Turn Lane Length	275	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	EBRT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	326	vph	
Number of Through Lanes	1		
Turning Volume	47	vph	
Number of Turning Lanes	1		
Design Condition	C	A, B, or C	
Turning Percentage	13%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	125	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

PM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	EBRT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	542	vph	
Number of Through Lanes	1		
Turning Volume	45	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	8%		
Vehicles Per Cycle	0.8		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

AM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	NBLT		
Design Speed	25	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	24	vph	
Number of Through Lanes	1		
Turning Volume	29	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	55%		
Vehicles Per Cycle	0.5		
Storage Length	50	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	100	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

PM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	NBLT		
Design Speed	25	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	48	vph	
Number of Through Lanes	1		
Turning Volume	83	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	63%		
Vehicles Per Cycle	1.4		
Storage Length	50	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	100	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour		
2016 w/o Site traffic		
Seldom Seen Road & Bunker Lane		
Movement	WBLT	
Design Speed	45	mph
Cycle Length	60	seconds
Control (Stop or Signal)	Stop	
Through Volume	170	vph
Number of Through Lanes	1	
Turning Volume	13	vph
Number of Turning Lanes	1	
Design Condition	B	A, B, or C
Turning Percentage	7%	
Vehicles Per Cycle	0.2	
Storage Length	50	feet
Deceleration/Taper	175	feet
Calculated Turn Lane Length	175	feet
No Block Distance	N.A.	feet
No Block Turn Lane Length	N.A.	feet

PM Peak Hour		
2016 w/o Site traffic		
Seldom Seen Road & Bunker Lane		
Movement	WBLT	
Design Speed	45	mph
Cycle Length	60	seconds
Control (Stop or Signal)	Stop	
Through Volume	369	vph
Number of Through Lanes	1	
Turning Volume	34	vph
Number of Turning Lanes	1	
Design Condition	B	A, B, or C
Turning Percentage	8%	
Vehicles Per Cycle	0.6	
Storage Length	50	feet
Deceleration/Taper	175	feet
Calculated Turn Lane Length	175	feet
No Block Distance	N.A.	feet
No Block Turn Lane Length	N.A.	feet

AM Peak Hour		
2016 with Site traffic		
Seldom Seen Road & Bunker Lane		
Movement	WBLT	
Design Speed	45	mph
Cycle Length	60	seconds
Control (Stop or Signal)	Stop	
Through Volume	163	vph
Number of Through Lanes	1	
Turning Volume	22	vph
Number of Turning Lanes	1	
Design Condition	C	A, B, or C
Turning Percentage	12%	
Vehicles Per Cycle	0.4	
Storage Length	50	feet
Deceleration/Taper	125	feet
Calculated Turn Lane Length	175	feet
No Block Distance	N.A.	feet
No Block Turn Lane Length	N.A.	feet

PM Peak Hour		
2016 with Site traffic		
Seldom Seen Road & Bunker Lane		
Movement	WBLT	
Design Speed	45	mph
Cycle Length	60	seconds
Control (Stop or Signal)	Stop	
Through Volume	343	vph
Number of Through Lanes	1	
Turning Volume	40	vph
Number of Turning Lanes	1	
Design Condition	C	A, B, or C
Turning Percentage	10%	
Vehicles Per Cycle	0.7	
Storage Length	50	feet
Deceleration/Taper	125	feet
Calculated Turn Lane Length	175	feet
No Block Distance	N.A.	feet
No Block Turn Lane Length	N.A.	feet

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	267	vph	
Number of Through Lanes	1		
Turning Volume	15	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	5%		
Vehicles Per Cycle	0.3		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

PM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	577	vph	
Number of Through Lanes	1		
Turning Volume	42	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	0.7		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

AM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	264	vph	
Number of Through Lanes	1		
Turning Volume	23	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	8%		
Vehicles Per Cycle	0.4		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

PM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Bunker Lane			
Movement	WBLT		
Design Speed	45	mph	
Cycle Length	60	seconds	
Control (Stop or Signal)	Stop		
Through Volume	559	vph	
Number of Through Lanes	1		
Turning Volume	39	vph	
Number of Turning Lanes	1		
Design Condition	B	A, B, or C	
Turning Percentage	7%		
Vehicles Per Cycle	0.7		
Storage Length	50	feet	
Deceleration/Taper	175	feet	
Calculated Turn Lane Length	175	feet	
No Block Distance	N.A.	feet	
No Block Turn Lane Length	N.A.	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	280	vph	
Number of Through Lanes	1		
Turning Volume	154	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	3.9		
Storage Length	175	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	275	feet	
No Block Turn Lane Length	275	feet	

PM Peak Hour			
2016 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	472	vph	
Number of Through Lanes	1		
Turning Volume	187	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	28%		
Vehicles Per Cycle	5.2		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

AM Peak Hour			
2016 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	280	vph	
Number of Through Lanes	1		
Turning Volume	163	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	37%		
Vehicles Per Cycle	4.1		
Storage Length	175	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	225	feet	
No Block Distance	275	feet	
No Block Turn Lane Length	275	feet	

PM Peak Hour			
2016 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	472	vph	
Number of Through Lanes	1		
Turning Volume	193	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	29%		
Vehicles Per Cycle	5.4		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2016 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	387	vph	
Number of Through Lanes	1		
Turning Volume	103	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	21%		
Vehicles Per Cycle	2.6		
Storage Length	150	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	200	feet	
No Block Distance	375	feet	
No Block Turn Lane Length	375	feet	

AM Peak Hour			
2016 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	387	vph	
Number of Through Lanes	1		
Turning Volume	108	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	22%		
Vehicles Per Cycle	2.7		
Storage Length	150	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	200	feet	
No Block Distance	375	feet	
No Block Turn Lane Length	375	feet	

PM Peak Hour			
2016 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	302	vph	
Number of Through Lanes	1		
Turning Volume	107	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	26%		
Vehicles Per Cycle	3.0		
Storage Length	150	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	200	feet	
No Block Distance	325	feet	
No Block Turn Lane Length	325	feet	

PM Peak Hour			
2016 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	302	vph	
Number of Through Lanes	1		
Turning Volume	112	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	27%		
Vehicles Per Cycle	3.1		
Storage Length	150	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	200	feet	
No Block Distance	325	feet	
No Block Turn Lane Length	325	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	506	vph	
Number of Through Lanes	1		
Turning Volume	274	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	35%		
Vehicles Per Cycle	6.9		
Storage Length	275	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	852	vph	
Number of Through Lanes	1		
Turning Volume	336	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	28%		
Vehicles Per Cycle	9.3		
Storage Length	350	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	400	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

AM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	506	vph	
Number of Through Lanes	1		
Turning Volume	283	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	36%		
Vehicles Per Cycle	7.1		
Storage Length	275	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	325	feet	
No Block Distance	475	feet	
No Block Turn Lane Length	475	feet	

PM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	NBLT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	852	vph	
Number of Through Lanes	1		
Turning Volume	342	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	29%		
Vehicles Per Cycle	9.5		
Storage Length	375	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	425	feet	
No Block Distance	800	feet	
No Block Turn Lane Length	800	feet	

**Seldom Seen Senior Living
Traffic Impact Study
Turn Lane Length Calculations**

AM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	699	vph	
Number of Through Lanes	1		
Turning Volume	185	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	21%		
Vehicles Per Cycle	4.6		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	600	feet	
No Block Turn Lane Length	600	feet	

AM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	90	seconds	
Control (Stop or Signal)	Signal		
Through Volume	699	vph	
Number of Through Lanes	1		
Turning Volume	190	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	21%		
Vehicles Per Cycle	4.8		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	600	feet	
No Block Turn Lane Length	600	feet	

PM Peak Hour			
2036 w/o Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	545	vph	
Number of Through Lanes	1		
Turning Volume	192	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	26%		
Vehicles Per Cycle	5.3		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	525	feet	
No Block Turn Lane Length	525	feet	

PM Peak Hour			
2036 with Site traffic			
Seldom Seen Road & Liberty Road			
Movement	SBRT		
Design Speed	35	mph	
Cycle Length	100	seconds	
Control (Stop or Signal)	Signal		
Through Volume	545	vph	
Number of Through Lanes	1		
Turning Volume	195	vph	
Number of Turning Lanes	1		
Design Condition	A	A, B, or C	
Turning Percentage	26%		
Vehicles Per Cycle	5.4		
Storage Length	200	feet	
Deceleration/Taper	50	feet	
Calculated Turn Lane Length	250	feet	
No Block Distance	525	feet	
No Block Turn Lane Length	525	feet	



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APPENDIX E:

Capacity Analysis Reports
Year 2016



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2016 AM Peak Hour
No Build

Intersection

Int Delay, s/veh 2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	192	43	13	158	12	29	1	18	8	2	13
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	11	206	46	14	170	13	31	1	19	9	2	14













Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	185	0	0	253	0	0	465	464	230	467	480	179
Stage 1	-	-	-	-	-	-	251	251	-	206	206	-
Stage 2	-	-	-	-	-	-	214	213	-	261	274	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1396	-	-	1318	-	-	511	498	814	509	488	869
Stage 1	-	-	-	-	-	-	758	703	-	801	735	-
Stage 2	-	-	-	-	-	-	793	730	-	748	687	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1395	-	-	1318	-	-	494	488	814	488	478	867
Mov Cap-2 Maneuver	-	-	-	-	-	-	494	488	-	488	478	-
Stage 1	-	-	-	-	-	-	752	697	-	793	726	-
Stage 2	-	-	-	-	-	-	769	721	-	723	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.6	11.6	10.7
HCM LOS	B	B	B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	494	786	1395	-	-	1318	-	-	488	782
HCM Lane V/C Ratio	0.063	0.026	0.008	-	-	0.011	-	-	0.018	0.021
HCM Control Delay (s)	12.8	9.7	7.6	-	-	7.8	-	-	12.5	9.7
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	0.1	0	-	-	0	-	-	0.1	0.1
























HCM 2010 Signalized Intersection Summary
7: Liberty Rd & Seldom Seen Rd

5/1/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	28	174	154	280	387	103		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	30	187	166	301	416	111		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	260	232	590	1297	977	261		
Arrive On Green	0.15	0.15	0.70	0.70	0.70	0.70		
Sat Flow, veh/h	1774	1583	872	1863	1404	375		
Grp Volume(v), veh/h	30	187	166	301	0	527		
Grp Sat Flow(s),veh/h/ln	1774	1583	872	1863	0	1779		
Q Serve(g_s), s	1.1	8.7	7.7	4.5	0.0	9.7		
Cycle Q Clear(g_c), s	1.1	8.7	17.5	4.5	0.0	9.7		
Prop In Lane	1.00	1.00	1.00			0.21		
Lane Grp Cap(c), veh/h	260	232	590	1297	0	1238		
V/C Ratio(X)	0.12	0.81	0.28	0.23	0.00	0.43		
Avail Cap(c_a), veh/h	582	520	590	1297	0	1238		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	28.2	31.5	8.8	4.2	0.0	5.0		
Incr Delay (d2), s/veh	0.2	6.5	1.2	0.4	0.0	1.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	0.6	4.2	2.0	2.4	0.0	5.1		
LnGrp Delay(d),s/veh	28.4	38.0	10.0	4.6	0.0	6.1		
LnGrp LOS	C	D	A	A		A		
Approach Vol, veh/h	217			467	527			
Approach Delay, s/veh	36.7			6.5	6.1			
Approach LOS	D			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		17.1		59.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		53.0		25.0		53.0		
Max Q Clear Time (g_c+I1), s		19.5		10.7		11.7		
Green Ext Time (p_c), s		7.3		0.6		7.5		
Intersection Summary								
HCM 2010 Ctrl Delay			11.7					
HCM 2010 LOS			B					




















HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	111	214	82	92	197	42	154	489	72	199	954	127
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	119	230	88	99	212	45	166	526	77	214	1026	137
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	233	460	326	272	390	81	261	1806	887	1105	1802	883
Arrive On Green	0.07	0.13	0.13	0.07	0.13	0.12	0.10	0.68	0.67	0.09	0.67	0.66
Sat Flow, veh/h	3442	3539	1583	1792	2946	614	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	119	230	88	99	127	130	166	526	77	214	1026	137
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1773	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	3.3	6.0	4.7	4.7	6.6	6.9	4.6	6.0	1.5	2.8	15.3	2.9
Cycle Q Clear(g_c), s	3.3	6.0	4.7	4.7	6.6	6.9	4.6	6.0	1.5	2.8	15.3	2.9
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	460	326	272	236	234	261	1806	887	1105	1802	883
V/C Ratio(X)	✓ 0.51	0.50	0.27	0.36	0.54	0.55	0.64	0.29	0.09	0.19	0.57	0.16
Avail Cap(c_a), veh/h	241	849	500	272	429	425	275	1806	887	1209	1802	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	40.5	33.4	34.1	40.5	40.8	43.6	8.8	6.7	9.6	10.7	7.2
Incr Delay (d2), s/veh	1.7	0.8	0.4	0.8	1.9	2.0	4.4	0.4	0.2	0.1	1.3	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	3.0	2.1	2.3	3.4	3.5	2.4	2.9	0.7	1.3	7.8	1.3	
LnGrp Delay(d),s/veh	46.7	41.3	33.8	34.9	42.4	42.8	48.1	9.2	6.9	9.7	12.0	7.6
LnGrp LOS	D	D	C	C	D	D	D	A	A	A	B	A
Approach Vol, veh/h	437			356			769			1377		
Approach Delay, s/veh	41.3			40.5			17.4			11.2		
Approach LOS	D			D			B			B		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	18.0	13.6	55.4	12.8	18.2	13.0	56.0				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	40.0	23.0	7.0	38.0	6.0	23.0	9.0	36.0				
Max Q Clear Time (g_c+I), s	11.7	8.0	6.6	17.3	5.3	8.9	4.8	8.0				
Green Ext Time (p_c), s	0.0	2.6	0.0	11.1	0.0	2.5	0.2	13.0				
Intersection Summary												
HCM 2010 Ctrl Delay	20.8											
HCM 2010 LOS	C											

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.





















