



May 25, 2022

Elizabeth Fuselier
City of Aurora
Planning Department
15151 E. Alameda Parkway, Suite 2300
Aurora, CO 80012

Re: Initial Submission Review – Green Valley Ranch East Site Plan No. 15 - Site Plan and Plat

Application Number: **DA-1662-26**

Case Number(s): 2022-4014-00; 2022-3019-00

Dear Ms. Fuselier,

On behalf of Oakwood Homes, Aztec Consultants, Dewberry Engineering and Terracina Design, we have reviewed the comments dated March 24, 2022. The following is a response to comments.

Initial Submission Review

- Development Fees (Planning)
- Provide Lot Table (Planning)
- Label all Lot Line Dimensions (Planning)
- Revise Letter of Introduction (Planning)
- Clarify grasses and perennials included in landscape calculations (Landscaping)
- Tributary T Channel Improvements Required (Public Works)
- Label slopes and drainage easements (Public Works)
- Provide Gating Sections and Elevations (Fire/Life safety)
- Provide Turning Templates (Fire/Life Safety)
- Provide All Weather Maintenance Access (Water)
- Meet Open Space Requirements (PROS)
- Show Trail Connections (PROS)
- Provide Certificate of Taxes, add labels (Real Property)
- MHFD, PCSO and DEN Comments (Outside Agencies)

PLANNING DEPARTMENT COMMENTS

1. Community Questions, Comments and Concerns

1A. Referrals were sent to 3 adjacent property owners, 1 community association and 10 outside agencies. No comments were received from any adjacent property owners. Four responses were received from outside agencies and will be included in or attached to this letter. Please provide responses to each specific comment and questions within the response letter for your next submission.

RESPONSE: Noted

2. Zoning and Land Use Comments

2A. For a motor court lot to be considered standard it must include: a. 50' lot frontage; b. 4500 sf minimum lot area and c. must have street frontage.

RESPONSE: Noted. Lot types have been revised accordingly.

2B. Show all lot dimensions on the site plan, consistent with the plat.

RESPONSE: Plat information added to site plan. Repetitive.

2C. Revise the Letter of Introduction to discuss how the proposed site plan meets Adjustment Criteria in Section 146-5.4.4.D.

RESPONSE: Letter of intro revised.

3. Completeness and Clarity of the Application

3A. Application fees must be paid prior to the second submission.

RESPONSE: Fees paid

3B. Please correct spelling on cover sheet (adjustment language) and add lot numbers affected by the adjustments.

RESPONSE: Revised

3C. Please move Lot Typical diagrams from the Landscaping Sheets to the front of the site plan.

RESPONSE: Lot typicals moved into Engineering sheets

3D. Add lot tables to site plan indicating Lot and Block number as well as side, front and rear setbacks for each lot and block.

RESPONSE: Lot tables shown on sheet 3. Refer to sheets 6-8 for setbacks. This was per direction from other GVRE submittals recently.

3E. Proposed unit counts on Sheet 4 in lot summary table for Bungalows (small and standard) are reversed and all bungalows need to be reevaluated based on size and dimensions.

RESPONSE: Lot counts and types revised.

3F. Use a bolder color and scale for the hatching, as it is difficult to differentiate between lots on legend.

RESPONSE: Revised

3G. Review matchlines for accuracy.

RESPONSE: Reviewed

4. Landscaping Issues (Deborah Bickmire/ 303-739-7189 / dbikmir@auroragov.org / Comments in bright teal)

4A. Add sight triangles at all intersections.

RESPONSE: Sight triangles added

4B. Perennials may be provided as accents but may not count toward the minimum plant quantities for buffers; and, no more than 20 percent of the buffer plant material shall be ornamental grasses (Section 146-4.7.5.D.3). Please verify perennials are not included in the plant counts.

RESPONSE: Perennials not included in plant counts.

4C. Buffers along 38th Avenue are important due to the future 38th Ave. interchange. The buffer needs to be proportionately distributed along the backs of lots, consistent with the plant requirement per the measured distance.

RESPONSE: Planting adjusted to meet requirements.

4D. Add a detail for the seating walls in Tract G. Include materials and maximum height.

RESPONSE: Seat wall will be same material and detail as the landscape retaining walls.

4E. Itemize grasses and perennials separately if there are any perennials included in the curbside landscape.

RESPONSE: Only grasses are provided in the curbside landscape.

4F. Add a key map to Sheets 32 and 33.

RESPONSE: Key map added

4G. Is the lot landscape plant count for “D1” intended to be different than the other “D” lots?

RESPONSE: No. Plant counts updated.

5. Addressing (Phil Turner / 303-739-7357 / pcturner@auroragov.org)

5A. Please provide a digital .shp or .dwg file for addressing and other GIS mapping purposes. Include the parcel, street line, easement and building footprint layers at a minimum. Please ensure that the digital file provided in a NAD 83 feet, Stateplane, Central Colorado projection so it will display correctly within our GIS system. Please eliminate any line work outside of the target area. Please contact me if you need additional information about this digital file.

RESPONSE: CAD file provided for addressing.

REFERRAL COMMENTS FROM OTHER DEPARTMENTS AND AGENCIES

6. Civil Engineering (Julie Bingham / 303-739-7306 / JBingham@auroragov.org / comments in green)

6A. The site plan will not be approved by public works until the preliminary drainage report is approved.

RESPONSE: Noted

6B. Show clear zones on street section.

RESPONSE: Clear zones added

6C. The site plan shows ROW where the roads are located. Either the roads are public and within public ROW or the roads are private within tracts. Per the pre-app notes, the City requests that the roads be private.

RESPONSE: Private streets were a “preference” by engineering in the preapp. To reiterate, local roads will be public with right of way as shown in our submittal.

6D. Motor court drive lanes less than 30 feet wide shall be surfaced with concrete (not pavers) per section 4.04.2.08.2 of the Roadway Manual.

RESPONSE: The Motor courts are private lots and will continue to be pavers.

6E. The Tributary T channel improvements are required with this site plan if not provided with a different submittal. Per the pre-app notes, the improvements shall be completed prior to any discharge into the channel.

RESPONSE: Trib T channel improvements are provided in the Filing 15 submittal.

6F. Provide reference for floodplain, either FIRM Panel or reference CLOMR/LOMR.

RESPONSE: Acknowledged.

6G. Sheet 6: Show/label the proposed drainage easement for the water quality pond.

RESPONSE: The drainage easement for the Water Quality pond is still being developed and will be in subsequent submittals.

6H. No cul-de-sac shall be longer than 500' unless a secondary emergency access is approved by the fire marshal per Section 4.04.1.05 in the Roadway Manual.

RESPONSE: Cul-de-sac shortened to less than 500'

6I. Show/label the location of proposed mail kiosks on the site plan. ADA ramps are required adjacent to proposed locations.

RESPONSE: Mail kiosks shown on site plan.

6J. Street lighting is required for all public and private streets. Please show the locations of the streetlights.

RESPONSE: Acknowledged.

6K. Sheet 7 Notes: add "or spacing".

RESPONSE: Acknowledged.

6L. Sheet 8: This curb cut and the curb cut to the north are not shown on the Tibet Road ISP. Please clarify if this site plan will provide the proposed improvements. (curb returns and curb ramps)

RESPONSE: Tibet Road ISP is being amended to include these curb cuts. This has been submitted.

6M. The landscape sheet shows a sidewalk connection to public ROW here. Please reflect all proposed sidewalks shown on the sidewalk on all the sheets in this plan set as well.

RESPONSE: Sidewalks coordinated

6N. Curb ramps are required with curb returns.

RESPONSE: Acknowledged.

6O. Sheet 8: What are these sidewalks connecting to?

RESPONSE: these are connecting to sidewalks along 38th Avenue. Design pending by HR Green.

6P. Sheet 9: Provide a temporary turnaround.

RESPONSE: Acknowledged.

6Q. Show/label the drainage easement for the pond, show/label pond maintenance access to the bottom and to the top of the outlet structure, show/label the access easement from the drainage easement to ROW, show/label the 100-year water surface elevation, indicate the direction of emergency overflow.

RESPONSE:

6R. Please label slopes in the bottom of the pond - minimum 2%.

RESPONSE: Acknowledged.

6S. Provide flow direction arrows on all grading sheets.

RESPONSE: Acknowledged.

6T. Provide slope labels in tracts showing a minimums slope of 2% in unpaved areas. Label slope - max 3:1.

RESPONSE: Acknowledged.

6U. Sheet 12: Indicate the max height or height range and material of the wall. Include a section of the proposed wall. Railing required adjacent to 3:1 slopes.

RESPONSE: Acknowledged.

6V. Typical all 4-pack and 6-pack areas: for alley loaded product with more than the equivalent of 2 lots draining to the private alley, flows cannot cross the sidewalk. Please see the pre-app notes for more detail regarding this comment.

RESPONSE: Acknowledged.

6W. Sheet 13: These inlets are too far from the intersection per Section 4.03.3 of the Roadway Manual. Please revise the locations.

RESPONSE: The inlets are placed at the point of transition in superelevation.

6X. Add existing and proposed contours labels.

RESPONSE: Acknowledged.

6Y. Sheet 14: Indicate the max height or height range for the proposed wall. Railing required for walls over 30", structural calcs required for walls over 4'.

RESPONSE: The grading has been updated. Any wall with a height over 30" will have structural calculations.

6Z. See additional redlined comments and respond with the next submission.

RESPONSE: Acknowledged.

7A. Traffic comments will be provided under separate cover.

RESPONSE: Traffic comments received and addressed.

8. Life/Safety (Will Polk / wpolk@auroragov.org / 303-739-7371 / comments in blue)

8A. Will this site be gated? If this site is gated then the installation of any gating system will require a City of Aurora licensed contractor to obtain a building permit through the Aurora Building Division prior to the start of any work. This would be considered a structural, life safety and electrical review within the Building Division that is conducted on behalf of the Fire Chief. If gated, provide sections for the automatic and manual gates.

RESPONSE: This neighborhood is not gated.

8B. Please confirm that the U.S.P.S. has approved the appropriate mode of delivery and kiosks locations. Please provide a note that identifies the location of the mail kiosks and states compliance with ADA and postal regulations.

RESPONSE: We are working thru this with USPS. The City of Aurora tends to more specific on these locations and not USPS.

8C. Sheet 2: Any proposed use of alternative surfacing materials (e.g. concrete paver, etc.) for fire lanes must be submitted for approval in writing to the City Engineer of Public Works. A license agreement must be obtained through Real Property (Public Works Department) for the installation of any alternative surfacing material used within dedicated fire lane easements. Submitted plans must be wet stamped by a Colorado licensed Professional Engineer and accompanied by an Alternative Surface Fire Apparatus report. Please work with City Engineer to address all other Alternative Fire Lane Surfaces requirements identified in the COA Roadway Design and Specifications Manual.

RESPONSE: Noted

8D. Only the 6-pack product requires a dedicated fire lane easement. Please revise the plat and site plans to reflect to the fire lanes.

RESPONSE: We are aware. Since some of these 4 pack motorcourts are larger, we've found thru the hose pull exhibits that a fire lane is in fact necessary as shown.

8E. Please describe how the looped water supply will be achieved during the phasing of this development.

RESPONSE: All utilities will be constructed in the first phase.

8F. Sheet 8: Can this median be reduced to a smaller width to provide a wider travel path for approaching fire apparatus? Also, provide the median section, describing surface materials, weight capability, etc. Also, verify with traffic/engineering if this particular median can be reduced.

RESPONSE: The median is per COA standard detail.

8G. Sheet 8: Provide a Bronto turning template to this intersection. Make sure to show the Bronto completing the turning traveling from both directions of E 38th Ave.

RESPONSE: The median is per COA standard detail.

8H. Sheet 8: The results of turning template may alter the elements proposed in the median to accommodate the turning maneuver of the Bronto apparatus.

RESPONSE: The median is per COA standard detail.

8I. Show all proposed and existing fire hydrants along E 38th Ave.

RESPONSE: Acknowledged.

8J. Sheet 10: Show all proposed and existing fire hydrants along E 38th Ave.

RESPONSE: Acknowledged.

8K. Sheet 15: Only one fire lane sign is required to be posted at the entrance of the fire lane. The remaining portion of the fire lane will require one additional sign at the end of the fire lane. These signs shall be posted on the opposite side of the entrance sign. See Example on redlines.

RESPONSE: Signs shown in typical detail.

8L. Please start the fire lane easement dedication process with Real Property.

RESPONSE: Noted

9. Aurora Water (Steve Dekoski / 303-739-7490 / sdekoski@auroragov.org / Comments in Red)

9A. Sheet 12: Individual tap connections are required. Water quality and detention are required. Please show how this is accomplished in these areas.

RESPONSE: Acknowledged.

9B. Sheet 13: Provide an all-weather access 16' utility easement for this water main alignment. EDN: 220055 doesn't show and existing water main stub at this location. Wet tap connection by a 3rd party contractor will be required if there is no stub.

RESPONSE: Acknowledged.

9C. Sheet 14: How does run off from this area get treated? Water main must be installed in a steel casing pipe under Tributary T. Casing pipe to have cathodic protection per AW detail 218 Valves required on either side of the stream crossing.

RESPONSE: Inlets will capture flows and they will be piped to a level spreader and a grass buffer.

10.Forestry (Jacque Chomiak / 303-739-7178 / jchomiack@auroragov.org / Comments in Purple)

10A. Approved.

RESPONSE: Noted

11.Pros (Michelle Teller / 303-739-7131 / MTeller@auroragov.org / Comments in Mauve)

11A. Sheet 5: Where is the trail labeled?

RESPONSE: Additional labeling provided for trails and future trails.

11B. Sheet 6: Label as pocket park.

RESPONSE: Revised

11C. Sheet 6: Connect area to the pocket park if this is open space. Trail should meander through here and get to pocket park. Identify trail through this area.

RESPONSE: A trail connection here does not lead to anywhere. The trail thru the pocket park crosses Trib T and leads to the regional trail and neighborhood park on the east side of the channel.

11D. Verify slope within area provides adequate usable turf space.

RESPONSE: Slopes modified per more detailed design. Turf is usable.

11E. Sheet 8: Be specific, is this area to be included with future channel improvements including the trail?

RESPONSE: Crossing and trail will be part of Trib T Phase 2 Submittal

11F. Sheet 8: How is this tract meeting Open Space criteria? How are these lots accessing the trail? Add connection. What is the purpose of this tract? Can it be connected to the larger open space area along the channel and the trail to be utilized and credited?

RESPONSE: Future regional trail is on the east side of the channel. Lots in Future Tracts D&E do not have trail access across the channel. Tract E & D are for future lots. these lots cannot be platted at this time because of the existing floodplain going thru them.

11G. Sheet 11: Indicate future trail connection.

RESPONSE: Future trails identified

11H. Sheet 12: Total Open Space identified within the Master Plan is 0.5 pocket park and 6.9 acres of OS

adjacent to the channel. This is significantly lower. Master plan identifies a 200-400' foot corridor along the channel to include trail corridor-all privately owned.

RESPONSE: There is a 0.5 Ac park. There is a 200' channel thru Trib T Phase 2, but this will mostly be city owned as shown in Trib T Phase 2 submittal. The open space shown in the original FDP is conceptual and will vary from actual plats. The FDP showed Trib T as channelized vs the geomorphic design now required. This significantly changed the open space credited within District owned Tracts. With recent changes to open space, this can now be credited within floodplain to a certain percentage. This will be shown within the Trib T Phase 2 plans. A separate OS tracking chart will also be provided to show we're well ahead on open space within GVRE.

12. Real Property (Maurice Brooks / mbrooks@auroragov.org / 303-739-7294 / comments in magenta)

12A. See redlined comments throughout plan set. Make changes with the next submission.

RESPONSE: Redlines addressed

12B. Name and re-name all streets to their approved names.

RESPONSE: Street names are now provided from Phil Turner

12C. Label Exterior B&D's / Curve Data.

RESPONSE: Revised

12D. Submit certificate of taxes due.

RESPONSE: Tax certs pending

12E. See redline comments on Subdivision Plat.

RESPONSE: Redlines addressed.

13.Mile High Flood District Comments:

We have reviewed the referral only as it relates to a major drainageway and for maintenance eligibility of storm drainage features, in this case: - Outfall and emergency overflow spillway from Filing 15 Water Quality Pond to Tributary T MHFD staff has the following comments to offer:

13A. Please confirm the Tributary T channel improvements shown on the Filing 15 plans are being completed as a separate project and follow the GVRE MDR.

RESPONSE: The Tributary T channel improvements are a separate filing, Filing 16.

13B. As design progresses, please provide "sheet 11" for review of the Water Quality Pond Outlet Structure, as called out on sheet LP2. This does not appear to be included at this time.

RESPONSE: Acknowledged.

13C. How is the higher imperviousness value for the Filing 15 Site accounted for within the overall MDR Basin 501.1 imperviousness value?

RESPONSE: The onsite impervious values are consistent with the overall uses for MDR Basin 501.1 and with the development of Filing 16 (Tributary T – Phase 2) we are confident that the overall basin imperviousness will be in line with the MDR.

13D. Please provide supporting information regarding how the downstream Regional Pond 808 was designed to have adequate storage for this Site. How was this determined?

RESPONSE: The SWWM model and the Master Drainage report show that regional detention is accounted for in the 808 Himalaya Pond.

13E. On the grading and utility plans, retaining walls are proposed along the east edge of the Site. Clearly indicate the extents of the existing and proposed 100-year floodplain on all plans that show proposed retaining wall locations. As the design progresses, we would like to review additional design details pertaining to the walls.

RESPONSE: Acknowledged. The grading has been updated and the retaining wall height has been reduced.

13F. There is limited detail provided for the outfall to Tributary T. We look forward to reviewing once more detail is

provided in the FDR submittal. Please ensure that enough detail is included for review as outlined in our MEP Guidelines, found here: https://mhfd.org/wpcontent/uploads/2019/12/2017.08.17_MEPGUIDELINES.pdf.

RESPONSE: Acknowledged.

14. Denver International Airport Comments:

14A. The proposed development is in the “5-Mile ‘Known - Wildlife Attractant Separation Area” for the final buildout of future DEN Runways, as defined by the Federal Aviation Administration (FAA). The USDA Wildlife Biologists assigned to DEN (Benjamin.J.Massey@usda.gov and #dia-operations-usdawildlife@flydenver.com) assist in implementing DEN's Wildlife Hazard Management Plan and have requested coordination as this project progresses. USDA and DEN will provide assistance with the requirements outlined in the current version of FAA Advisory Circular 150/5200-33C (see link below). DEN also requests that the landscape plan include maintenance of trees and grasses to reduce attractants for wildlife such as raptor species, blackbirds/starlings, and geese. Fruit-producing trees and shrubs should be avoided. Water quality ponds/detention structures must be designed to meet a 48-hour drain time following a 100-year event.

RESPONSE: Per previous coordination, seed mixes and plant lists have been adjusted to reduce attractants for wildlife.

14B. The site is found within/under the navigable airspace associated with DEN, as promulgated and regulated by the Federal Aviation Administration (FAA) under 14 CFR Part 77, Objects Affecting the Navigable Airspace. Based on Part 77 and the development site location, the proponent is required to file notice with the FAA, via the FAA Form 7460-1 process (Notice of Proposed Construction or Alteration), of any structure or temporary construction equipment (e.g., cranes) that penetrate Part 77 surfaces. The FAA website from which the need for the 7460 process can be determined (“Notice Criteria Tool”) and/or the filing can be initiated is: <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

RESPONSE: Noted

15. Xcel Energy Comments (Donna George)

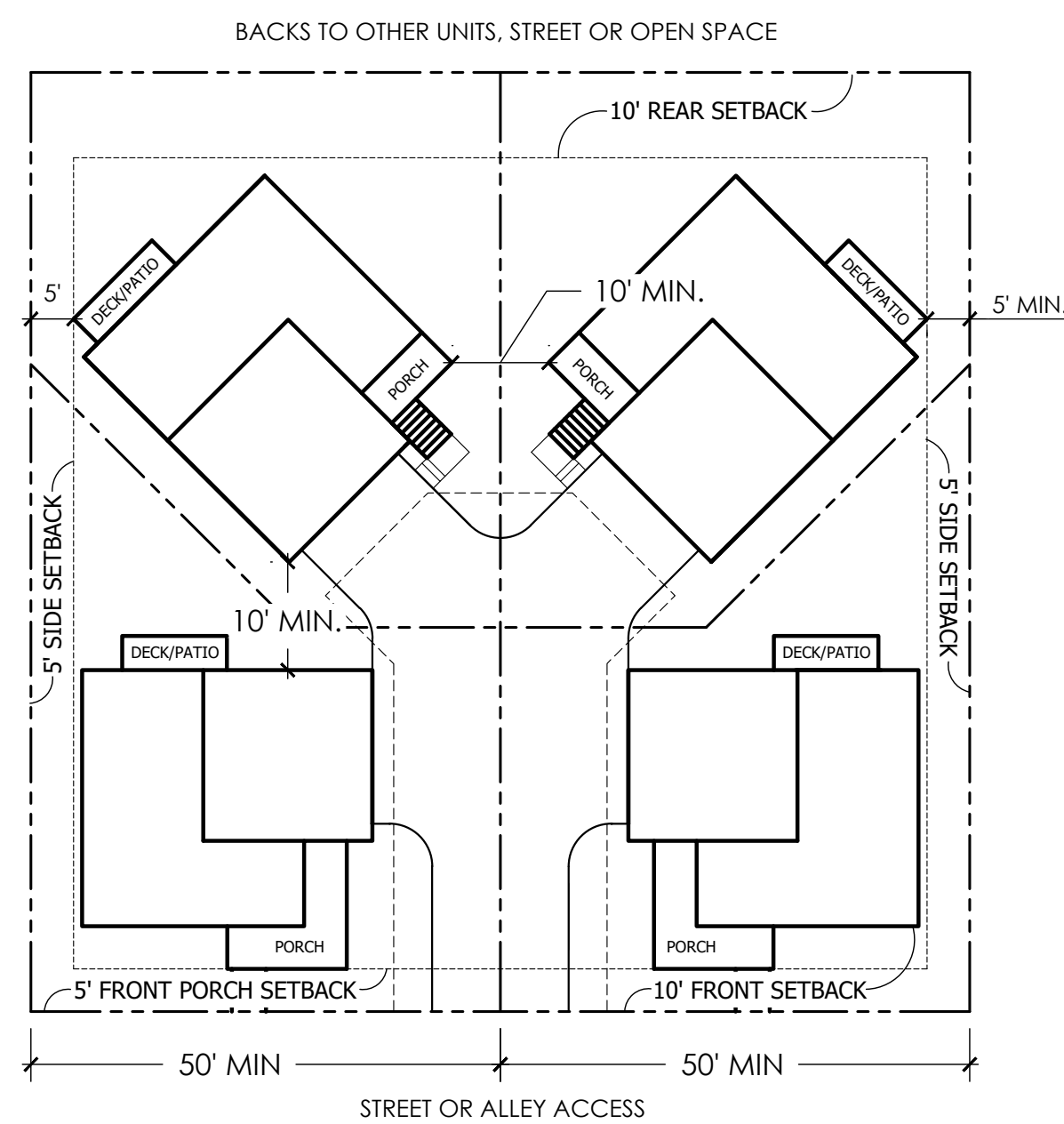
15A. Public Service Company of Colorado’s (PSCo) Right of Way & Permits Referral Desk has reviewed the documentation for **Green Valley Ranch East Site Plan No. 15**. The property owner/developer/contractor must complete the application process for any new natural gas or electric service, or modification to existing facilities via xcelenergy.com/InstallAndConnect. It is then the responsibility of the developer to contact the Designer assigned to the project for approval of design details.

If additional easements need to be acquired by separate PSCo document (i.e. transformers), a Right-of Way Agent will need to be contacted.

RESPONSE: Noted

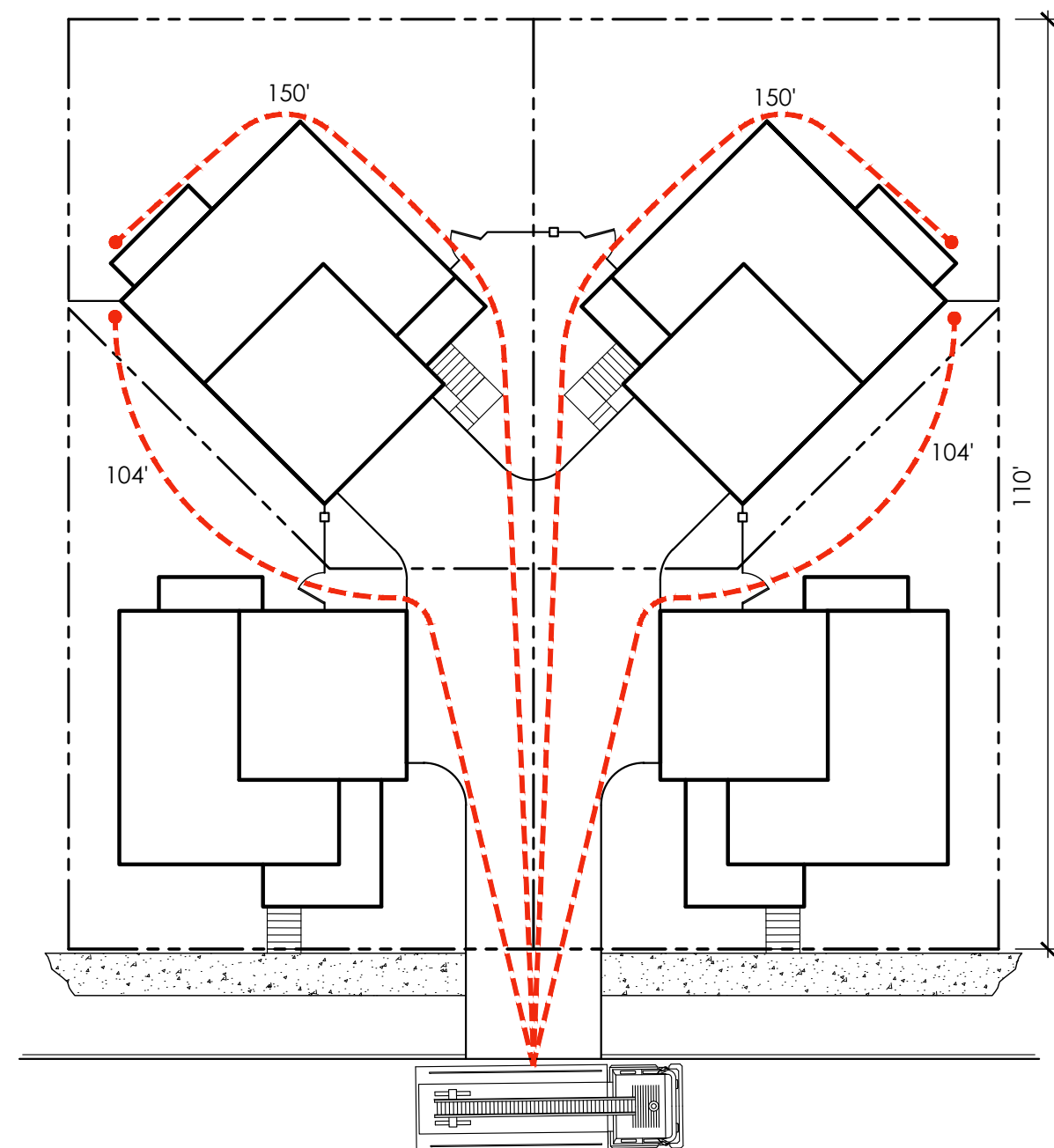
END OF RESPONSES

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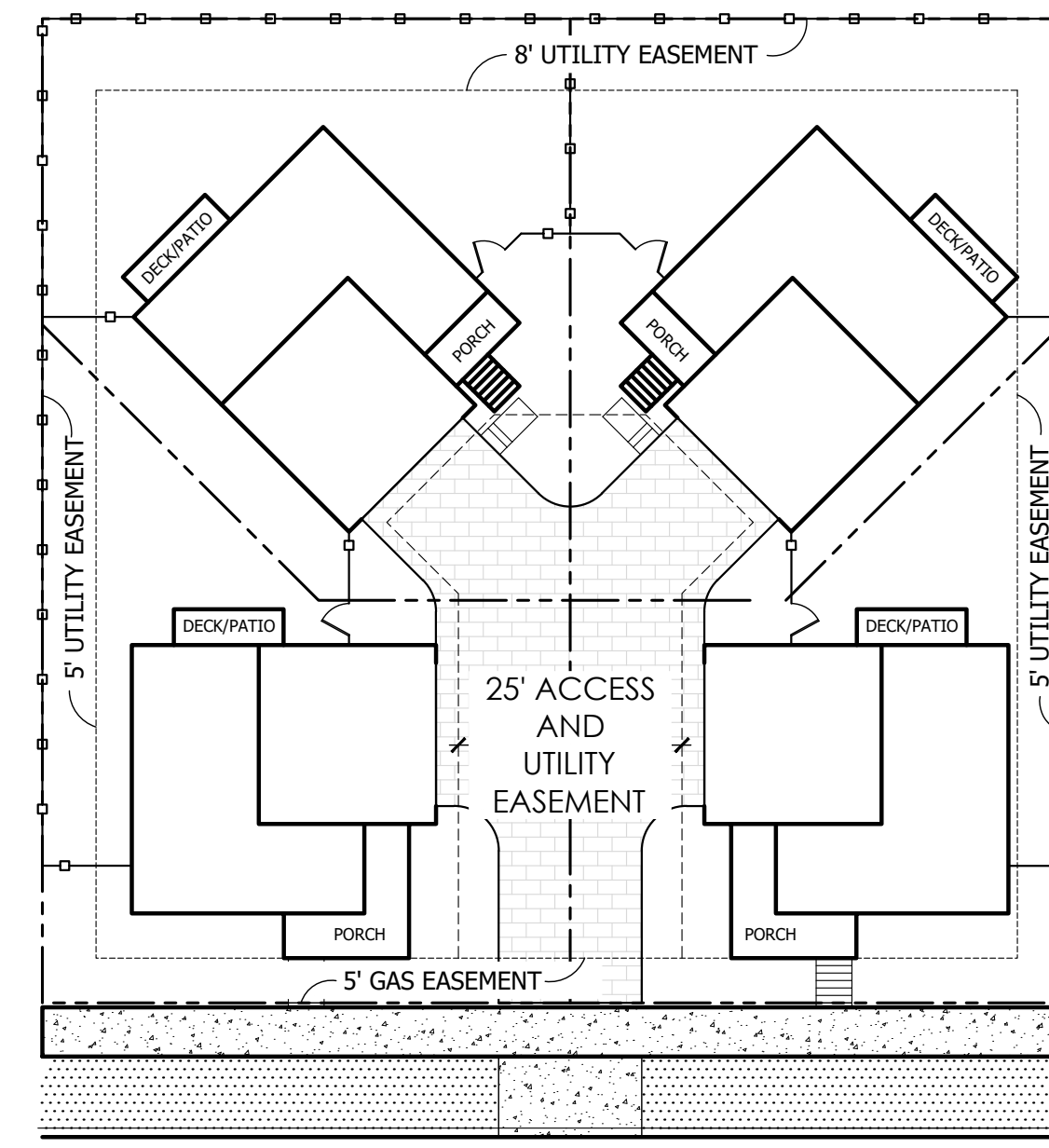


TYPICAL CARRIAGE HOUSE POD SETBACKS

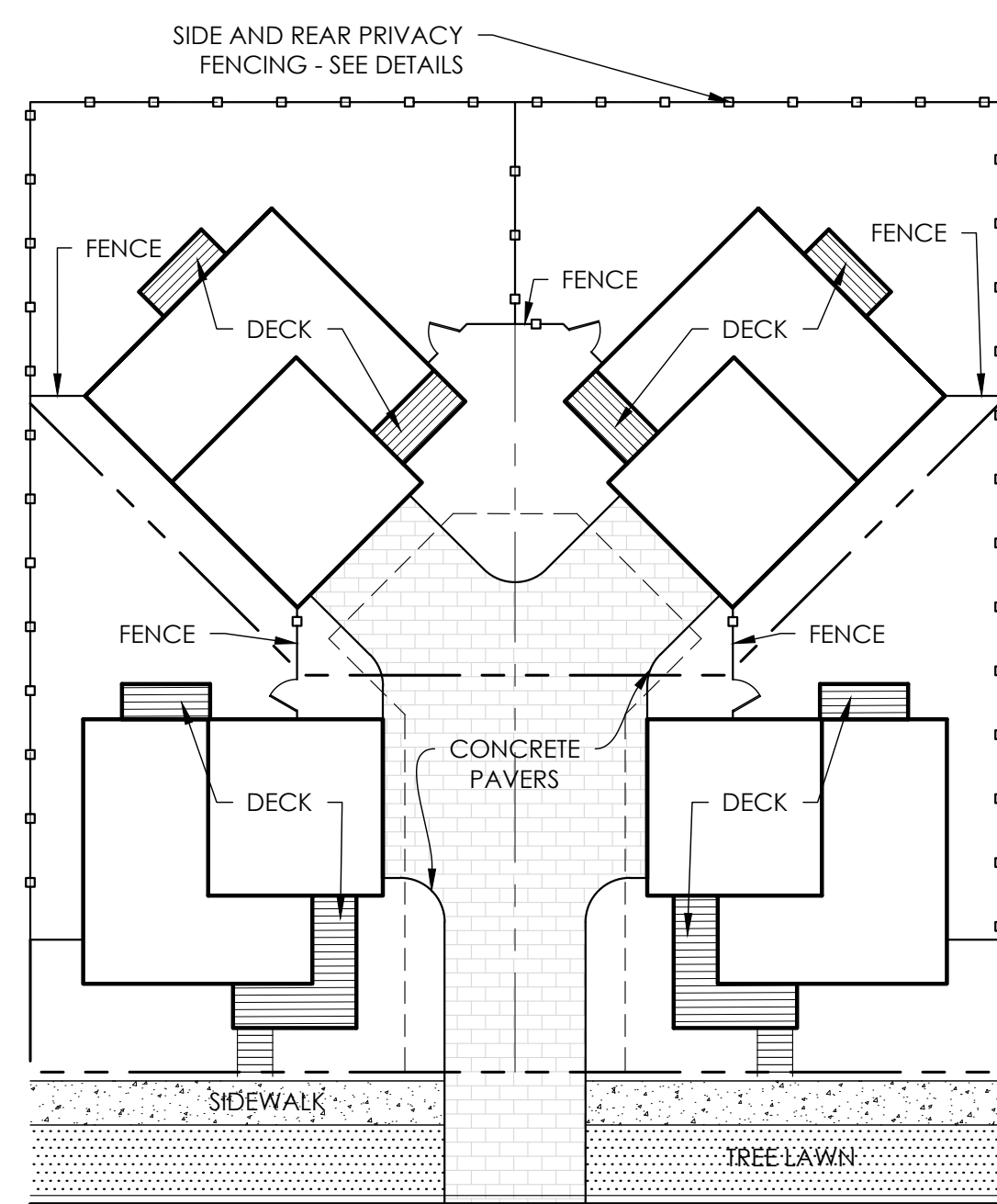
MOVE LOT
TYPICALS
TO THE
FRONT OF
THE PLAN
SET
Revised



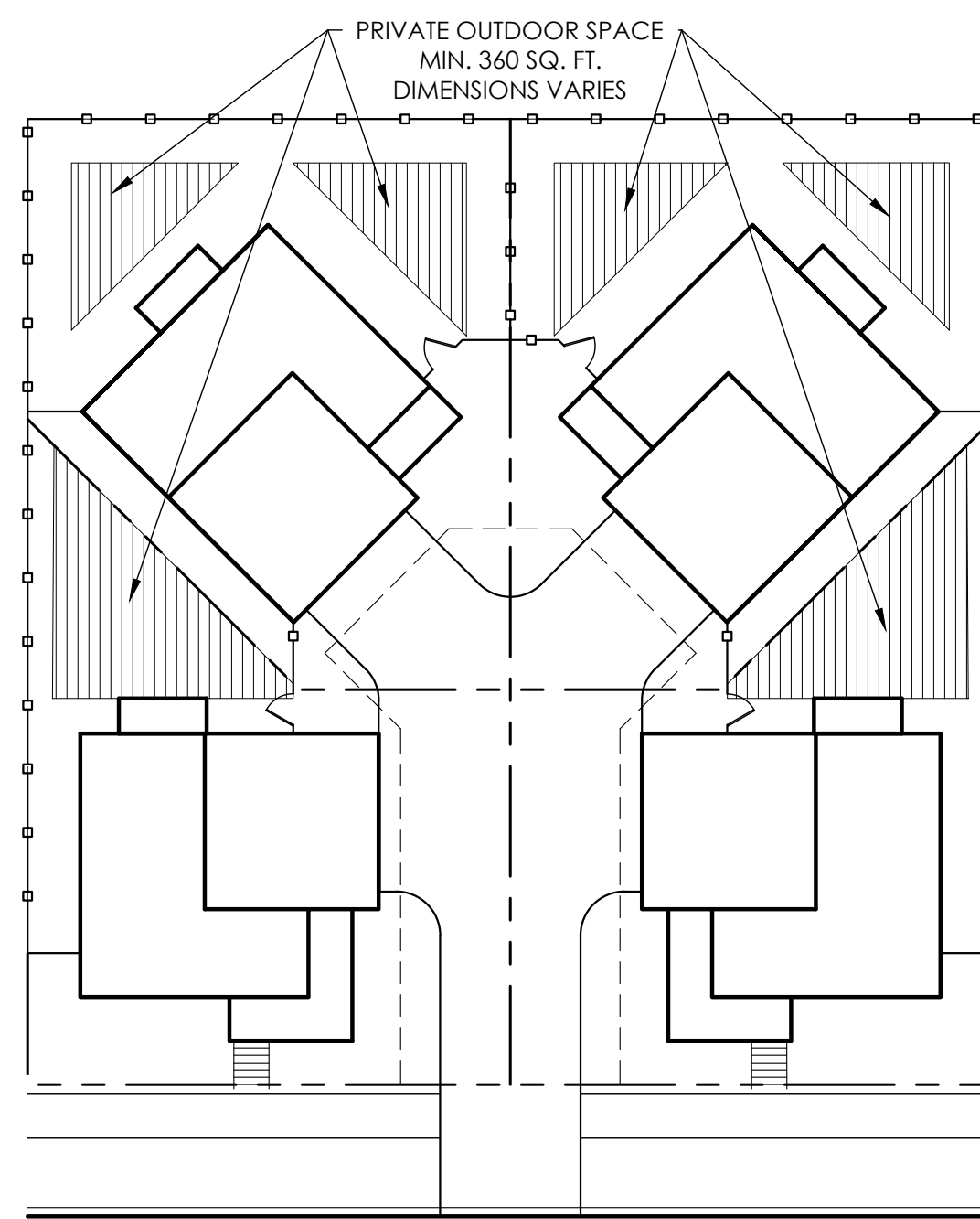
TYPICAL CARRIAGE HOUSE HOSE PULL



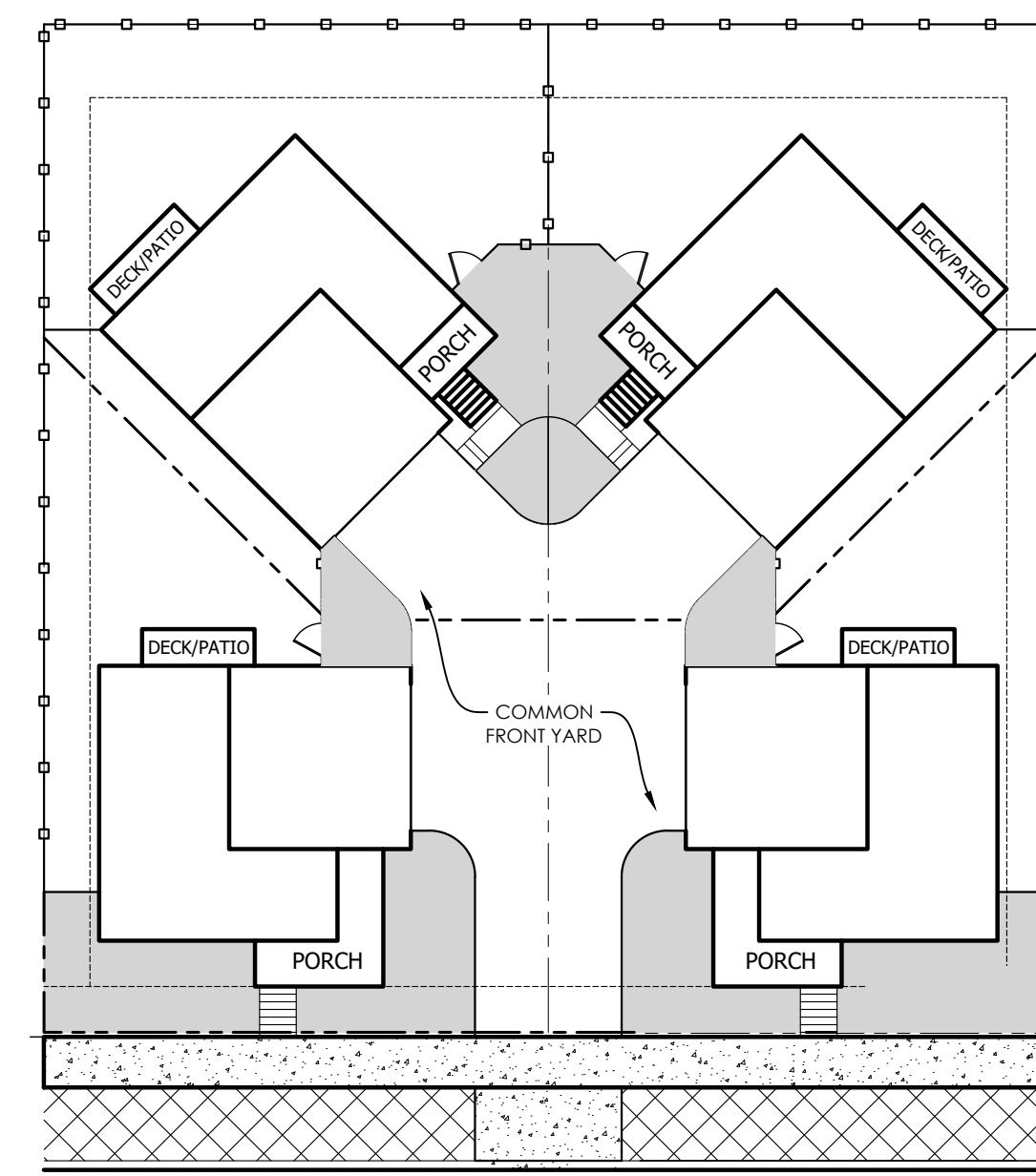
TYPICAL CARRIAGE HOUSE EASEMENTS



TYPICAL CARRIAGE HOUSE
MATERIALS AND FENCING



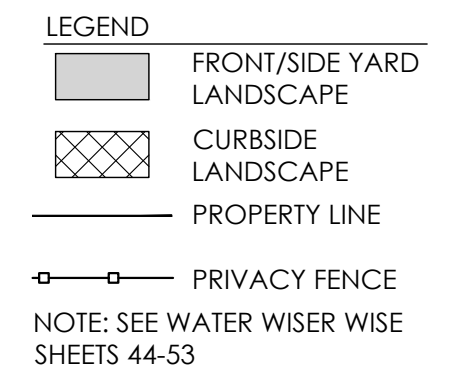
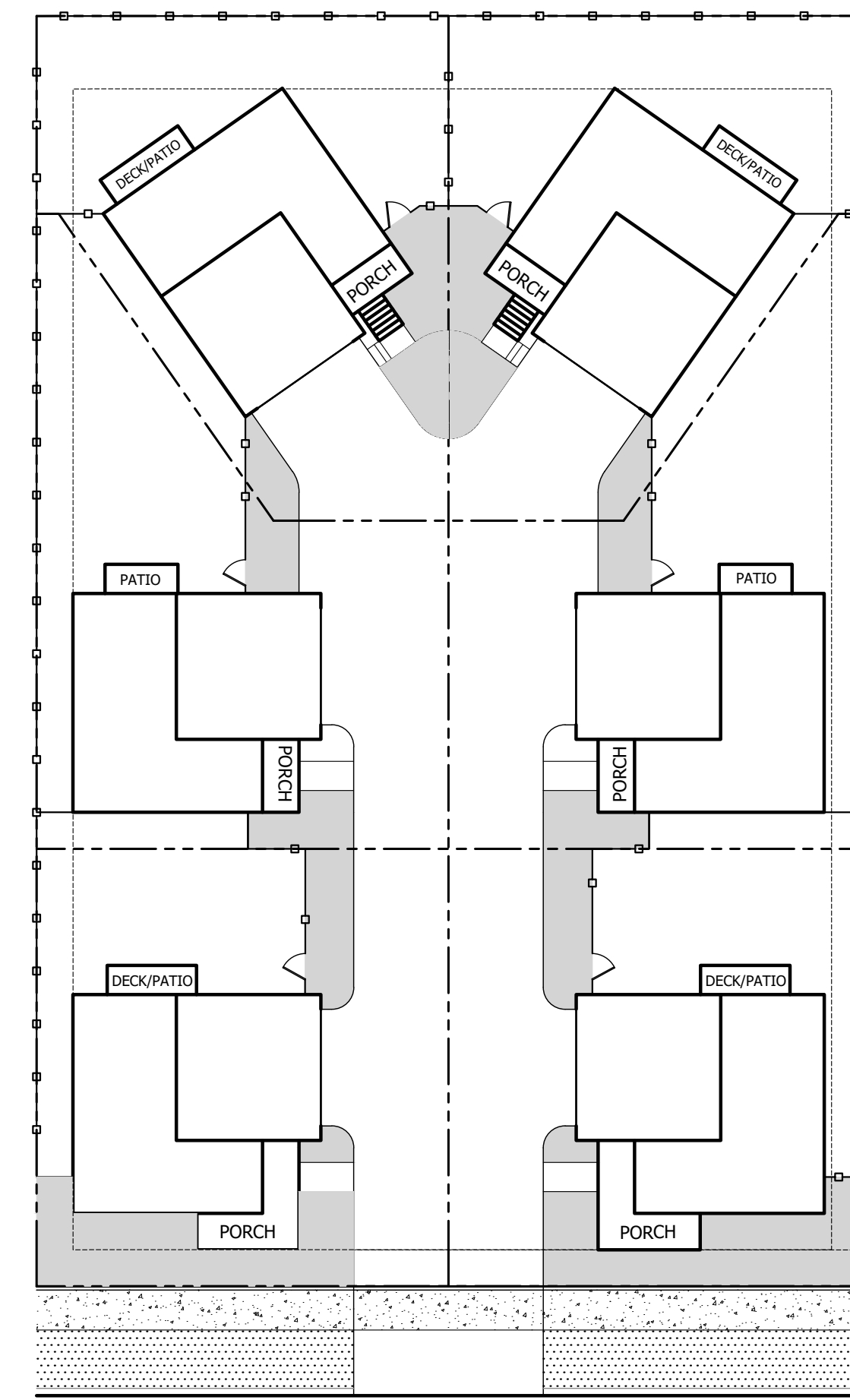
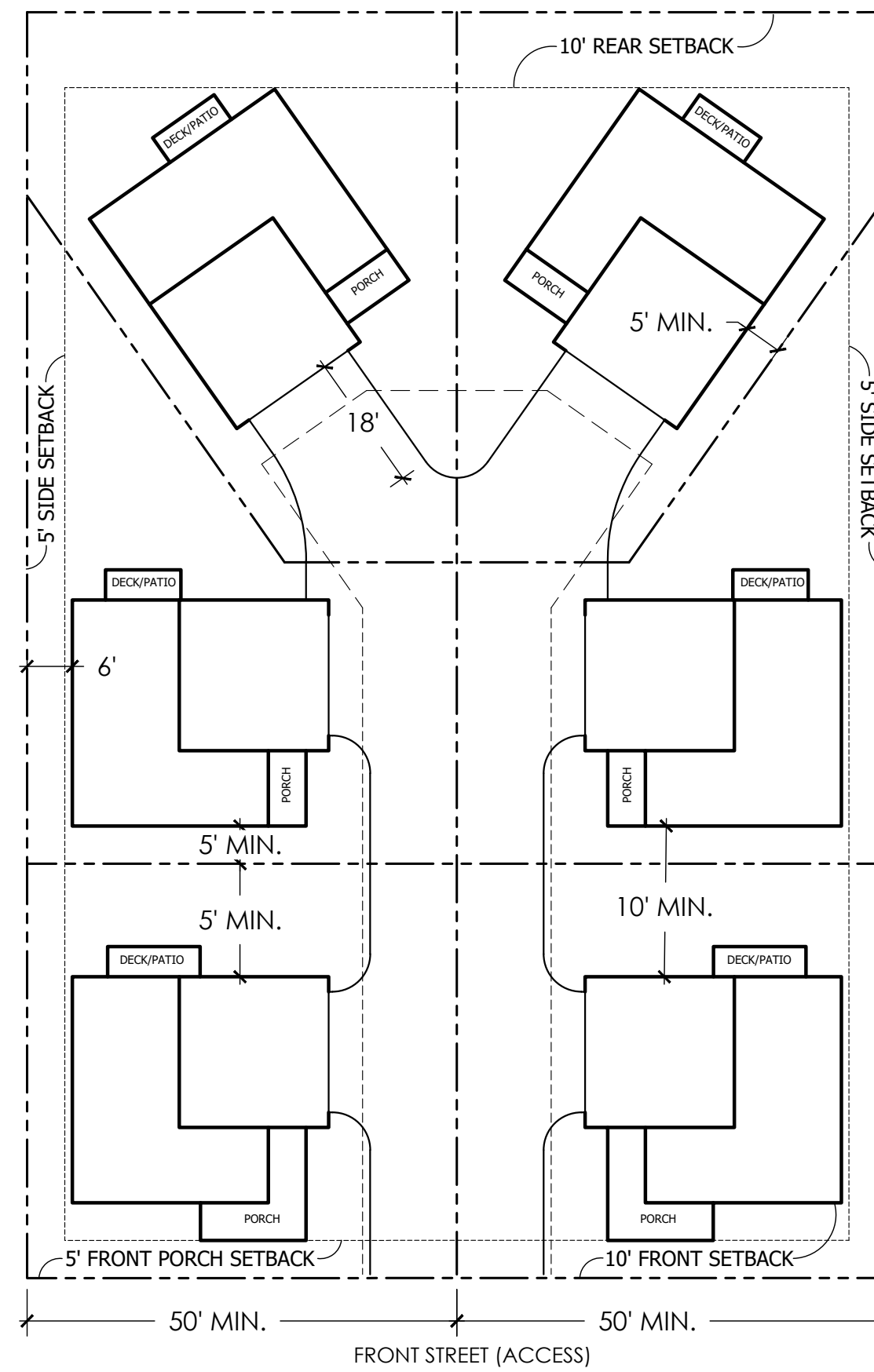
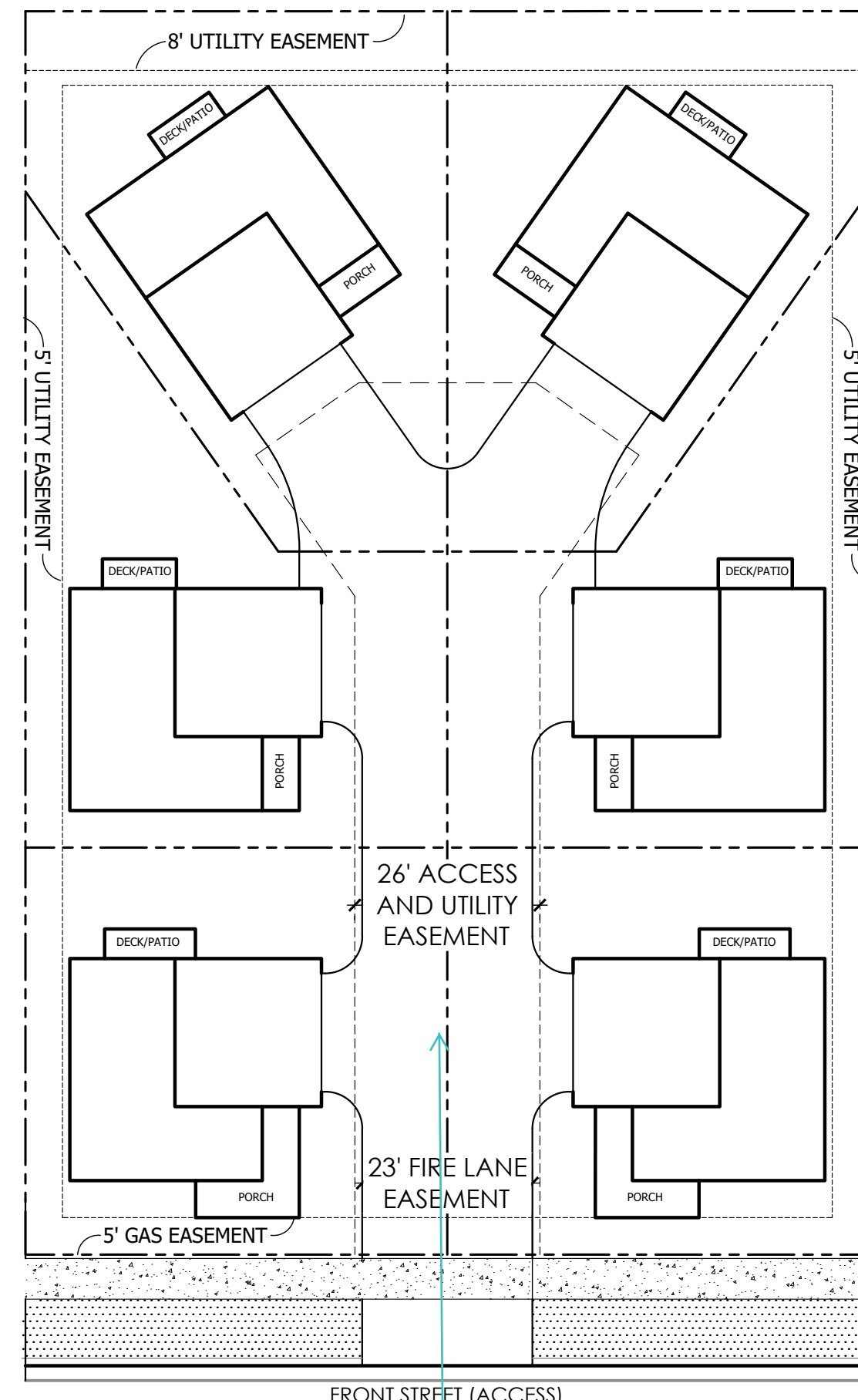
TYPICAL CARRIAGE HOUSE
PRIVATE OUTDOOR SPACE



TYPICAL CARRIAGE HOUSE LANDSCAPE

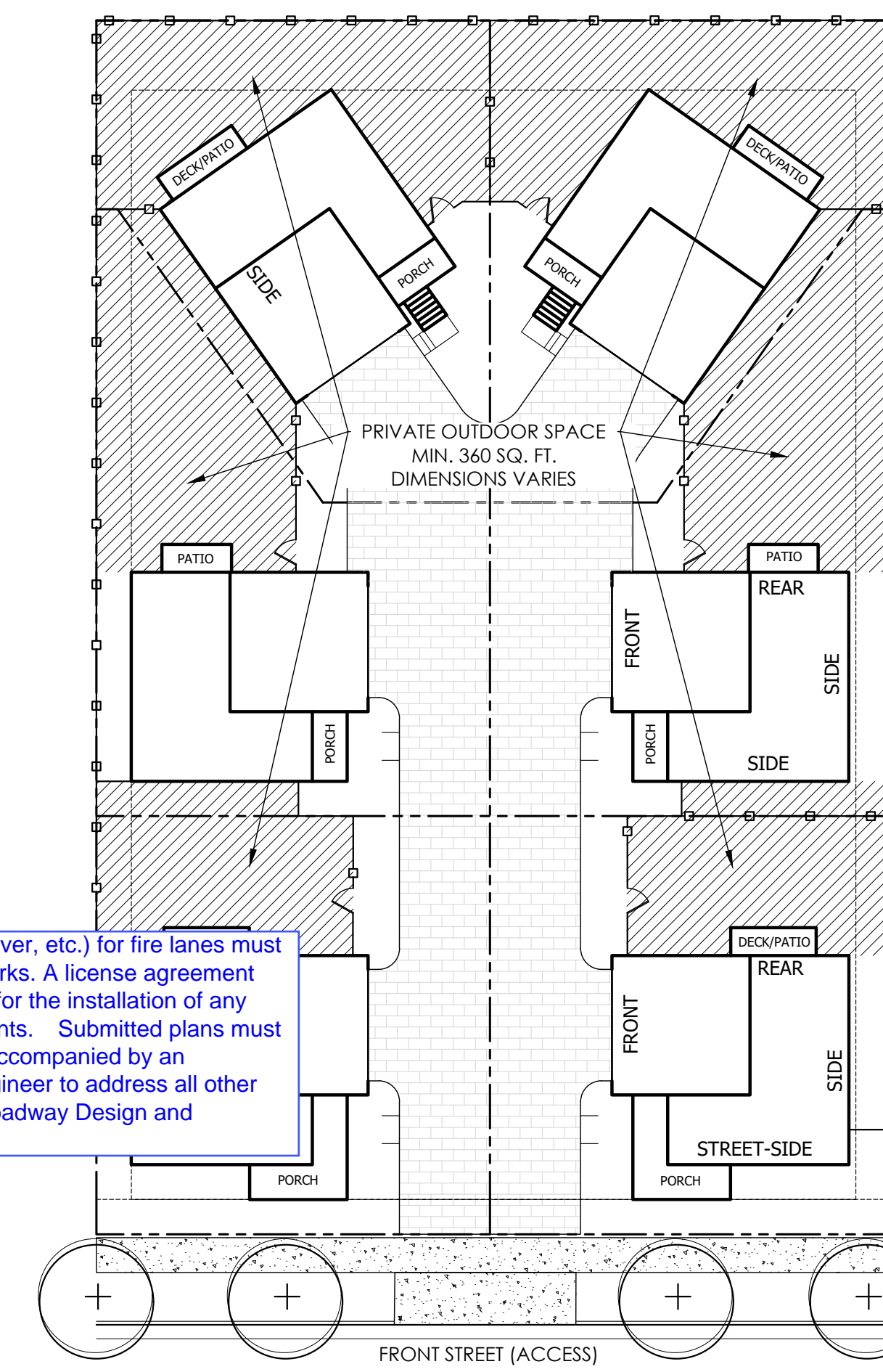
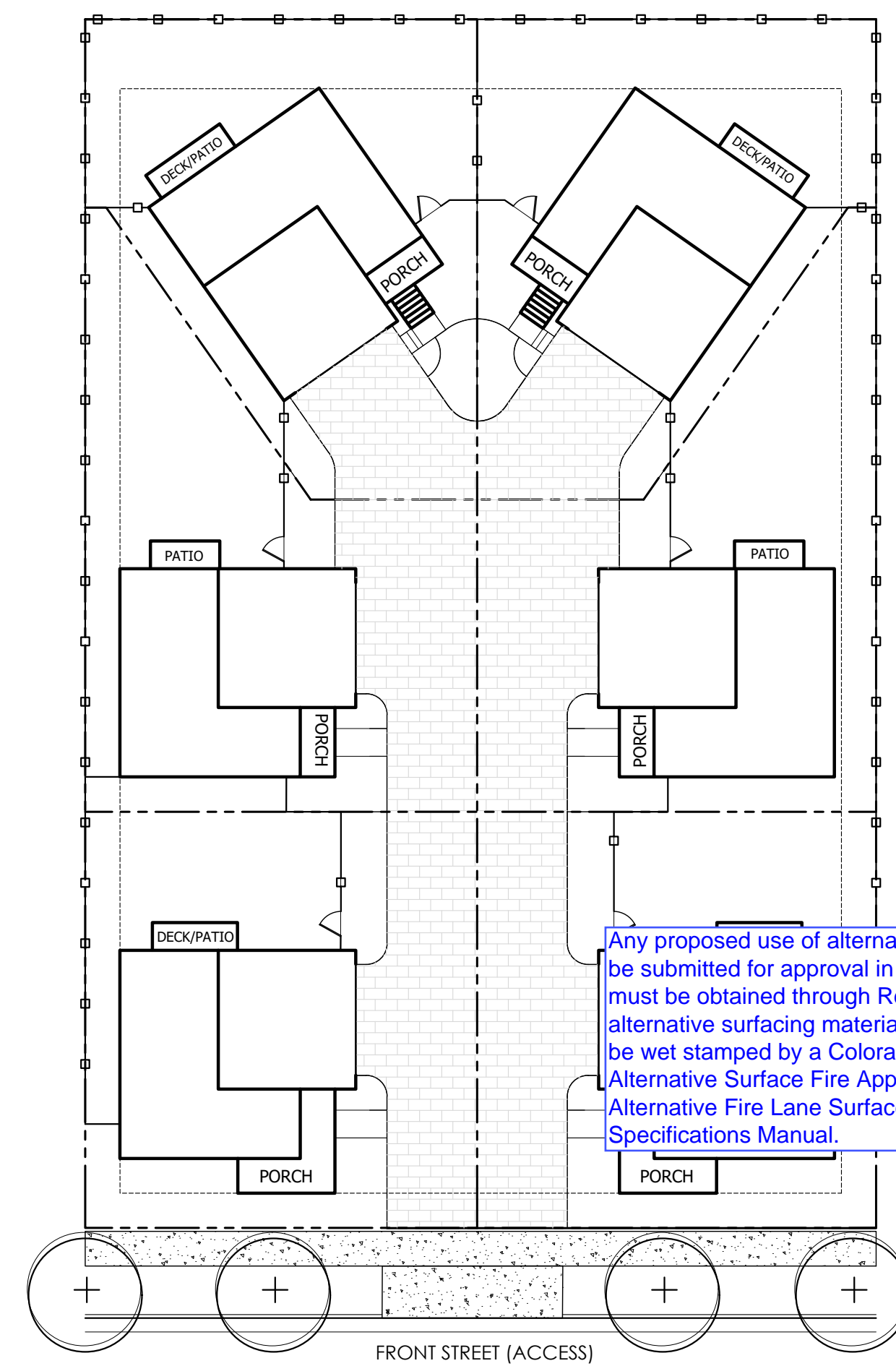
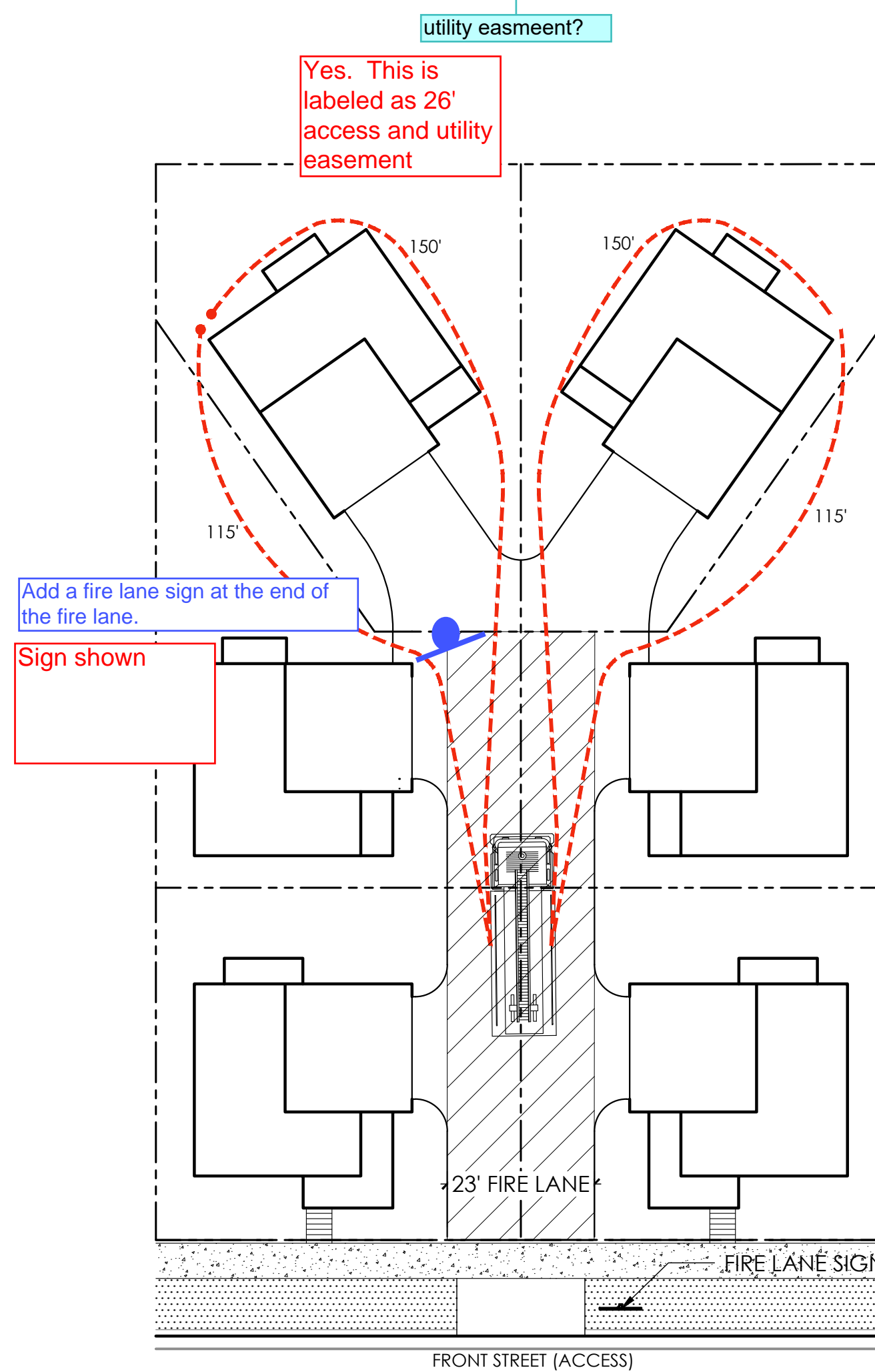
NOTE:
SHARED USE EASEMENT IS
REQUIRED WHEN A PORTION
OF THE PRIVATE, USABLE
OUTDOOR SPACE IS LOCATED
ON THE ADJACENT
NEIGHBOR'S SIDE YARD. SUCH
EASEMENT SHALL BE
RECORDED PRIOR TO
ISSUANCE OF THE CERTIFICATE
OF OCCUPANCY.