5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	8	55	35	1	18	11	622	41	32	1206	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	9	59	38	1	19	12	669	44	34	1297	17
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	64	22	84	172	6	113	410	2735	180	667	2902	38
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	248	275	1065	1269	76	1437	416	3371	222	733	3577	47
Grp Volume(v), veh/h	88	0	0	38	0	20	12	351	362	34	641	673
Grp Sat Flow(s),veh/h/ln	589	0	0	1269	0	1513	416	1770	1823	733	1770	1854
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.8	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.23		0.67	1.00		0.95	1.00		0.12	1.00		0.03
Lane Grp Cap(c), veh/h	169	0	0	172	0	119	410	1436	1479	667	1436	1505
V/C Ratio(X)	0.52	0.00	0.00	0.22	0.00	0.17	0.03	0.24	0.24	0.05	0.45	0.45
Avail Cap(c_a), veh/h	342	0	0	313	0	287	410	1436	1479	667	1436	1505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	0.0	43.8	0.0	43.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.6	0.0	0.7	0.1	0.4	0.4	0.1	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.2	0.2	0.0	0.4	0.4
LnGrp Delay(d),s/veh	47.3	0.0	0.0	44.4	0.0	43.7	0.1	0.4	0.4	0.1	1.0	1.0
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h	88			58			725			1348		
Approach Delay, s/veh	47.3			44.1			0.4			1.0		
Approach LOS	D			D			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	86.1		13.9		86.1		13.9					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	69.0		19.0		69.0		19.0					
Max Q Clear Time (g_c+l1), s	2.0		7.3		2.0		4.8					
Green Ext Time (p_c), s	22.3		0.3		22.3		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay	3.7											
HCM 2010 LOS	A											

Intersection												
Int Delay, s/veh	3.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	3	1	18	57	0	25	16	595	55	24	1159	1
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	160	-	210	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	3	1	19	61	0	27	17	640	59	26	1246	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1662	1982	632	1359	1983	327	1255	0	0	642	0	0
Stage 1	1306	1306	-	676	676	-	-	-	-	-	-	-
Stage 2	356	676	-	683	1307	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	64	61	423	109	62	675	550	-	-	939	-	-
Stage 1	169	228	-	414	456	-	-	-	-	-	-	-
Stage 2	634	451	-	410	232	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	58	57	420	98	58	671	550	-	-	935	-	-
Mov Cap-2 Maneuver	58	57	-	98	58	-	-	-	-	-	-	-
Stage 1	163	220	-	401	441	-	-	-	-	-	-	-
Stage 2	587	436	-	378	224	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	25.9			65.4			0.3			0.2		
HCM LOS	D			F								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR			
Capacity (veh/h)	550	-	-	196	98	671	935	-	-			
HCM Lane V/C Ratio ✓	0.031	-	-	0.121	0.625	0.04	0.028	-	-			
HCM Control Delay (s)	11.8	-	-	25.9	89.5	10.6	9	-	-			
HCM Lane LOS	B	-	-	D	F	B	A	-	-			
HCM 95th %tile Q(veh)	0.1	-	-	0.4	3	0.1	0.1	-	-			

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	61	84	159	28	44	29	513	81	62	938	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	31	66	90	171	30	47	31	552	87	67	1009	47
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	292	87	119	292	125	196	350	1637	257	515	1876	87
Arrive On Green	0.03	0.12	0.11	0.10	0.19	0.18	0.04	0.71	0.70	0.06	0.72	0.71
Sat Flow, veh/h	1774	715	975	1792	662	1037	1774	3066	482	1774	3444	160
Grp Volume(v), veh/h	31	0	156	171	0	77	31	318	321	67	518	538
Grp Sat Flow(s),veh/h/ln	1774	0	1691	1792	0	1698	1774	1770	1778	1774	1770	1834
Q Serve(g_s), s	1.5	0.0	8.9	8.0	0.0	3.9	0.8	6.8	7.0	1.7	13.2	13.3
Cycle Q Clear(g_c), s	1.5	0.0	8.9	8.0	0.0	3.9	0.8	6.8	7.0	1.7	13.2	13.3
Prop In Lane	1.00		0.58	1.00		0.61	1.00		0.27	1.00		0.09
Lane Grp Cap(c), veh/h	292	0	207	292	0	321	350	945	949	515	964	999
V/C Ratio(X)	0.11	0.00	0.76	0.59	0.00	0.24	0.09	0.34	0.34	0.13	0.54	0.54
Avail Cap(c_a), veh/h	322	0	287	292	0	374	433	945	949	579	964	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	42.7	32.4	0.0	34.7	10.2	7.7	7.9	9.4	8.1	8.1
Incr Delay (d2), s/veh	0.2	0.0	7.1	3.0	0.0	0.4	0.1	1.0	1.0	0.1	2.2	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	0.0	4.6	4.1	0.0	1.8	0.4	3.6	3.6	0.8	6.9	7.2
LnGrp Delay(d),s/veh	36.5	0.0	49.9	35.5	0.0	35.1	10.3	8.7	8.8	9.5	10.2	10.2
LnGrp LOS	D		D	D		D	B	A	A	A	B	B
Approach Vol, veh/h	187				248				670		1123	
Approach Delay, s/veh	47.6				35.3				8.8		10.2	
Approach LOS	D				D				A		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.4	58.4	15.0	17.2	8.3	59.5	8.3	23.9				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	7.0	44.0	9.0	16.0	7.0	44.0	4.0	21.0				
Max Q Clear Time (g_c+l1), s	3.7	9.0	10.0	10.9	2.8	15.3	3.5	5.9				
Green Ext Time (p_c), s	0.0	13.0	0.0	0.3	0.0	12.1	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			15.7									
HCM 2010 LOS			B									



A legacy of experience. A reputation for excellence.

2016 AM Peak Hour Full Build

Intersection												
Int Delay, s/veh	2.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	195	85	22	163	12	51	1	23	8	2	13
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	11	210	91	24	175	13	55	1	25	9	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	301	0	0	516	514	255	521	554	185
Stage 1	-	-	-	-	-	-	277	277	-	231	231	-
Stage 2	-	-	-	-	-	-	239	237	-	290	323	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1390	-	-	1266	-	-	473	467	789	469	443	862
Stage 1	-	-	-	-	-	-	734	685	-	776	717	-
Stage 2	-	-	-	-	-	-	769	713	-	722	654	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1389	-	-	1266	-	-	454	454	789	443	430	860
Mov Cap-2 Maneuver	-	-	-	-	-	-	454	454	-	443	430	-
Stage 1	-	-	-	-	-	-	728	680	-	769	702	-
Stage 2	-	-	-	-	-	-	739	698	-	693	649	-












Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.9	12.7	11
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	454	765	1389	-	-	1266	-	-	443	759
HCM Lane V/C Ratio	0.121	0.034	0.008	-	-	0.019	-	-	0.019	0.021
HCM Control Delay (s)	14	9.9	7.6	-	-	7.9	-	-	13.3	9.8
HCM Lane LOS	B	A	A	-	-	A	-	-	B	A
HCM 95th %tile Q(veh)	0.4	0.1	0	-	-	0.1	-	-	0.1	0.1

HCM 2010 Signalized Intersection Summary

























7: Liberty Rd & Seldom Seen Rd

5/5/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	30	179	163	280	387	108		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	32	192	175	301	416	116		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	265	237	582	1292	963	269		
Arrive On Green	0.15	0.15	0.69	0.69	0.69	0.69		
Sat Flow, veh/h	1774	1583	868	1863	1389	387		
Grp Volume(v), veh/h	32	192	175	301	0	532		
Grp Sat Flow(s),veh/h/ln	1774	1583	868	1863	0	1776		
Q Serve(g_s), s	1.2	9.0	8.4	4.5	0.0	10.0		
Cycle Q Clear(g_c), s	1.2	9.0	18.5	4.5	0.0	10.0		
Prop In Lane	1.00	1.00	1.00			0.22		
Lane Grp Cap(c), veh/h	265	237	582	1292	0	1232		
V/C Ratio(X)	✓ 0.12	0.81	0.30	0.23	0.00	0.43		
Avail Cap(c_a), veh/h	580	518	582	1292	0	1232		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	28.1	31.5	9.2	4.3	0.0	5.1		
Incr Delay (d2), s/veh	0.2	6.5	1.3	0.4	0.0	1.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	0.6	4.3	2.2	2.4	0.0	5.3		
LnGrp Delay(d),s/veh	28.3	38.0	10.5	4.7	0.0	6.2		
LnGrp LOS	C	D	B	A		A		
Approach Vol, veh/h	224			476	532			
Approach Delay, s/veh	36.6			6.8	6.2			
Approach LOS	D			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		59.0		17.4		59.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		53.0		25.0		53.0		
Max Q Clear Time (g_c+I1), s		20.5		11.0		12.0		
Green Ext Time (p_c), s		7.4		0.6		7.6		
Intersection Summary								
HCM 2010 Ctrl Delay			12.0					
HCM 2010 LOS			B					




















HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	119	214	82	92	197	47	154	552	72	202	987	131
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	128	230	88	99	212	51	166	594	77	217	1061	141
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	235	460	326	272	378	89	261	1806	887	1046	1802	883
Arrive On Green	0.07	0.13	0.13	0.07	0.13	0.12	0.10	0.68	0.67	0.09	0.67	0.66
Sat Flow, veh/h	3442	3539	1583	1792	2872	676	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	128	230	88	99	130	133	166	594	77	217	1061	141
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1762	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	3.6	6.0	4.7	4.7	6.8	7.1	4.6	6.9	1.5	2.8	16.2	3.0
Cycle Q Clear(g_c), s	3.6	6.0	4.7	4.7	6.8	7.1	4.6	6.9	1.5	2.8	16.2	3.0
Prop In Lane	1.00		1.00	1.00		0.38	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	235	460	326	272	235	232	261	1806	887	1046	1802	883
V/C Ratio(X)	0.54	0.50	0.27	0.36	0.55	0.57	0.64	0.33	0.09	0.21	0.59	0.16
Avail Cap(c_a), veh/h	241	849	500	272	429	423	275	1806	887	1151	1802	883
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.1	40.5	33.4	34.1	40.7	41.0	43.6	9.0	6.7	9.7	10.8	7.2
Incr Delay (d2), s/veh	2.4	0.8	0.4	0.8	2.0	2.2	4.4	0.5	0.2	0.1	1.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	3.0	2.1	2.3	3.5	3.6	2.4	3.4	0.7	1.3	8.2	1.4	
LnGrp Delay(d),s/veh	47.5	41.3	33.8	34.9	42.7	43.2	48.1	9.5	6.9	9.8	12.3	7.6
LnGrp LOS	D	D	C	C	D	D	D	A	A	A	B	A
Approach Vol, veh/h	446				362		837		1419			
Approach Delay, s/veh	41.6				40.7		16.9		11.4			
Approach LOS	D				D		B		B			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	3.0	18.0	13.6	55.4	12.8	18.2	13.0	56.0				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	3.0	23.0	7.0	38.0	6.0	23.0	9.0	36.0				
Max Q Clear Time (g_c+I), s	3.0	8.0	6.6	18.2	5.6	9.1	4.8	8.9				
Green Ext Time (p_c), s	0.0	2.6	0.0	11.5	0.0	2.5	0.3	13.8				
Intersection Summary												
HCM 2010 Ctrl Delay			20.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	8	55	35	1	18	11	698	41	32	1246	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	9	59	38	1	19	12	751	44	34	1340	17
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	64	22	84	172	6	113	396	2757	161	623	2904	37
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	248	275	1065	1269	76	1437	400	3398	199	680	3579	45
Grp Volume(v), veh/h	88	0	0	38	0	20	12	391	404	34	662	695
Grp Sat Flow(s),veh/h/ln	1589	0	0	1269	0	1513	400	1770	1827	680	1770	1855
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.8	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.23		0.67	1.00		0.95	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	169	0	0	172	0	119	396	1436	1482	623	1436	1505
V/C Ratio(X)	0.52	0.00	0.00	0.22	0.00	0.17	0.03	0.27	0.27	0.05	0.46	0.46
Avail Cap(c_a), veh/h	342	0	0	313	0	287	396	1436	1482	623	1436	1505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	0.0	43.8	0.0	43.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.6	0.0	0.7	0.1	0.5	0.5	0.2	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	1.0	0.0	0.5	0.0	0.2	0.2	0.0	0.4	0.4
LnGrp Delay(d),s/veh	47.3	0.0	0.0	44.4	0.0	43.7	0.1	0.5	0.5	0.2	1.1	1.0
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h	88			58			807			1391		
Approach Delay, s/veh	47.3			44.1			0.5			1.0		
Approach LOS	D			D			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	86.1		13.9		86.1		13.9					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	69.0		19.0		69.0		19.0					
Max Q Clear Time (g_c+I1), s	2.0		7.3		2.0		4.8					
Green Ext Time (p_c), s	25.1		0.3		25.1		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay				3.6								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	25	0	634	49	0	1220	1
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	27	0	682	53	0	1312	1





















Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1663	2004	664	1348	2005	348	1321	0	0	684	0	0
Stage 1	1320	1320	-	684	684	-	-	-	-	-	-	-
Stage 2	343	684	-	664	1321	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	64	59	403	111	60	654	519	-	-	905	-	-
Stage 1	166	225	-	410	452	-	-	-	-	-	-	-
Stage 2	646	447	-	421	228	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	61	59	400	108	60	650	519	-	-	901	-	-
Mov Cap-2 Maneuver	61	59	-	108	60	-	-	-	-	-	-	-
Stage 1	165	224	-	409	451	-	-	-	-	-	-	-
Stage 2	617	446	-	410	226	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.2	10.8	0	0
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	519	-	-	400	650	901	-	-
HCM Lane V/C Ratio	-	-	-	0.027	0.041	-	-	-
HCM Control Delay (s)	0	-	-	14.2	10.8	0	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.





