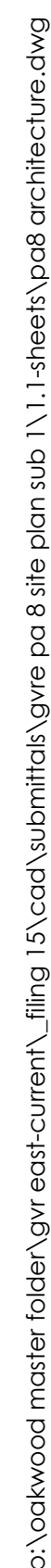
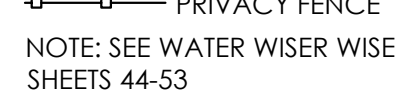
NOT FOR CONSTRUCTION



NOTE:

SHARED USE EASEMENT IS REQUIRED WHEN A PORTION OF THE PRIVATE, USABLE OUTDOOR SPACE IS LOCATED ON THE ADJACENT NEIGHBOR'S SIDE YARD. SUCH EASEMENT SHALL BE RECORDED PRIOR TO ISSUANCE OF THE CERTIFICATE OF OCCUPANCY.

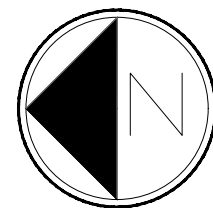
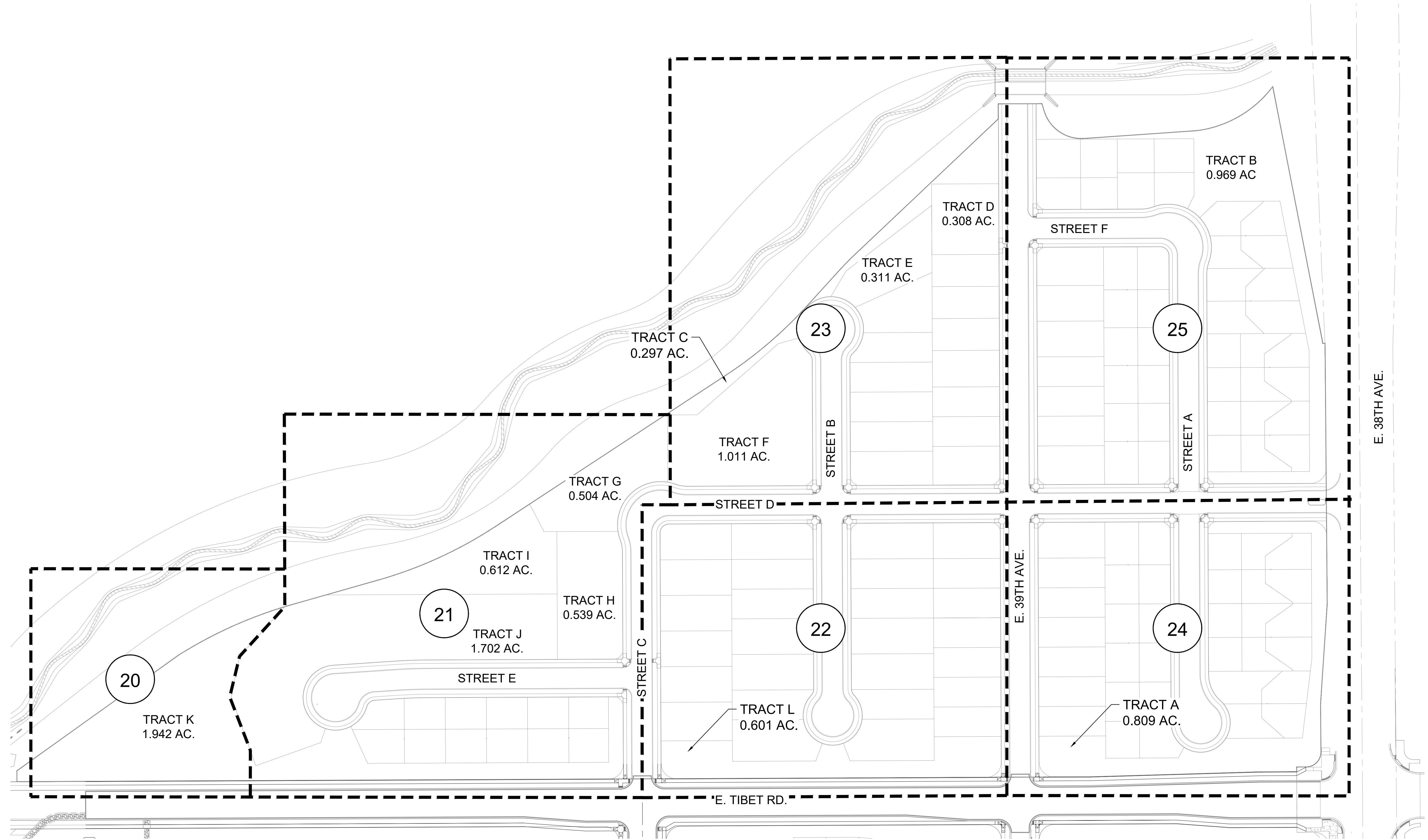




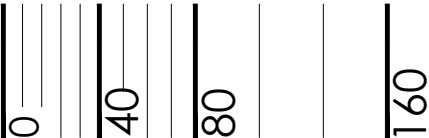
LEGEND

13 SHEET NUMBER

--- MATCHLINE



Scale: 1"= 80'-0"



PROJECT NAME
GREEN VALLEY RANCH EAST FILING 15
AURORA, COLORADO
LANDSCAPE PLANS

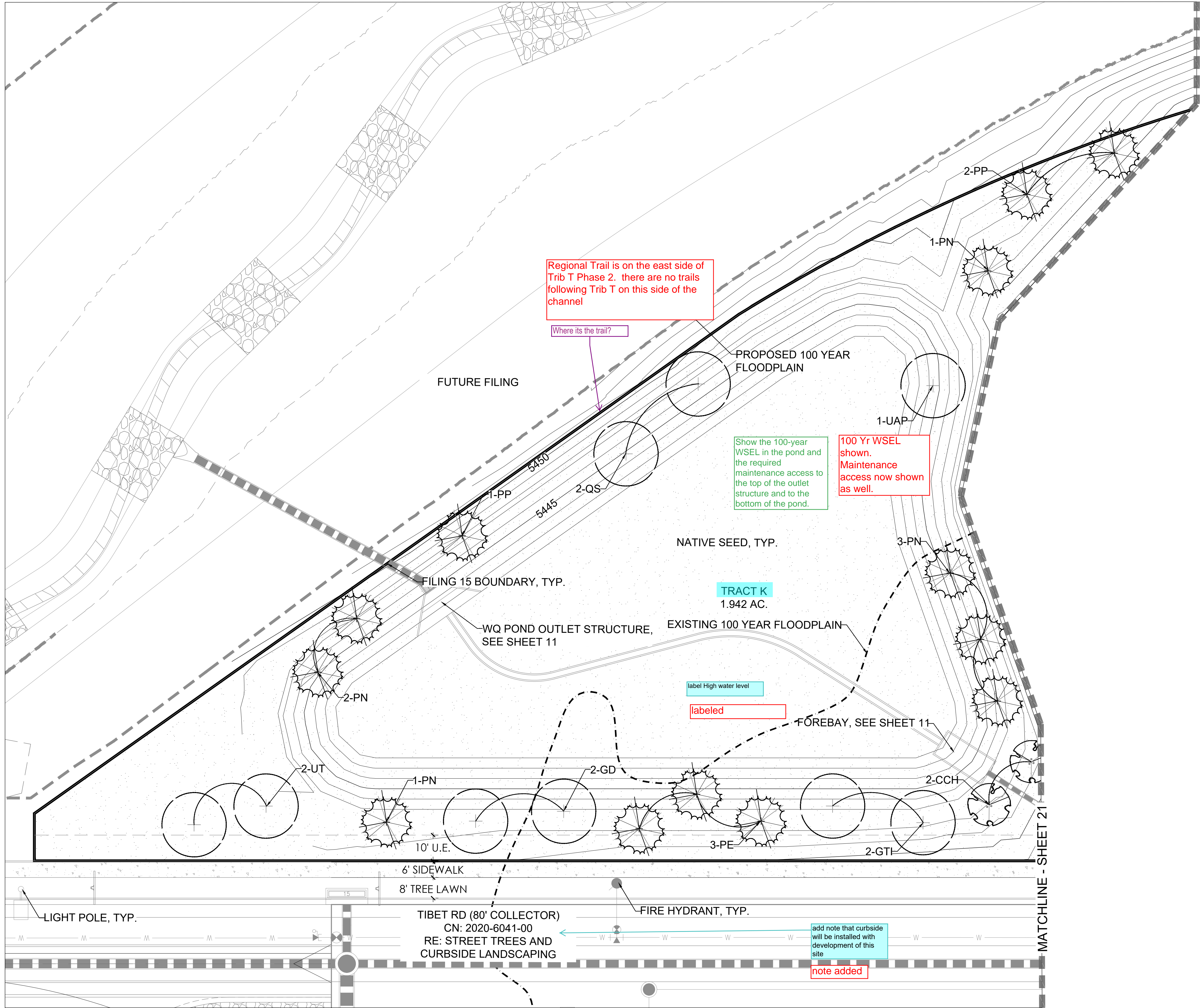
SHEET TITLE
OVERALL LANDSCAPE PLAN

SHEET NUMBER
LP.1

SHEET 19 OF 36
February 28, 2022

NOT FOR CONSTRUCTION

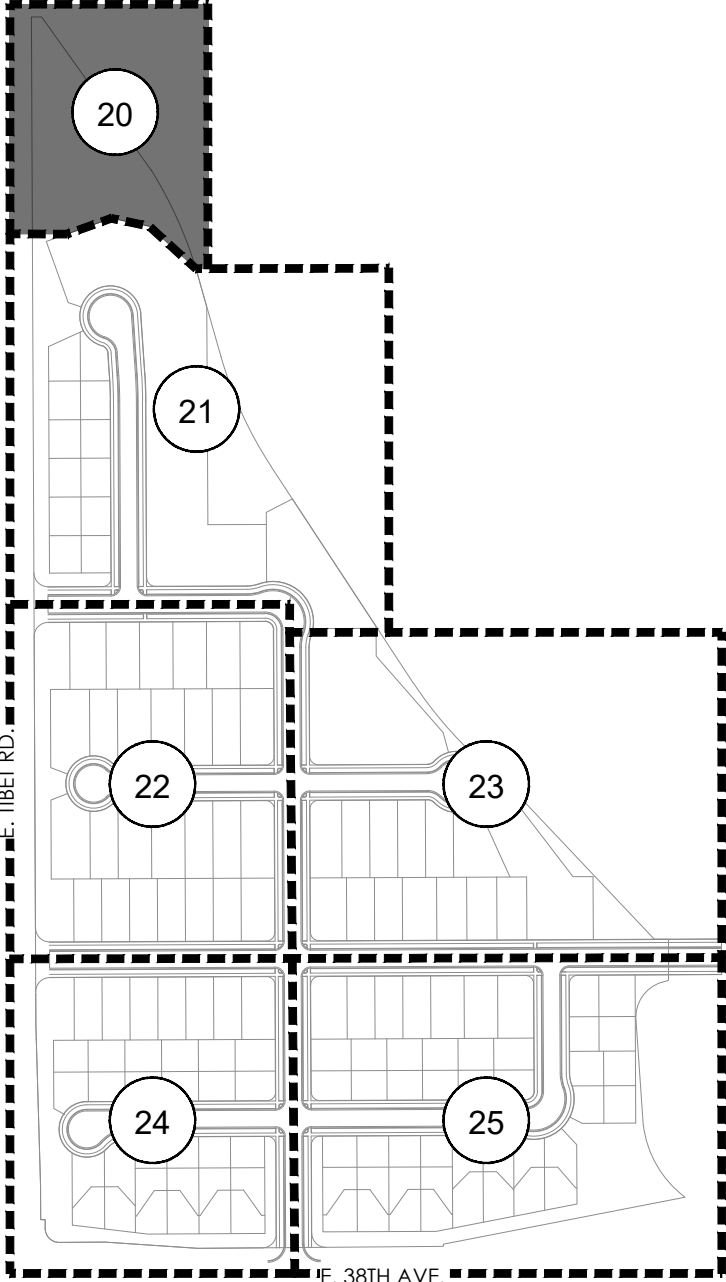
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LEGEND

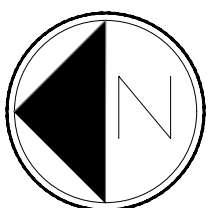
	CANOPY TREE
	ORNAMENTAL TREE
	EVERGREEN TREE
	SHRUBS
	IRRIGATED TURF MIX
	NATIVE SEED MIX
	CONCRETE WALK
	CRUSHER FINES
	STEEL EDGER
	FENCE COLUMN
	PRIVACY FENCE
	OPEN RAIL FENCE
	FILING 15 R.O.W.
	FILING 15 BOUNDARY
	SIGHT LINE
	LIGHT POLE
	FIRE HYDRANT
	LANDSCAPE BOULDER
	MAILBOX KIOSK
U.E. = UTILITY EASEMENT S.E. = SIDEWALK EASEMENT	
G.E. = GAS EASEMENT A.F.E. = ACCESS & FIRE LANE EASEMENT	

KEY MAP

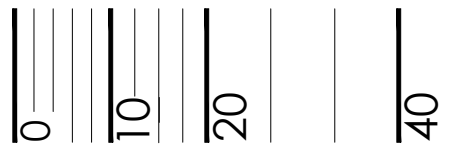


NOTES:

- REFER TO PLAT FOR ALL EASEMENTS WITHIN LOTS.
- PER THE PUBLIC IMPROVEMENT PLAN (PIP), THE IMPROVEMENTS TO THE TIBET RD. RIGHT OF WAY WILL BE BUILT IN A SEPARATE SUBMITTAL. THIS INCLUDES SIDEWALK, TREELAWN, AND PAVEMENT.
- ALL PROPOSED LANDSCAPING WITHIN THE SIGHT TRIANGLE SHALL BE IN COMPLIANCE WITH COA ROADWAY SPECIFICATIONS, SECTION 4.04.2.10. AND UDO SECTION 146.4.7.5.VII.
- LANDSCAPE BUFFERS WILL NOT BE DEFERRED.



Scale: 1"= 20'-0"



PROJECT NAME



GREEN VALLEY RANCH EAST FILING 15 AURORA, COLORADO LANDSCAPE PLANS

SHEET TITLE

LANDSCAPE PLAN

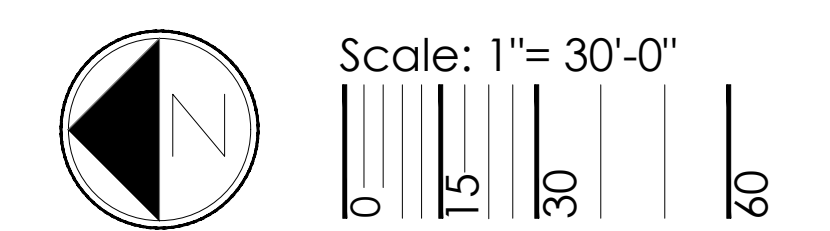
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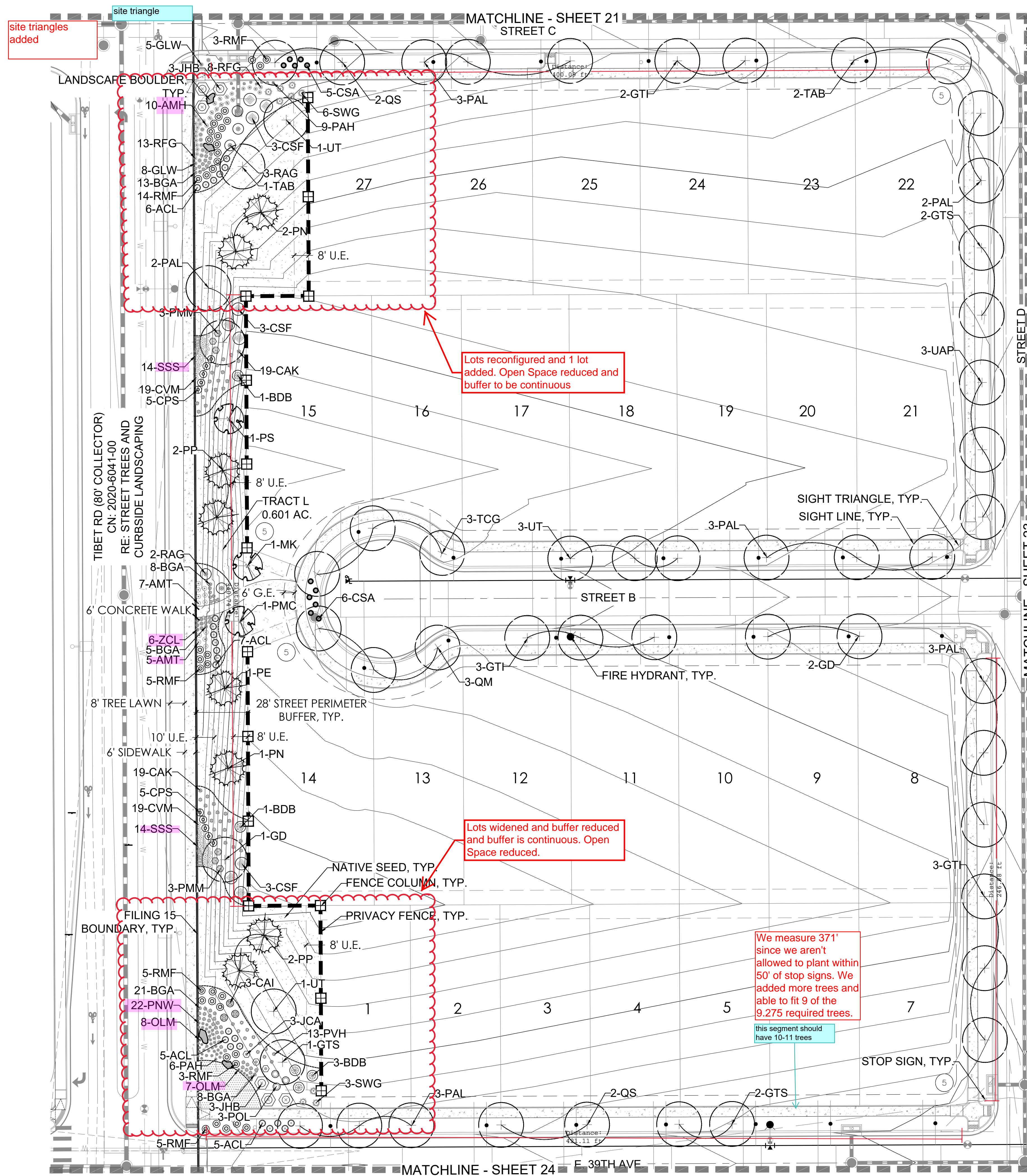
LP.2

SHEET 20 OF 36




















February 28, 2022

NOT FOR CONSTRUCTION

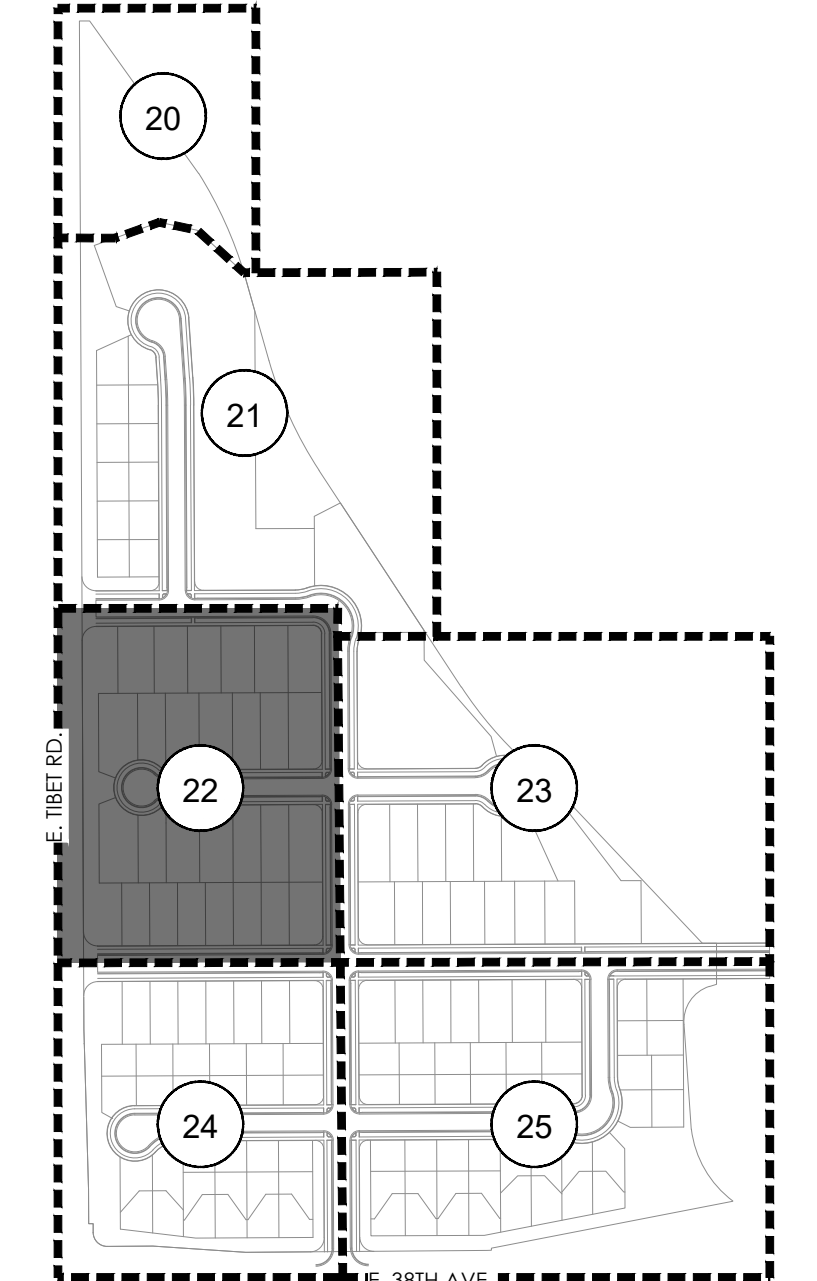




LEGEND

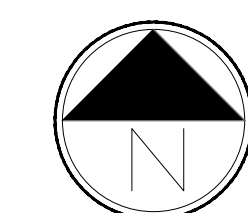
- | | |
|---|--------------------|
|  | CANOPY TREE |
|  | ORNAMENTAL TREE |
|  | EVERGREEN TREE |
|  | SHRUBS |
|  | IRRIGATED TURF MIX |
|  | NATIVE SEED MIX |
|  | CONCRETE WALK |
|  | CRUSHER FINES |
|  | STEEL EDGER |
|  | FENCE COLUMN |
|  | PRIVACY FENCE |
|  | OPEN RAIL FENCE |
|  | FILING 15 R.O.W. |
|  | FILING 15 BOUNDARY |
|  | SIGHT LINE |
|  | LIGHT POLE |
|  | FIRE HYDRANT |
|  | LANDSCAPE BOULDER |
|  | MAILBOX KIOSK |
- U.E. = UTILITY EASEMENT
G.E. = GAS EASEMENT
S.E. = SIDEWALK EASEMENT
A.F.E. = ACCESS & FIRE LANE EASEMENT

KEY MAP

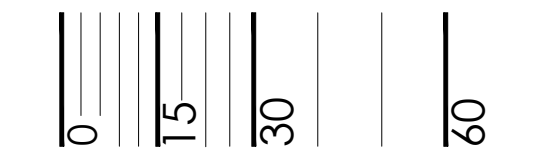


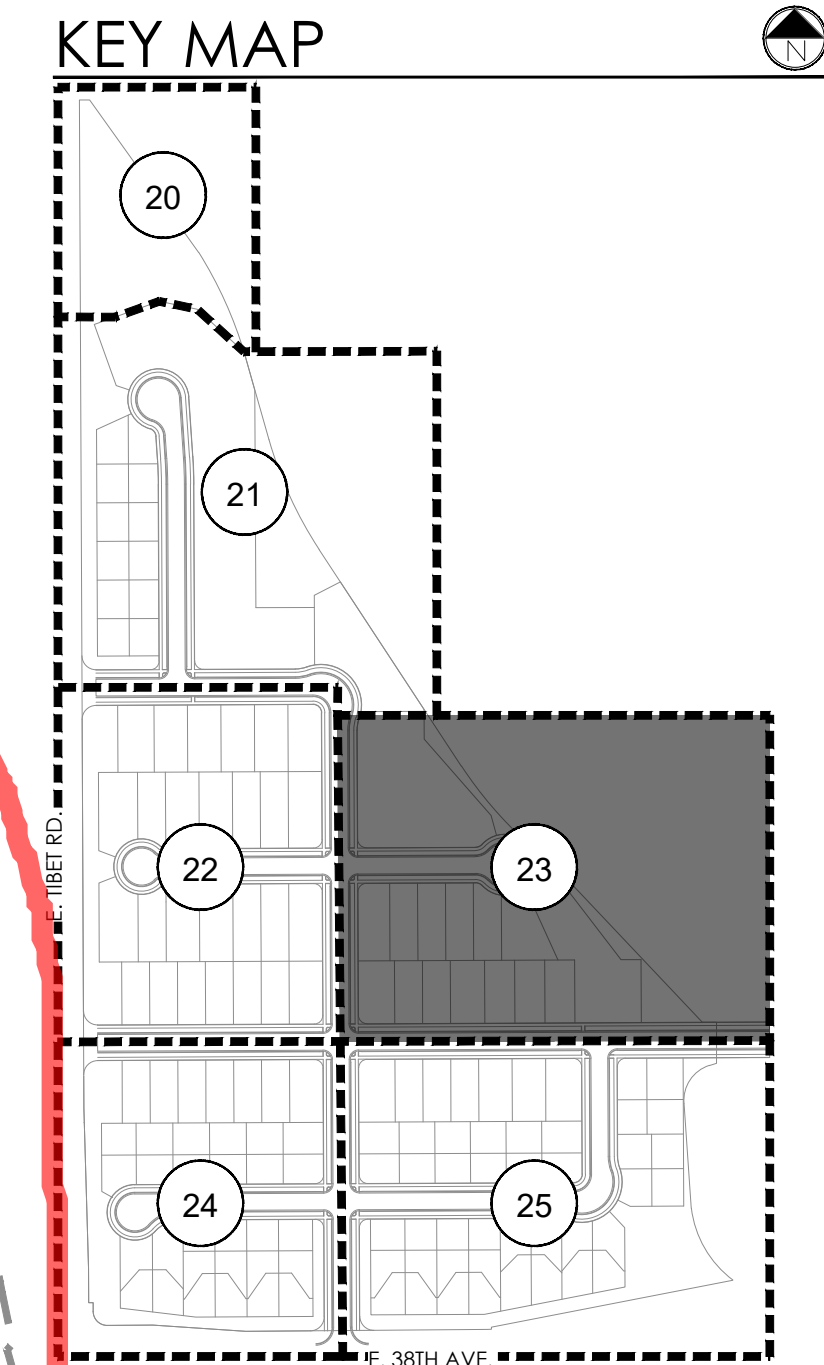
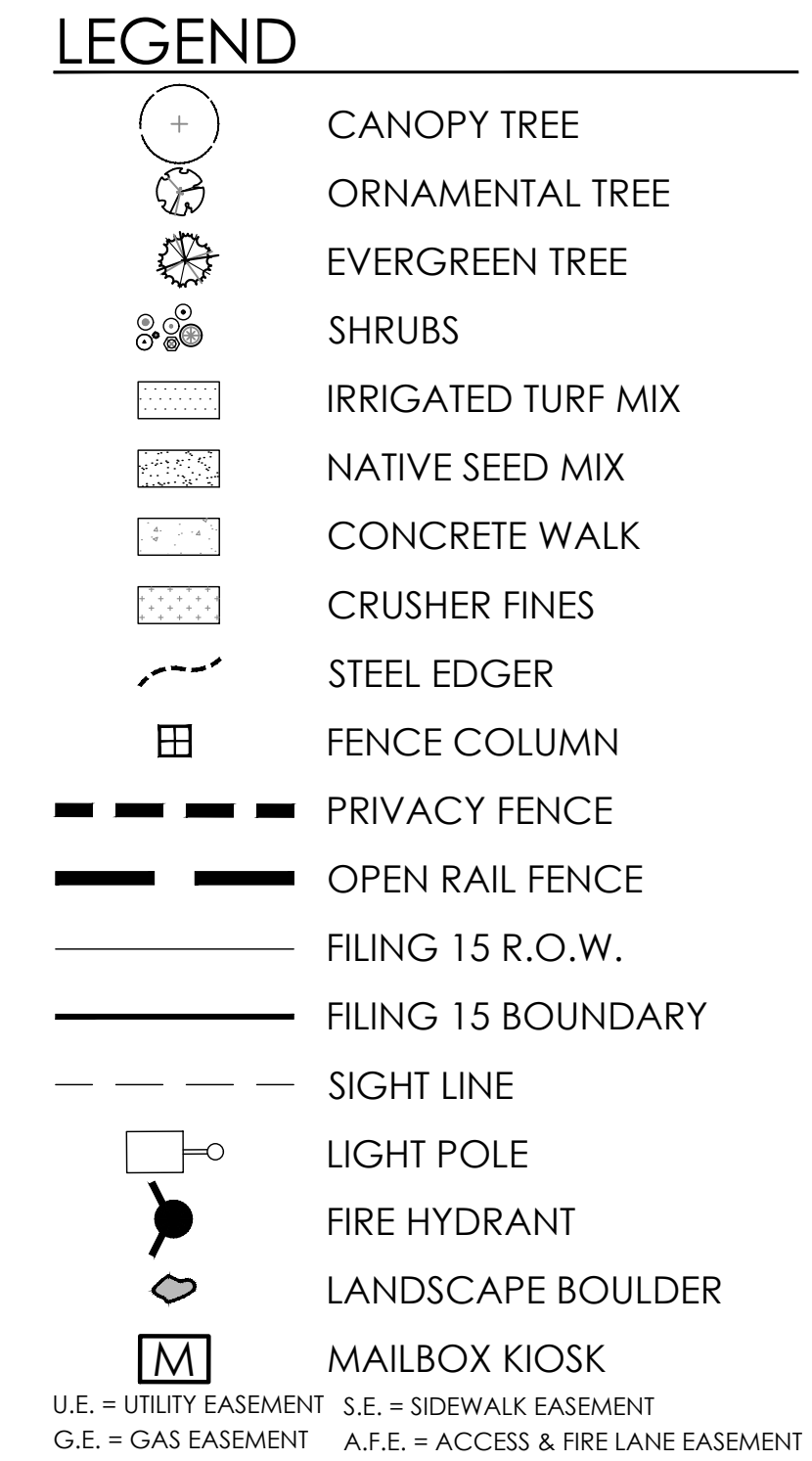
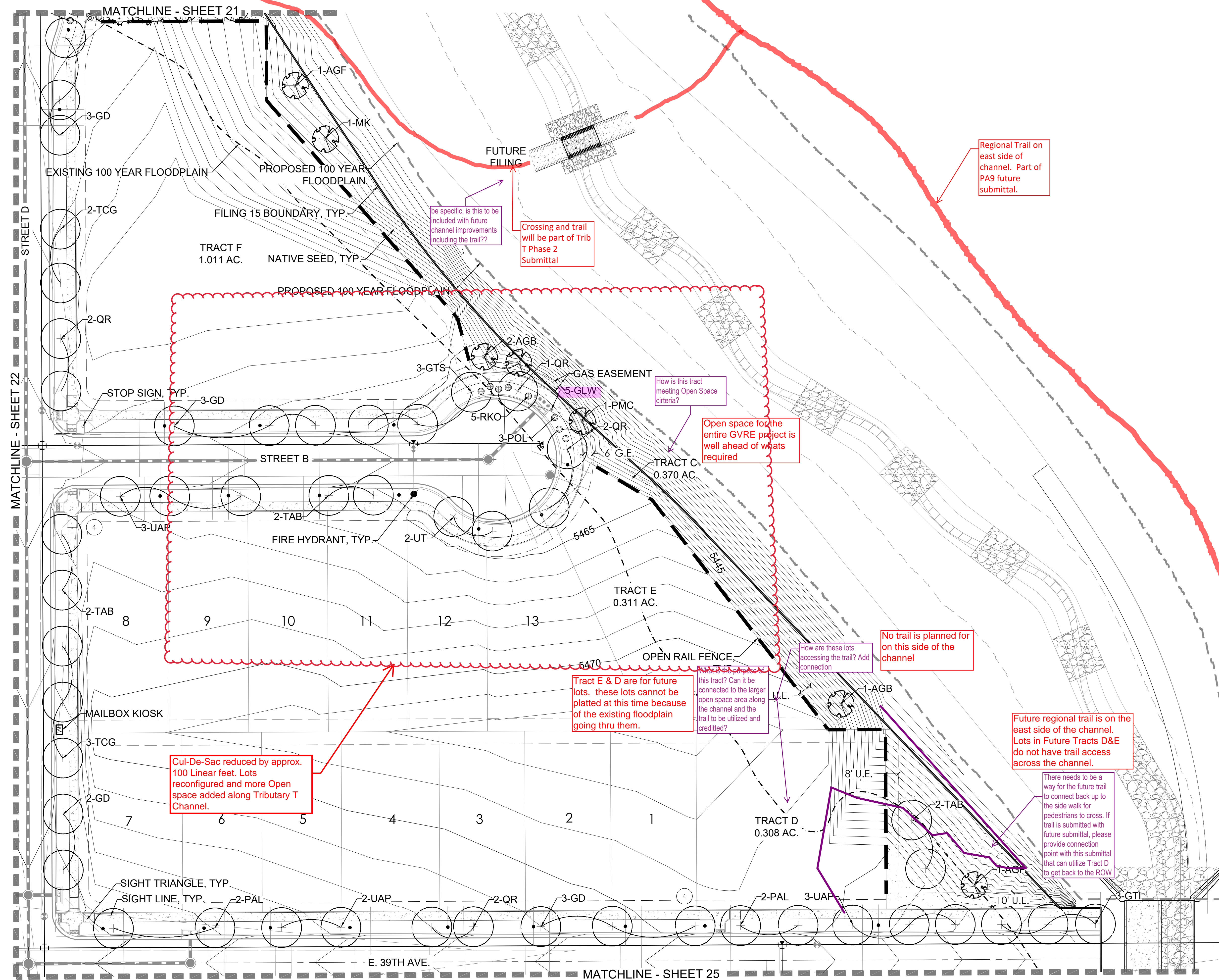
NOTES:

1. REFER TO PLAT FOR ALL EASEMENTS WITHIN LOTS.
2. PER THE PUBLIC IMPROVEMENT PLAN (PIP), THE IMPROVEMENTS TO THE TIBET RD. RIGHT OF WAY WILL BE BUILT IN A SEPARATE SUBMITTAL. THIS INCLUDES SIDEWALK, TREELAWN, AND PAVEMENT.
3. ALL PROPOSED LANDSCAPING WITHIN THE SIGHT TRIANGLE SHALL BE IN COMPLIANCE WITH COA ROADWAY SPECIFICATIONS, SECTION 4.04.2.10. AND UDO SECTION 146.4.7.5.VII.
4. LANDSCAPE BUFFERS WILL NOT BE DEFERRED.