5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	64	87	177	29	52	30	522	108	77	954	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	31	69	94	190	31	56	32	561	116	83	1026	47
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	296	90	123	292	116	210	341	1539	317	496	1862	85
Arrive On Green	0.03	0.13	0.12	0.10	0.19	0.18	0.04	0.70	0.69	0.06	0.72	0.71
Sat Flow, veh/h	1774	716	975	1792	602	1087	1774	2923	603	1774	3447	158
Grp Volume(v), veh/h	31	0	163	190	0	87	32	339	338	83	527	546
Grp Sat Flow(s),veh/h/ln	1774	0	1691	1792	0	1689	1774	1770	1756	1774	1770	1835
Q Serve(g_s), s	1.5	0.0	9.3	8.9	0.0	4.4	0.8	7.7	7.9	2.1	13.9	13.9
Cycle Q Clear(g_c), s	1.5	0.0	9.3	8.9	0.0	4.4	0.8	7.7	7.9	2.1	13.9	13.9
Prop In Lane	1.00		0.58	1.00		0.64	1.00		0.34	1.00		0.09
Lane Grp Cap(c), veh/h	296	0	214	292	0	326	341	932	925	496	956	991
V/C Ratio(X)	0.10	0.00	0.76	0.65	0.00	0.27	0.09	0.36	0.37	0.17	0.55	0.55
Avail Cap(c_a), veh/h	326	0	287	292	0	372	424	932	925	554	956	991
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	42.5	32.5	0.0	34.6	10.6	8.3	8.4	9.7	8.4	8.5
Incr Delay (d2), s/veh	0.2	0.0	8.1	5.1	0.0	0.4	0.1	1.1	1.1	0.2	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	0.0	4.8	4.8	0.0	2.1	0.4	3.9	4.0	1.0	7.3	7.5
LnGrp Delay(d),s/veh	36.1	0.0	50.6	37.6	0.0	35.0	10.7	9.4	9.5	9.9	10.7	10.7
LnGrp LOS	D		D	D		D	B	A	A	A	B	B
Approach Vol, veh/h	194				277				709		1156	
Approach Delay, s/veh	48.3				36.8				9.5		10.6	
Approach LOS	D				D				A		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.7	57.6	15.0	17.6	8.4	59.0	8.3	24.3				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	7.0	44.0	9.0	16.0	7.0	44.0	4.0	21.0				
Max Q Clear Time (g_c+I1), s	4.1	9.9	10.9	11.3	2.8	15.9	3.5	6.4				
Green Ext Time (p_c), s	0.0	13.5	0.0	0.3	0.0	12.5	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			16.5									
HCM 2010 LOS			B									

HCM 2010 Signalized Intersection Summary

35: Sawmill Pkwy. & Drive 1

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	3	1	8	84	0	12	16	665	64	6	42	1182
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900		1863	1863
Adj Flow Rate, veh/h	3	1	9	90	0	13	17	715	69		45	1271
Adj No. of Lanes	1	1	0	1	1	0	1	2	0		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	184	14	127	187	0	139	415	2584	249		576	2875
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.79	0.79	0.79		1.00	1.00
Sat Flow, veh/h	1395	161	1447	1399	0	1583	434	3262	315		687	3629
Grp Volume(v), veh/h	3	0	10	90	0	13	17	388	396		45	620
Grp Sat Flow(s),veh/h/ln	1395	0	1607	1399	0	1583	434	1770	1807		687	1770
Q Serve(g_s), s	0.2	0.0	0.6	6.3	0.0	0.8	0.8	5.8	5.8		0.5	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.6	6.9	0.0	0.8	0.8	5.8	5.8		6.4	0.0
Prop In Lane	1.00		0.90	1.00		1.00	1.00		0.17		1.00	
Lane Grp Cap(c), veh/h	184	0	141	187	0	139	415	1402	1432		576	1402
V/C Ratio(X)	0.02	0.00	0.07	0.48	0.00	0.09	0.04	0.28	0.28		0.08	0.44
Avail Cap(c_a), veh/h	368	0	354	372	0	348	415	1402	1432		576	1402
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	42.4	0.0	41.9	45.0	0.0	42.0	2.2	2.8	2.8		0.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	1.9	0.0	0.3	0.2	0.5	0.5		0.3	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	0.0	0.3	2.5	0.0	0.3	0.1	3.0	3.1		0.1	0.4
LnGrp Delay(d),s/veh	42.4	0.0	42.1	46.9	0.0	42.2	2.4	3.3	3.2		0.5	1.0
LnGrp LOS	D		D	D		D	A	A	A		A	A
Approach Vol, veh/h	13				103				801		1317	
Approach Delay, s/veh	42.2				46.4				3.2		1.0	
Approach LOS	D				D				A		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	85.2		14.8		85.2		14.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	66.0		22.0		66.0		22.0					
Max Q Clear Time (g_c+I1), s	7.8		3.0		8.4		8.9					
Green Ext Time (p_c), s	22.4		0.3		22.3		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay			4.1									
HCM 2010 LOS			A									
Notes												
User approved ignoring U-Turning movement.												

HCM 2010 Signalized Intersection Summary 35: Sawmill Pkwy. & Drive 1

5/5/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	1
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	1
Adj No. of Lanes	0
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	2
Arrive On Green	1.00
Sat Flow, veh/h	3
Grp Volume(v), veh/h	652
Grp Sat Flow(s),veh/h/ln	1862
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	1475
V/C Ratio(X)	0.44
Avail Cap(c_a), veh/h	1475
HCM Platoon Ratio	2.00
Upstream Filter(l)	1.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(-26165%),veh/ln	0.4
LnGrp Delay(d),s/veh	1.0
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



A legacy of **experience**. A reputation for **excellence**.

2016 PM Peak Hour
No Build

HCM 2010 TWSC
4: Bunker Ln & Seldom Seen Rd.

5/1/2015

Intersection

Int Delay, s/veh 2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	314	42	34	340	29	43	0	33	25	1	21
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	27	338	45	37	366	31	46	0	35	27	1	23













Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	399	0	0	383	0	0	882	886	360	888	893	384
Stage 1	-	-	-	-	-	-	414	414	-	456	456	-
Stage 2	-	-	-	-	-	-	468	472	-	432	437	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1165	-	-	1181	-	-	269	286	689	267	283	668
Stage 1	-	-	-	-	-	-	620	597	-	588	572	-
Stage 2	-	-	-	-	-	-	579	562	-	606	583	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1164	-	-	1181	-	-	248	270	689	242	267	666
Mov Cap-2 Maneuver	-	-	-	-	-	-	248	270	-	242	267	-
Stage 1	-	-	-	-	-	-	606	583	-	573	553	-
Stage 2	-	-	-	-	-	-	540	543	-	561	569	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.7	17.5	16.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	248	689	1164	-	-	1181	-	-	242	624
HCM Lane V/C Ratio	0.186	0.052	0.023	-	-	0.031	-	-	0.111	0.038
HCM Control Delay (s)	22.8	10.5	8.2	-	-	8.1	-	-	21.7	11
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	0.2	0.1	-	-	0.1	-	-	0.4	0.1

























HCM 2010 Signalized Intersection Summary
7: Liberty Rd & Seldom Seen Rd

5/1/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	117	205	187	472	302	107		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	126	220	201	508	325	115		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	344	307	529	1014	709	251		
Arrive On Green	0.19	0.19	0.54	0.54	0.54	0.54		
Sat Flow, veh/h	1774	1583	945	1863	1302	461		
Grp Volume(v), veh/h	126	220	201	508	0	440		
Grp Sat Flow(s),veh/h/ln	1774	1583	945	1863	0	1763		
Q Serve(g_s), s	2.8	6.0	7.5	7.8	0.0	6.9		
Cycle Q Clear(g_c), s	2.8	6.0	14.5	7.8	0.0	6.9		
Prop In Lane	1.00	1.00	1.00			0.26		
Lane Grp Cap(c), veh/h	344	307	529	1014	0	960		
V/C Ratio(X)	✓ 0.37	0.72	0.38	0.50	0.00	0.46		
Avail Cap(c_a), veh/h	1083	967	1045	2031	0	1923		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	16.0	17.3	10.7	6.5	0.0	6.3		
Incr Delay (d2), s/veh	0.7	3.1	0.5	0.4	0.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	1.4	2.8	2.0	4.1	0.0	3.4		
LnGrp Delay(d),s/veh	16.7	20.4	11.2	6.9	0.0	6.7		
LnGrp LOS	B	C	B	A		A		
Approach Vol, veh/h	346			709	440			
Approach Delay, s/veh	19.1			8.1	6.7			
Approach LOS	B			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		31.0		14.9		31.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		50.0		28.0		50.0		
Max Q Clear Time (g_c+I1), s		16.5		8.0		8.9		
Green Ext Time (p_c), s		8.5		1.0		8.8		
Intersection Summary								
HCM 2010 Ctrl Delay			10.2					
HCM 2010 LOS			B					










HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	358	318	92	201	262	131	240	1266	126	284	771	102
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	385	342	99	216	282	141	258	1361	135	305	829	110
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	459	549	404	346	343	167	344	1515	849	377	1559	884
Arrive On Green	0.13	0.16	0.16	0.13	0.15	0.14	0.10	0.43	0.42	0.11	0.44	0.43
Sat Flow, veh/h	3442	3539	1583	1792	2332	1136	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	385	342	99	216	214	209	258	1361	135	305	829	110
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1681	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	13.1	10.8	6.0	12.0	13.9	14.5	8.8	42.9	5.2	10.3	20.4	4.0
Cycle Q Clear(g_c), s	13.1	10.8	6.0	12.0	13.9	14.5	8.8	42.9	5.2	10.3	20.4	4.0
Prop In Lane	1.00		1.00	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	459	549	404	346	263	247	344	1515	849	377	1559	884
V/C Ratio(X)	✓ 0.84	0.62	0.24	0.62	0.82	0.84	0.75	0.90	0.16	0.81	0.53	0.12
Avail Cap(c_a), veh/h	459	549	404	361	268	252	430	1515	849	377	1559	884
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	47.4	35.5	36.7	49.6	50.2	52.5	31.9	14.1	52.3	24.8	12.9
Incr Delay (d2), s/veh	13.0	2.2	0.3	3.1	17.2	21.9	5.5	8.8	0.4	12.5	1.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	5.5	2.6	6.2	8.2	8.2	4.4	22.8	2.4	5.6	10.3	1.8	
LnGrp Delay(d),s/veh	63.7	49.6	35.8	39.8	66.8	72.1	58.1	40.7	14.5	64.8	26.1	13.2
LnGrp LOS	E	D	D	D	E	E	E	D	B	E	C	B
Approach Vol, veh/h	826			639			1754			1244		
Approach Delay, s/veh	54.5			59.4			41.3			34.5		
Approach LOS	D			E			D			C		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.0	23.6	18.0	57.3	22.0	22.6	19.0	56.4				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	45.0	17.0	14.0	48.0	15.0	17.0	12.0	50.0				
Max Q Clear Time (g_c+I1), s	14.0	12.8	10.8	22.4	15.1	16.5	12.3	44.9				
Green Ext Time (p_c), s	0.1	1.8	0.3	18.0	0.0	0.1	0.0	4.5				
Intersection Summary												
HCM 2010 Ctrl Delay	44.4											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	20	34	53	15	19	53	1695	77	18	1040	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	37	57	16	20	57	1823	83	19	1118	26
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	87	38	47	158	64	81	461	2823	128	204	2895	67
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.82	0.82	0.81	1.00	1.00	1.00
Sat Flow, veh/h	497	427	526	1281	720	900	490	3448	156	235	3536	82
Grp Volume(v), veh/h	102	0	0	57	0	36	57	929	977	19	560	584
Grp Sat Flow(s),veh/h/ln	449	0	0	1281	0	1619	490	1770	1835	235	1770	1848
Q Serve(g_s), s	5.9	0.0	0.0	0.0	0.0	2.5	2.9	24.0	24.8	2.7	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	0.0	6.3	0.0	2.5	2.9	24.0	24.8	27.6	0.0	0.0
Prop In Lane	0.42		0.36	1.00		0.56	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	173	0	0	158	0	145	461	1449	1502	204	1449	1513
V/C Ratio(X)	 0.59	0.00	0.00	0.36	0.00	0.25	0.12	0.64	0.65	0.09	0.39	0.39
Avail Cap(c_a), veh/h	278	0	0	246	0	256	461	1449	1502	204	1449	1513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(l)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	0.0	52.6	0.0	50.9	2.2	4.2	4.2	3.5	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	1.4	0.0	0.9	0.6	2.2	2.2	0.9	0.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.5	0.0	0.0	1.9	0.0	1.1	0.5	12.2	13.1	0.2	0.3	0.3
LnGrp Delay(d),s/veh	56.9	0.0	0.0	54.0	0.0	51.7	2.8	6.3	6.4	4.4	0.8	0.7
LnGrp LOS	E			D		D	A	A	A	A	A	A
Approach Vol, veh/h	102			93			1963			1163		
Approach Delay, s/veh	56.9			53.1			6.3			0.8		
Approach LOS	E			D			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	103.2		16.8		103.2		16.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	89.0		19.0		89.0		19.0					
Max Q Clear Time (g_c+1), s	26.8		10.4		29.6		8.3					
Green Ext Time (p_c), s	46.8		0.4		45.3		0.4					
Intersection Summary												
HCM 2010 Ctrl Delay				7.2								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 31.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	5	2	17	51	0	29	35	1570	125	20	1014	6
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	160	-	210	165	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	5	2	18	55	0	31	38	1688	134	22	1090	6

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2066	2910	556	2362	2913	851	1105	0	0	1690	0	0
Stage 1	1145	1145	-	1765	1765	-	-	-	-	-	-	-
Stage 2	921	1765	-	597	1148	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	31	15	475	~ 19	16	308	628	-	-	374	-	-
Stage 1	212	272	-	89	139	-	-	-	-	-	-	-
Stage 2	291	136	-	461	276	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	25	13	472	~ 15	14	306	628	-	-	372	-	-
Mov Cap-2 Maneuver	25	13	-	~ 15	14	-	-	-	-	-	-	-
Stage 1	198	254	-	83	130	-	-	-	-	-	-	-
Stage 2	245	128	-	413	258	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	99.4	\$ 1096.5	0.2	0.3
HCM LOS	F	F		





















Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	628	-	-	62	15	306	372	-	-
HCM Lane V/C Ratio	0.06	-	-	0.416	3.656	0.102	0.058	-	-
HCM Control Delay (s)	11.1	-	-	99.4	1709.7	18.1	15.3	-	-
HCM Lane LOS	B	-	-	F	F	C	C	-	-
HCM 95th %tile Q(veh)	0.2	-	-	1.6	7.7	0.3	0.2	-	-

Notes

~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	97	76	245	79	95	89	1269	246	104	708	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	56	104	82	263	85	102	96	1365	265	112	761	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	274	126	99	315	167	200	413	1565	299	184	1873	64
Arrive On Green	0.04	0.13	0.12	0.13	0.21	0.21	0.04	0.53	0.52	0.05	0.54	0.53
Sat Flow, veh/h	1774	966	762	1792	780	936	1774	2965	567	1774	3492	119
Grp Volume(v), veh/h	56	0	186	263	0	187	96	806	824	112	386	401
Grp Sat Flow(s),veh/h/ln	1774	0	1728	1792	0	1716	1774	1770	1763	1774	1770	1842
Q Serve(g_s), s	3.2	0.0	12.6	15.0	0.0	11.6	3.0	47.4	49.7	3.4	15.5	15.5
Cycle Q Clear(g_c), s	3.2	0.0	12.6	15.0	0.0	11.6	3.0	47.4	49.7	3.4	15.5	15.5
Prop In Lane	1.00		0.44	1.00		0.55	1.00		0.32	1.00		0.06
Lane Grp Cap(c), veh/h	274	0	225	315	0	367	413	934	931	184	949	988
V/C Ratio(X)	0.20	0.00	0.83	0.84	0.00	0.51	0.23	0.86	0.89	0.61	0.41	0.41
Avail Cap(c_a), veh/h	274	0	230	315	0	372	413	934	931	184	949	988
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	0.0	51.1	38.4	0.0	41.9	12.8	24.6	25.3	26.0	16.5	16.5
Incr Delay (d2), s/veh	0.4	0.0	20.8	17.5	0.0	1.1	0.3	10.4	12.1	5.8	1.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.6	0.0	7.3	8.9	0.0	5.6	1.4	25.8	27.2	2.3	7.8	8.2
LnGrp Delay(d),s/veh	42.8	0.0	71.9	55.9	0.0	43.0	13.1	35.0	37.3	31.8	17.8	17.8
LnGrp LOS	D		E	E		D	B	C	D	C	B	B
Approach Vol, veh/h	242				450				1726		899	
Approach Delay, s/veh	65.1				50.5				34.9		19.5	
Approach LOS	E				D				C		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	68.3	20.0	20.7	10.0	69.3	10.0	30.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	62.0	14.0	15.0	4.0	63.0	4.0	25.0				
Max Q Clear Time (g_c+I1), s	5.4	51.7	17.0	14.6	5.0	17.5	5.2	13.6				
Green Ext Time (p_c), s	0.0	8.6	0.0	0.1	0.0	26.2	0.0	0.9				
Intersection Summary												
HCM 2010 Ctrl Delay			35.1									
HCM 2010 LOS			D									














A legacy of **experience**. A reputation for **excellence**.

2016 PM Peak Hour Full Build

Intersection												
Int Delay, s/veh	4.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	320	70	40	343	29	83	0	44	25	1	21
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	27	344	75	43	369	31	89	0	47	27	1	23
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	402	0	0	419	0	0	919	923	382	931	945	387
Stage 1	-	-	-	-	-	-	435	435	-	472	472	-
Stage 2	-	-	-	-	-	-	484	488	-	459	473	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2:209	-	-	2:209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1162	-	-	1145	-	-	254	272	670	249	264	665
Stage 1	-	-	-	-	-	-	604	584	-	576	562	-
Stage 2	-	-	-	-	-	-	568	553	-	586	562	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1161	-	-	1145	-	-	233	255	670	220	248	663
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	255	-	220	248	-
Stage 1	-	-	-	-	-	-	590	570	-	562	540	-
Stage 2	-	-	-	-	-	-	527	531	-	532	549	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.5			0.8			23.2			17.7		
HCM LOS							C			C		
Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2		
Capacity (veh/h)	233	670	1161	-	-	1145	-	-	220	616		
HCM Lane V/C Ratio	0.383	0.071	0.023	-	-	0.038	-	-	0.122	0.038		
HCM Control Delay (s)	29.7	10.8	8.2	-	-	8.3	-	-	23.6	11.1		
HCM Lane LOS	D	B	A	-	-	A	-	-	C	B		
HCM 95th %tile Q(veh)	1.7	0.2	0.1	-	-	0.1	-	-	0.4	0.1		
























HCM 2010 Signalized Intersection Summary
7: Liberty Rd & Seldom Seen Rd

5/5/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	123	216	193	472	302	110		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	132	232	208	508	325	118		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	356	318	523	1018	706	256		
Arrive On Green	0.20	0.20	0.55	0.55	0.55	0.55		
Sat Flow, veh/h	1774	1583	943	1863	1293	469		
Grp Volume(v), veh/h	132	232	208	508	0	443		
Grp Sat Flow(s),veh/h/ln	1774	1583	943	1863	0	1762		
Q Serve(g_s), s	3.0	6.5	8.1	8.1	0.0	7.2		
Cycle Q Clear(g_c), s	3.0	6.5	15.4	8.1	0.0	7.2		
Prop In Lane	1.00	1.00	1.00			0.27		
Lane Grp Cap(c), veh/h	356	318	523	1018	0	963		
V/C Ratio(X)	0.37	0.73	0.40	0.50	0.00	0.46		
Avail Cap(c_a), veh/h	1047	935	1002	1963	0	1857		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	16.4	17.8	11.2	6.7	0.0	6.5		
Incr Delay (d2), s/veh	0.6	3.2	0.5	0.4	0.0	0.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	1.5	3.1	2.2	4.2	0.0	3.5		
LnGrp Delay(d),s/veh	17.0	21.0	11.7	7.1	0.0	6.9		
LnGrp LOS	B	C	B	A		A		
Approach Vol, veh/h	364			716	443			
Approach Delay, s/veh	19.6			8.4	6.9			
Approach LOS	B			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		31.9		15.5		31.9		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		50.0		28.0		50.0		
Max Q Clear Time (g_c+I1), s		17.4		8.5		9.2		
Green Ext Time (p_c), s		8.6		1.1		8.9		
Intersection Summary								
HCM 2010 Ctrl Delay			10.6					
HCM 2010 LOS			B					

HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.




















5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	363	318	92	201	262	134	240	1309	126	290	847	111
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	390	342	99	216	282	144	258	1408	135	312	911	119
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	430	555	407	333	344	171	344	1568	860	348	1583	882
Arrive On Green	0.13	0.16	0.16	0.12	0.15	0.14	0.10	0.44	0.43	0.10	0.44	0.43
Sat Flow, veh/h	3442	3539	1583	1792	2315	1151	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	390	342	99	216	216	210	258	1408	135	312	911	119
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1678	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	13.4	10.8	5.9	12.1	14.0	14.6	8.8	44.1	5.1	10.7	22.9	4.3
Cycle Q Clear(g_c), s	13.4	10.8	5.9	12.1	14.0	14.6	8.8	44.1	5.1	10.7	22.9	4.3
Prop In Lane	1.00		1.00	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	430	555	407	333	265	249	344	1568	860	348	1583	882
V/C Ratio(X)	0.91	0.62	0.24	0.65	0.81	0.84	0.75	0.90	0.16	0.90	0.58	0.13
Avail Cap(c_a), veh/h	430	560	409	333	268	252	430	1568	860	348	1583	882
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	47.2	35.3	37.4	49.5	50.1	52.5	30.9	13.7	53.4	25.0	13.0
Incr Delay (d2), s/veh	22.5	2.0	0.3	4.4	17.1	21.8	5.5	8.5	0.4	24.8	1.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	5.4	2.6	6.3	8.2	8.3	4.4	23.4	2.3	6.3	11.6	2.0	
LnGrp Delay(d),s/veh	74.4	49.2	35.6	41.7	66.6	71.9	58.1	39.4	14.1	78.2	26.5	13.4
LnGrp LOS	E	D	D	D	E	E	E	D	B	E	C	B
Approach Vol, veh/h	831		642				1801			1342		
Approach Delay, s/veh	59.4		60.0				40.2			37.4		
Approach LOS	E		E				D			D		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc),s	20.0	23.8	18.0	58.2	21.0	22.8	18.0	58.2				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax),s	13.0	18.0	14.0	49.0	14.0	17.0	11.0	52.0				
Max Q Clear Time (g_c+I),s	14.1	12.8	10.8	24.9	15.4	16.6	12.7	46.1				
Green Ext Time (p_c), s	0.0	2.2	0.3	18.1	0.0	0.2	0.0	5.3				
Intersection Summary												
HCM 2010 Ctrl Delay			45.6									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

21: Sawmill Pkwy. & Big Bear Ave.

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	20	34	53	15	19	53	1747	77	18	1131	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	37	57	16	20	57	1878	83	19	1216	26
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	87	38	47	158	64	81	425	2828	124	193	2901	62
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.82	0.82	0.81	1.00	1.00	1.00
Sat Flow, veh/h	497	427	526	1281	720	900	446	3454	151	223	3543	76
Grp Volume(v), veh/h	102	0	0	57	0	36	57	955	1006	19	607	635
Grp Sat Flow(s),veh/h/ln	449	0	0	1281	0	1619	446	1770	1836	223	1770	1849
Q Serve(g_s), s	5.9	0.0	0.0	0.0	0.0	2.5	3.2	25.5	26.4	3.1	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	0.0	6.3	0.0	2.5	3.2	25.5	26.4	29.5	0.0	0.0
Prop In Lane	0.42		0.36	1.00		0.56	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	173	0	0	158	0	145	425	1449	1503	193	1449	1514
V/C Ratio(X)	0.59	0.00	0.00	0.36	0.00	0.25	0.13	0.66	0.67	0.10	0.42	0.42
Avail Cap(c_a), veh/h	278	0	0	246	0	256	425	1449	1503	193	1449	1514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	0.0	52.6	0.0	50.9	2.3	4.3	4.4	4.0	0.0	0.0
Incr Delay (d2), s/veh	3.2	0.0	0.0	1.4	0.0	0.9	0.7	2.4	2.4	1.0	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	1.9	0.0	1.1	0.5	13.2	14.1	0.2	0.4	0.4
LnGrp Delay(d),s/veh	56.9	0.0	0.0	54.0	0.0	51.7	2.9	6.7	6.8	5.0	0.9	0.9
LnGrp LOS	E			D		D	A	A	A	A	A	A
Approach Vol, veh/h	102			93			2018			1261		
Approach Delay, s/veh	56.9			53.1			6.6			0.9		
Approach LOS	E			D			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	103.2		16.8		103.2		16.8					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	89.0		19.0		89.0		19.0					
Max Q Clear Time (g_c+I1), s	28.4		10.4		31.5		8.3					
Green Ext Time (p_c), s	48.6		0.4		46.6		0.4					
Intersection Summary												
HCM 2010 Ctrl Delay				7.3								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	37	0	1611	114	0	1068	6
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	40	0	1732	123	0	1148	6




















Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2028	2894	585	2316	2897	873	1163	0	0	1734	0	0
Stage 1	1160	1160	-	1734	1734	-	-	-	-	-	-	-
Stage 2	868	1734	-	582	1163	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	34	16	454	21	16	297	596	-	-	359	-	-
Stage 1	208	268	-	93	144	-	-	-	-	-	-	-
Stage 2	314	141	-	471	271	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	29	16	451	20	16	295	596	-	-	358	-	-
Mov Cap-2 Maneuver	29	16	-	20	16	-	-	-	-	-	-	-
Stage 1	207	266	-	93	144	-	-	-	-	-	-	-
Stage 2	271	141	-	460	269	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	19.1	0	0
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	596	-	-	451	295	358	-	-
HCM Lane V/C Ratio	-	-	-	0.024	0.135	-	-	-
HCM Control Delay (s)	0	-	-	13.2	19.1	0	-	-
HCM Lane LOS	A	-	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0	-	-

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.




















5/6/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	52	99	78	266	82	113	92	1289	268	114	719	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	56	106	84	286	88	122	99	1386	288	123	773	26
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	269	128	101	329	158	219	399	1516	309	301	1838	62
Arrive On Green	0.05	0.13	0.12	0.13	0.22	0.21	0.08	1.00	1.00	0.05	0.53	0.52
Sat Flow, veh/h	1774	964	764	1792	715	991	1774	2929	598	1774	3494	118
Grp Volume(v), veh/h	56	0	190	286	0	210	99	827	847	123	391	408
Grp Sat Flow(s),veh/h/ln	1774	0	1728	1792	0	1706	1774	1770	1757	1774	1770	1842
Q Serve(g_s), s	3.2	0.0	12.9	16.0	0.0	13.2	3.2	0.0	0.0	3.9	16.2	16.2
Cycle Q Clear(g_c), s	3.2	0.0	12.9	16.0	0.0	13.2	3.2	0.0	0.0	3.9	16.2	16.2
Prop In Lane	1.00		0.44	1.00		0.58	1.00		0.34	1.00		0.06
Lane Grp Cap(c), veh/h	269	0	229	329	0	376	399	916	910	301	931	969
V/C Ratio(X)	0.21	0.00	0.83	0.87	0.00	0.56	0.25	0.90	0.93	0.41	0.42	0.42
Avail Cap(c_a), veh/h	293	0	230	329	0	376	399	916	910	301	931	969
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.9	0.0	51.0	38.2	0.0	41.8	12.9	0.0	0.0	12.1	17.3	17.3
Incr Delay (d2), s/veh	0.4	0.0	21.8	21.3	0.0	1.8	0.3	13.9	17.1	0.9	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.6	0.0	7.5	3.4	0.0	6.4	1.6	3.5	4.3	1.9	8.2	8.5
LnGrp Delay(d),s/veh	42.3	0.0	72.8	59.5	0.0	43.7	13.2	13.9	17.1	12.9	18.7	18.7
LnGrp LOS	D		E	E		D	B	B	B	B	B	B
Approach Vol, veh/h	246				496		1773				922	
Approach Delay, s/veh	65.8				52.8		15.4				17.9	
Approach LOS	E				D		B				B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	67.1	21.0	20.9	10.0	68.1	10.4	31.5				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	61.0	15.0	15.0	4.0	62.0	6.0	24.0				
Max Q Clear Time (g_c+I1), s	5.9	2.0	18.0	14.9	5.2	18.2	5.2	15.2				
Green Ext Time (p_c), s	0.0	31.3	0.0	0.0	0.0	26.7	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			25.1									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

35: Sawmill Pkwy. & Drive 1

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	5	2	8	124	1	20	35	1717	49	3	33	1042
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900		1863	1863
Adj Flow Rate, veh/h	5	2	9	133	1	22	38	1846	53		35	1120
Adj No. of Lanes	1	1	0	1	1	0	1	2	0		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	203	35	155	215	8	178	452	2753	79		188	2842
Arrive On Green	0.12	0.12	0.12	0.12	0.12	0.12	0.78	0.78	0.78		1.00	1.00
Sat Flow, veh/h	1383	296	1332	1398	69	1524	500	3514	100		237	3629
Grp Volume(v), veh/h	5	0	11	133	0	23	38	926	973		35	546
Grp Sat Flow(s),veh/h/ln	1383	0	1628	1398	0	1594	500	1770	1845		237	1770
Q Serve(g_s), s	0.4	0.0	0.7	11.2	0.0	1.6	2.1	28.5	29.0		6.8	0.0
Cycle Q Clear(g_c), s	1.9	0.0	0.7	11.9	0.0	1.6	2.1	28.5	29.0		35.8	0.0
Prop In Lane	1.00		0.82	1.00		0.96	1.00		0.05		1.00	
Lane Grp Cap(c), veh/h	203	0	190	215	0	186	452	1386	1445		188	1386
V/C Ratio(X)	0.02	0.00	0.06	0.62	0.00	0.12	0.08	0.67	0.67		0.19	0.39
Avail Cap(c_a), veh/h	226	0	217	238	0	212	452	1386	1445		188	1386
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	48.4	0.0	47.1	52.4	0.0	47.5	3.0	5.9	6.0		5.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.1	4.1	0.0	0.3	0.4	2.6	2.5		2.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	0.0	0.3	4.6	0.0	0.7	0.3	14.6	15.6		0.5	0.3
LnGrp Delay(d),s/veh	48.4	0.0	47.3	56.6	0.0	47.8	3.4	8.5	8.5		7.7	0.8
LnGrp LOS	D		D	E		D	A	A	A		A	A
Approach Vol, veh/h	16				156		1937				1156	
Approach Delay, s/veh	47.6				55.3		8.4				1.0	
Approach LOS	D				E		A				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	100.0		20.0		100.0		20.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	92.0		16.0		92.0		16.0					
Max Q Clear Time (g_c+I1), s	31.0		3.9		37.8		13.9					
Green Ext Time (p_c), s	45.9		0.4		42.0		0.1					
Intersection Summary												
HCM 2010 Ctrl Delay			8.2									
HCM 2010 LOS			A									
Notes												

HCM 2010 Signalized Intersection Summary 35: Sawmill Pkwy. & Drive 1

5/5/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	1
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	1
Adj No. of Lanes	0
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	3
Arrive On Green	1.00
Sat Flow, veh/h	3
Grp Volume(v), veh/h	575
Grp Sat Flow(s),veh/h/ln	1862
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	1459
V/C Ratio(X)	0.39
Avail Cap(c_a), veh/h	1459
HCM Platoon Ratio	2.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	0.8
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(-26165%),veh/ln	0.3
LnGrp Delay(d),s/veh	0.8
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	

User approved ignoring U-Turning movement.