Scale: 1"= 30'-0"

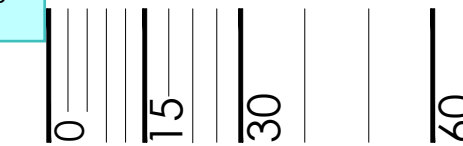




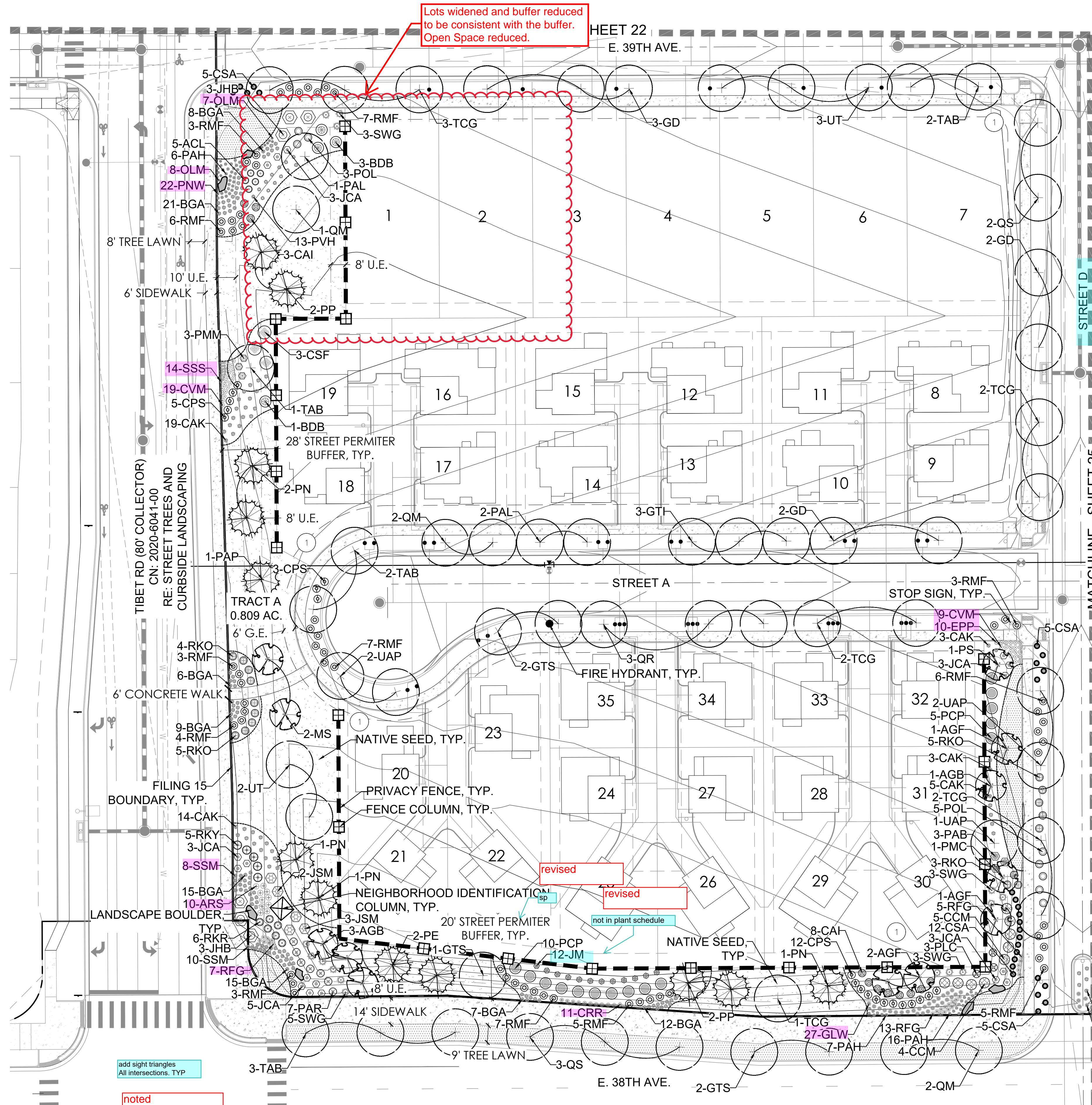
- NOTES:**
1. REFER TO PLAT FOR ALL EASEMENTS WITHIN LOTS.
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 4. LANDSCAPE BUFFERS WILL NOT BE DEFERRED.

there should be a note to reference curbside landscape on separate plans

Scale: 1" = 30'-0"



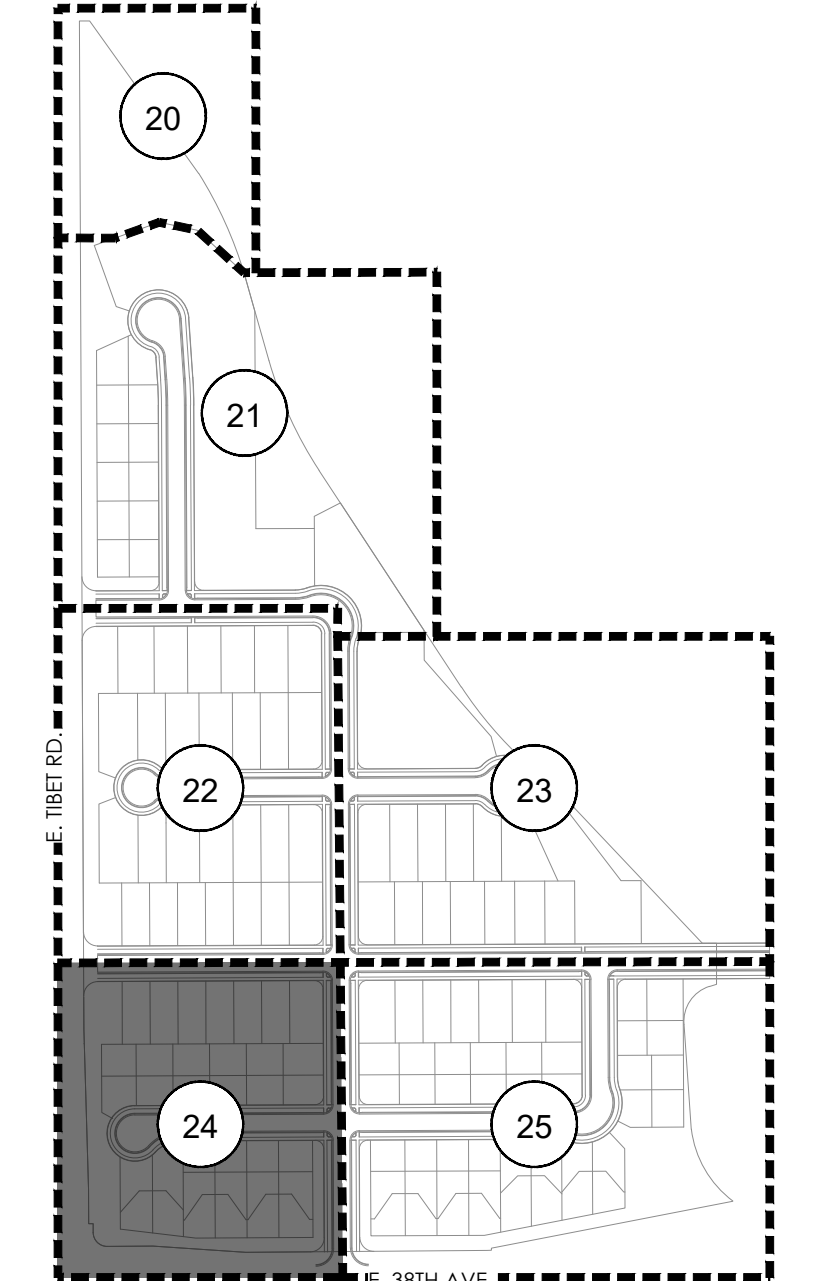
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LEGEND

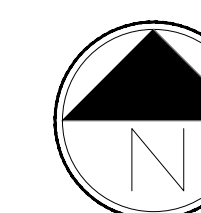
- CANOPY TREE
 - ORNAMENTAL TREE
 - EVERGREEN TREE
 - SHRUBS
 - IRRIGATED TURF MIX
 - NATIVE SEED MIX
 - CONCRETE WALK
 - CRUSHER FINES
 - STEEL EDGER
 - FENCE COLUMN
 - PRIVACY FENCE
 - OPEN RAIL FENCE
 - FILING 15 R.O.W.
 - FILING 15 BOUNDARY
 - SIGHT LINE
 - LIGHT POLE
 - FIRE HYDRANT
 - LANDSCAPE BOULDER
 - MAILBOX KIOSK
- U.E. = UTILITY EASEMENT S.E. = SIDEWALK EASEMENT
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KEY MAP



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Scale: 1"= 30'-0"

0 15 30 45 60

distance: 59.18 ft

PROJECT NAME



GREEN VALLEY RANCH EAST FILING 15 AURORA, COLORADO LANDSCAPE PLANS

SHEET TITLE

LANDSCAPE PLAN

SHEET NUMBER

LP.6


SHEET 24 OF 36

February 28, 2022

NOT FOR CONSTRUCTION



- U.E. = UTILITY EASEMENT S.E. = SIDEWALK EASEMENT
G.E. = GAS EASEMENT A.F.E. = ACCESS & FIRE LANE EASEMENT



Scale: 1" = 10'-0"

0 5 10 20

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OPEN SPACE REQUIREMENTS TABLE

TRACT	TRACT DESCRIPTION	TOTAL TRACT AREA (SF)	TREES REQUIRED (OPEN SPACE 1/4000 SF)	TREES PROVIDED	SHRUBS REQUIRED (OPEN SPACE 10/4000 SF)	*SHRUBS PROVIDED	
TRACT A	ST. PERIMETER BUFFER	35,240	9	32	88	5 GAL	1 GAL
TRACT B	OPEN SPACE/ST. PERIMETER BUFFER	42,209	11	34	106	73	54
TRACT C	OPEN SPACE	16,117	5	9	40	0	0
TRACT G	POCKET PARK	21,934	5.4= 6 trees	16	55	25	143
TRACT I	OPEN SPACE	26,660	7	13	42	0	0
TRACT K	OPEN SPACE/ST. PERIMETER BUFFER	58,478	15	42	18	18	30
TRACT L	ST. PERIMETER BUFFER	26,179	7	18	37		
TOTALS		226,837	57	164			

NOTE: (1) 2.5" CAL. TREE = (12) 5 GAL. SHRUBS, (1) 2.0" CAL. TREE = (10) 5 GAL. SHRUBS, (1) 5 GAL. SHRUB = (3) 1 GAL. GRASS
NOTE: EXCLUDES THOSE AREAS WITHIN 100 YR FLOODPLAIN, WETLANDS, AND WET DETENTION PONDS.
NOTE: WHERE THE NUMBER FOR SHRUBS PROVIDED IS LOWER THAN WHAT IS REQUIRED, THE REQUIREMENT IS MET THROUGH THE TREE EQUIVALENT NOTED ABOVE.
* NUMBER EQUAL TO (TOTAL 5 GAL) + (TOTAL 1 GAL/3)

STREET PERIMETER BUFFER TABLE

TRACT	TRACT DESCRIPTION	STREET PERIMETER LENGTH (LF)	REQUIRED STREET BUFFER WIDTH	PROVIDED STREET BUFFER WIDTH	REQUIRED (PERIMETER BUFFER 1/40 LF)	TREES PROVIDED	(PERIMETER BUFFER 10/40 LF)	SHRUBS PROVIDE (5 GAL/ 1 GAL)*	
TRACT A (E. TIBET RD.)	OPEN SPACE/ST. PERIMETER BUFFER	473	20'	24'-6"	12	15	118	5 GAL	1 GAL
TRACT A (E. 38TH. AVE.)	OPEN SPACE/ST. PERIMETER BUFFER	373	20'	24'-6" to 100'	10	11	93	70	48
TRACT B (E. 38TH. AVE.)	OPEN SPACE/ST. PERIMETER BUFFER	462	20'	24'-6"	12	19	116	32	40
TRACT K (E. TIBET RD.)	OPEN SPACE/ST. PERIMETER BUFFER	620	20'	20' to 100'	16	17	155	123	99
TRACT L (E. TIBET RD.)	OPEN SPACE/ST. PERIMETER BUFFER	573	20'	24'-6" to 100'	15	18	143	90	126
TOTALS		2,501			65	80	625	405	443

NOTE: (1) 2.5" CAL. TREE = (12) 5 GAL. SHRUBS, (1) 2.0" CAL. TREE = (10) 5 GAL. SHRUBS, (1) 5 GAL. SHRUB = (3) 1 GAL. GRASS
NOTE: EXCLUDES THOSE AREAS WITHIN 100 YR FLOODPLAIN, WETLANDS, AND WET DETENTION PONDS.
NOTE: TRACT PERIMETER BUFFER NOT REQUIRED ADJACENT TO OPEN SPACE WHEN GREATER THAN 100 FEET.
NOTE: WHERE THE NUMBER FOR SHRUBS PROVIDED IS LOWER THAN WHAT IS REQUIRED, THE REQUIREMENT IS MET THROUGH THE TREE EQUIVALENT NOTED ABOVE.
* NUMBER EQUAL TO (TOTAL 5 GAL) + (TOTAL 1 GAL/3)

NATIVE SEED AREAS: DRY / UPLAND GRASSES

LBS/ACRE	BOTANICAL NAME	COMMON NAME
GRASSES		
6	BUCHLOE DACTYLOIDES 'SHARP'S'	BUFFALOGRASS, SHARP'S
7	BOULETELOUA CURTINPENDULA 'BUTTE'	SIDE-OATS GRAMA, BUTTE*
5	CHONDROSUM GRACILE 'HACHITA'	BLUE GRAMA, HACHITA*
8	PASCOPYRIUM SMITHII 'ARIBA'	WESTERN WHEATGRASS, ARIBA*
1	SPOROBOLUS AIROIDES	ALKALI SACATON
TOTAL: 27		

NATIVE SEED AREAS: WET / DRAINAGE GRASSES

LBS/ACRE	BOTANICAL NAME	COMMON NAME
GRASSES		
2	BUCHLOE DACTYLOIDES	BUFFALOGRASS
1	CAREX NEBRASCENSIS	NEBRASKA SEDGE*
0.5	JUNCUS BALTICUS	BALTIC RUSH*
6	PASCOPYRIUM SMITHII	WESTERN WHEATGRASS*
6	PANICUM VIRGATUM	SWITCHGRASS*
3	ELYMUS LANCEOLATUS	STREAMBANK WHEATGRASS
2	PUCCINELLIA DISTANS	ALKALIGRASS
2	PUCCINELLIA AIROIDES	NUTTALL ALKALIGRASS
TOTAL: 22.5		

NOTE: FOR PERCENTAGE OF COOL SEASON GRASSES REFER TO SHEET 30

OPEN SPACE DEDICATION

TRACT DATA			
TRACT	TRACT DESCRIPTION	TOTAL TRACT AREA (SF)	TOTAL TRACT AREA (A.C.)
TRACT C	OPEN SPACE	16,117	0.370
TRACT G	POCKET PARK	21,932	0.503
TRACT I	OPEN SPACE	26,659	0.612

Total OS identified within the Master Plan is 0.5 pocket park and 6.9 acres of OS adjacent to the channel. This is significantly lower. Master plan identifies a 200'-400' foot corridor along the channel to include trail corridor-all privately owned.

There is a 0.5 Ac park. There is a 200' channel thru Trib T Phase 2, but this will mostly be city owned as shown in Trib T Phase 2 submittal. The open space shown in the original FDP is conceptual and will vary from actual plats. The FDP showed Trib T as channelized vs the geomorphic design now required. This significantly changed the open space credited within District owned Tracts. With recent changes to open space, this can now be credited within floodplain to a certain percentage. This will be shown within the Trib T Phase 2 plans. A separate OS tracking chart will also be provided to show we're well ahead on open space within GVRE.

RESIDENTIAL RECOMMENDED PLANT LIST

SHADE STREET TREE

- TREE SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- AESCULUS X ARNOLDIANA 'AUTUMN SPLENDOR', AUTUMN SPLENDOR HORSE CHESTNUT
 - PLATANUS X ACERIFOLIA BLOODGOOD, BLOODGOOD PLANETREE
 - CATALPA SPECIOSA, SEEDLESS WESTERN CATALPA
 - GLEDTISIA TRIACANTHOS INERMIS 'SKYLINE', SKYLINE HONEYLOCUST

SHADE PATIO TREE

- TREE SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- GLEDTISIA TRIACANTHOS INERMIS 'SKYLINE', SKYLINE HONEYLOCUST
 - TILIA CORDATA GREENSPIRE, LINDEN, GREENSPIRE
 - ULMUS X TRIUMPH, TRIUMPH ELM

ORNAMENTAL TREE - MULTI TRUNK

- TREE SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- AMELANCHIER ANIFOLIA, SASKATOON SERVICEBERRY
 - MALUS ROYAL RAINDROPS, ROYAL RAINDROPS CRABAPPLE

ORNAMENTAL TREE - SINGLE STEM, 15' DIA MAX. FULL GROWN

- TREE SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- CRATAEGUS CRUS-GALLI INERMIS, THORNLESS COCKSPUR HAWTHORN
 - MALUS RADIANT, RADIANT CRABAPPLE
 - MALUS THUNDERCHILD, THUNDERCHILD CRABAPPLE
 - **ALTERNATE THROUGHOUT CORRIDOR

ORNAMENTAL TREE - SINGLE STEM, 10' DIA MAX FULL GROWN

- TREE SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- MALUS 'ADIRONDACK', ADIRONDACK CRABAPPLE
 - MALUS 'RED BARRON', RED BARRON CRABAPPLE
 - PYRUS CALLERYANA 'REDSPIRE', REDSPIRE FLOWERING PEAR
 - PRUNUS NIGRA 'PRINCESS KAY', PRINCESS KAY PLUM

DECIDUOUS SHRUBS - MED

- SHRUB SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- CARYOPTERIS X CLANDONENSIS 'BLUE MIST', BLUE MIST SPIREA
 - PHYSOCARPUS OPULIFOLIUS DART'S GOLD, DART'S GOLD NINEBARK
 - PEROVSKIA ATRIPLICIFOLIA 'LITTLE SPIRE', LITTLE SPIRE RUSSIAN SAGE
 - ROSA SPP., KNOCKOUT OR MEIDLILAND ROSES, NO WHITE FLOWERS

PERENNIAL GRASS - SMALL

- SHRUB SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- BOULETELOUA GRACILIS, BLUE GRAMA GRASS
 - PENNISETUM ALOPECUROIDES 'HAMELN', DWARF FOUNTAIN GRASS

PERENNIAL GRASS - MEDIUM

- SHRUB SPECIES (OR SIMILAR) TO BE INSTALLED INCLUDE:
- CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER', FEATHER REED GRASS
 - PANICUM VIRGATUM 'HEAVY METAL', HEAVY METAL BLUE SWITCH GRASS
 - SCHIZACHYRIUM SCOPARIUM 'THE BLUES', THE BLUES LITTLE BLUESTEM GRASS

CURBSIDE TREE REQUIREMENTS

LANDSCAPED AREA	REQUIREMENT	LENGTH	TREES REQ'D	TREES PROVIDED
STREET A	1 TREE/40 LF	1,530	39	39
STREET B	1 TREE/40 LF	1,311	33	33
STREET C	1 TREE/40 LF	765	20	20
STREET D	1 TREE/40 LF	1,756	44	48
STREET E	1 TREE/40 LF	1,057	27	29
STREET F	1 TREE/40 LF	442	12	12
E. 39TH AVE.	1 TREE/40 LF	1,995	50	50
E. 38TH AVE.	1 TREE/40 LF	608	16	16
TOTAL		9,444	241	247

NOTE: SEE WATER WISE LANDSCAPE FOR CURBSIDE SHRUB REQUIREMENTS
SHEET 31-36
NOTE: FOR ALL STREET TREES AND CURBSIDE LANDSCAPE ALONG E. TIBET RD PLEASE REFERENCE:

VE : CN: 2021-6018-00

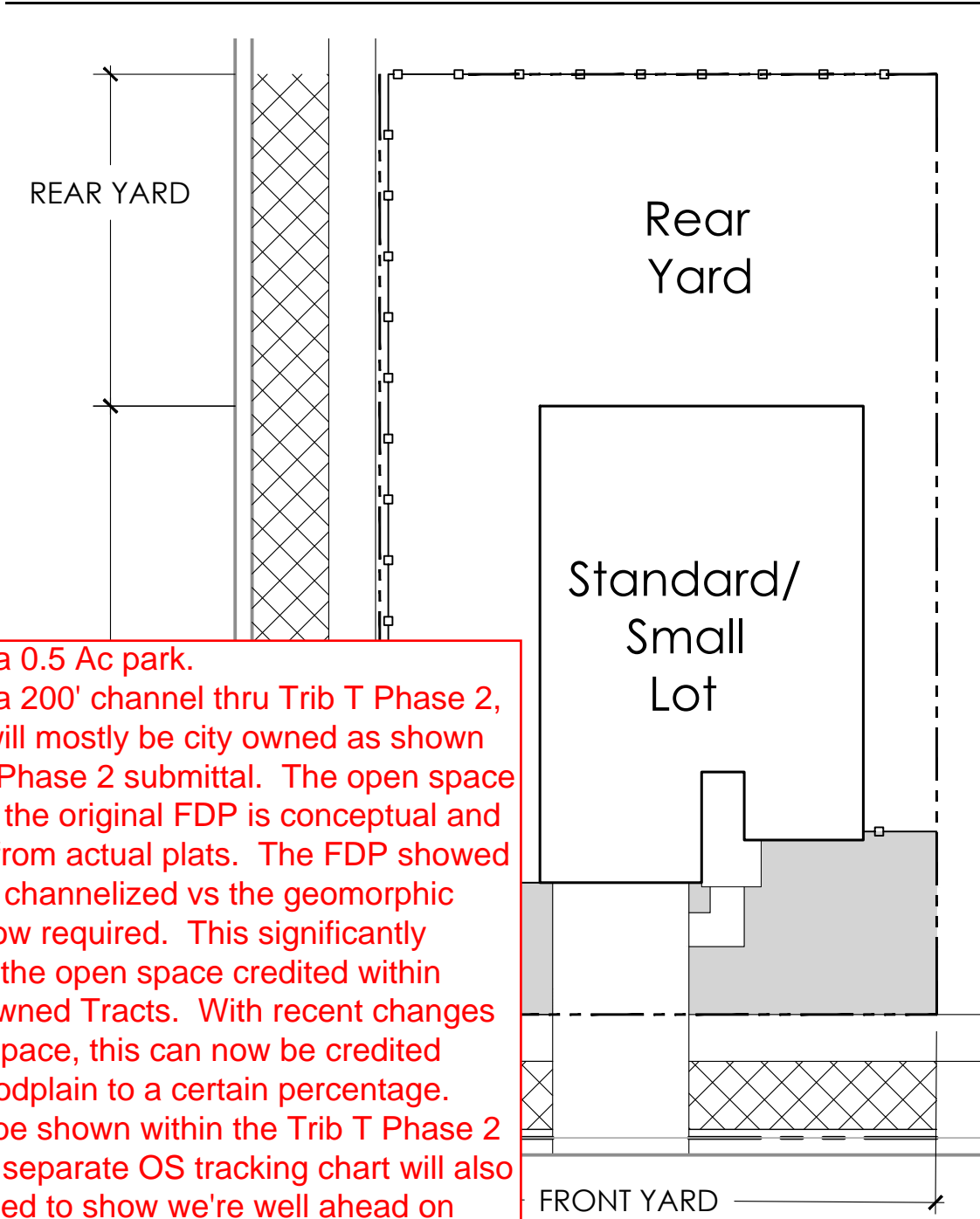
Perennials not being counted
perennials do not count toward buffer landscape. Confirm they are not included in plant counts.

SITE DATA

SITE DATA		
SITE DATA	AREA (AC)	%
TOTAL SITE AREA	32.41	100.0%
LOT AREA	18.99	58.6%
HARD SURFACE AREA*	7.72	23.8%
LANDSCAPE AREA	5.70	17.6%

* HARD SURFACE AREA INCLUDES PAVEMENT, CURB, GUTTER, AND SIDEWALK.

SINGLE FAMILY LS AREAS



LEGEND

- Front/Side Yard Landscape
- Rear Yard Landscape
- Curbside Landscape

NOTE:
1. SEE WATER WISE LANDSCAPE REQUIREMENT 31-36
2. FENCE SHALL BE LOCATED A MINIMUM OF 18" BEHIND THE SIDEWALK.

PLANT SCHEDULE

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	TYPE	WATER USE*
DECIDUOUS SHADE TREES						
35	GD	GYMNOCALUS DIOICUS 'ESPRESSO'	KENTUCKY COFFEETREE, SEEDLESS	2.5" CAL	B&B	L-M
27	GTI	GLEDTISIA TRIACANTHOS INERMIS 'IMPERIAL'	HONEYLOCUST, IMPERIAL	2.5" CAL	B&B	L-M
22	GTS	GLEDTISIA TRIACANTHOS INERMIS 'SKYLINE'	HONEYLOCUST, SKYLINE	2.5" CAL	B&B	L-M
40	PAL	PLATANUS X ACERIFOLIA 'BLOODGOOD'	PLANE TREE, BLOODGOOD	2.5" CAL	B&B	M
22	QM	QUERCUS MACROCARPA	OAK, BUR	2.5" CAL	B&B	L-M
21	QR	QUERCUS ROBUR	OAK, ENGLISH	2.5" CAL	B&B	L-M
23	QS	QUERCUS BICOLOR	OAK, SWAMP WHITE	2.5" CAL	B&B	L-M
23	TAB	TILIA CORDATA 'BOULEVARD'	LINDEN, BOULEVARD	2.5" CAL	B&B	M
28	TCG	TILIA CORDATA 'GREENSPIRE'	LINDEN, GREENSPIRE	2.5" CAL	B&B	M
24	UAP	ULMUS AMERICANA 'PRINCETON'	ELM, PRINCETON AMERICAN	2.5" CAL	B&B	L-M
32	UT	ULMUS X TRIUMPH	ELM, TRIUMPH	2.5" CAL	B&B	L-M

ORNAMENTAL TREES						
14	AGB	ACER GRANDIDENTATUM	MAPLE, BIGTOOTH	2.0" CAL	B&B	L-M
19	AGF	ACER GINNALA	MAPLE, AMUR	2.0" CAL	B&B	L-M
3	CCH	CRATAEGUS CRUS-GALLI INERMIS	HAWTHORN, THORNLESS COCKSPUR	6-8" MULTI-STEM	B&B	L-M
7	MK	MALUS 'KELSEY'	CRABAPPLE, KELSEY	6-8" MULTI-STEM	B&B	L-M
3	MS	MALUS 'SPRING SNOW'	CRABAPPLE, SPRING SNOW	2.0" CAL	B&B	L-M
2	PCS	PYRUS CALLERYANA CHANTICLEER	PEAR, CHANTICLEER	2.0" CAL	B&B	L-M
5	PS	PRUNUS SARGENTII	CHERRY, SARGENT	2.0" CAL	B&B	L-M
5	PMC	PRUNUS MAACKII	CHOKECERRY, AMUR	2.0" CAL	B&B	L-M

EVERGREEN TREES						
5	PAP	PINUS ARISTATA	PINE, BRISTLECOONE	6' HT.	B&B	L-M
10	PE	PINUS EDULIS	PINE, PINON	6' HT.	B&B	L-M
25	PN	PINUS NIGRA	PINE, AUSTRIAN	6' HT.	B&B	M
19	PP	PINUS PONDEROSA	PINE, PONDEROSA	6' HT.	B&B	L-M

EVERGREEN SHRUBS						
35	JCA	JUNIPERUS CHINENSIS 'ARMSTONG'	JUNIPER, ARMSTONG	#5	CONT.	L
15	JHB	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	JUNIPER, BAR HARBOR	#5	CONT.	L
5	JSM	JUNIPERUS HORIZONTALIS 'BAR HARBOUR'	JUNIPER, BAR HARBOR	#5	CONT.	L
6	PAB	PINUS MUGO MOPS	MUGO MOPS PINE	#5	CONT.	L
18	PMM	PINUS MUGO MOPS	MUGO MOPS PINE	#5	CONT.	L

DECIDUOUS SHRUBS						
31	ACL	AMPORPHA CANESCENS	LEADPLANT	#5	CONT.	L
14	BDB	BUDDLEJA DAVIDII 'BLACK NIGHT'	BUTTERFLY BUSH, PURPLE	#5	CONT.	L
3	BTB	BERBERIS THUNBERGII 'BURGUNDY CAROUSEL'	BARBERRY, BURGUNDY CAROUSEL JAPANESE	#5	CONT.	L
22	CAI	CORNUS ALBA 'IVORY HALO'	DOGWOOD, IVORY HALO	#5	CONT.	L
18	CCM	COTINUS COCOGYRIA 'WINECRAFT BLACK'	SMOKE TREE, WINECRAFT BLACK	#5	CONT.	L
75	CSA	CORNUS SERICEA 'ARTIC FIRE'	DOGWOOD, ARTIC FIRE	#5	CONT.	L
21	CSF	CORNUS SERICEA 'FLAVIRAMEA'	DOGWOOD, YELLOWTWIG	#5	CONT.	L
58	CPS	CYTISUS PURGANS SPANISH GOLD	SPANISH GOLD BROOM	#5	CONT.	L
7	PAR	PEROVSKIA ATRIPLICIFOLIA	SAGE, RUSSIAN	#5	CONT.	L
29	PCP	PRUNUS X OSTENA	PLUM, PURPLE LEAF	#5	CONT.	L-M
6	PLC	PHILADELPHUS LEWISII 'CHEYENNE'	MOCKORANGE, CHEYENNE	#5	CONT.	L
30	POL	PHYSOCARPUS OPULIFOLIUS 'LITTLE DEVIL'	NINEBARK, LITTLE DEVIL	#5	CONT.	L
5	RAG	RHUS AROMATICA 'GRO-L'OW	SUMAC, DWARF FRAGRANT	#5	CONT.	L
80	RKO	ROSA 'KNOCK OUT'	ROSE, KNOCK OUT	#5	CONT.	L
6	RKR	ROSA 'DOUBLE KNOCK OUT'	ROSE, DOUBLE KNOCK OUT	#5	CONT.	L-M
8	RKY	ROSA 'SUNNY KNOCK OUT'	ROSE, SUNNY KNOCK OUT	#5	CONT.	L
186	RMF	ROSA 'SUNNY KNOCK OUT'	ROSE, SUNNY KNOCK OUT	#5	CONT.	L-M