A legacy of **experience**. A reputation for **excellence**.

APPENDIX F:

Capacity Analysis Reports
Year 2036



A legacy of experience. A reputation for excellence.

2036 AM Peak Hour
No Build

HCM 2010 TWSC
4: Bunker Ln & Seldom Seen Rd.

5/1/2015

Intersection												
Int Delay, s/veh	1.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	314	46	14	259	11	29	1	18	8	2	13
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	11	338	49	15	278	12	31	1	19	9	2	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	292	0	0	387	0	0	709	706	362	711	726	287
Stage 1	-	-	-	-	-	-	384	384	-	317	317	-
Stage 2	-	-	-	-	-	-	325	322	-	394	409	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1275	-	-	1177	-	-	352	363	687	351	354	757
Stage 1	-	-	-	-	-	-	643	615	-	698	658	-
Stage 2	-	-	-	-	-	-	692	655	-	635	600	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1274	-	-	1177	-	-	338	355	687	334	346	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	338	355	-	334	346	-
Stage 1	-	-	-	-	-	-	637	610	-	691	649	-
Stage 2	-	-	-	-	-	-	668	646	-	611	595	-













Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	14.3	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	338	655	1274	-	-	1177	-	-	334	652
HCM Lane V/C Ratio	0.092	0.031	0.008	-	-	0.013	-	-	0.026	0.025
HCM Control Delay (s)	16.7	10.7	7.9	-	-	8.1	-	-	16.1	10.7
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-	0	-	-	0.1	0.1

HCM 2010 Signalized Intersection Summary
























7: Liberty Rd & Seldom Seen Rd

5/1/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	46	283	274	506	699	185		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	49	304	295	544	752	199		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	315	281	275	1283	969	256		
Arrive On Green	0.18	0.18	0.69	0.69	0.69	0.69		
Sat Flow, veh/h	1774	1583	588	1863	1407	372		
Grp Volume(v), veh/h	49	304	295	544	0	951		
Grp Sat Flow(s),veh/h/ln	1774	1583	588	1863	0	1779		
Q Serve(g_s), s	2.1	16.0	29.8	11.6	0.0	32.2		
Cycle Q Clear(g_c), s	2.1	16.0	62.0	11.6	0.0	32.2		
Prop In Lane	1.00	1.00	1.00			0.21		
Lane Grp Cap(c), veh/h	315	281	275	1283	0	1226		
V/C Ratio(X) Δ	0.16	1.08	1.07	0.42	0.00	0.78		
Avail Cap(c_a), veh/h	315	281	275	1283	0	1226		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	31.3	37.0	34.4	6.2	0.0	9.4		
Incr Delay (d2), s/veh	0.2	76.6	75.2	1.0	0.0	4.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	1.1	12.9	12.5	6.3	0.0	17.2		
LnGrp Delay(d),s/veh	31.5	113.6	109.6	7.2	0.0	14.2		
LnGrp LOS	C	F	F	A		B		
Approach Vol, veh/h	353			839	951			
Approach Delay, s/veh	102.2			43.2	14.2			
Approach LOS	F			D	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		68.0		22.0		68.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		62.0		16.0		62.0		
Max Q Clear Time (g_c+I1), s		64.0		18.0		34.2		
Green Ext Time (p_c), s		0.0		0.0		17.3		
Intersection Summary								
HCM 2010 Ctrl Delay			40.1					
HCM 2010 LOS			D					




















HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	164	318	122	137	293	62	278	868	130	358	1701	228
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	176	342	131	147	315	67	299	933	140	385	1829	245
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	241	587	389	268	488	102	275	1610	799	757	1659	822
Arrive On Green	0.07	0.17	0.17	0.07	0.17	0.16	0.11	0.61	0.59	0.12	0.62	0.60
Sat Flow, veh/h	3442	3539	1583	1792	2942	618	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	176	342	131	147	190	192	299	933	140	385	1829	245
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1772	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	5.0	8.9	6.8	6.8	9.9	10.2	8.0	16.0	3.6	5.7	46.4	6.8
Cycle Q Clear(g_c), s	5.0	8.9	6.8	6.8	9.9	10.2	8.0	16.0	3.6	5.7	46.4	6.8
Prop In Lane	1.00		1.00	1.00		0.35	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	587	389	268	296	294	275	1610	799	757	1659	822
V/C Ratio(X)	0.73	0.58	0.34	0.55	0.64	0.65	1.09	0.58	0.18	0.51	1.10	0.30
Avail Cap(c_a), veh/h	241	849	507	268	429	425	275	1610	799	794	1659	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	38.5	31.0	32.3	38.9	39.2	44.7	13.9	9.7	13.3	19.1	9.8
Incr Delay (d2), s/veh	10.7	0.9	0.5	2.3	2.3	2.5	79.1	1.5	0.5	0.5	55.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	4.4	3.0	3.5	5.1	5.2	6.8	8.1	1.7	2.7	35.3	3.2	
LnGrp Delay(d),s/veh	56.3	39.4	31.5	34.6	41.2	41.7	123.8	15.5	10.2	13.8	74.9	10.7
LnGrp LOS	E	D	C	C	D	D	F	B	B	B	F	B
Approach Vol, veh/h		649			529			1372			2459	
Approach Delay, s/veh		42.4			39.6			38.5			58.9	
Approach LOS		D			D			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	13.0	21.6	14.0	51.4	13.0	21.6	14.9	50.5				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	23.0	23.0	7.0	38.0	6.0	23.0	9.0	36.0				
Max Q Clear Time (g_c+I), s	10.9	10.9	10.0	48.4	7.0	12.2	7.7	18.0				
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	3.4	0.2	16.1				
Intersection Summary												
HCM 2010 Ctrl Delay			49.1									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	8	55	35	1	18	20	1107	73	57	2152	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	9	59	38	1	19	22	1190	78	61	2314	30
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	64	22	84	172	6	113	196	2736	179	425	2903	38
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	248	275	1065	1269	76	1437	153	3372	221	435	3578	46
Grp Volume(v), veh/h	88	0	0	38	0	20	22	624	644	61	1142	1202
Grp Sat Flow(s),veh/h/ln	1589	0	0	1269	0	1513	153	1770	1823	435	1770	1855
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.8	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.23		0.67	1.00		0.95	1.00		0.12	1.00		0.02
Lane Grp Cap(c), veh/h	169	0	0	172	0	119	196	1436	1479	425	1436	1505
V/C Ratio(X)	△ 0.52	0.00	0.00	0.22	0.00	0.17	0.11	0.43	0.44	0.14	0.80	0.80
Avail Cap(c_a), veh/h	342	0	0	313	0	287	196	1436	1479	425	1436	1505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	0.0	43.8	0.0	43.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.6	0.0	0.7	1.2	1.0	0.9	0.7	4.6	4.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	1.0	0.0	0.5	0.1	0.4	0.4	0.1	1.8	1.9
LnGrp Delay(d),s/veh	47.3	0.0	0.0	44.4	0.0	43.7	1.2	1.0	0.9	0.7	4.6	4.5
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h	88			58			1290			2405		
Approach Delay, s/veh	47.3			44.1			1.0			4.5		
Approach LOS	D			D			A			A		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	86.1		13.9		86.1		13.9					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	69.0		19.0		69.0		19.0					
Max Q Clear Time (g_c+I1), s	2.0		7.3		2.0		4.8					
Green Ext Time (p_c), s	60.4		0.3		60.4		0.3					
Intersection Summary												
HCM 2010 Ctrl Delay				4.9								
HCM 2010 LOS				A								

Intersection

Int Delay, s/veh 0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	19	0	1097	40	0	2126	1
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	20	0	1180	43	0	2286	1






















Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2887	3477	1152	2333	3477	597	2295	0	0	1182	0	0
Stage 1	2295	2295	-	1182	1182	-	-	-	-	-	-	-
Stage 2	592	1182	-	1151	2295	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	7	6	191	20	7	451	216	-	-	587	-	-
Stage 1	40	73	-	205	266	-	-	-	-	-	-	-
Stage 2	460	262	-	214	75	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	7	6	190	19	7	448	216	-	-	585	-	-
Mov Cap-2 Maneuver	7	6	-	19	7	-	-	-	-	-	-	-
Stage 1	40	73	-	205	266	-	-	-	-	-	-	-
Stage 2	437	262	-	202	75	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.1	13.4	0	0
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	216	-	-	190	448	585	-	-
HCM Lane V/C Ratio	-	-	-	0.057	0.046	-	-	-
HCM Control Delay (s)	0	-	-	25.1	13.4	0	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.




















5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	99	138	260	45	72	51	920	145	112	1688	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	51	106	148	280	48	77	55	989	156	120	1815	85
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	302	99	138	233	122	195	145	1562	246	338	1821	85
Arrive On Green	0.04	0.14	0.13	0.09	0.19	0.18	0.05	0.68	0.66	0.08	0.70	0.69
Sat Flow, veh/h	1774	705	984	1792	652	1045	1774	3064	483	1774	3444	160
Grp Volume(v), veh/h	51	0	254	280	0	125	55	571	574	120	926	974
Grp Sat Flow(s),veh/h/ln	1774	0	1689	1792	0	1697	1774	1770	1778	1774	1770	1834
Q Serve(g_s), s	2.4	0.0	14.0	9.0	0.0	6.5	1.4	18.2	18.4	3.1	51.1	52.9
Cycle Q Clear(g_c), s	2.4	0.0	14.0	9.0	0.0	6.5	1.4	18.2	18.4	3.1	51.1	52.9
Prop In Lane	1.00		0.58	1.00		0.62	1.00		0.27	1.00		0.09
Lane Grp Cap(c), veh/h	302	0	236	233	0	317	145	902	906	338	936	970
V/C Ratio(X)	0.17	0.00	1.07	1.20	0.00	0.39	0.38	0.63	0.63	0.35	0.99	1.00
Avail Cap(c_a), veh/h	314	0	236	233	0	317	214	902	906	391	936	970
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(l)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	43.3	36.1	0.0	36.0	23.1	10.8	11.0	11.9	14.6	14.9
Incr Delay (d2), s/veh	0.3	0.0	79.6	123.9	0.0	0.8	1.6	3.4	3.4	0.6	27.1	29.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	0.0	11.7	10.0	0.0	3.1	0.8	9.5	9.6	1.6	31.4	33.9
LnGrp Delay(d),s/veh	34.6	0.0	122.9	159.9	0.0	36.8	24.7	14.2	14.3	12.5	41.7	44.8
LnGrp LOS	C		F	F		D	C	B	B	B	D	F
Approach Vol, veh/h	305				405		1200				2020	
Approach Delay, s/veh	108.1				121.9		14.7				41.5	
Approach LOS	F				F		B				D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	56.0	14.0	19.0	9.1	57.9	9.3	23.7				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	47.0	8.0	13.0	7.0	48.0	4.0	17.0				
Max Q Clear Time (g_c+l1), s	5.1	20.4	11.0	16.0	3.4	54.9	4.4	8.5				
Green Ext Time (p_c), s	0.1	22.7	0.0	0.0	0.0	0.0	0.0	0.8				
Intersection Summary												
HCM 2010 Ctrl Delay			46.8									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

35: Sawmill Pkwy. & Drive 1

5/1/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	3	1	8	59	0	8	16	1140	36	6	26	2104
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900		1863	1863
Adj Flow Rate, veh/h	3	1	9	63	0	9	17	1226	39		28	2262
Adj No. of Lanes	1	1	0	1	1	0	1	2	0		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	155	10	94	154	0	103	207	2854	91		425	2960
Arrive On Green	0.06	0.06	0.06	0.06	0.00	0.06	1.00	1.00	0.82		1.00	1.00
Sat Flow, veh/h	1400	161	1447	1399	0	1583	165	3501	111		436	3630
Grp Volume(v), veh/h	3	0	10	63	0	9	17	619	646		28	1102
Grp Sat Flow(s),veh/h/ln	1400	0	1607	1399	0	1583	165	1770	1843		436	1770
Q Serve(g_s), s	0.2	0.0	0.6	4.4	0.0	0.5	0.0	0.0	0.7		0.1	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.6	5.0	0.0	0.5	0.0	0.0	0.7		0.7	0.0
Prop In Lane	1.00		0.90	1.00		1.00	1.00		0.06		1.00	
Lane Grp Cap(c), veh/h	155	0	104	154	0	103	207	1443	1503		425	1443
V/C Ratio(X)	0.02	0.00	0.10	0.41	0.00	0.09	0.08	0.43	0.43		0.07	0.76
Avail Cap(c_a), veh/h	289	0	257	288	0	253	207	1443	1503		425	1443
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.00		1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	44.3	0.0	44.0	46.4	0.0	44.0	0.0	0.0	0.1		0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.4	1.7	0.0	0.4	0.8	0.9	0.9		0.3	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	0.0	0.3	1.8	0.0	0.2	0.0	0.4	0.6		0.0	1.6
LnGrp Delay(d),s/veh	44.4	0.0	44.4	48.1	0.0	44.3	0.8	0.9	1.0		0.3	3.9
LnGrp LOS	D		D	D		D	A	A	A		A	A
Approach Vol, veh/h	13				72		1282				2291	
Approach Delay, s/veh	44.4				47.6		1.0				3.8	
Approach LOS	D				D		A				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	87.5		12.5		87.5		12.5					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	72.0		16.0		72.0		16.0					
Max Q Clear Time (g_c+I1), s	2.7		2.7		2.7		7.0					
Green Ext Time (p_c), s	60.0		0.2		60.0		0.1					
Intersection Summary												
HCM 2010 Ctrl Delay			3.8									
HCM 2010 LOS			A									

HCM 2010 Signalized Intersection Summary 35: Sawmill Pkwy. & Drive 1

5/1/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	1
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	1
Adj No. of Lanes	0
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	1
Arrive On Green	1.00
Sat Flow, veh/h	2
Grp Volume(v), veh/h	1161
Grp Sat Flow(s),veh/h/ln	1862
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	1518
V/C Ratio(X)	0.76
Avail Cap(c_a), veh/h	1518
HCM Platoon Ratio	2.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	3.7
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(-26165%),veh/ln	1.6
LnGrp Delay(d),s/veh	3.7
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



A legacy of experience. A reputation for excellence.

2036 AM Peak Hour Full Build

HCM 2010 TWSC
4: Bunker Ln & Seldom Seen Rd.