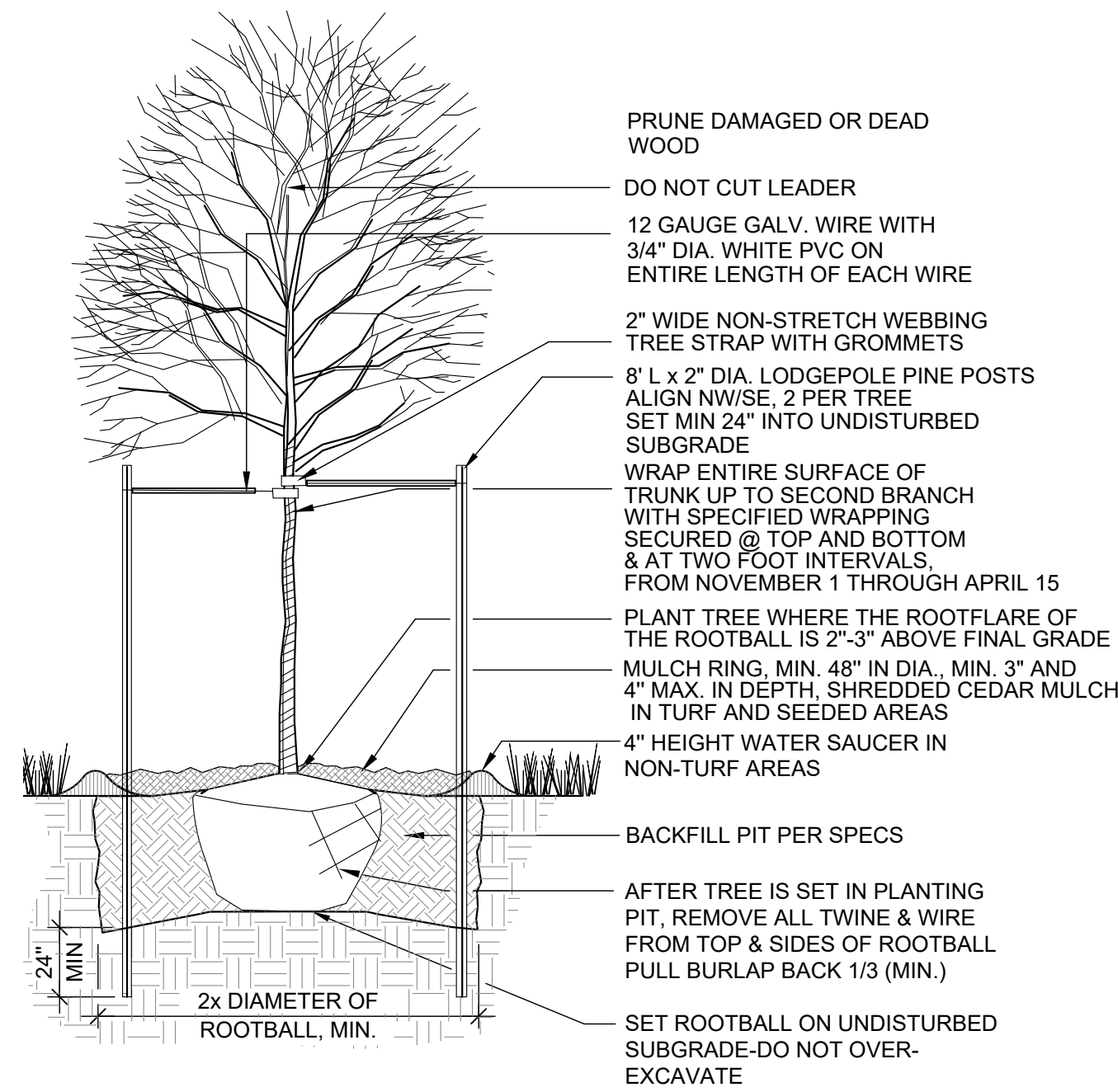
PERENNIALS						
perennials need to be itemized separately in landscape charts.						
10	AMH	ACHILLEA MILLEFOLIUM 'HEIDI'	YARROW, COMMON RED	#1	CONT.	L
12	AMT	ACHILLEA MILLEFOLIUM 'TERRA COTTA'	YARROW, TERRA COTTA	#1	CONT.	L
10	ARS	AGASTACHE RUPESTRIS	HYSSOP, SUNSET	#1	CONT.	L
6	BLC	BERLANDIERA LYRATA	CHOCOLATE FLOWER	#1	CONT.	L
3	CJT	COREOPSIS 'JETHRO TULL'	COREOPSIS, JETHRO TULL	#1	CONT.	L
41	CRR	CENTRANTHUS RUBER	RED VALERIAN	#1	CONT.	L
114	CVM	COREOPSIS VERTICILLATA 'MOONBEAM'	MOONBEAM COREOPSIS	#1	CONT.	L
44	EPF	ECHINACEA PURPUREA	CONEFLOWER, PURPLE	#1	CONT.	L
33	GLC	GAURA LINDHEIMERI 'ORSMON BUTTERFLIES'	WHIRLING BUTTERFLIES, RED	#1	CONT.	L
142	GLW	GAURA LINDHEIMERI	WHIRLING BUTTERFLIES	#1	CONT.	L
46	HAR	HEMEROCALLIS 'AUTUMN RED'	DAYLILY, RED	#1	CONT.	L
121	OLM	OSTEOSPERMUM LAVENDER MIST 'PO08S'	SUN DAISY, LAVENDER MIST	#1	CONT.	L
95	PBR	PENSTEMON BARBATUS 'RONDOD'	PENSTEMON, RONDOD	#1	CONT.	L
52	PNW	POTENTILLA NEPALENSIS 'MISS WILMOTT'	CINQUEFOIL, MISS WILMOTT	#1	CONT.	L
137	RFG	RUDBECKIA FULGIDA 'GOLDSTURM'	BLACK EYE SUSAN	#1	CONT.	L
10	SAJ	SEDUM 'AUTUMN JOY'	SEDUM, AUTUMN JOY	#1	CONT.	L
29	SBR	SALVIA GREGGII 'FURNANS RED'	FURNANS RED SALVIA	#1	CONT.	L
26	SFR	SOLIDAGO RUOGOSA 'FIREWORKS'	GOLDENROD FIREWORKS	#1	CONT.	L
26	SSM	SALVIA X SYLVESTRIS 'MAY NIGHT'	MAY NIGHT PURPLE SALVIA	#1	CONT.	L
142	SSS	SALVIA X SYLVESTRIS 'SNOW HILL'	SNOW HILL SALVIA	#1	CONT.	L
20	ZCL	ZAUSCHNERIA CALIFORNICA LATIFOLIA	HUMMINGBIRD FLOWER	#1	CONT.	L

ORNAMENTAL GRASSES						
269	BGA	BOULETELOUA GRACILIS 'BLONDE AMBITION'	BLONDE AMBITION GRASS	#1	CONT.	L
164	CAK	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	FEATHER REED GRASS	#1	CONT.	L
112	PAH	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	#1	CONT.	L
68	PVH	PANICUM VIRGATUM 'HEAVY METAL'	HEAVY METAL SWITCH GRASS	#1	CONT.	L
35	SWG	SPOROBOLUS WRIGHTII	GIANT SACATON GRASS	#1	CONT.	L

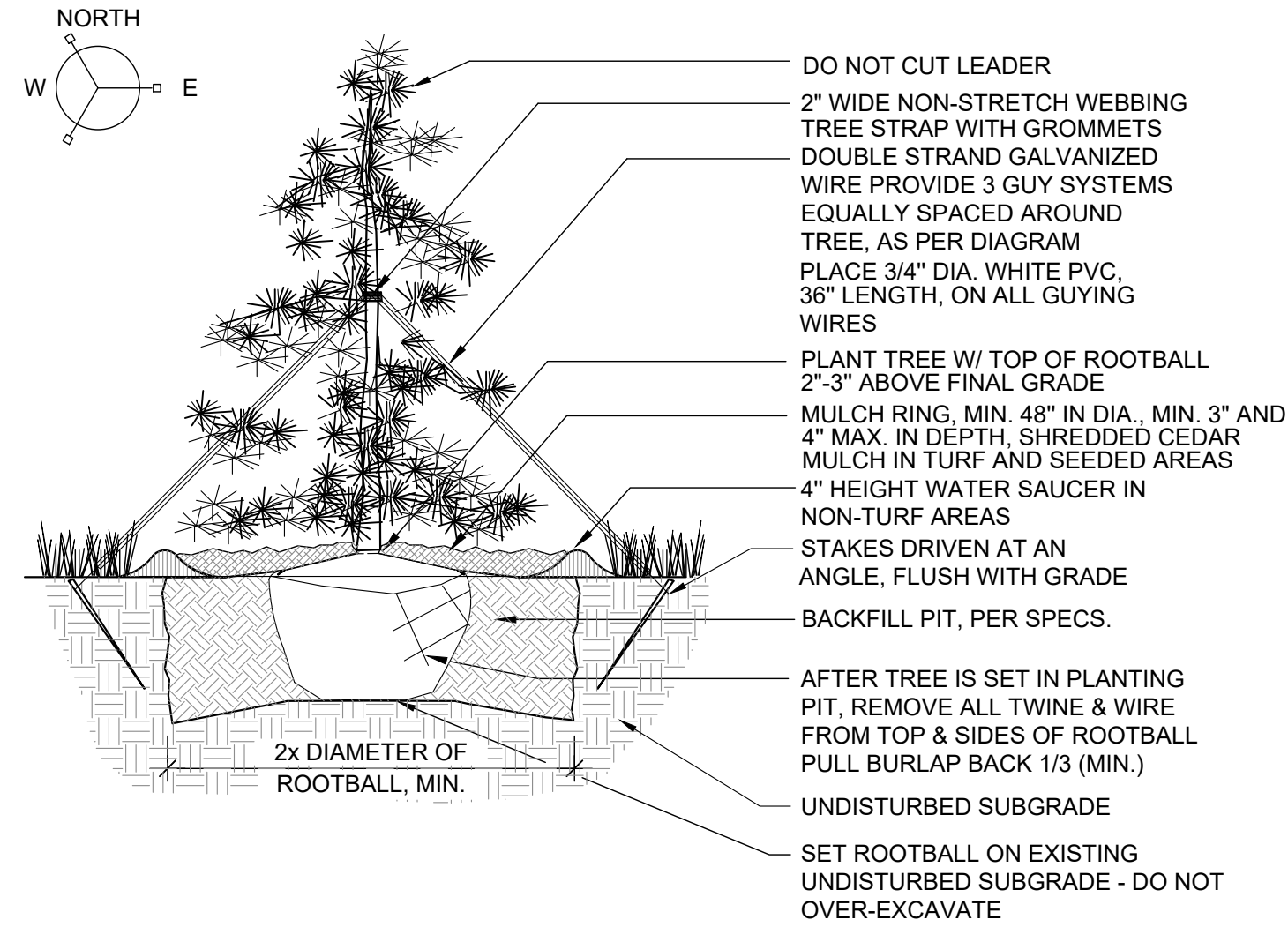
*WATER USE TABLE BASED OFF OF CSU FRONT RANGE TREE RECOMMENDATION LIST & CITY OF AURORA XERISCAPE AND NO-WATER PLANT LIST.
WATER USE SYMBOLS REPRESENT THE FOLLOWING WATER NEEDS: L=LOW, M=MEDIUM, H=HIGH

LANDSCAPE NOTES

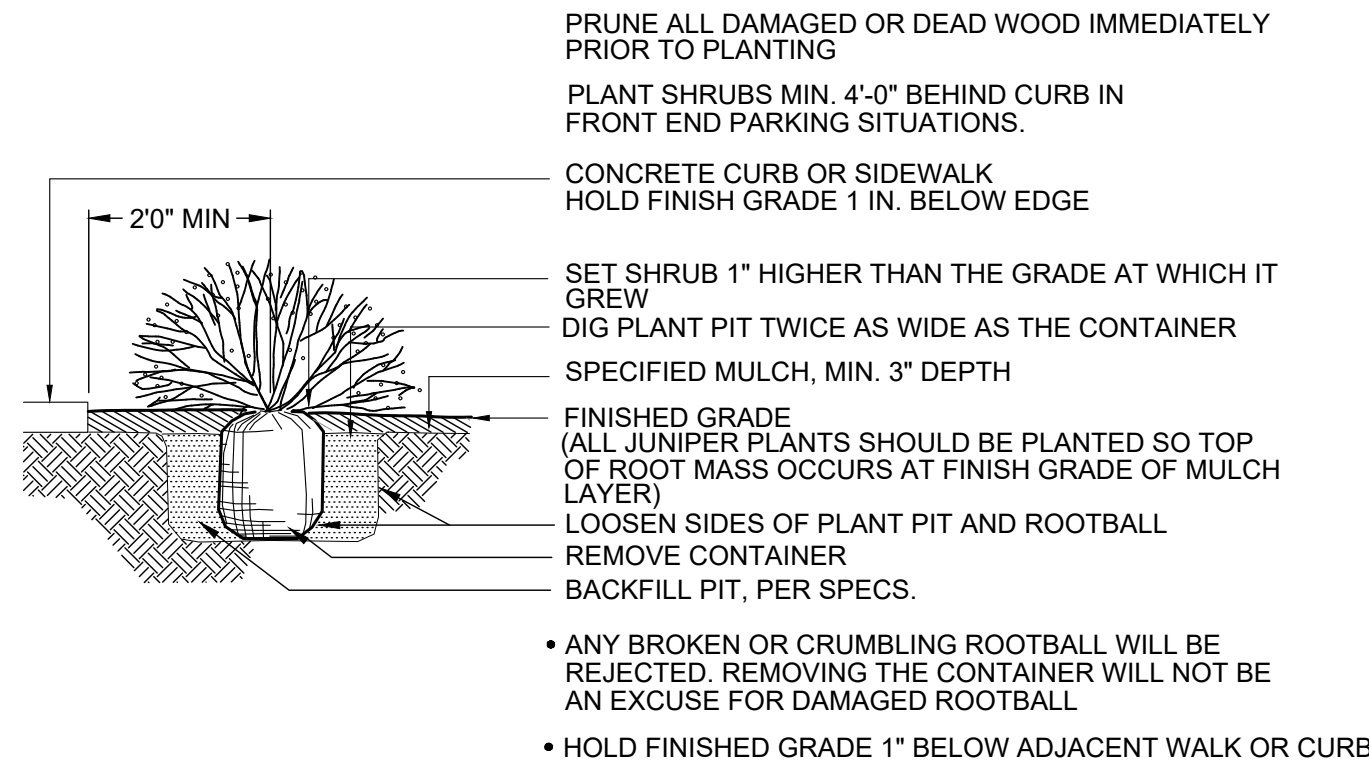
- THE DEVELOPER, HIS SUCCESSORS AND ASSIGNS, SHALL BE RESPONSIBLE FOR INSTALLATION, MAINTENANCE AND REPLACEMENT FOR ALL LANDSCAPING MATERIALS SHOWN OR INDICATED ON THE APPROVED SITE PLAN OR LANDSCAPE PLAN ON FILE IN THE PLANNING DEPARTMENT. ALL LANDSCAPING WILL BE INSTALLED AS DELINEATED ON THE PLAN, PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY.
- ALL LANDSCAPE AREAS AND PLANT MATERIALS, EXCEPT FOR NON-IRRIGATED NATIVE, RESTORATIVE, AND DRYLAND GRASS AREAS THAT COMPLY WITH REQUIREMENTS FOUND IN SEC. 146-4.7.3.C MUST BE WATERED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. IRRIGATION SYSTEM DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE SHALL CONFORM TO REQUIREMENTS FOUND IN THE CITY OF AURORA IRRIGATION ORDINANCE.
- ALL UTILITY EASEMENTS SHALL REMAIN UNOBSTRUCTED AND FULLY ACCESSIBLE ALONG THEIR ENTIRE LENGTH FOR THE MAINTENANCE EQUIPMENT ENTRY.
- ALL LANDSCAPED AREAS SHALL RECEIVE SOIL PREPARATION. SODDED AREAS AND LANDSCAPE BEDS SHALL RECEIVE 4 CUBIC YARDS OF COMPOST PER 1,000 S.F. MINIMUM. SEEDDED AREAS SHALL RECEIVE 2 CUBIC YARDS OF COMPOST PER 1,000 S.F. MINIMUM. COMPOST SHALL BE CLASS 1.
- SHRUB BEDS SHALL CONTAIN 1 1/2" -3" WASHED ROUNDED COLORADO RIVER ROCK; FROM A LOCAL SOURCE.
- TREES PLANTED IN SEED AND SOD AREAS SHALL CONTAIN DOUBLE SHREDDED LONG CEDAR MULCH.
- ALL ADA ACCESSIBLE WALKS SHALL BE STANDARD GRAY CONCRETE W/ MEDIUM BROOM FINISH. A FEW MINOR NON ADA TRAILS SHALL BE CRUSHER FINES. PEDESTRIAN NODES SHALL BE STANDARD GRAY CONCRETE W/MEDIUM BROOM FINISH.
- LANDSCAPE MATERIAL SHALL NOT BE PLACED OR KEPT NEAR FIRE HYDRANTS IN A MANNER THAT WOULD PREVENT SUCH EQUIPMENT FROM BEING IMMEDIATELY DISCERNIBLE. A 5-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS. LANDSCAPING MATERIAL SHOWN WITHIN THE SITE PLAN CANNOT ENCROACH INTO ROADWAYS THAT ARE DEDICATED (OR DESIGNATED) AS FIRE LANE