5/5/2015

Intersection

Int Delay, s/veh 2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	10	317	86	23	264	11	51	1	23	8	2	13
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	125	-	-	125	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	11	341	92	25	284	12	55	1	25	9	2	14













Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	298	0	0	433	0	0	758	756	387	763	796	293
Stage 1	-	-	-	-	-	-	409	409	-	341	341	-
Stage 2	-	-	-	-	-	-	349	347	-	422	455	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	1269	-	-	1132	-	-	326	340	665	324	322	751
Stage 1	-	-	-	-	-	-	623	600	-	678	642	-
Stage 2	-	-	-	-	-	-	671	638	-	613	572	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1268	-	-	1132	-	-	311	329	665	303	312	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	311	329	-	303	312	-
Stage 1	-	-	-	-	-	-	618	595	-	671	627	-
Stage 2	-	-	-	-	-	-	641	623	-	584	567	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.6	16.4	13.1
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	311	638	1268	-	-	1132	-	-	303	631
HCM Lane V/C Ratio	0.176	0.04	0.008	-	-	0.022	-	-	0.028	0.026
HCM Control Delay (s)	19	10.9	7.9	-	-	8.3	-	-	17.2	10.9
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.6	0.1	0	-	-	0.1	-	-	0.1	0.1

























HCM 2010 Signalized Intersection Summary
7: Liberty Rd & Seldom Seen Rd

5/5/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	48	288	283	506	699	190		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	52	310	304	544	752	204		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	315	281	271	1283	963	261		
Arrive On Green	0.18	0.18	0.69	0.69	0.69	0.69		
Sat Flow, veh/h	1774	1583	585	1863	1398	379		
Grp Volume(v), veh/h	52	310	304	544	0	956		
Grp Sat Flow(s),veh/h/ln	1774	1583	585	1863	0	1778		
Q Serve(g_s), s	2.2	16.0	29.4	11.6	0.0	32.6		
Cycle Q Clear(g_c), s	2.2	16.0	62.0	11.6	0.0	32.6		
Prop In Lane	1.00	1.00	1.00			0.21		
Lane Grp Cap(c), veh/h	315	281	271	1283	0	1225		
V/C Ratio(X)	0.16	1.10	1.12	0.42	0.00	0.78		
Avail Cap(c_a), veh/h	315	281	271	1283	0	1225		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	31.3	37.0	34.6	6.2	0.0	9.4		
Incr Delay (d2), s/veh	0.2	83.5	91.2	1.0	0.0	5.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	1.1	13.5	13.6	6.3	0.0	17.4		
LnGrp Delay(d),s/veh	31.6	120.5	125.8	7.2	0.0	14.4		
LnGrp LOS	C	F	F	A		B		
Approach Vol, veh/h	362			848	956			
Approach Delay, s/veh	107.8			49.7	14.4			
Approach LOS	F			D	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		68.0		22.0		68.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		62.0		16.0		62.0		
Max Q Clear Time (g_c+I1), s		64.0		18.0		34.6		
Green Ext Time (p_c), s		0.0		0.0		17.3		
Intersection Summary								
HCM 2010 Ctrl Delay			43.8					
HCM 2010 LOS			D					




















HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	172	318	122	137	293	67	278	931	130	361	1734	232
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	185	342	131	147	315	72	299	1001	140	388	1865	249
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	241	592	392	270	485	109	275	1602	796	718	1654	820
Arrive On Green	0.07	0.17	0.17	0.07	0.17	0.16	0.11	0.60	0.59	0.12	0.62	0.60
Sat Flow, veh/h	3442	3539	1583	1792	2899	654	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	185	342	131	147	192	195	299	1001	140	388	1865	249
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1766	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	5.3	8.9	6.8	6.8	10.1	10.3	8.0	18.0	3.7	5.8	46.3	7.0
Cycle Q Clear(g_c), s	5.3	8.9	6.8	6.8	10.1	10.3	8.0	18.0	3.7	5.8	46.3	7.0
Prop In Lane	1.00		1.00	1.00		0.37	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	241	592	392	270	299	296	275	1602	796	718	1654	820
V/C Ratio(X)	 0.77	0.58	0.33	0.54	0.64	0.66	1.09	0.62	0.18	0.54	1.13	0.30
Avail Cap(c_a), veh/h	241	849	507	270	429	424	275	1602	796	754	1654	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.7	38.4	30.9	32.2	38.8	39.1	44.7	14.5	9.8	14.0	19.2	9.9
Incr Delay (d2), s/veh	13.9	0.9	0.5	2.3	2.3	2.5	79.1	1.8	0.5	0.7	65.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	4.4	3.0	3.5	5.2	5.2	6.8	9.1	1.7	2.8	37.5	3.2	
LnGrp Delay(d),s/veh	59.6	39.3	31.4	34.4	41.2	41.6	123.8	16.3	10.3	14.7	85.1	10.8
LnGrp LOS	E	D	C	C	D	D	F	B	B	B	F	B
Approach Vol, veh/h	658				534		1440		2502			
Approach Delay, s/veh	43.4				39.5		38.0		66.8			
Approach LOS	D				D		D		E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	33.0	21.7	14.0	51.3	13.0	21.7	15.0	50.3				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	33.0	23.0	7.0	38.0	6.0	23.0	9.0	36.0				
Max Q Clear Time (g_c+I), s	10.8	10.9	10.0	48.3	7.3	12.3	7.8	20.0				
Green Ext Time (p_c), s	0.0	3.6	0.0	0.0	0.0	3.4	0.2	14.6				
Intersection Summary												
HCM 2010 Ctrl Delay			52.9									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.





















5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	19	8	55	35	1	18	20	1183	73	57	2192	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	20	9	59	38	1	19	22	1272	78	61	2357	30
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	64	22	84	172	6	113	191	2749	168	398	2904	37
Arrive On Green	0.08	0.08	0.08	0.08	0.08	0.08	1.00	1.00	1.00	1.00	1.00	1.00
Sat Flow, veh/h	248	275	1065	1269	76	1437	146	3388	207	402	3579	45
Grp Volume(v), veh/h	88	0	0	38	0	20	22	663	687	61	1163	1224
Grp Sat Flow(s),veh/h/ln	1589	0	0	1269	0	1513	146	1770	1826	402	1770	1855
Q Serve(g_s), s	3.0	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.3	0.0	0.0	2.8	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0
Prop In Lane	0.23		0.67	1.00		0.95	1.00		0.11	1.00		0.02
Lane Grp Cap(c), veh/h	169	0	0	172	0	119	191	1436	1481	398	1436	1505
V/C Ratio(X)	0.52	0.00	0.00	0.22	0.00	0.17	0.12	0.46	0.46	0.15	0.81	0.81
Avail Cap(c_a), veh/h	342	0	0	313	0	287	191	1436	1481	398	1436	1505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.9	0.0	0.0	43.8	0.0	43.0	0.0	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	2.5	0.0	0.0	0.6	0.0	0.7	1.2	1.1	1.0	0.8	5.0	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	1.0	0.0	0.5	0.1	0.4	0.4	0.1	2.0	2.1
LnGrp Delay(d),s/veh	47.3	0.0	0.0	44.4	0.0	43.7	1.2	1.1	1.0	0.8	5.0	4.9
LnGrp LOS	D			D		D	A	A	A	A	A	A
Approach Vol, veh/h		88			58			1372			2448	
Approach Delay, s/veh		47.3			44.1			1.1			4.9	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		86.1		13.9		86.1		13.9				
Change Period (Y+Rc), s		6.0		6.0		6.0		6.0				
Max Green Setting (Gmax), s		69.0		19.0		69.0		19.0				
Max Q Clear Time (g_c+I1), s		2.0		7.3		2.0		4.8				
Green Ext Time (p_c), s		61.7		0.3		61.7		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			5.1									
HCM 2010 LOS			A									

Intersection												
Int Delay, s/veh		0.1										
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	13	0	1126	54	0	2163	1
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	14	0	1211	58	0	2326	1
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2941	3547	1171	2384	3548	612	2335	0	0	1213	0	0
Stage 1	2334	2334	-	1213	1213	-	-	-	-	-	-	-
Stage 2	607	1213	-	1171	2335	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	7	6	186	18	6	441	209	-	-	571	-	-
Stage 1	37	69	-	196	257	-	-	-	-	-	-	-
Stage 2	450	253	-	208	71	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	7	6	185	17	6	438	209	-	-	569	-	-
Mov Cap-2 Maneuver	7	6	-	17	6	-	-	-	-	-	-	-
Stage 1	37	69	-	196	257	-	-	-	-	-	-	-
Stage 2	434	253	-	196	71	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	25.7			13.5			0			0		
HCM LOS	D			B								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	209	-	-	185	438	569	-	-				
HCM Lane V/C Ratio	-	-	-	0.058	0.032	-	-	-				
HCM Control Delay (s)	0	-	-	25.7	13.5	0	-	-				
HCM Lane LOS	A	-	-	D	B	A	-	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-				

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.





















5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	102	141	278	46	80	52	929	172	127	1704	79
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	51	110	152	299	49	86	56	999	185	137	1832	85
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	267	92	127	215	102	179	156	1569	290	347	1890	87
Arrive On Green	0.04	0.13	0.12	0.08	0.17	0.16	0.06	0.70	0.69	0.09	0.73	0.72
Sat Flow, veh/h	1774	709	980	1792	614	1077	1774	2983	552	1774	3446	159
Grp Volume(v), veh/h	51	0	262	299	0	135	56	592	592	137	934	983
Grp Sat Flow(s),veh/h/ln	1774	0	1690	1792	0	1691	1774	1770	1765	1774	1770	1835
Q Serve(g_s), s	2.4	0.0	13.0	8.0	0.0	7.3	1.4	18.1	18.3	3.4	48.0	50.4
Cycle Q Clear(g_c), s	2.4	0.0	13.0	8.0	0.0	7.3	1.4	18.1	18.3	3.4	48.0	50.4
Prop In Lane	1.00		0.58	1.00		0.64	1.00		0.31	1.00		0.09
Lane Grp Cap(c), veh/h	267	0	220	215	0	281	156	931	929	347	971	1006
V/C Ratio(X)	△ 0.19	0.00	1.19	1.39	0.00	0.48	0.36	0.64	0.64	0.39	0.96	0.98
Avail Cap(c_a), veh/h	278	0	220	215	0	281	224	931	929	393	971	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.2	0.0	43.8	38.3	0.0	38.1	22.7	9.8	10.0	11.2	12.6	13.0
Incr Delay (d2), s/veh	0.3	0.0	122.6	200.9	0.0	1.3	1.4	3.3	3.3	0.7	21.2	23.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.2	0.0	13.5	17.1	0.0	3.5	0.9	9.4	9.5	1.8	28.2	31.2
LnGrp Delay(d),s/veh	35.6	0.0	166.4	239.1	0.0	39.3	24.1	13.1	13.4	11.9	33.8	36.2
LnGrp LOS	D		F	F		D	C	B	B	B	C	D
Approach Vol, veh/h	313				434				1240		2054	
Approach Delay, s/veh	145.1				177.0				13.7		33.5	
Approach LOS	F				F				B		C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.4	57.6	13.0	18.0	9.2	59.8	9.4	21.6				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	8.0	49.0	7.0	12.0	7.0	50.0	4.0	15.0				
Max Q Clear Time (g_c+I1), s	5.4	20.3	10.0	15.0	3.4	52.4	4.4	9.3				
Green Ext Time (p_c), s	0.1	24.5	0.0	0.0	0.0	0.0	0.0	0.6				
Intersection Summary												
HCM 2010 Ctrl Delay			51.5									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

35: Sawmill Pkwy. & Drive 1

5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	3	1	8	86	0	13	16	1178	74	6	50	2117
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900		1863	1863
Adj Flow Rate, veh/h	3	1	9	92	0	14	17	1267	80		54	2276
Adj No. of Lanes	1	1	0	1	1	0	1	2	0		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	184	14	128	188	0	140	201	2676	169		341	2873
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.79	0.79	0.79		1.00	1.00
Sat Flow, veh/h	1394	161	1447	1399	0	1583	163	3382	213		404	3630
Grp Volume(v), veh/h	3	0	10	92	0	14	17	662	685		54	1109
Grp Sat Flow(s),veh/h/ln	1394	0	1607	1399	0	1583	163	1770	1825		404	1770
Q Serve(g_s), s	0.2	0.0	0.6	6.5	0.0	0.8	2.4	12.5	12.5		2.5	0.0
Cycle Q Clear(g_c), s	1.0	0.0	0.6	7.0	0.0	0.8	2.4	12.5	12.5		15.1	0.0
Prop In Lane	1.00		0.90	1.00		1.00	1.00		0.12		1.00	
Lane Grp Cap(c), veh/h	184	0	142	188	0	140	201	1400	1444		341	1400
V/C Ratio(X)	0.02	0.00	0.07	0.49	0.00	0.10	0.08	0.47	0.47		0.16	0.79
Avail Cap(c_a), veh/h	284	0	257	288	0	253	201	1400	1444		341	1400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	42.4	0.0	41.8	45.0	0.0	41.9	2.4	3.5	3.5		1.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.2	2.0	0.0	0.3	0.8	1.1	1.1		1.0	4.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.1	0.0	0.3	2.6	0.0	0.4	0.2	6.3	6.5		0.4	1.8
LnGrp Delay(d),s/veh	42.4	0.0	42.0	47.0	0.0	42.2	3.3	4.6	4.6		2.2	4.7
LnGrp LOS	D		D	D		D	A	A	A		A	A
Approach Vol, veh/h	13				106		1364				2331	
Approach Delay, s/veh	42.1				46.3		4.6				4.5	
Approach LOS	D				D		A				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	85.1		14.9		85.1		14.9					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	72.0		16.0		72.0		16.0					
Max Q Clear Time (g_c+I1), s	14.5		3.0		17.1		9.0					
Green Ext Time (p_c), s	52.1		0.3		50.0		0.2					
Intersection Summary												
HCM 2010 Ctrl Delay			5.8									
HCM 2010 LOS			A									
Notes												
User approved ignoring U-Turning movement.												

HCM 2010 Signalized Intersection Summary 35: Sawmill Pkwy. & Drive 1

5/5/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	1
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	1
Adj No. of Lanes	0
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	1
Arrive On Green	1.00
Sat Flow, veh/h	2
Grp Volume(v), veh/h	1168
Grp Sat Flow(s),veh/h/ln	1862
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	1474
V/C Ratio(X)	0.79
Avail Cap(c_a), veh/h	1474
HCM Platoon Ratio	2.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	4.4
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(-26165%),veh/ln	1.8
LnGrp Delay(d),s/veh	4.4
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



A legacy of **experience**. A reputation for **excellence**.

2036 PM Peak Hour
No Build

HCM 2010 TWSC
4: Bunker Ln & Seldom Seen Rd.