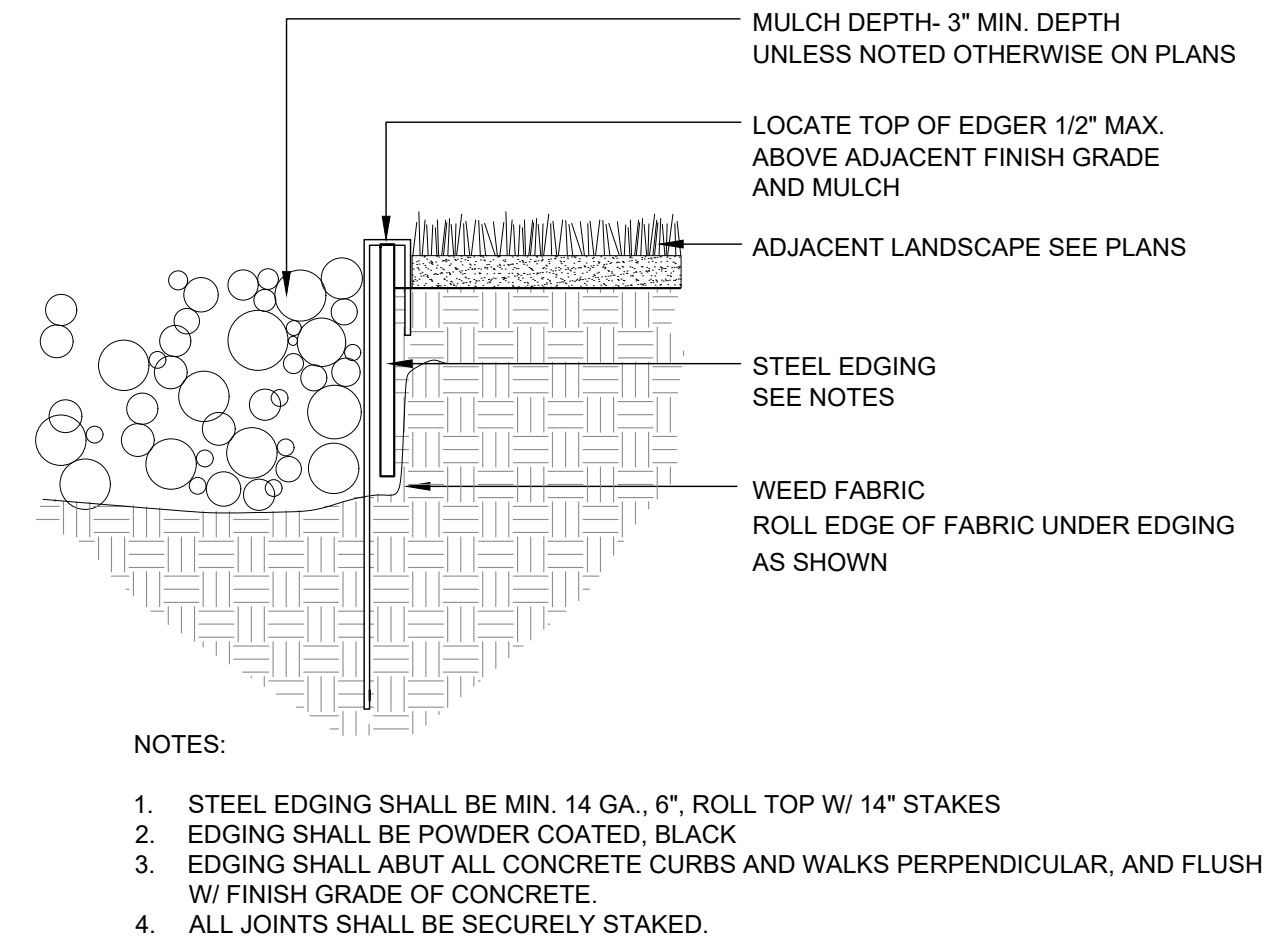
1 DECIDUOUS TREE PLANTING
SCALE: NTS



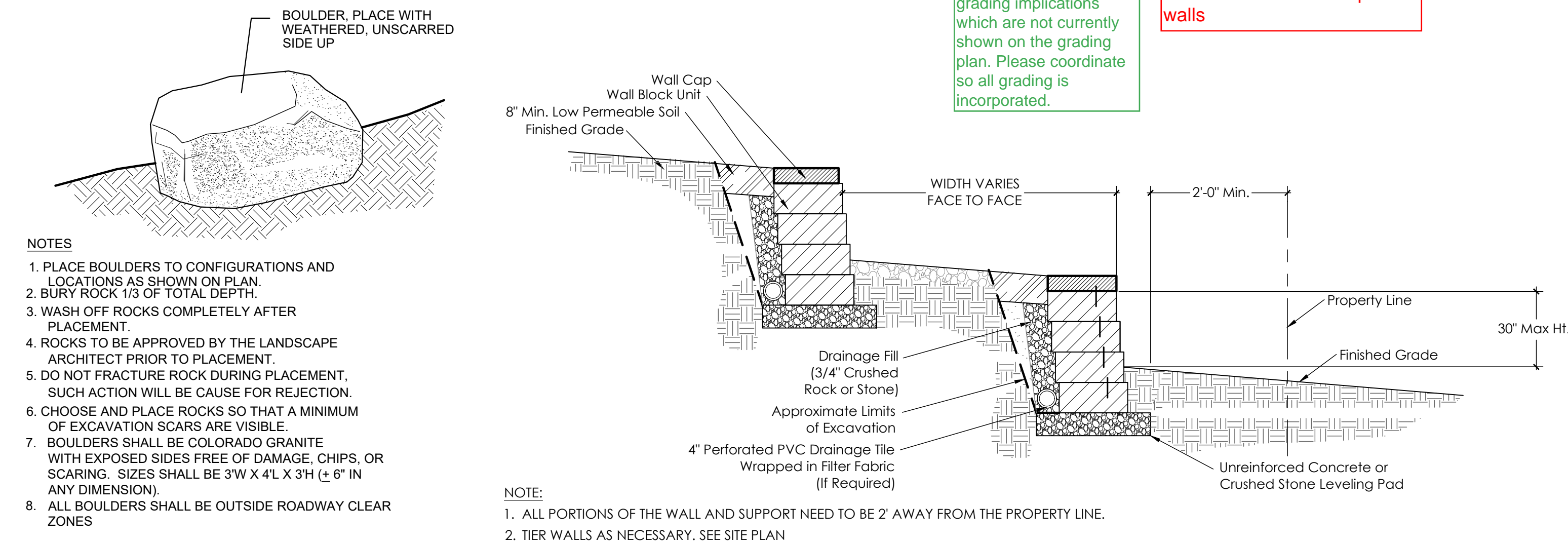
2 EVERGREEN TREE PLANTING
SCALE: NTS



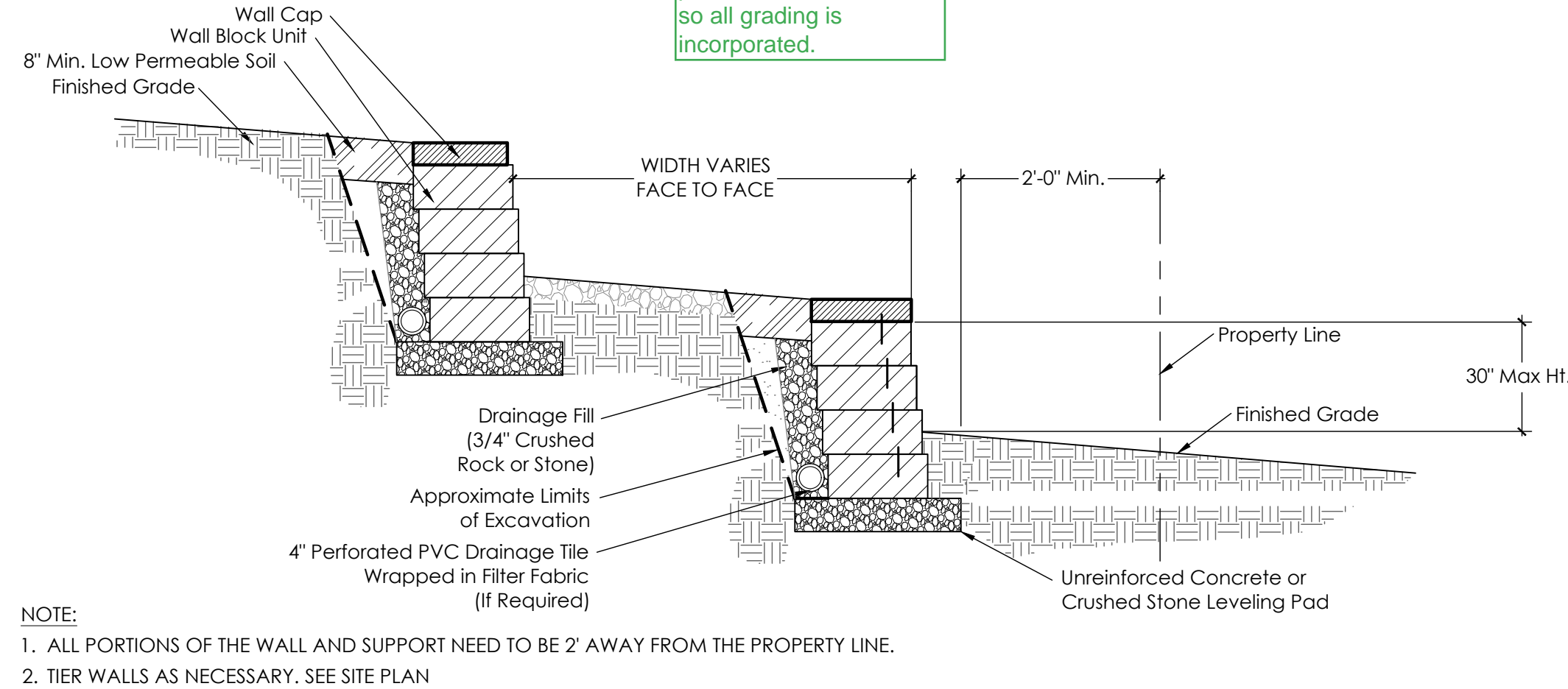
3 TYPICAL SHRUB PLANTING
SCALE: NTS



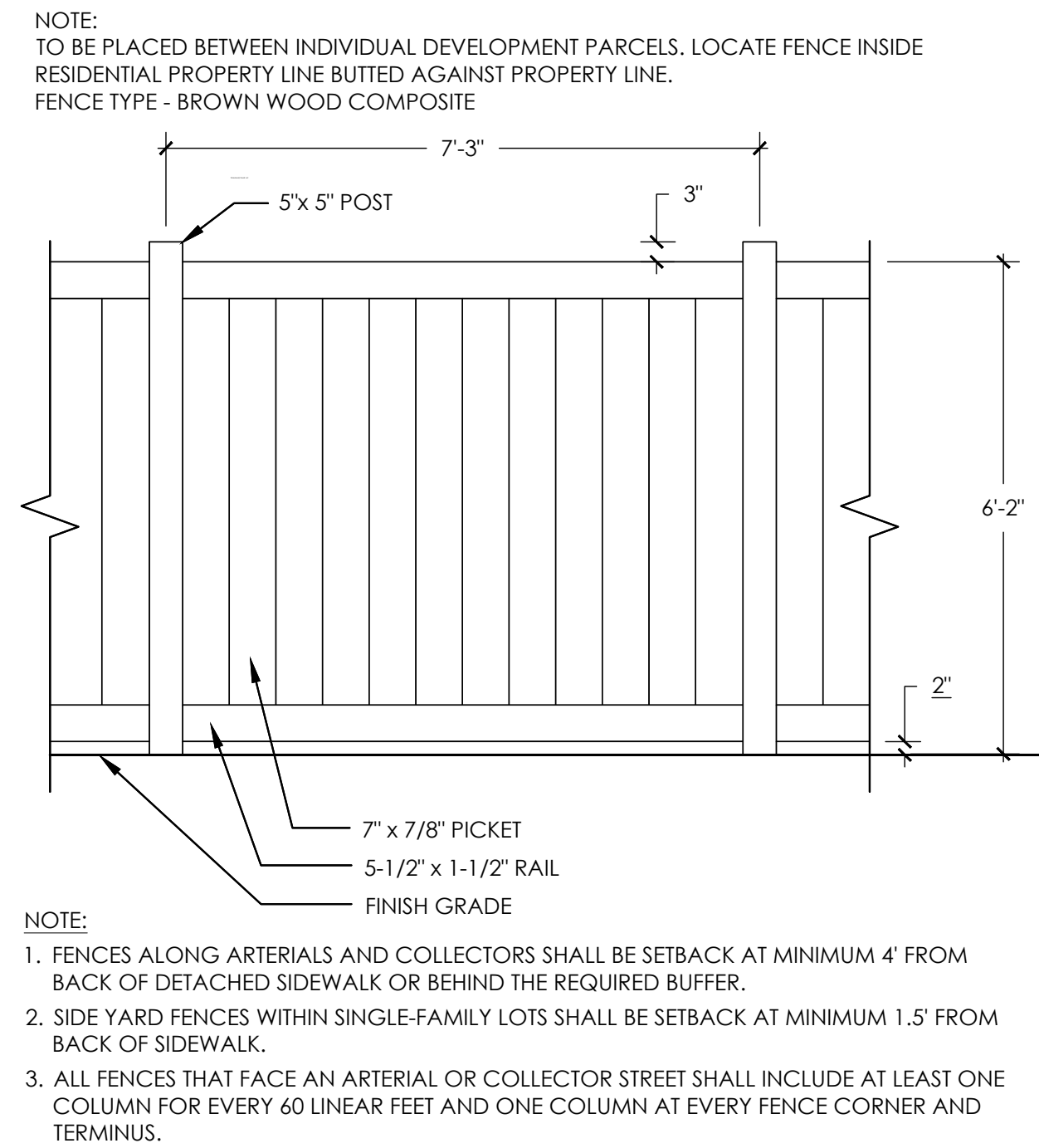
4 STEEL EDGER
SCALE: NTS



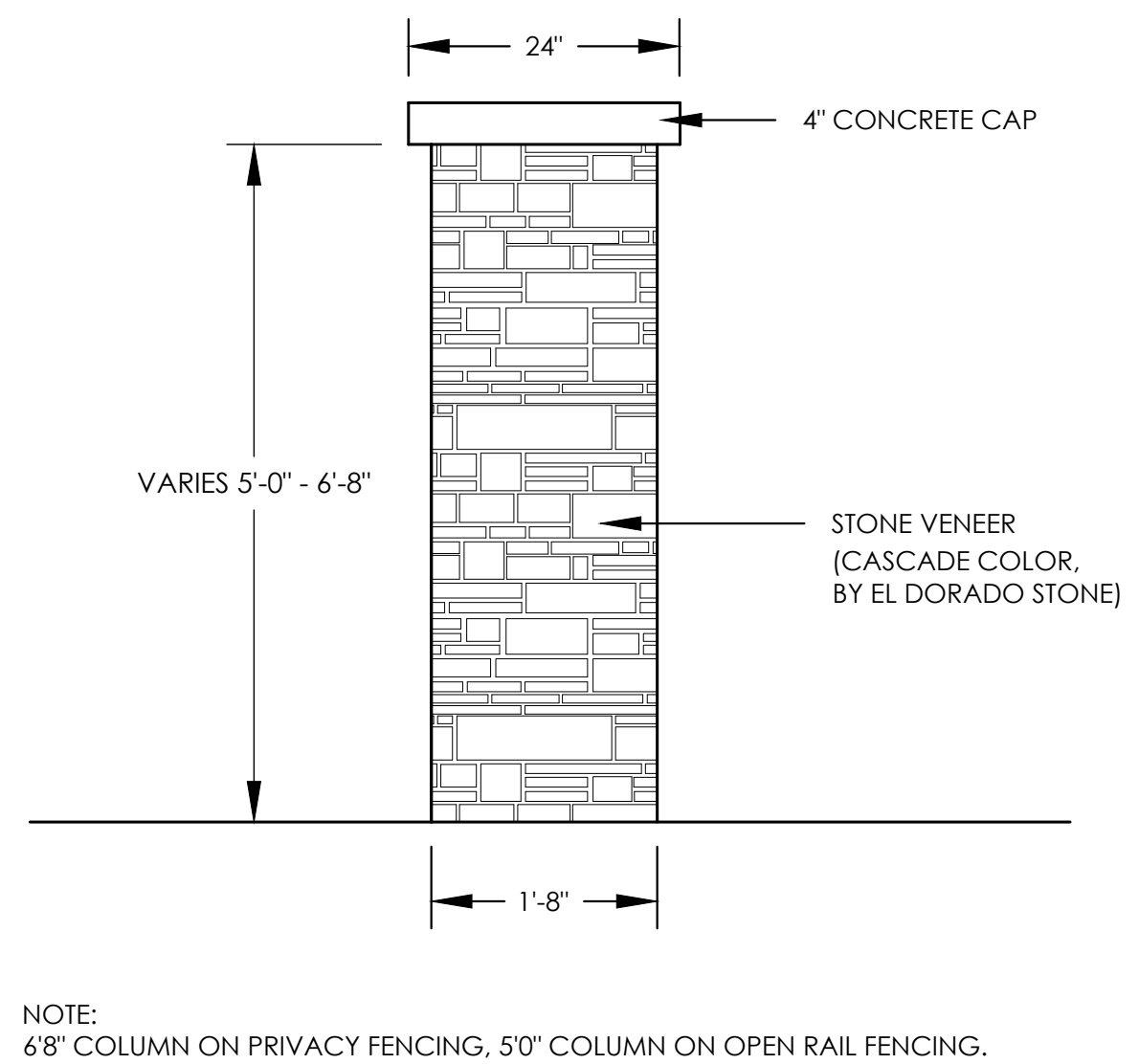
5 LANDSCAPE BOULDER
SCALE: NTS



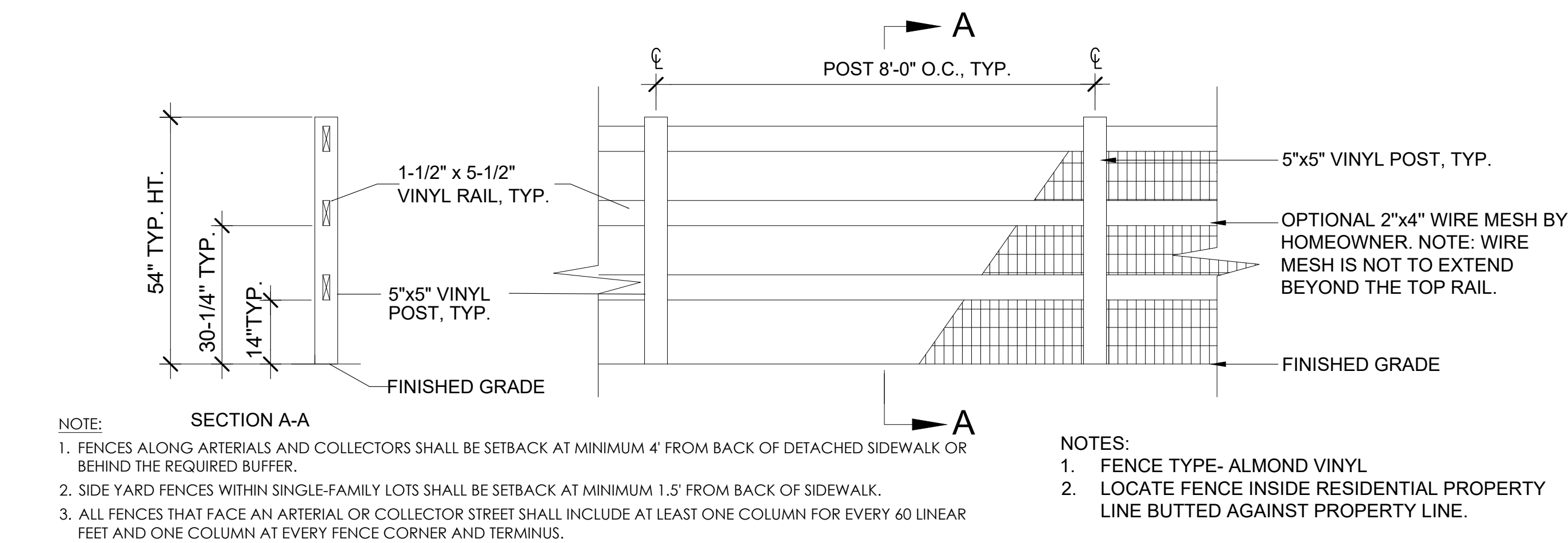
6 LANDSCAPE RETAINING WALL
SCALE: NTS



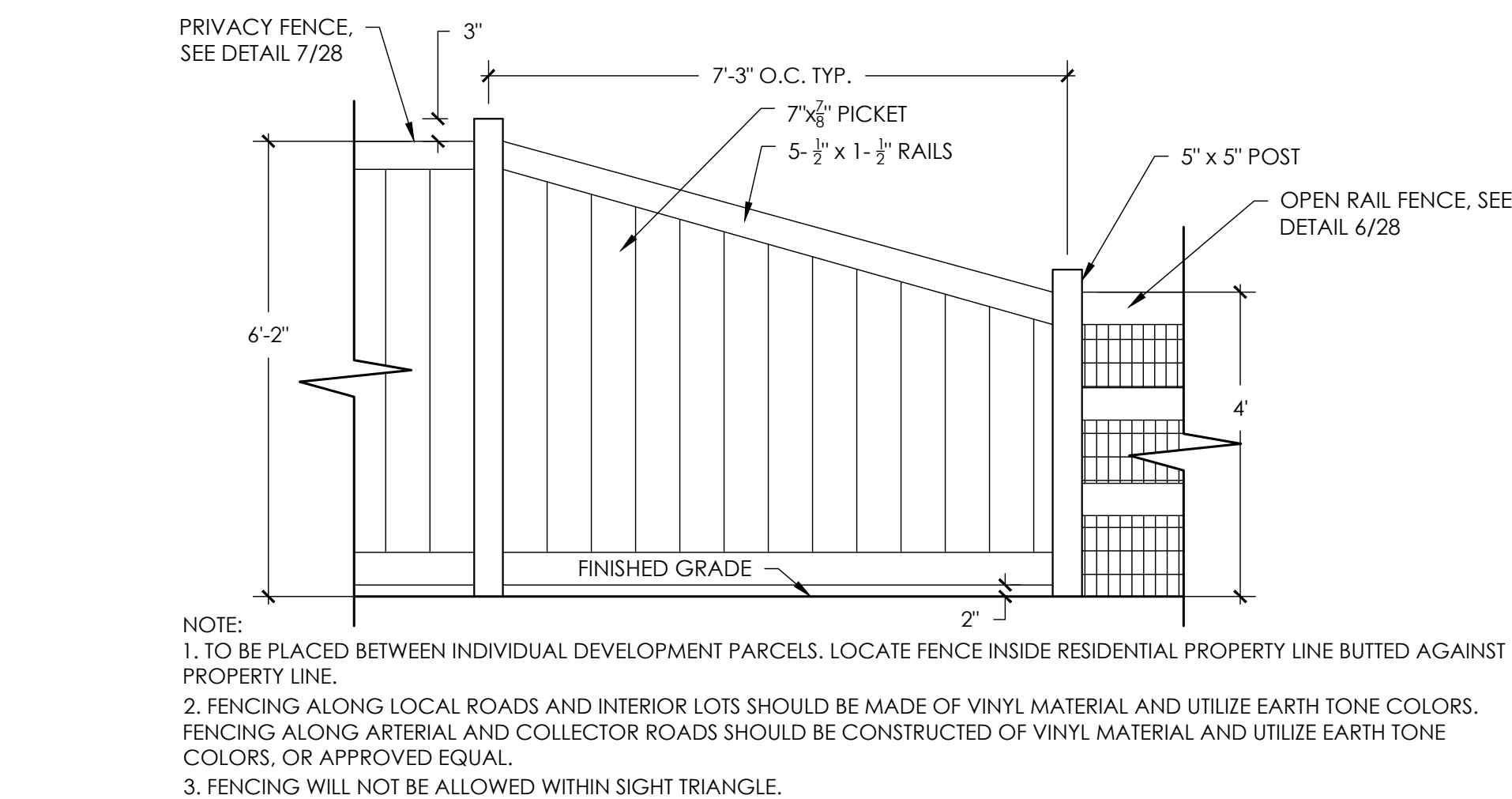
7 PRIVACY FENCE
SCALE: 1/2\"=1'



8 FENCE COLUMN
SCALE: 3/4\"=1'



9 OPEN RAIL FENCE
SCALE: 1/2\"=1'



10 FENCE TRANSITION DETAIL
SCALE: 1/2\"=1'

NOT FOR CONSTRUCTION



1 PET WASTE STATION
SCALE: 3/4"=1'
BRAND: DOGIPOT
MODEL: ALUMINUM DOGIPOT PET STATION (ITEM #1011-POLY)
PHONE: (800) 364-7681
WEBSITE: WWW.DOGIPOT.COM



2 TRASH RECEPTACLE
SCALE: NTS



3 SHADE STRUCTURE
SCALE: NTS
DIMENSIONS: 13' X 14' POST TO POST



4 BENCH SWING
SCALE: NTS



5 BBQ GRILL
SCALE: NTS



6 SECURITY LIGHTING
SCALE: NTS



7 BIKE RACK
SCALE: NTS



8 ADA PICNIC TABLE
SCALE: NTS



9 SEAT WALL
SCALE: NTS



10 BOULDER WALL TRANSITION
SCALE: NTS



11 STONE STEP
SCALE: NTS

All images are conceptual.
Final colors and materials to
be determined at
construction documents.

confirm colors, TYP all
site furniture and
structures

Awesome to see
Bench Swing Removed

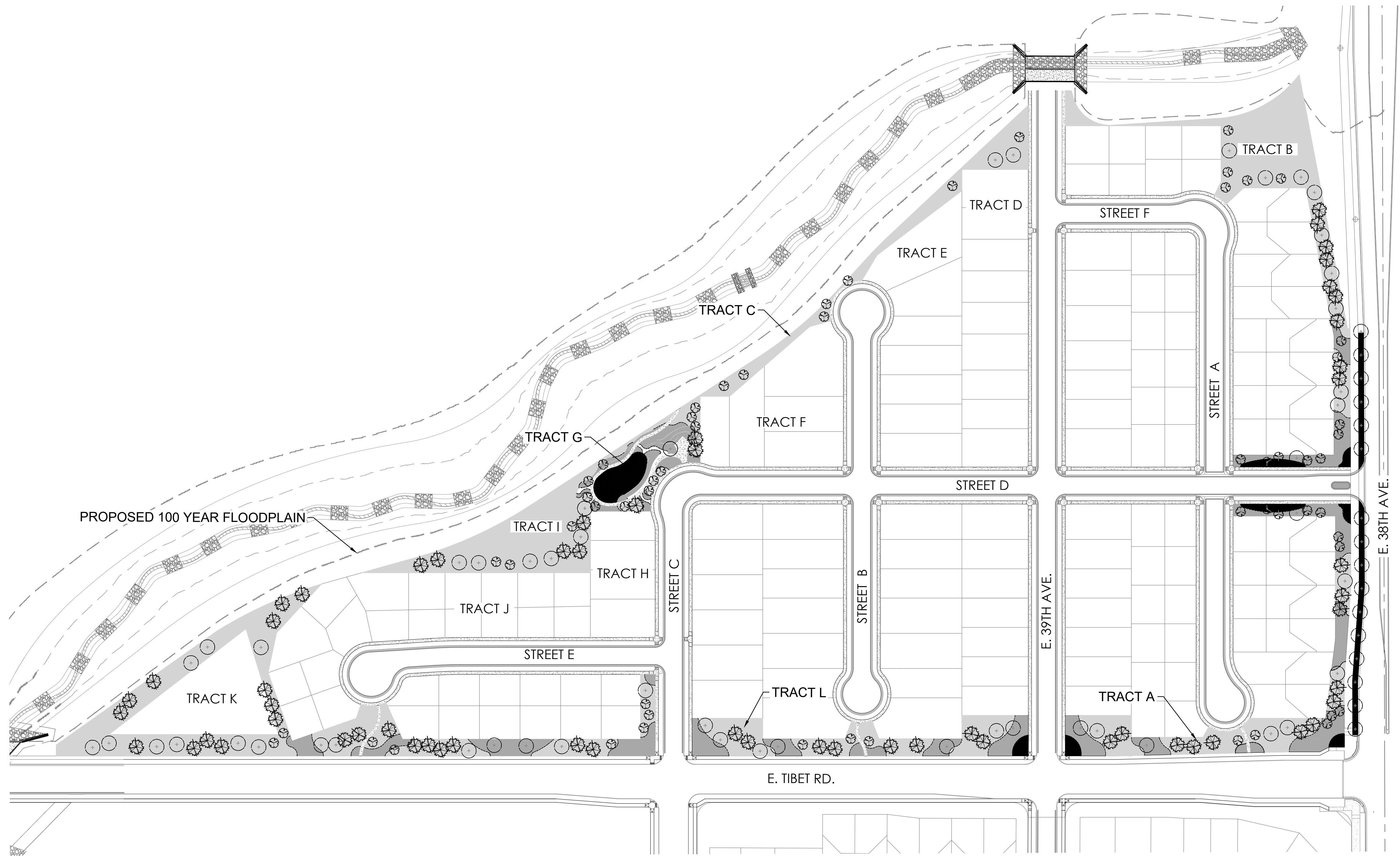
Yes it is going to be built out
of the same materials as the
landscape retaining walls.
Image is conceptual.

is this in any way
related to detail 6 on
Sheet 28. If not, spec
materials with this site
plan.

* IMAGES ARE CONCEPTUAL. FINAL STRUCTURES AND MATERIALS TO BE DETERMINED AT CONSTRUCTION DOCUMENTS

NOT FOR CONSTRUCTION

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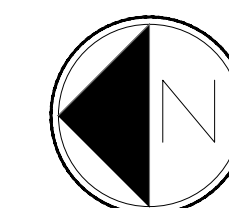
HYDROZONE TABLE

WATER USE TYPE	AREA (SF)	PERCENTAGE OF AREA	
HIGH WATER USE (COOL SEASON GRASSES)	15,403	5%	
LOW WATER USE	62,008	19%	
Z-ZONE	241,393	76%	
*TOTAL	318,804	100%	
* INCLUDES ALL HIGH WATER USE, LOW WATER USE, AND Z ZONE IN TRACT AREAS.			
	QUANTITY	AREA VALUE (SF)	TOTAL AREA
CANOPY TREES	66	706	46,596
EVERGREEN/ORNAMENTAL TREES	117	177	20,709
TOTAL			67,305
TOTAL AREA	386,109		

*TOTAL LANDSCAPE AREA (SF) DOES NOT INCLUDE FRONT YARD CURBSIDE LANDSCAPE ADJACENT TO INTERIOR LOTS. TOTAL LANDSCAPE AREA INCLUDES LANDSCAPE IN FRONT OF TRACTS AND IN TRACTS NOT INCLUDING AREA WITHIN 100 YEAR FLOOD PLAIN.

LEGEND

- HIGH WATER USE: COOL SEASON GRASSES
- LOW WATER USE: SHRUB BED
- Z-ZONE: NATIVE SEED AREA
- DECIDUOUS CANOPY TREES
66 TREES
- ORNAMENTAL TREES
58 TREES
- EVERGREEN TREES
59 TREES



Scale: 1"= 100'-0"

NOT FOR CONSTRUCTION

HYDROZONE MAP

SHEET NUMBER

HM.1

SHEET 31 OF 36

February 28, 2022

GREEN VALLEY RANCH EAST FILING 15
AURORA, COLORADO
LANDSCAPE PLANS



PROJECT NAME



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RESIDENTIAL LOT TYPE LEGEND

HORIZON LOTS

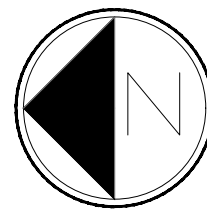
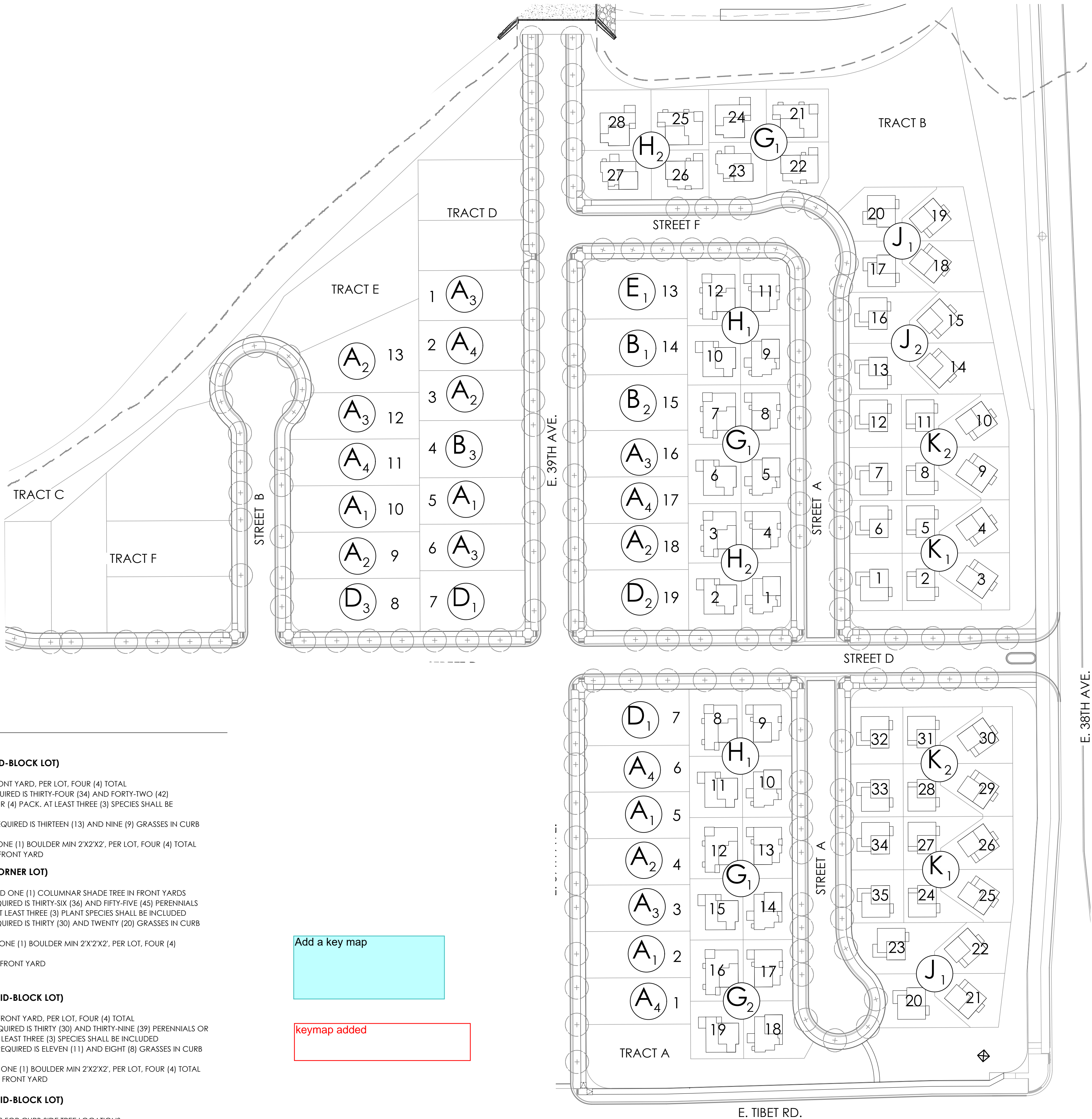
- A SINGLE FAMILY HOME (MID-BLOCK LOT) 50'-60' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREES IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS ELEVEN (11) AND FIFTEEN (15) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS FOUR (4) AND THREE (3) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2'
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- B SINGLE FAMILY HOME (MID-BLOCK LOT) 60'-70' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE(S) AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SIXTEEN (16) AND TWENTY-ONE (21) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SIX (6) AND FOUR (4) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2'
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- C SINGLE FAMILY HOME (MID-BLOCK LOT) 70'-80' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE(S) AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS TWENTY (20) AND TWENTY-FOUR (24) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SEVEN (7) AND FIVE (5) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2'
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- D SINGLE FAMILY HOME (CORNER LOT) 60'-70' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE(S) AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS FOURTY-EIGHT (48) AND SIXTY (60) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS FOURTEEN (14) AND TEN(10) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2'
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD

PORCHLIGHT

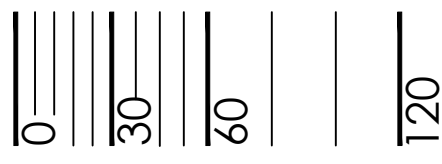
- G SINGLE FAMILY HOME (4 PACK MID-BLOCK LOT)**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE IN FRONT YARD, PER LOT, FOUR (4) TOTAL
 - MINIMUM COUNT OF SHRUBS REQUIRED IS THIRTY-FOUR (34) AND FORTY-TWO (42) PERENNIALS OR GRASSES PER FOUR (4) PACK. AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS IS REQUIRED IS THIRTEEN (13) AND NINE (9) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2', PER LOT, FOUR (4) TOTAL
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- H SINGLE FAMILY HOME (4 PACK CORNER LOT)**
LANDSCAPE STANDARDS:
- FOUR (4) ORNAMENTAL TREES AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARDS
 - MINIMUM COUNT OF SHRUBS REQUIRED IS THIRTY-SIX (36) AND FIFTY-FIVE (45) PERENNIALS OR GRASS PER FOUR (4) PACK. AT LEAST THREE (3) PLANT SPECIES SHALL BE INCLUDED
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 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2', PER LOT, FOUR (4) TOTAL
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD

CARRIAGE HOUSE

- J SINGLE FAMILY HOME (4 PACK MID-BLOCK LOT)**
LANDSCAPE STANDARDS:
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 - MINIMUM COUNT OF SHRUBS IS REQUIRED IS ELEVEN (11) AND EIGHT (8) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2', PER LOT, FOUR (4) TOTAL
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- K SINGLE FAMILY HOME (6 PACK MID-BLOCK LOT)**
LANDSCAPE STANDARDS:
- REFER TO CSP LANDSCAPE PLANS FOR CURB SIDE TREE LOCATIONS
 - ONE (1) ORNAMENTAL TREE IN FRONT YARD, PER LOT, SIX (6) TOTAL
 - MINIMUM COUNT OF SHRUBS REQUIRED IS FORTY-NINE (49) AND SIXTY-THREE (63) PERENNIALS OR GRASS PER SIX (6) PACK. AT LEAST THREE (3) PLANT SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS ELEVEN (11) AND SEVEN (7) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2', PER LOT, SIX (6) TOTAL
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD



Scale: 1"= 60'-0"



PROJECT NAME



GREEN VALLEY RANCH EAST FILING 15
AURORA, COLORADO
LANDSCAPE PLANS

SHEET TITLE

OVERALL
WATER WISE
EXHIBIT

SHEET NUMBER

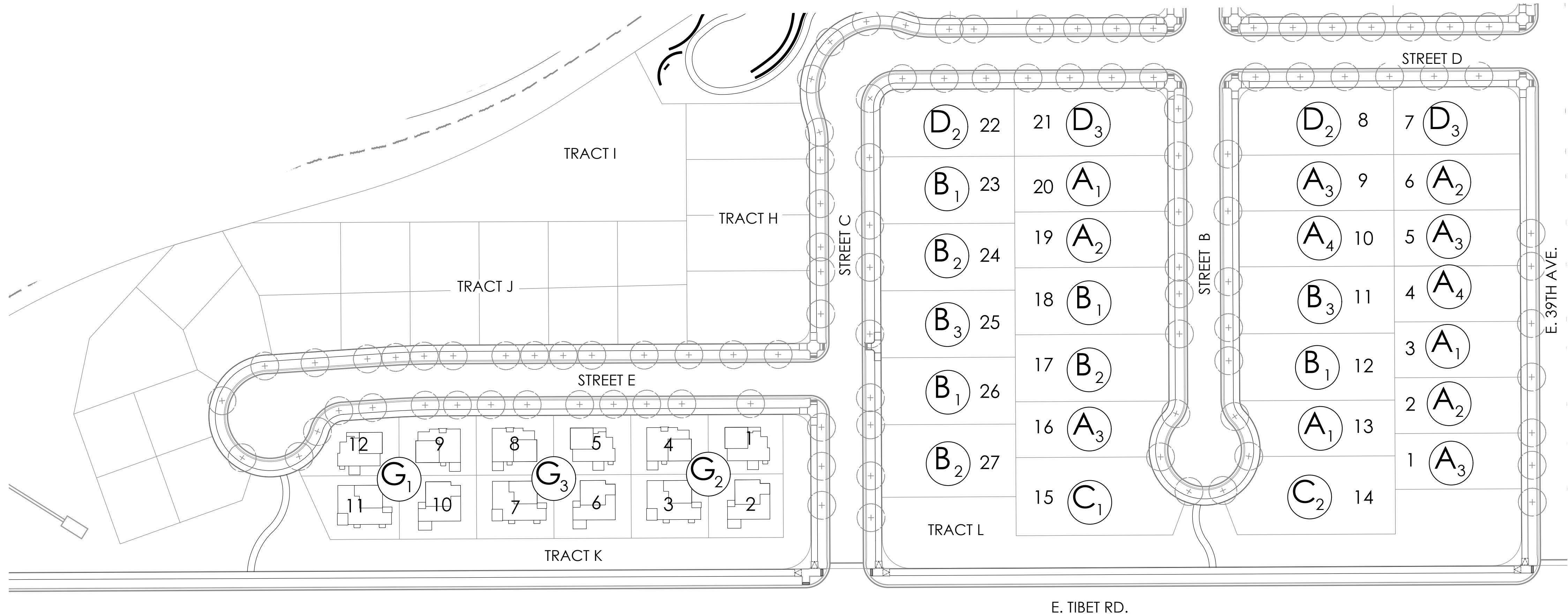
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SHEET 32 OF 36

February 28, 2022

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RESIDENTIAL LOT TYPE LEGEND

HORIZON LOTS

- A SINGLE FAMILY HOME (MID-BLOCK LOT) 50'-60' x 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREES IN FRONT YARD
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 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- B SINGLE FAMILY HOME (MID-BLOCK LOT) 60'-70' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE(S) AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SIXTEEN (16) AND TWENTY-ONE (21) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SIX (6) AND FOUR (4) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2'
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD
- C SINGLE FAMILY HOME (MID-BLOCK LOT) 70'-80' X 110'**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE(S) AND ONE (1) COLUMNAR SHADE TREE IN FRONT YARD
 - MINIMUM COUNT OF SHRUBS REQUIRED IS TWENTY (20) AND TWENTY-FOUR (24) PERENNIALS OR GRASSES IN FRONT YARD, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS SEVEN (7) AND FIVE (5) GRASSES IN CURB SIDE LANDSCAPE
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 - TURF SHALL NOT BE PERMITTED IN FRONT YARD

PORCHLIGHT

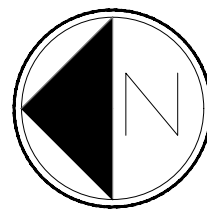
- G SINGLE FAMILY HOME (4 PACK MID-BLOCK LOT)**
LANDSCAPE STANDARDS:
- ONE (1) ORNAMENTAL TREE IN FRONT YARD, PER LOT, FOUR (4) TOTAL
 - MINIMUM COUNT OF SHRUBS REQUIRED IS THIRTY-FOUR (34) AND FORTY-TWO (42) PERENNIALS OR GRASSES PER FOUR (4) PACK, AT LEAST THREE (3) SPECIES SHALL BE INCLUDED
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- H SINGLE FAMILY HOME (4 PACK CORNER LOT)**
LANDSCAPE STANDARDS:
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CARRIAGE HOUSE

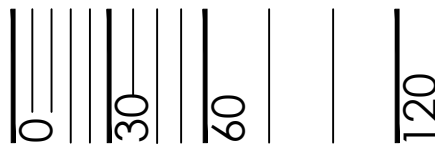
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- REFER TO CSP LANDSCAPE PLANS FOR CURB SIDE TREE LOCATIONS
 - ONE (1) ORNAMENTAL TREE IN FRONT YARD, PER LOT, SIX (6) TOTAL
 - MINIMUM COUNT OF SHRUBS REQUIRED IS FORTY-NINE (49) AND SIXTY-THREE (63) PERENNIALS OR GRASS PER SIX (6) PACK, AT LEAST THREE (3) PLANT SPECIES SHALL BE INCLUDED
 - MINIMUM COUNT OF SHRUBS REQUIRED IS ELEVEN (11) AND SEVEN (7) GRASSES IN CURB SIDE LANDSCAPE
 - REQUIRED LANDSCAPE FEATURE: ONE (1) BOULDER MIN 2'X2'X2', PER LOT, SIX (6) TOTAL
 - TURF SHALL NOT BE PERMITTED IN FRONT YARD

Add a key map

keymap added



Scale: 1"= 60'-0"



PROJECT NAME



GREEN VALLEY RANCH EAST FILING 15
AURORA, COLORADO
LANDSCAPE PLANS

SHEET TITLE

NOT FOR CONSTRUCTION

OVERALL
WATER WISE
EXHIBIT

SHEET NUMBER

WW.2

SHEET33 OF 36

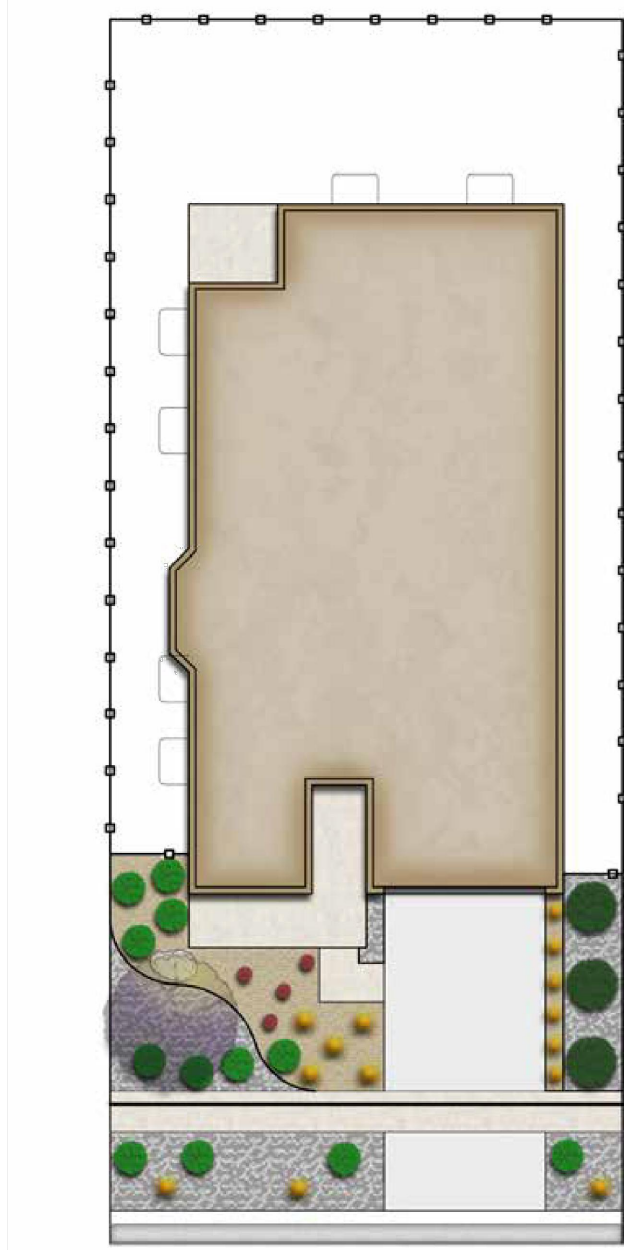
February 28, 2022

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- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Ornamental Tree	2.0' Cal	1	
Shrubs	#5 Cont	15	
Perennials	#1 Cont	4	
Front Yard Grasses	#1 Cont	11	
Curbside Grasses	#5 Cont	3	



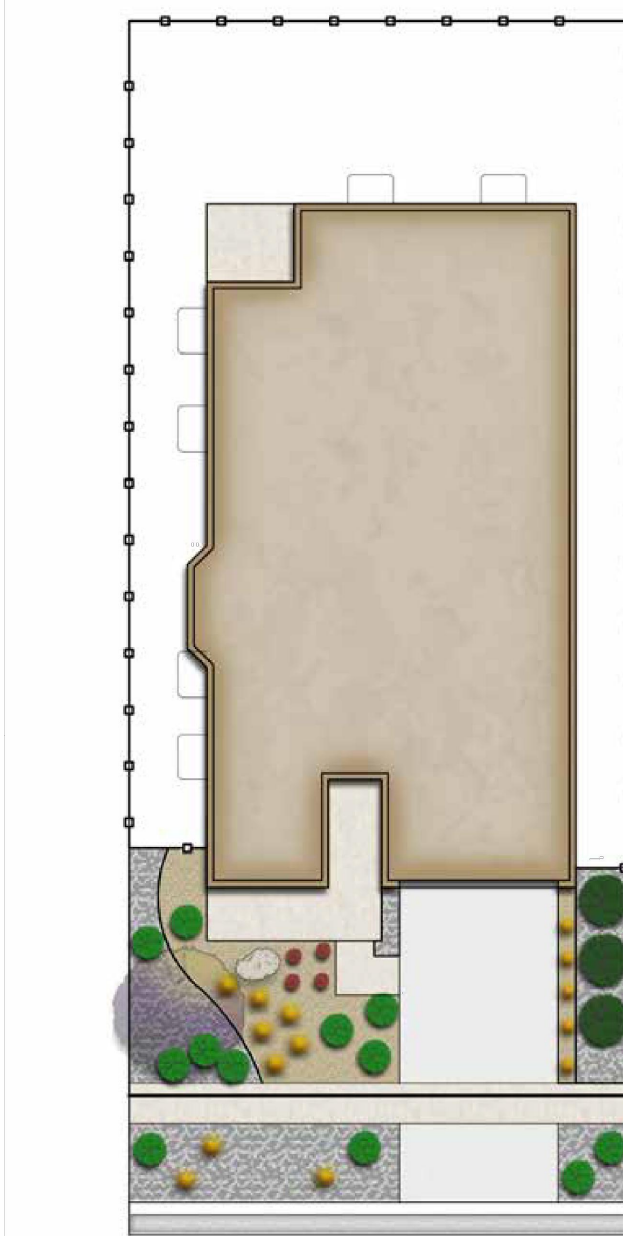
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Mid-Block Lot Type 1 (50'-60' x 110')

terracedesign
Not to Scale
Feb. 2022
A1

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

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Plant Schedule			
Plant Type	Size	Qty.	
Ornamental Tree	2.0' Cal	1	
Shrubs	#5 Cont	15	
Perennials	#1 Cont	4	
Front Yard Grasses	#1 Cont	11	
Curbside Grasses	#5 Cont	3	