5/4/2015

Intersection

Int Delay, s/veh 3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	515	42	33	556	26	43	0	37	25	1	21
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	27	554	45	35	598	28	46	0	40	27	1	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	628	0	0	599	0	0	1327	1329	576	1335	1338	615
Stage 1	-	-	-	-	-	-	630	630	-	685	685	-
Stage 2	-	-	-	-	-	-	697	699	-	650	653	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	959	-	-	983	-	-	134	156	521	132	154	495
Stage 1	-	-	-	-	-	-	473	478	-	441	451	-
Stage 2	-	-	-	-	-	-	435	445	-	461	467	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	958	-	-	983	-	-	121	146	521	116	144	494
Mov Cap-2 Maneuver	-	-	-	-	-	-	121	146	-	116	144	-
Stage 1	-	-	-	-	-	-	460	465	-	428	434	-
Stage 2	-	-	-	-	-	-	399	428	-	414	454	-












Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.5	33.8	30.4
HCM LOS			D	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	121	521	958	-	-	983	-	-	116	445
HCM Lane V/C Ratio Δ	0.382	0.076	0.028	-	-	0.036	-	-	0.232	0.053
HCM Control Delay (s)	52.1	12.5	8.9	-	-	8.8	-	-	45.2	13.5
HCM Lane LOS	F	B	A	-	-	A	-	-	E	B
HCM 95th %tile Q(veh)	1.6	0.2	0.1	-	-	0.1	-	-	0.8	0.2

HCM 2010 Signalized Intersection Summary
























7: Liberty Rd & Seldom Seen Rd

5/4/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	190	337	336	852	545	192		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	204	362	361	916	586	206		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	355	317	349	1242	870	306		
Arrive On Green	0.20	0.20	0.67	0.67	0.67	0.67		
Sat Flow, veh/h	1774	1583	682	1863	1305	459		
Grp Volume(v), veh/h	204	362	361	916	0	792		
Grp Sat Flow(s),veh/h/ln	1774	1583	682	1863	0	1764		
Q Serve(g_s), s	9.4	18.0	35.5	29.0	0.0	24.5		
Cycle Q Clear(g_c), s	9.4	18.0	60.0	29.0	0.0	24.5		
Prop In Lane	1.00	1.00	1.00			0.26		
Lane Grp Cap(c), veh/h	355	317	349	1242	0	1176		
V/C Ratio(X)	0.57	1.14	1.03	0.74	0.00	0.67		
Avail Cap(c_a), veh/h	355	317	349	1242	0	1176		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	32.5	36.0	31.3	9.8	0.0	9.1		
Incr Delay (d2), s/veh	2.3	95.2	57.0	2.4	0.0	1.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	4.8	16.2	14.2	15.6	0.0	12.2		
LnGrp Delay(d),s/veh	34.8	131.2	88.3	12.2	0.0	10.6		
LnGrp LOS	C	F	F	B		B		
Approach Vol, veh/h	566			1277	792			
Approach Delay, s/veh	96.4			33.7	10.6			
Approach LOS	F			C	B			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		66.0		24.0		66.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		60.0		18.0		60.0		
Max Q Clear Time (g_c+l1), s		62.0		20.0		26.5		
Green Ext Time (p_c), s		0.0		0.0		22.0		
Intersection Summary								
HCM 2010 Ctrl Delay			40.2					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.




















5/4/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	532	473	137	299	389	194	433	2271	228	514	1404	185
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	572	509	147	322	418	209	466	2442	245	553	1510	199
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	373	531	435	245	328	163	430	1652	871	348	1579	853
Arrive On Green	0.11	0.15	0.15	0.10	0.14	0.13	0.13	0.47	0.46	0.10	0.44	0.43
Sat Flow, veh/h	3442	3539	1583	1792	2319	1147	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	572	509	147	322	321	306	466	2442	245	553	1510	199
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1679	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	13.0	17.1	8.9	12.0	17.0	17.0	15.0	56.0	9.9	12.0	49.0	8.0
Cycle Q Clear(g_c), s	13.0	17.1	8.9	12.0	17.0	17.0	15.0	56.0	9.9	12.0	49.0	8.0
Prop In Lane	1.00		1.00	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	531	435	245	253	238	430	1652	871	348	1579	853
V/C Ratio(X)	1.53	0.96	0.34	1.32	1.27	1.29	1.08	1.48	0.28	1.59	0.96	0.23
Avail Cap(c_a), veh/h	373	531	435	245	253	238	430	1652	871	348	1579	853
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	50.6	34.8	43.2	51.5	51.8	52.5	32.0	14.4	54.0	32.4	14.9
Incr Delay (d2), s/veh	253.5	28.9	0.5	167.8	148.2	156.7	67.6	218.7	0.8	279.2	14.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	10.5	3.9	20.5	18.8	18.2	11.2	77.5	4.5	19.2	27.3	3.6	
LnGrp Delay(d),s/veh	307.0	79.5	35.2	211.0	199.7	208.5	120.1	250.7	15.2	333.2	46.8	15.6
LnGrp LOS	F	E	D	F	F	F	F	F	B	F	D	B
Approach Vol, veh/h	1228				949		3153				2262	
Approach Delay, s/veh	180.2				206.4		213.1				114.1	
Approach LOS	F				F		F				F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	23.0	21.0	58.0	19.0	22.0	18.0	61.0				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	17.0	17.0	14.0	52.0	12.0	16.0	11.0	55.0				
Max Q Clear Time (g_c+ffl), s	19.1	17.0	51.0	15.0	19.0	14.0	58.0					
Green Ext Time (p_c), s	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			177.4									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary

21: Sawmill Pkwy. & Big Bear Ave.

5/4/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	20	34	53	15	19	96	3042	138	33	1891	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1900	1792	1792	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	43	22	37	57	16	20	103	3271	148	35	2033	46
Adj No. of Lanes	0	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	6	6	6	2	2	2	2	2	2
Cap, veh/h	72	22	29	131	48	60	227	2903	130	60	2978	67
Arrive On Green	0.07	0.07	0.07	0.07	0.07	0.07	0.84	0.84	0.83	1.00	1.00	1.00
Sat Flow, veh/h	438	325	435	1280	718	897	198	3450	155	51	3538	80
Grp Volume(v), veh/h	102	0	0	57	0	36	103	1666	1753	35	1013	1066
Grp Sat Flow(s),veh/h/ln	198	0	0	1280	0	1615	198	1770	1835	51	1770	1849
Q Serve(g_s), s	5.4	0.0	0.0	0.0	0.0	2.6	20.5	101.0	101.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	8.0	0.0	0.0	6.3	0.0	2.6	20.5	101.0	101.0	101.0	0.0	0.0
Prop In Lane	0.42		0.36	1.00		0.56	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	123	0	0	131	0	108	227	1489	1544	60	1489	1556
V/C Ratio(X)	0.83	0.00	0.00	0.43	0.00	0.33	0.45	1.12	1.14	0.58	0.68	0.69
Avail Cap(c_a), veh/h	123	0	0	131	0	108	227	1489	1544	60	1489	1556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.4	0.0	0.0	55.2	0.0	53.5	3.1	9.5	9.5	50.5	0.0	0.0
Incr Delay (d2), s/veh	36.3	0.0	0.0	2.3	0.0	1.8	6.4	62.9	69.4	35.3	2.5	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	2.0	0.0	1.2	1.5	73.2	78.7	1.7	1.0	1.1
LnGrp Delay(d),s/veh	93.7	0.0	0.0	57.5	0.0	55.3	9.5	72.4	79.0	85.8	2.5	2.5
LnGrp LOS	F			E		E	A	F	F	F	A	A
Approach Vol, veh/h	102				93		3522				2114	
Approach Delay, s/veh	93.7				56.6		73.8				3.9	
Approach LOS	F				E		E				A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	106.0		14.0		106.0		14.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	100.0		8.0		100.0		8.0					
Max Q Clear Time (g_c+l1), s	103.0		10.0		103.0		8.3					
Green Ext Time (p_c), s	0.0		0.0		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay			48.6									
HCM 2010 LOS			D									

Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	35	0	2871	108	0	1856	6
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	38	0	3087	116	0	1996	6






















Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3553	5096	1009	4095	5099	1551	2010	0	0	3089	0	0
Stage 1	2007	2007	-	3089	3089	-	-	-	-	-	-	-
Stage 2	1546	3089	-	1006	2010	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	2	0	238	1	1	105	280	-	-	104	-	-
Stage 1	61	102	-	12	28	-	-	-	-	-	-	-
Stage 2	120	28	-	262	104	-	-	-	-	-	-	-
Platoon blocked, %												
Mov Cap-1 Maneuver	1	0	236	1	1	104	280	-	-	104	-	-
Mov Cap-2 Maneuver	1	0	-	1	1	-	-	-	-	-	-	-
Stage 1	61	101	-	12	28	-	-	-	-	-	-	-
Stage 2	76	28	-	250	103	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21	58.1	0	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	280	-	-	236	104	104	-	-
HCM Lane V/C Ratio	-	-	-	0.046	0.362	-	-	-
HCM Control Delay (s)	0	-	-	21	58.1	0	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.4	0	-	-





















HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.

5/4/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	158	124	402	130	156	160	2302	444	187	1270	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	91	170	133	432	140	168	172	2475	477	201	1366	46
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	150	121	95	254	150	179	271	1638	306	149	1851	62
Arrive On Green	0.04	0.13	0.12	0.11	0.19	0.18	0.14	1.00	1.00	0.05	0.53	0.52
Sat Flow, veh/h	1774	970	759	1792	780	936	1774	2978	556	1774	3494	118
Grp Volume(v), veh/h	91	0	303	432	0	308	172	1438	1514	201	691	721
Grp Sat Flow(s),veh/h/ln	1774	0	1729	1792	0	1716	1774	1770	1765	1774	1770	1842
Q Serve(g_s), s	5.0	0.0	15.0	13.0	0.0	21.2	5.3	0.0	66.0	6.0	36.1	36.3
Cycle Q Clear(g_c), s	5.0	0.0	15.0	13.0	0.0	21.2	5.3	0.0	66.0	6.0	36.1	36.3
Prop In Lane	1.00		0.44	1.00		0.55	1.00		0.32	1.00		0.06
Lane Grp Cap(c), veh/h	150	0	216	254	0	329	271	973	971	149	938	976
V/C Ratio(X)	0.61	0.00	1.40	1.70	0.00	0.94	0.64	1.48	1.56	1.35	0.74	0.74
Avail Cap(c_a), veh/h	150	0	216	254	0	329	309	973	971	149	938	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	0.0	52.7	42.0	0.0	48.1	18.6	0.0	0.0	35.4	21.8	21.8
Incr Delay (d2), s/veh	6.9	0.0	206.4	331.4	0.0	33.5	3.5	220.5	257.0	195.9	5.2	5.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	0.0	19.5	25.4	0.0	13.2	3.0	59.6	69.3	13.0	19.0	19.8
LnGrp Delay(d),s/veh	52.5	0.0	259.1	373.5	0.0	81.5	22.1	220.5	257.0	231.3	26.9	26.8
LnGrp LOS	D		F	F		F	C	F	F	F	C	C
Approach Vol, veh/h		394			740			3124			1613	
Approach Delay, s/veh		211.4			252.0			227.3			52.3	
Approach LOS		F			F			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	71.0	18.0	20.0	13.4	68.6	10.0	28.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	65.0	12.0	14.0	10.0	60.0	4.0	22.0				
Max Q Clear Time (g_c+I1), s	8.0	68.0	15.0	17.0	7.3	38.3	7.0	23.2				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	21.6	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			181.2									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary
35: Sawmill Pkwy. & Drive 1

5/4/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	5	2	8	96	0	18	35	3070	29	3	21	1842
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900		1863	1863
Adj Flow Rate, veh/h	5	2	9	103	0	19	38	3301	31		23	1981
Adj No. of Lanes	1	1	0	1	1	0	1	2	0		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	177	28	127	185	0	151	236	2890	27		60	2920
Arrive On Green	0.10	0.10	0.10	0.10	0.00	0.10	0.80	0.80	0.80		1.00	1.00
Sat Flow, veh/h	1388	296	1332	1398	0	1583	218	3593	34		56	3630
Grp Volume(v), veh/h	5	0	11	103	0	19	38	1623	1709		23	966
Grp Sat Flow(s),veh/h/ln	1388	0	1628	1398	0	1583	218	1770	1857		56	1770
Q Serve(g_s), s	0.4	0.0	0.7	8.7	0.0	1.3	4.9	96.5	96.5		0.0	0.0
Cycle Q Clear(g_c), s	1.7	0.0	0.7	9.4	0.0	1.3	4.9	96.5	96.5		96.5	0.0
Prop In Lane	1.00		0.82	1.00		1.00	1.00		0.02		1.00	
Lane Grp Cap(c), veh/h	177	0	156	185	0	151	236	1424	1494		60	1424
V/C Ratio(X)	0.03	0.00	0.07	0.56	0.00	0.13	0.16	1.14	1.14		0.38	0.68
Avail Cap(c_a), veh/h	230	0	217	238	0	211	236	1424	1494		60	1424
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	50.5	0.0	49.4	53.7	0.0	49.7	2.8	11.7	11.7		48.3	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	2.6	0.0	0.4	1.5	72.1	73.3		17.5	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	0.0	0.3	3.5	0.0	0.6	0.4	74.4	78.5		1.1	1.0
LnGrp Delay(d),s/veh	50.5	0.0	49.6	56.3	0.0	50.0	4.2	83.9	85.0		65.8	2.6
LnGrp LOS	D		D	E		D	A	F	F		E	A
Approach Vol, veh/h	16				122				3370			
Approach Delay, s/veh	49.9				55.3				83.5			
Approach LOS	D				E				F		A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	102.5		17.5		102.5		17.5					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	92.0		16.0		92.0		16.0					
Max Q Clear Time (g_c+l1), s	98.5		3.7		98.5		11.4					
Green Ext Time (p_c), s	0.0		0.3		0.0		0.2					
Intersection Summary												
HCM 2010 Ctrl Delay	53.6											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary

35: Sawmill Pkwy. & Drive 1

5/4/2015

Movement	SBR
Lane Configurations	1
Volume (veh/h)	16
Number	0
Initial Q (Qb), veh	1.00
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1900
Adj Sat Flow, veh/h/ln	1
Adj Flow Rate, veh/h	0
Adj No. of Lanes	0.93
Peak Hour Factor	2
Percent Heavy Veh, %	1
Cap, veh/h	1.00
Arrive On Green	2
Sat Flow, veh/h	1016
Grp Volume(v), veh/h	1862
Grp Sat Flow(s),veh/h/ln	0.0
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.00
Prop In Lane	1498
Lane Grp Cap(c), veh/h	0.68
V/C Ratio(X)	1498
Avail Cap(c_a), veh/h	2.00
HCM Platoon Ratio	1.00
Upstream Filter(I)	0.0
Uniform Delay (d), s/veh	2.5
Incr Delay (d2), s/veh	0.0
Initial Q Delay(d3),s/veh	1.0
%ile BackOfQ(-26165%),veh/ln	2.5
LnGrp Delay(d),s/veh	A
LnGrp LOS	
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	



A legacy of **experience**. A reputation for **excellence**.