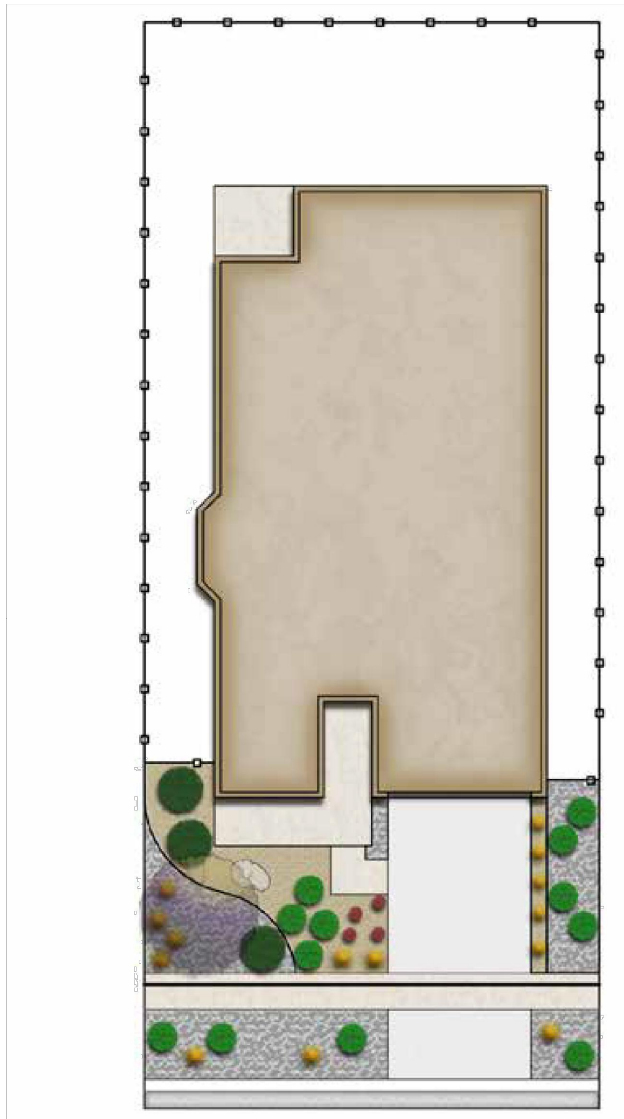
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Mid-Block Lot Type 2 (50'-60' x 110')

terracedesign
Not to Scale
Feb. 2022
A2

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Ornamental Tree	2.0' Cal	1	
Shrubs	#5 Cont	15	
Perennials	#1 Cont	4	
Front Yard Grasses	#1 Cont	11	
Curbside Grasses	#5 Cont	3	



GVR-E Filing 15 Front Yard Landscape Typical
Horizon Mid-Block Lot Type 3 (50'-60' x 110')

terracedesign
Not to Scale
Feb. 2022
A3

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Ornamental Tree	2.0' Cal	1	
Shrubs	#5 Cont	15	
Perennials	#1 Cont	4	
Front Yard Grasses	#1 Cont	11	
Curbside Grasses	#5 Cont	3	



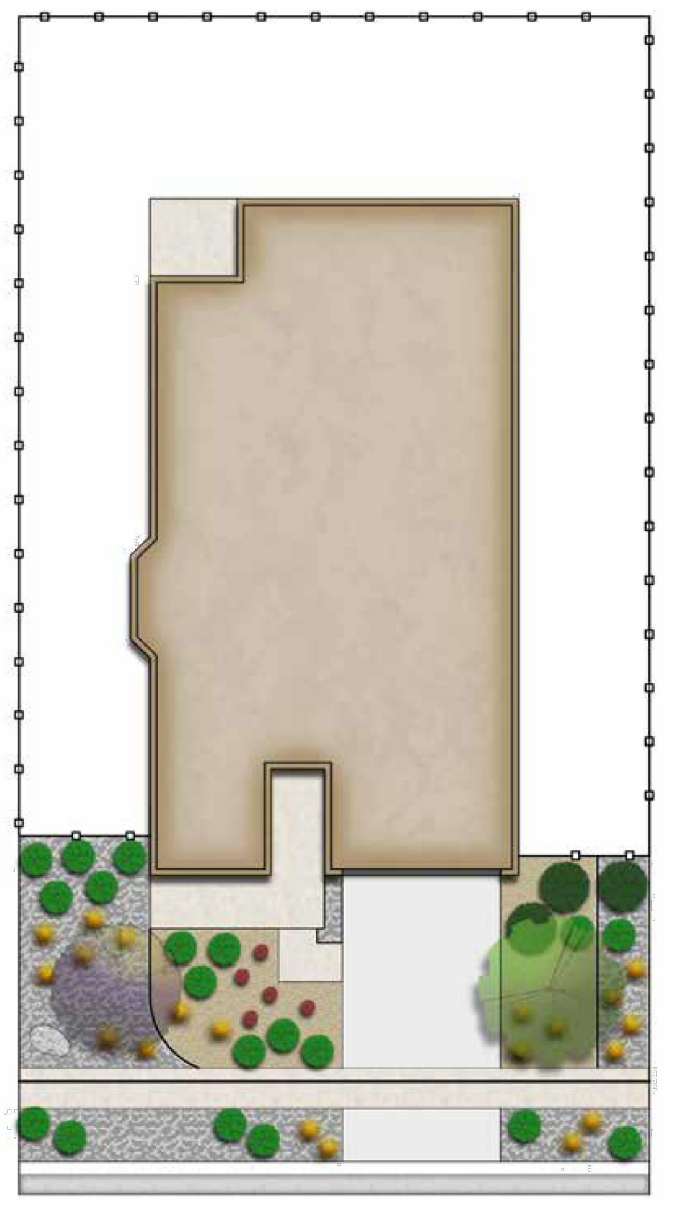
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Mid-Block Lot Type 4 (50'-60' x 110')

terracedesign
Not to Scale
Feb. 2022
A4

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Columnar Shade Tree	2.5" Cal	1	
Ornamental Tree	2.0" Cal	1	
Shrubs	#5 Cont	22	
Perennials	#1 Cont	5	
Front Yard Grasses	#1 Cont	16	
Curbside Grasses	#5 Cont	4	



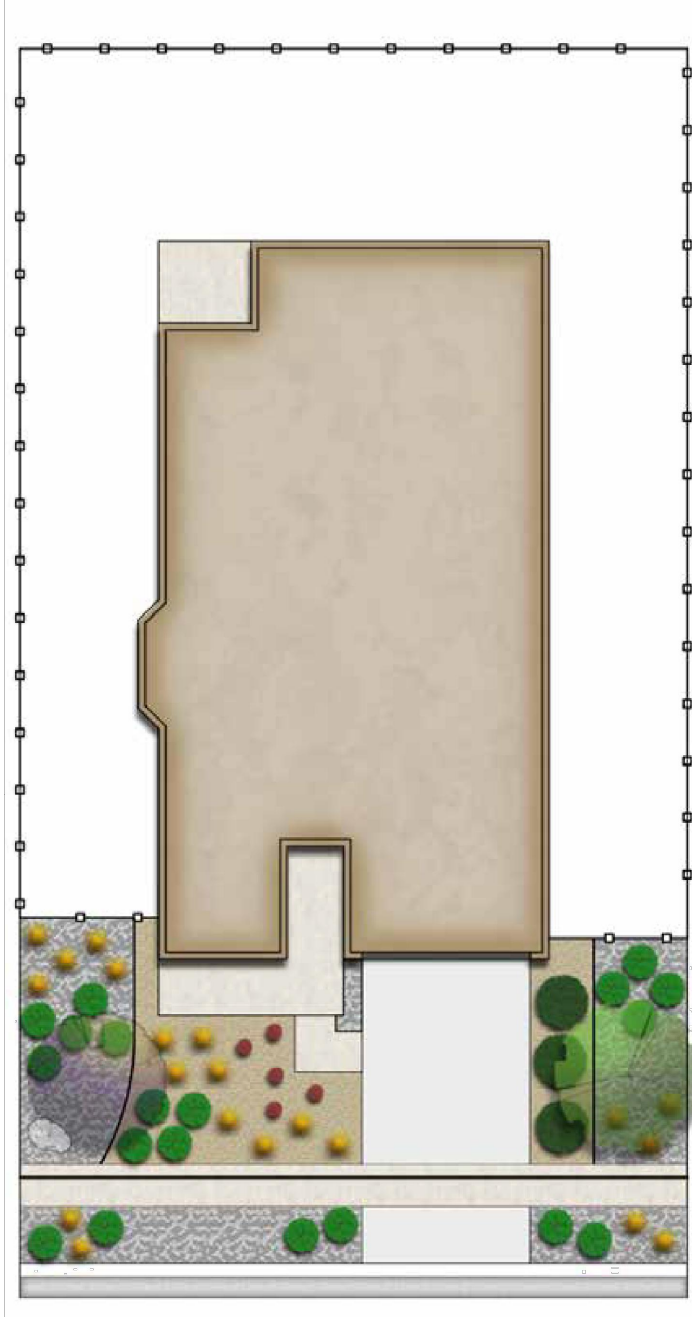
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Large Mid-Block Lot Type 1 (60'-70' x 110')

terracedesign
Not to Scale
Feb. 2022
B1

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Columnar Shade Tree	2.5" Cal	1	
Ornamental Tree	2.0" Cal	1	
Shrubs	#5 Cont	22	
Perennials	#1 Cont	5	
Front Yard Grasses	#1 Cont	16	
Curbside Grasses	#5 Cont	4	



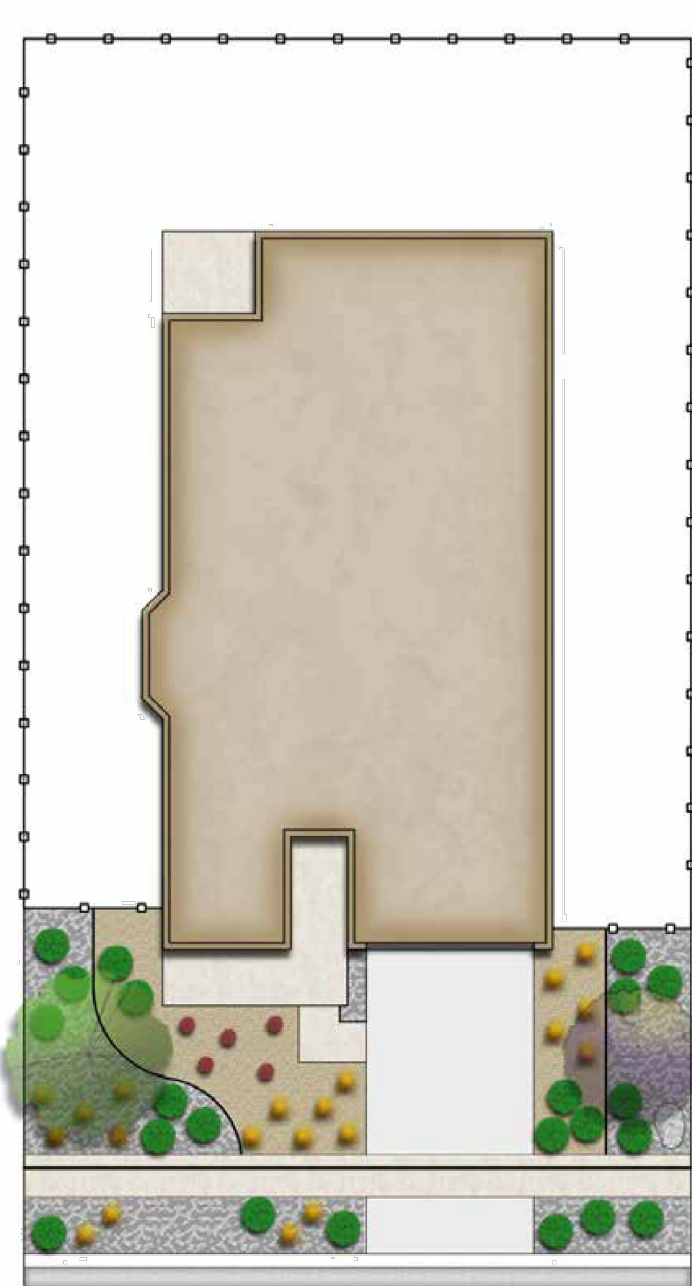
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Large Mid-Block Lot Type 2 (60'-70' x 110')

terracedesign
Not to Scale
Feb. 2022
B2

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Columnar Shade Tree	2.5" Cal	1	
Ornamental Tree	2.0" Cal	1	
Shrubs	#5 Cont	22	
Perennials	#1 Cont	5	
Front Yard Grasses	#1 Cont	16	
Curbside Grasses	#5 Cont	4	



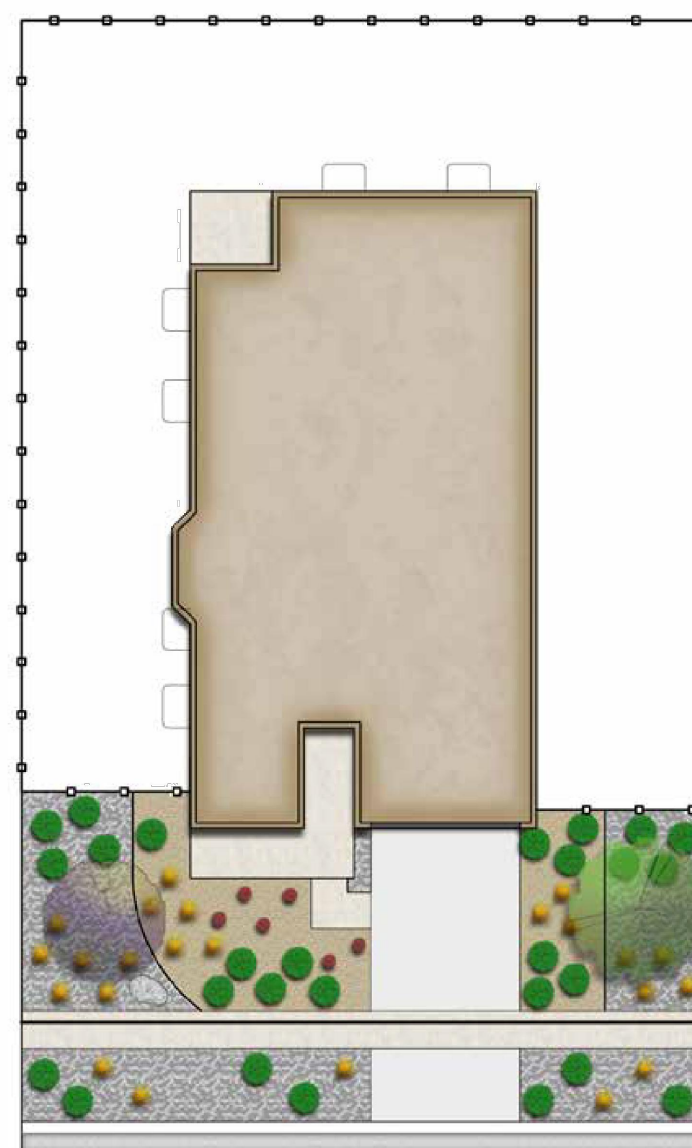
GVR-E Filing 15 Front Yard Landscape Typical
Horizon Large Mid-Block Lot Type 3 (60'-70' x 110')

terracedesign
Not to Scale
Feb. 2022
B3

- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder
Minimum Size:
24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Schedule			
Plant Type	Size	Qty.	
Columnar Shade Tree	2.5" Cal	1	
Ornamental Tree	2.0" Cal	1	
Shrubs	#5 Cont	27	
Perennials	#1 Cont	6	
Front Yard Grasses	#1 Cont	18	
Curbside Grasses	#5 Cont	5	



GVR-E Filing 15 Front Yard Landscape Typical
Horizon Mid-Block Lot Type 1 (70'-80' x 110')

terracedesign
Not to Scale
Feb. 2022
C1

NOT FOR CONSTRUCTION

INDIVIDUAL WATER WISE EXHIBIT

SHEET NUMBER

WW.3

SHEET34 OF 36

February 28, 2022

terracedesign
td
10200 E. Girard Ave. Ste A-314
Denver, CO 80231
ph: 303.632.8867

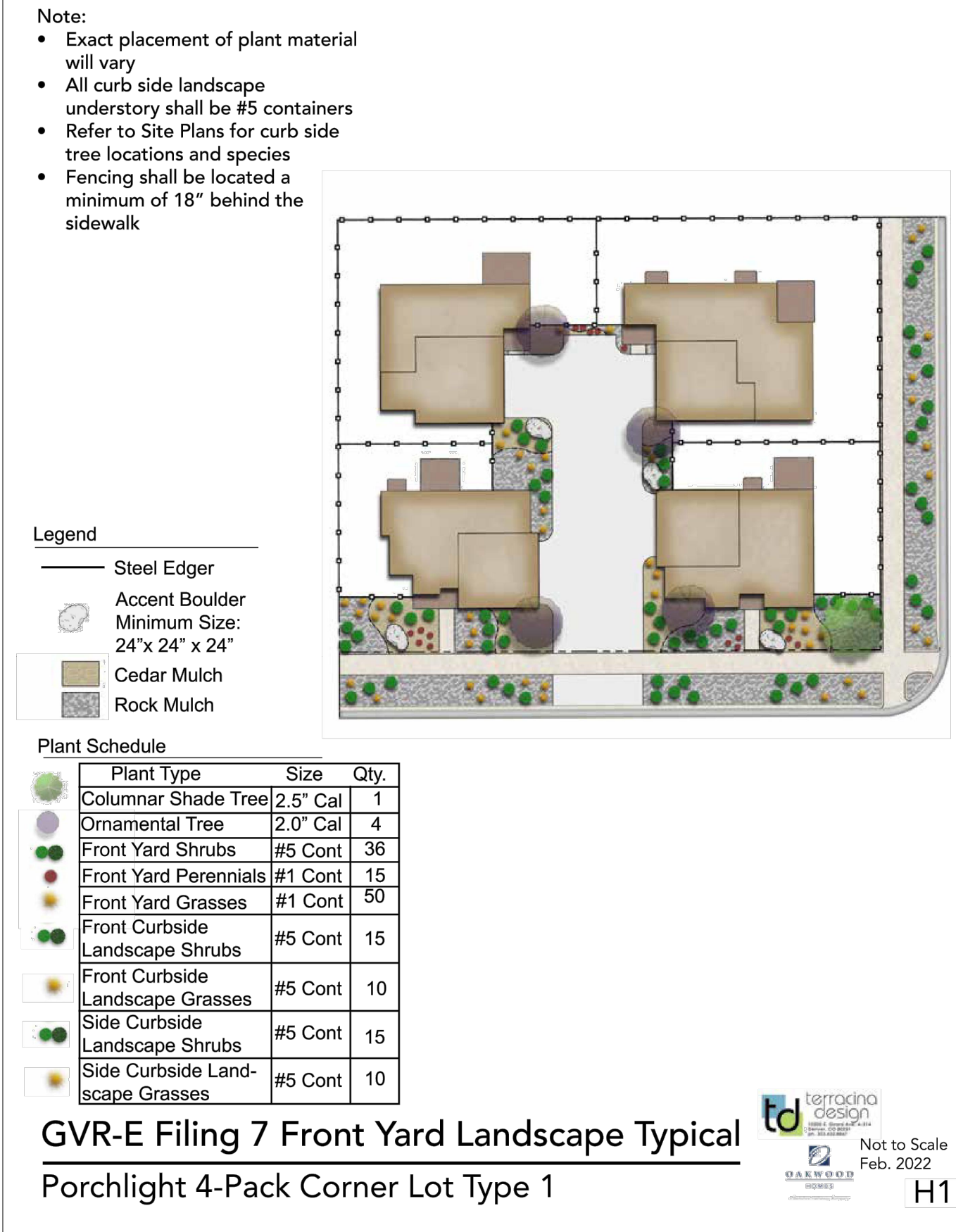
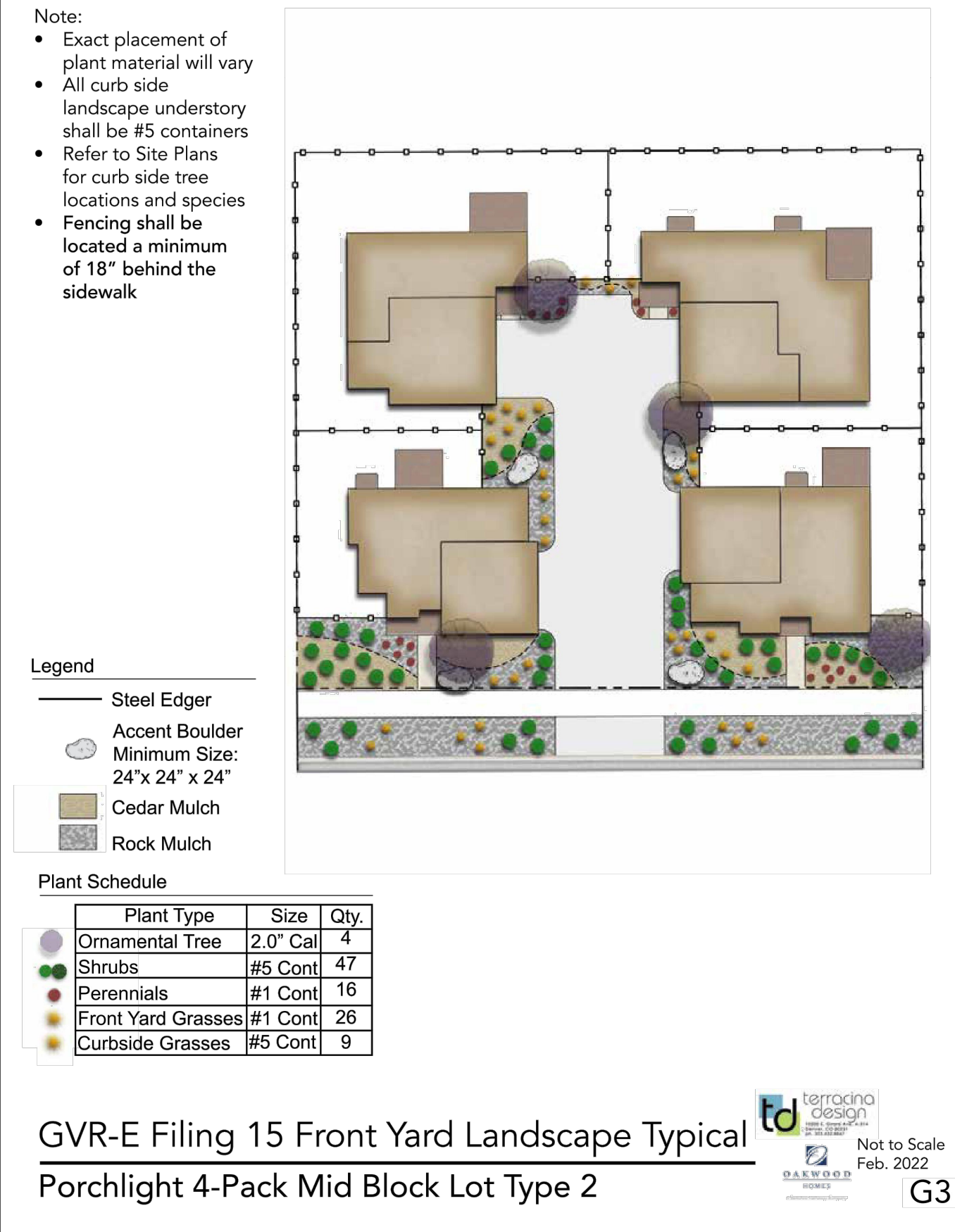
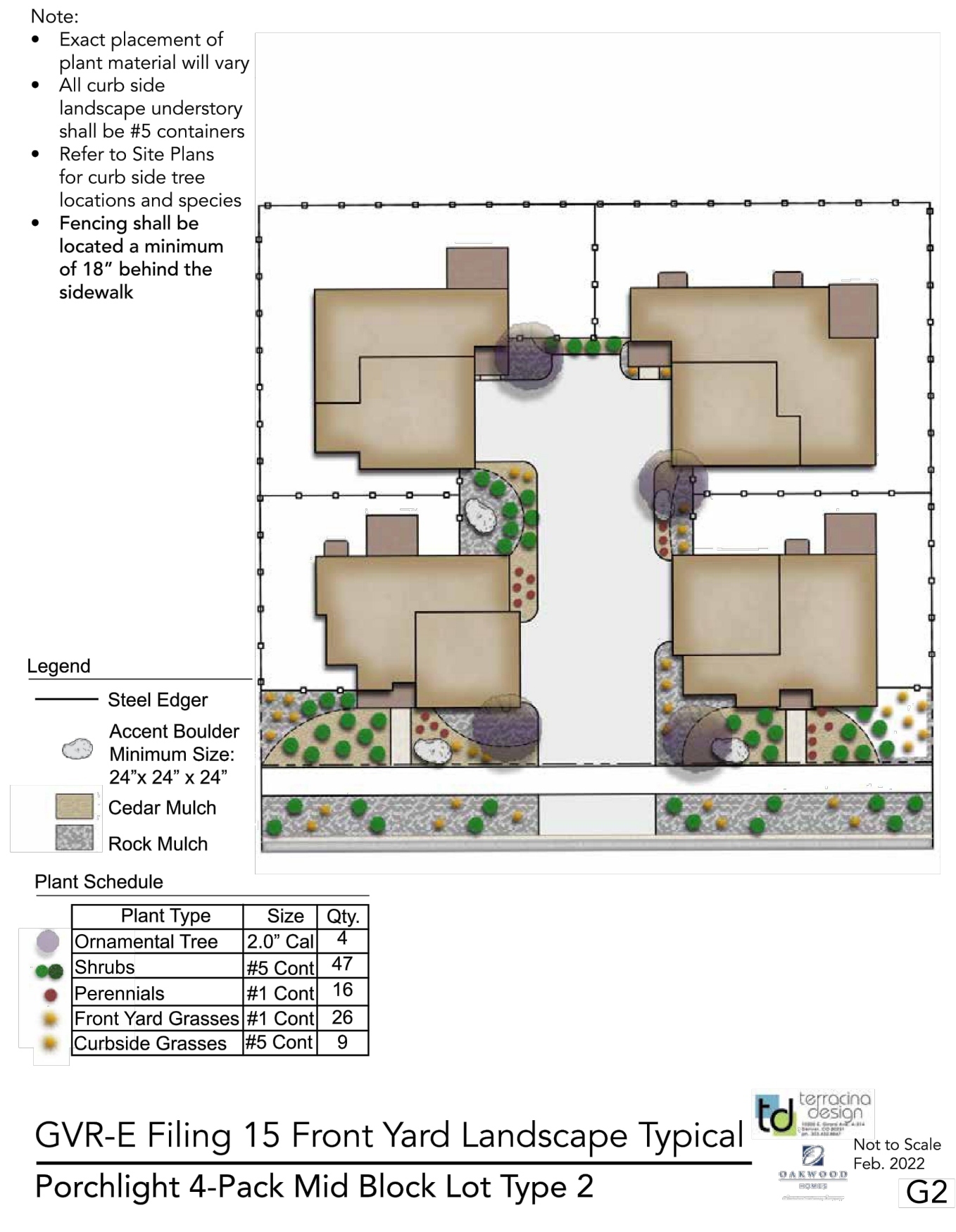
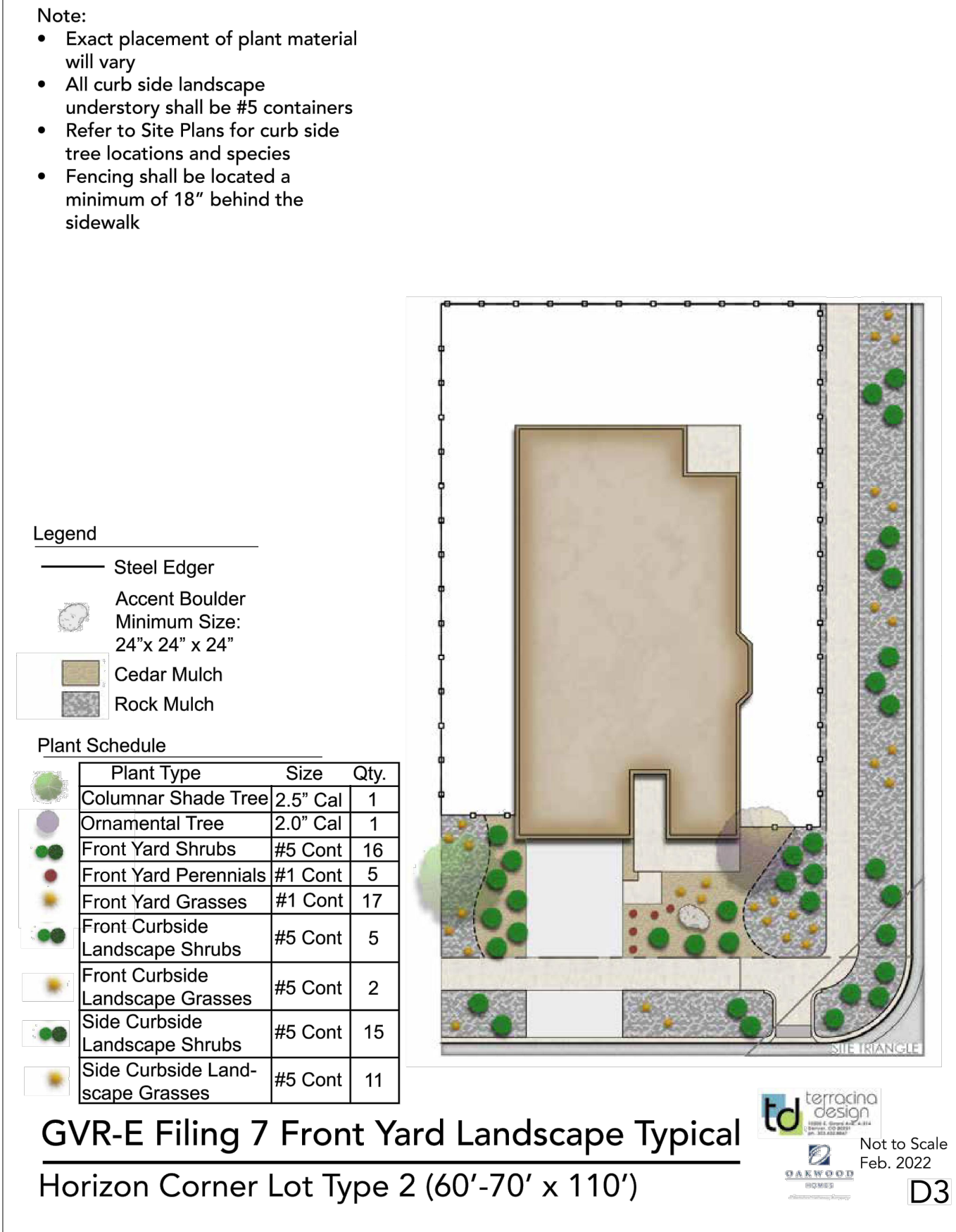
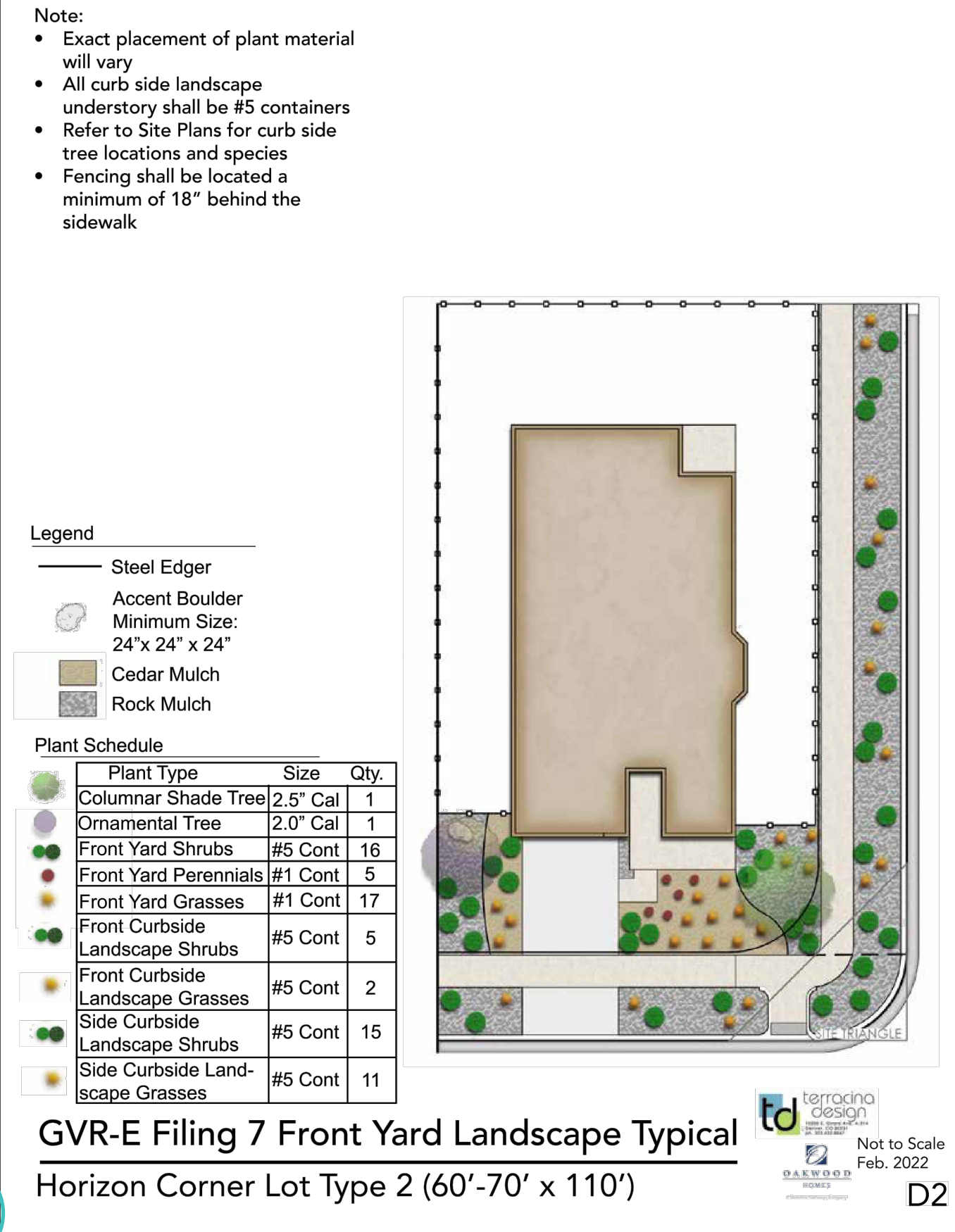
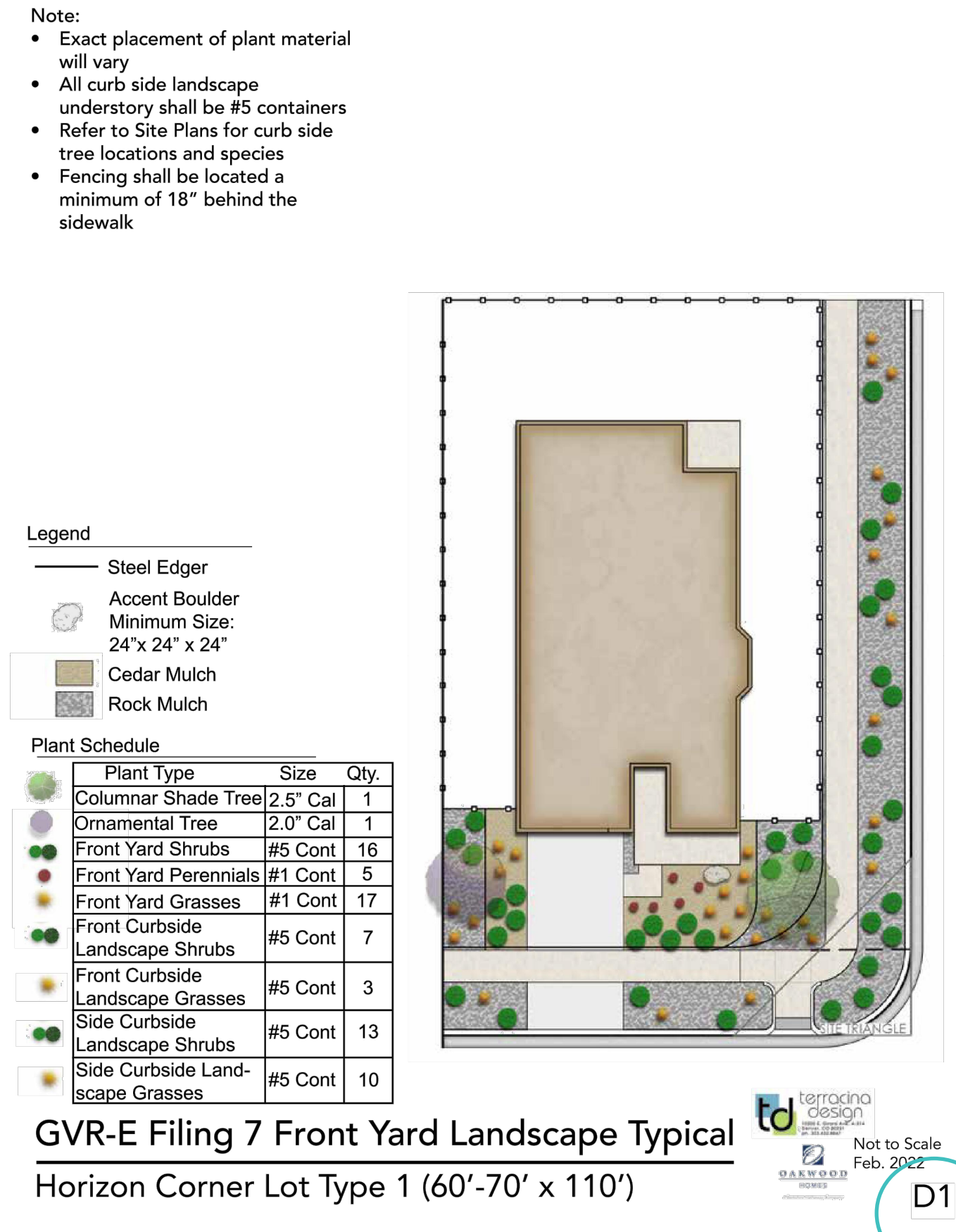
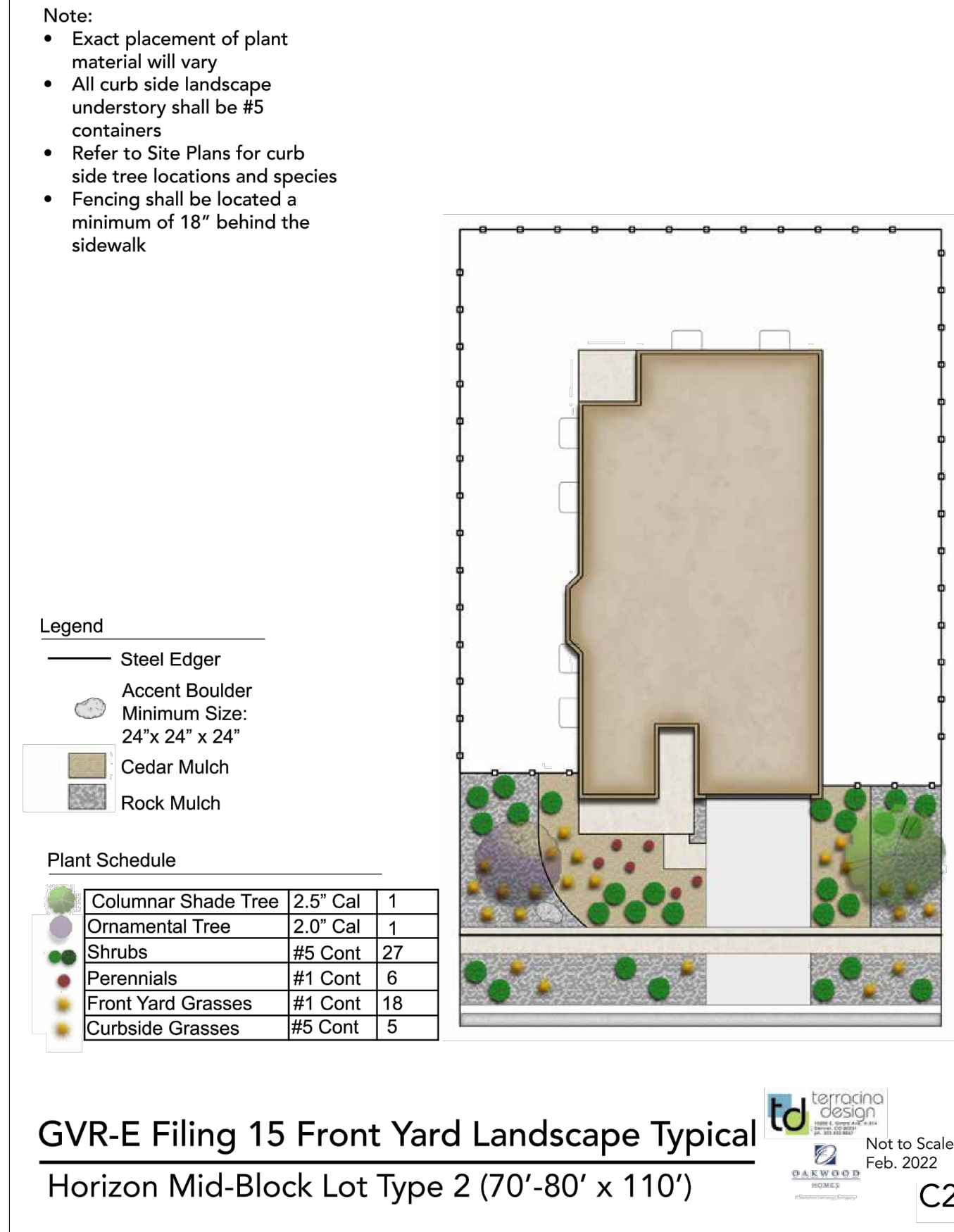
PROJECT NAME