2036 PM Peak Hour
Full Build

Intersection												
Int Delay, s/veh	8.2											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	25	521	70	39	559	26	83	0	48	25	1	21
Conflicting Peds, #/hr	0	0	1	0	0	0	0	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	175	-	-	175	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	1	1	1	1	1	1	0	0	0	0	0	0
Mvmt Flow	27	560	75	42	601	28	89	0	52	27	1	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	631	0	0	635	0	0	1365	1367	598	1378	1390	618
Stage 1	-	-	-	-	-	-	652	652	-	701	701	-
Stage 2	-	-	-	-	-	-	713	715	-	677	689	-
Critical Hdwy	4.11	-	-	4.11	-	-	7.1	6.5	6.2	7.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.209	-	-	2.209	-	-	3.5	4	3.3	3.5	4	3.3
Pot Cap-1 Maneuver	956	-	-	953	-	-	126	148	506	123	144	493
Stage 1	-	-	-	-	-	-	460	467	-	433	444	-
Stage 2	-	-	-	-	-	-	426	438	-	446	450	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	955	-	-	953	-	-	113	137	506	104	134	492
Mov Cap-2 Maneuver	-	-	-	-	-	-	113	137	-	104	134	-
Stage 1	-	-	-	-	-	-	447	454	-	420	424	-
Stage 2	-	-	-	-	-	-	387	418	-	389	437	-












Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.6	71.9	33.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	113	506	955	-	-	953	-	-	104	439
HCM Lane V/C Ratio	0.79	0.102	0.028	-	-	0.044	-	-	0.258	0.054
HCM Control Delay (s)	106	12.9	8.9	-	-	9	-	-	51.3	13.7
HCM Lane LOS	F	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	4.5	0.3	0.1	-	-	0.1	-	-	1	0.2

HCM 2010 Signalized Intersection Summary
7: Liberty Rd & Seldom Seen Rd

2014-2045

























5/5/2015

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	196	348	342	852	545	195		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1845	1900		
Adj Flow Rate, veh/h	211	374	368	916	586	210		
Adj No. of Lanes	1	1	1	1	1	0		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93		
Percent Heavy Veh, %	2	2	2	2	3	3		
Cap, veh/h	335	299	360	1263	879	315		
Arrive On Green	0.19	0.19	0.68	0.68	0.68	0.68		
Sat Flow, veh/h	1774	1583	679	1863	1298	465		
Grp Volume(v), veh/h	211	374	368	916	0	796		
Grp Sat Flow(s),veh/h/ln	1774	1583	679	1863	0	1763		
Q Serve(g_s), s	9.9	17.0	37.1	28.1	0.0	23.9		
Cycle Q Clear(g_c), s	9.9	17.0	61.0	28.1	0.0	23.9		
Prop In Lane	1.00	1.00	1.00			0.26		
Lane Grp Cap(c), veh/h	335	299	360	1263	0	1195		
V/C Ratio(X)	0.63	1.25	1.02	0.73	0.00	0.67		
Avail Cap(c_a), veh/h	335	299	360	1263	0	1195		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00		
Uniform Delay (d), s/veh	33.6	36.5	30.6	9.2	0.0	8.5		
Incr Delay (d2), s/veh	3.7	137.4	53.0	2.1	0.0	1.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	5.2	18.8	14.2	15.0	0.0	12.0		
LnGrp Delay(d),s/veh	37.3	173.9	83.6	11.3	0.0	9.9		
LnGrp LOS	D	F	F	B		A		
Approach Vol, veh/h	585			1284	796			
Approach Delay, s/veh	124.6			32.0	9.9			
Approach LOS	F			C	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		67.0		23.0		67.0		
Change Period (Y+Rc), s		6.0		6.0		6.0		
Max Green Setting (Gmax), s		61.0		17.0		61.0		
Max Q Clear Time (g_c+I1), s		63.0		19.0		25.9		
Green Ext Time (p_c), s		0.0		0.0		22.8		
Intersection Summary								
HCM 2010 Ctrl Delay			45.8					
HCM 2010 LOS			D					

HCM 2010 Signalized Intersection Summary
18: Sawmill Pkwy. & Powell Rd.

2014-2045



















5/5/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	537	473	137	299	389	197	433	2314	228	520	1480	194
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1881	1881	1900	1863	1863	1863	1881	1881	1881
Adj Flow Rate, veh/h	577	509	147	322	418	212	466	2488	245	559	1591	209
Adj No. of Lanes	2	2	1	1	2	0	2	2	1	2	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	1	1	1
Cap, veh/h	373	531	422	245	327	164	402	1652	871	348	1608	866
Arrive On Green	0.11	0.15	0.15	0.10	0.14	0.13	0.12	0.47	0.46	0.10	0.45	0.44
Sat Flow, veh/h	3442	3539	1583	1792	2306	1158	3442	3539	1583	3476	3574	1599
Grp Volume(v), veh/h	577	509	147	322	323	307	466	2488	245	559	1591	209
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1792	1787	1677	1721	1770	1583	1738	1787	1599
Q Serve(g_s), s	13.0	17.1	9.0	12.0	17.0	17.0	14.0	56.0	9.9	12.0	52.9	8.3
Cycle Q Clear(g_c), s	13.0	17.1	9.0	12.0	17.0	17.0	14.0	56.0	9.9	12.0	52.9	8.3
Prop In Lane	1.00		1.00	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	373	531	422	245	253	238	402	1652	871	348	1608	866
V/C Ratio(X)	✓ 1.55	0.96	0.35	1.32	1.28	1.29	1.16	1.51	0.28	1.61	0.99	0.24
Avail Cap(c_a), veh/h	373	531	422	245	253	238	402	1652	871	348	1608	866
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	50.6	35.6	43.2	51.5	51.8	53.0	32.0	14.4	54.0	32.7	14.5
Incr Delay (d2), s/veh	259.4	28.9	0.5	167.8	150.9	159.4	96.5	231.1	0.8	286.8	20.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	10.5	4.0	11.4	19.0	18.4	12.0	80.3	4.5	19.6	30.5	3.8	
LnGrp Delay(d),s/veh	312.9	79.5	36.1	211.0	202.4	211.2	149.5	263.1	15.2	340.8	52.7	15.2
LnGrp LOS	F	E	D	F	F	F	F	F	B	F	D	B
Approach Vol, veh/h	1233			952			3199			2359		
Approach Delay, s/veh	183.5			208.2			227.5			117.7		
Approach LOS	F			F			F			F		
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	18.0	23.0	20.0	59.0	19.0	22.0	18.0	61.0				
Change Period (Y+Rc), s	7.0	6.0	7.0	6.0	7.0	6.0	7.0	6.0				
Max Green Setting (Gmax), s	17.0	17.0	13.0	53.0	12.0	16.0	11.0	55.0				
Max Q Clear Time (g_c+1/4), s	19.1	19.1	16.0	54.9	15.0	19.0	14.0	58.0				
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	184.7											
HCM 2010 LOS	F											

HCM 2010 Signalized Intersection Summary
21: Sawmill Pkwy. & Big Bear Ave.

2014-2045

5/5/2015

																																																																																																																																																																																									
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Intersection

Int Delay, s/veh 0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	0	10	0	0	52	0	2899	117	0	1890	6
Conflicting Peds, #/hr	0	0	8	0	0	2	0	0	0	0	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	-	-	210	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	0	0	0	2	2	2	2	2	2
Mvmt Flow	0	0	11	0	0	56	0	3117	126	0	2032	6





















Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	3604	5162	1027	4143	5166	1566	2047	0	0	3119	0	0
Stage 1	2043	2043	-	3119	3119	-	-	-	-	-	-	-
Stage 2	1561	3119	-	1024	2047	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.5	6.5	6.9	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.5	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.5	4	3.3	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	2	0	232	1	0	102	271	-	-	101	-	-
Stage 1	58	98	-	12	27	-	-	-	-	-	-	-
Stage 2	117	26	-	256	100	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1	0	230	1	0	101	271	-	-	101	-	-
Mov Cap-2 Maneuver	1	0	-	1	0	-	-	-	-	-	-	-
Stage 1	58	97	-	12	27	-	-	-	-	-	-	-
Stage 2	52	26	-	244	99	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.4	77.9	0	0
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	271	-	-	230	101	101	-	-
HCM Lane V/C Ratio	-	-	-	0.047	0.554	-	-	-
HCM Control Delay (s)	0	-	-	21.4	77.9	0	-	-
HCM Lane LOS	A	-	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.6	0	-	-

HCM 2010 Signalized Intersection Summary
27: Sawmill Pkwy. & Seldom Seen Rd.






















2014-2045
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	85	160	126	423	133	174	163	2322	466	197	1281	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1881	1881	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	91	172	135	455	143	187	175	2497	501	212	1377	46
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	1	1	1	2	2	2	2	2	2
Cap, veh/h	134	153	120	194	142	186	269	1626	316	151	1850	62
Arrive On Green	0.04	0.16	0.15	0.08	0.19	0.18	0.14	1.00	1.00	0.05	0.53	0.52
Sat Flow, veh/h	1774	968	760	1792	741	969	1774	2957	574	1774	3495	117
Grp Volume(v), veh/h	91	0	307	455	0	330	175	1461	1537	212	696	727
Grp Sat Flow(s),veh/h/ln	1774	0	1729	1792	0	1710	1774	1770	1761	1774	1770	1842
Q Serve(g_s), s	5.0	0.0	19.0	9.0	0.0	23.0	5.4	0.0	62.5	6.0	36.7	36.8
Cycle Q Clear(g_c), s	5.0	0.0	19.0	9.0	0.0	23.0	5.4	0.0	62.5	6.0	36.7	36.8
Prop In Lane	1.00		0.44	1.00		0.57	1.00		0.33	1.00		0.06
Lane Grp Cap(c), veh/h	134	0	274	194	0	328	269	973	969	151	937	975
V/C Ratio(X)	0.68	0.00	1.12	2.34	0.00	1.01	0.65	1.50	1.59	1.40	0.74	0.75
Avail Cap(c_a), veh/h	134	0	274	194	0	328	291	973	969	151	937	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	0.0	50.7	43.1	0.0	48.8	19.0	0.0	0.0	34.9	21.9	22.0
Incr Delay (d2), s/veh	13.0	0.0	91.2	619.2	0.0	51.4	4.5	230.7	269.1	216.5	5.3	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	1.1	0.0	16.0	33.4	0.0	15.5	3.2	62.4	72.4	14.1	19.2	20.0
LnGrp Delay(d),s/veh	55.5	0.0	141.9	662.2	0.0	100.2	23.6	230.7	269.1	251.4	27.3	27.2
LnGrp LOS	E		F	F		F	C	F	F	F	C	C
Approach Vol, veh/h	398				785		3173		1635			
Approach Delay, s/veh	122.1				426.0		237.9		56.3			
Approach LOS	F				F		F		E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	11.0	71.0	14.0	24.0	13.5	68.5	10.0	28.0				
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0				
Max Green Setting (Gmax), s	5.0	65.0	8.0	18.0	9.0	61.0	4.0	22.0				
Max Q Clear Time (g_c+I1), s	8.0	64.5	11.0	21.0	7.4	38.8	7.0	25.0				
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.1	22.1	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay	205.3											
HCM 2010 LOS	F											

HCM 2010 Signalized Intersection Summary
35: Sawmill Pkwy. & Drive 1

2014-2045

5/7/2015

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Volume (veh/h)	5	2	8	169	0	30	35	3096	55	3	37	1860
Number	7	4	14	3	8	18	5	2	12		1	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863		1863	1863
Adj Flow Rate, veh/h	5	2	9	182	0	32	38	3329	59		40	2000
Adj No. of Lanes	1	1	0	1	1	0	1	2	1		1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93		0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	172	30	133	191	0	158	231	2831	1267		60	2904
Arrive On Green	0.10	0.10	0.10	0.10	0.00	0.10	1.00	1.00	1.00		1.00	1.00
Sat Flow, veh/h	1372	296	1332	1398	0	1583	214	3539	1583		53	3630
Grp Volume(v), veh/h	5	0	11	182	0	32	38	3329	59		40	975
Grp Sat Flow(s),veh/h/ln	1372	0	1628	1398	0	1583	214	1770	1583		53	1770
Q Serve(g_s), s	0.4	0.0	0.7	11.3	0.0	2.2	0.0	96.0	0.0		0.0	0.0
Cycle Q Clear(g_c), s	2.6	0.0	0.7	12.0	0.0	2.2	0.0	96.0	0.0		96.0	0.0
Prop In Lane	1.00		0.82	1.00		1.00	1.00		1.00		1.00	
Lane Grp Cap(c), veh/h	172	0	163	191	0	158	231	2831	1267		60	1416
V/C Ratio(X)	0.03	0.00	0.07	0.95	0.00	0.20	0.16	1.18	0.05		0.67	0.69
Avail Cap(c_a), veh/h	172	0	163	191	0	158	231	2831	1267		60	1416
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33		2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	50.8	0.0	48.9	55.9	0.0	49.6	0.0	0.0	0.0		48.0	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.2	51.2	0.0	0.6	1.5	83.1	0.1		45.9	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.2	0.0	0.3	8.7	0.0	1.0	0.1	32.7	0.0		2.1	1.1
LnGrp Delay(d),s/veh	50.9	0.0	49.1	107.1	0.0	50.2	1.5	83.1	0.1		93.9	2.8
LnGrp LOS	D		D	F		D	A	F	A		F	A
Approach Vol, veh/h	16				214				3426			
Approach Delay, s/veh	49.7				98.6				80.8			
Approach LOS	D				F				F			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		4		6		8					
Phs Duration (G+Y+Rc), s	102.0		18.0		102.0		18.0					
Change Period (Y+Rc), s	6.0		6.0		6.0		6.0					
Max Green Setting (Gmax), s	96.0		12.0		96.0		12.0					
Max Q Clear Time (g_c+I1), s	98.0		4.6		98.0		14.0					
Green Ext Time (p_c), s	0.0		0.4		0.0		0.0					
Intersection Summary												
HCM 2010 Ctrl Delay	54.0											
HCM 2010 LOS	D											

HCM 2010 Signalized Intersection Summary
35: Sawmill Pkwy. & Drive 1

2014-2045
5/7/2015

Movement	SBR
Lane Configurations	
Volume (veh/h)	1
Number	16
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	1
Adj No. of Lanes	0
Peak Hour Factor	0.93
Percent Heavy Veh, %	2
Cap, veh/h	1
Arrive On Green	1.00
Sat Flow, veh/h	2
Grp Volume(v), veh/h	1026
Grp Sat Flow(s),veh/h/ln	1862
Q Serve(g_s), s	0.0
Cycle Q Clear(g_c), s	0.0
Prop In Lane	0.00
Lane Grp Cap(c), veh/h	1490
V/C Ratio(X)	0.69
Avail Cap(c_a), veh/h	1490
HCM Platoon Ratio	2.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	0.0
Incr Delay (d2), s/veh	2.6
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(-26165%),veh/ln	1.1
LnGrp Delay(d),s/veh	2.6
LnGrp LOS	A
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer

User approved ignoring U-Turning movement.