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

GREEN VALLEY RANCH EAST FILING 15
AURORA, COLORADO
LANDSCAPE PLANS

SHEET TITLE

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Is this "D" lot intended to have different counts?
Plant counts updated

NOT FOR CONSTRUCTION

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- Note:
- Exact placement of plant material will vary
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 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder Minimum Size: 24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Type	Size	Qty.
Columnar Shade Tree	2.5" Cal	1
Ornamental Tree	2.0" Cal	4
Front Yard Shrubs	#5 Cont	36
Front Yard Perennials	#1 Cont	15
Front Yard Grasses	#1 Cont	50
Front Curbside Landscape Shrubs	#5 Cont	15
Front Curbside Landscape Grasses	#5 Cont	10
Side Curbside Landscape Shrubs	#5 Cont	15
Side Curbside Landscape Grasses	#5 Cont	10

GVR-E Filing 7 Front Yard Landscape Typical
Porchlight 4-Pack Corner Lot Type 2



- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder Minimum Size: 24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Type	Size	Qty.
Ornamental Tree	2.0" Cal	4
Shrubs	#5 Cont	41
Perennials	#1 Cont	10
Front Yard Grasses	#1 Cont	29
Curbside Grasses	#5 Cont	8

GVR-E Filing 15 Front Yard Landscape Typical
Carriage House 4-Pack Mid Block Lot Type 1



- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder Minimum Size: 24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Type	Size	Qty.
Ornamental Tree	2.0" Cal	4
Shrubs	#5 Cont	41
Perennials	#1 Cont	10
Front Yard Grasses	#1 Cont	29
Curbside Grasses	#5 Cont	8

GVR-E Filing 15 Front Yard Landscape Typical
Carriage House 4-Pack Mid Block Lot Type 2



- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder Minimum Size: 24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Type	Size	Qty.
Ornamental Tree	2.0" Cal	6
Shrubs	#5 Cont	52
Perennials	#1 Cont	18
Front Yard Grasses	#1 Cont	45
Curbside Grasses	#5 Cont	8

GVR-E Filing 15 Front Yard Landscape Typical
Carriage House 6-Pack Mid Block Lot Type 2



- Note:
- Exact placement of plant material will vary
 - All curb side landscape understory shall be #5 containers
 - Refer to Site Plans for curb side tree locations and species
 - Fencing shall be located a minimum of 18" behind the sidewalk

- Legend
- Steel Edger
 - Accent Boulder Minimum Size: 24"x 24" x 24"
 - Cedar Mulch
 - Rock Mulch

Plant Type	Size	Qty.
Ornamental Tree	2.0" Cal	6
Shrubs	#5 Cont	52
Perennials	#1 Cont	18
Front Yard Grasses	#1 Cont	45
Curbside Grasses	#5 Cont	8

GVR-E Filing 15 Front Yard Landscape Typical
Carriage House 6-Pack Mid Block Lot Type 2



NOT FOR CONSTRUCTION

TRAFFIC IMPACT

Green Valley Ranch
Planning Areas 8

Key comments 4.1.2022:

- 1) Primarily few minor comments, as this study broadly agrees with previously approved GVRE MTIS.
- 2) 38th/Tibet signalized intersection: LOS E for NB/SB lefts at this intersection. Can SBL dual left turn lanes be considered for this roadway to better accommodate future traffic?
- 3) Traffic calming discussion requested for the E/W roadway from PA9 to PA8, as well as the N/S roadway within PA9.
- 4) See other comments as needed throughout.

Comments have
been addressed in
the revised report
dated 04/15/2022

Prepared for:

Oakwood Homes
4908 Tower Rd.
Denver, CO 80249

Prepared by:

Felsburg Holt & Ullevig
6400 S Fiddlers Green Circle, Suite 1500
Greenwood Village, CO 80111
303.721.1440

Principal: Lyle E. DeVries, PE, PTOE
Project Engineer: Charles M. Buck, PE, PTOE



FHU Reference No. 119605-01

February 2022

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- Appendix B. Existing Conditions LOS
- Appendix C. Short Range Future Background Traffic LOS

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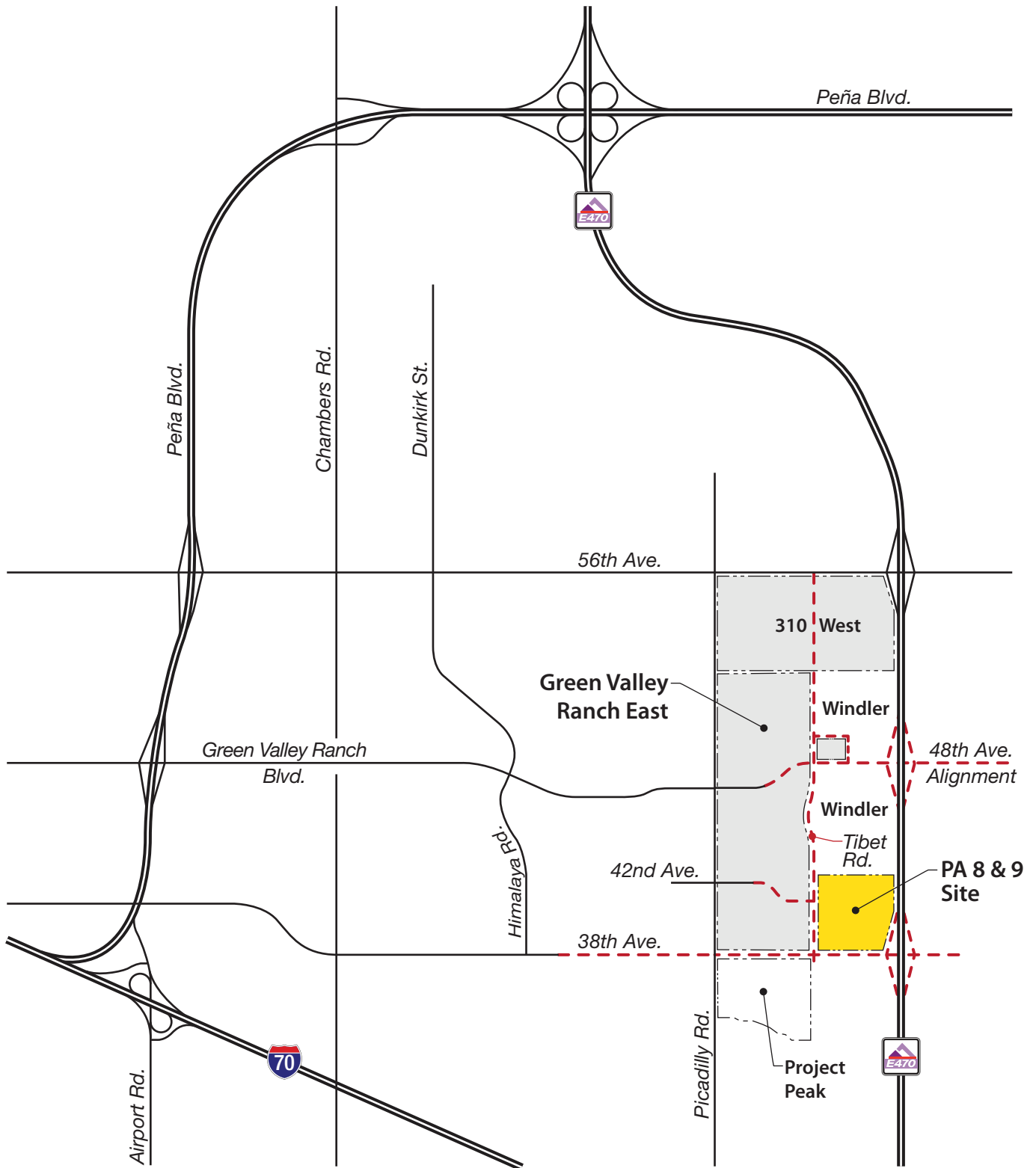
I. INTRODUCTION

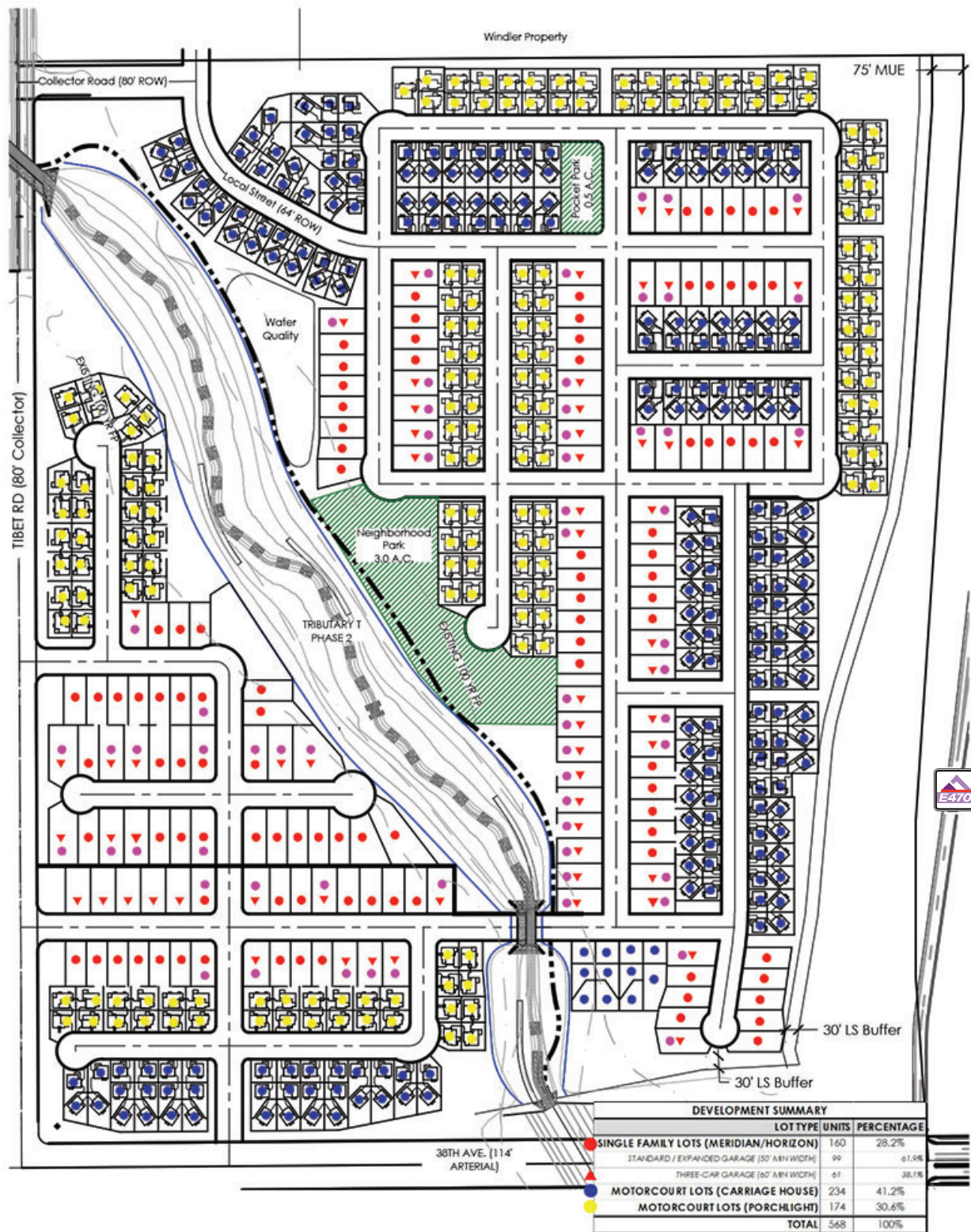
Green Valley Ranch East Planning Areas 8 & 9 include a total of 568 single-family dwelling units. As shown on **Figure 1**, the site is located in the northeast quadrant of the future 38th Avenue/Tibet Road intersection in Aurora, Colorado. Vehicular access would be via connection to Tibet Road at the 39th, 42nd, and 45th Avenue (approximate) future alignments. These accesses would be full-movement (unsignalized), consistent with previous planning efforts at Green Valley Ranch East. A local, right-in/right-out (RIRO) connection to 38th Avenue is also planned. **Figure 2** depicts the current site plan concept.

Previous traffic analyses conducted for Green Valley Ranch East include the following:

- Transportation Analysis, Green Valley Ranch East, Felsburg Holt & Ullevig, updated May 2020
- Traffic Impact Study, Green Valley Ranch East CSP 3, updated May 2020
- Traffic Impact Study, Green Valley Ranch East Filing 7, updated May 2020

By incorporating the above documents, as well as more recent analyses conducted within the surrounding area, this traffic study identifies the potential impacts specific to the residential development in Planning Areas 8 & 9 and identifies the resultant roadway and traffic control improvements required. Because the adjacent roadway system has yet to be constructed, this analysis focuses on the Long-Range (year 2040) planning horizon.





II. EXISTING CONDITIONS

II.A. Land Use

Green Valley Ranch Planning Areas 8 & 9 are currently vacant. E-470 forms the eastern site boundary. Lands to the west in Green Valley Ranch East are currently under development with residential uses. Lands to the south include Project Peak, an industrial development.

II.B. Roadways

The primary existing study area includes:

- **38th Avenue.** This east-west roadway extends east from Tower Road to Himalaya Street as a 4-lane arterial in the City and County of Denver, and is posted with a 40 miles per hour (MPH) speed limit. To the west, 38th Avenue transitions to 40th Avenue and interchanges with Peña Boulevard. 38th Avenue is currently under construction between Himalaya Street and Project Peak, which will have access at the future Tibet Road alignment. In the future, 38th Avenue will have an interchange on E-470.
- **Tibet Road.** This planned north-south roadway will be constructed as adjacent lands develop. Tibet Road between 38th Avenue and 48th Avenue is planned as a 3-lane collector. As noted above, Project Peak (on the south side of 38th Avenue) will have vehicular access at the Tibet Road alignment.

III. PROPOSED FUTURE CONDITIONS

III.A. Trip Generation

As previously noted, the planned residential uses within Planning Areas 8 & 9 would consist of 568 single-family residential units. The proposed development is in general conformance with the planning data previously assumed for the *Transportation Analysis, Green Valley Ranch East* master report. The trip generation analysis, summarized in **Table I**, was conducted using the fitted curve equations contained in *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), 2021 (ITE worksheets are included in **Appendix A**).

Correction to 568
DU, per text.

Correction made

Table I. Planning Areas 8 & 9 Trip Generation Analysis

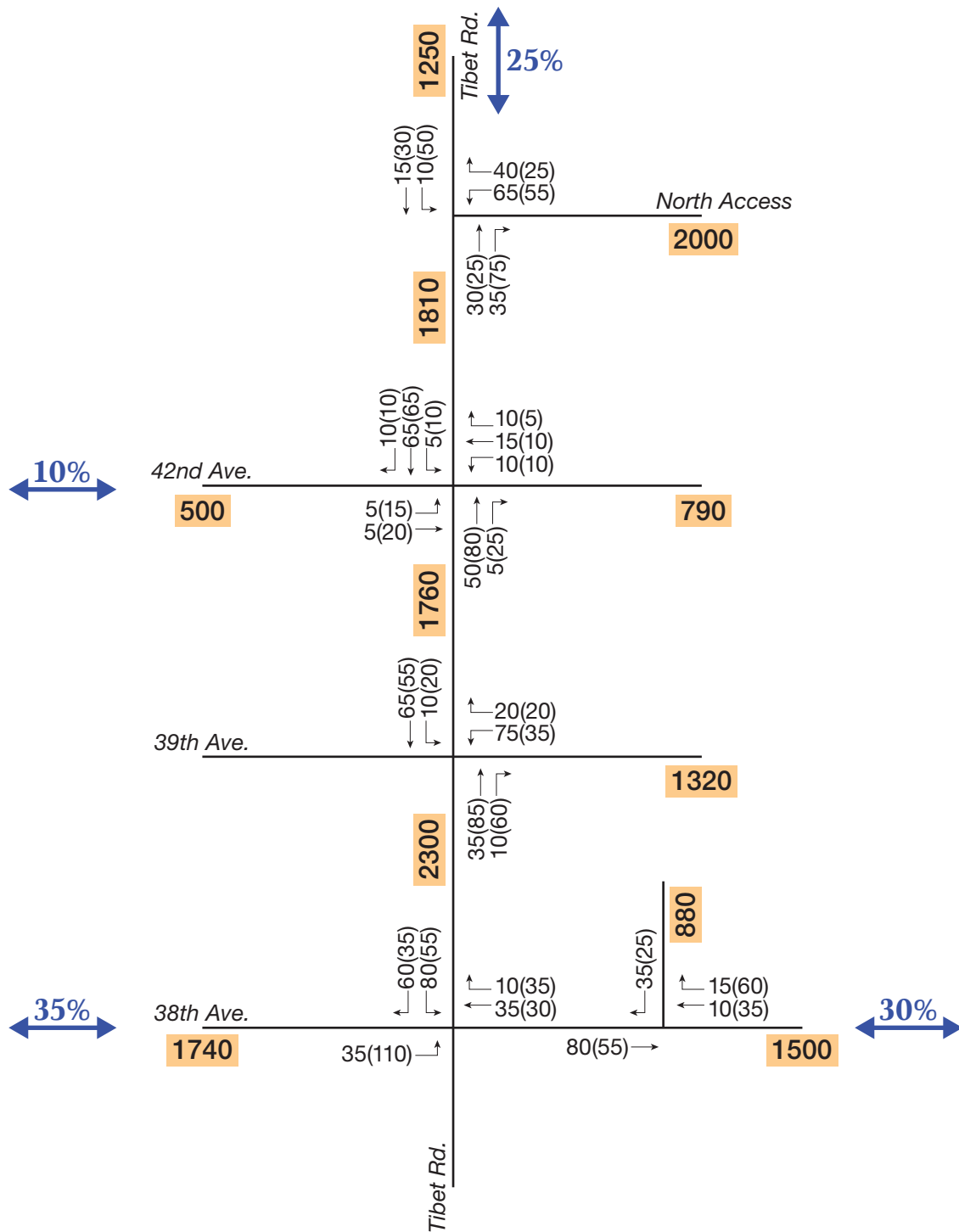
Land Use	Quantity	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Single Family Detached Housing (1)	174 DU	4,990	95	270	365	320	190	510
1 ITE Land Use Code 210 Single Family Detached Housing. Fitted curve equation results shown.								

As shown in **Table I**, the site would have a trip generation potential of about 4,990 trips per day, with 365 AM peak hour trips and 510 PM peak hour trips.

III.B. Site Trip Distribution and Site-Generated Traffic Assignment

In the future, it is projected that the adjacent study area roadway system would be built, including Tibet Road, 38th Avenue, and the E-470 interchange at 38th Avenue. The trip distribution, as depicted on **Figure 3**, is based on the location of the site relative to regional connections and on previous traffic engineering efforts at Green Valley Ranch East.

Figure 3 also shows the resultant site-generated traffic assignment. As shown, Tibet Road would carry between 1,250 and 2,300 vehicles per day (VPD) in site-related volumes. 38th Avenue would carry 1,500 to 1,740 VPD generated by the site.



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXX = Daily Traffic Volumes

XX% = Trip Distribution

IV. FUTURE CONDITIONS

IV.A. Background Traffic Conditions

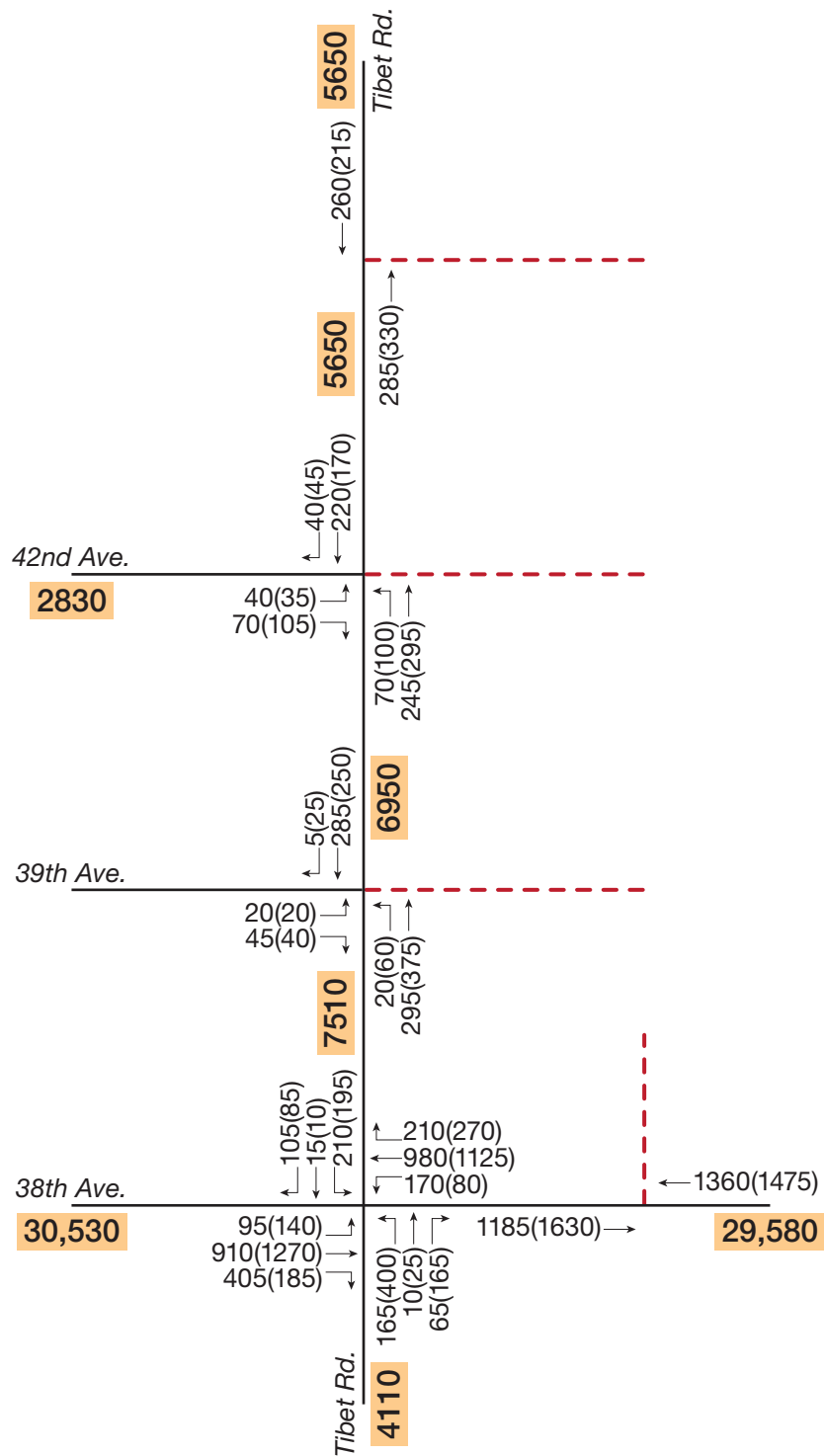
For the Long Range Future scenario (year 2040), background volumes were based on the following:

- Other Green Valley Ranch East development per the Final Development Plan (FDP) and the CSP 1, CSP 2, CSP 3, and Filing 7 Traffic Impact Studies
- Development of Project Peak, per the Traffic Impact Study for this site dated April 2019, by Kimley-Horn and Associates, Inc.
- Background growth based on the 2018 NEATS Refresh project, including anticipated development in the surrounding area, as follows:
 - The Aurora Highlands 3,500 acres east of E-470 and The Aurora Highlands 310 located at Picadilly Road and 56th Avenue.
 - Porteos, estimated to generate approximately 120,000 trips per day when built out, based on the Denver Regional Council of Governments (DRCOG) model (this master plan's traffic impact study shows more given a maximum buildout scenario).
 - Windler and Cardon properties that straddle E-470.
 - Avelon, located in the northeast quadrant of 56th Avenue and Picadilly Road. A mix of residential and commercial uses is planned for this site.
 - Painted Prairie, 1,628 acres of future mixed-use development located in the northwest quadrant of 56th Avenue and Picadilly Road.
 - Majestic (southwest of E-470 and 38th Avenue). Project Peak is a portion of this overall development.

Figure 4 illustrates the resultant Long Range Future background projections. As shown, background volumes on 38th Avenue would be approximately 29,580 to 30,530 VPD. Daily volumes on Tibet Road adjacent to Planning Areas 8 & 9 would range between about 5,650 to 7,510 VPD.

The Long Range Future peak hour background volumes were used as the basis for intersection Level of Service (LOS) analyses, the results of which are graphically depicted on **Figure 5**. As shown, year 2040 background traffic operations are projected to remain generally acceptable at study area intersections (**Appendix B** contains LOS worksheets). The analyses assume the following improvements:

- Tibet Road would be constructed to a three-lane collector cross section with adjacent development. The projected traffic volumes along Tibet Road would remain within the general capacity of a two-lane collector roadway.
- 38th Avenue would be constructed to four-lane arterial standards. For this analysis, it is assumed that the planned interchange at E-470/38th Avenue would be constructed.
- The intersection at 38th Avenue/Tibet Street would require signalization per the Project Peak Traffic Impact Study. Dual left-turn lanes would be needed on the northbound approach at this intersection. Signalization of this intersection should be anticipated following connection of 38th Avenue across E-470.



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXX = Daily Traffic Volumes

--- = Future Roadway

Note broad agreement with previously approved GVRE Master TIS.

So noted on page 7, paragraph 2 of the revised report

LEGEND

X/X = AM/PM Peak Hour Intersection
Level of Service

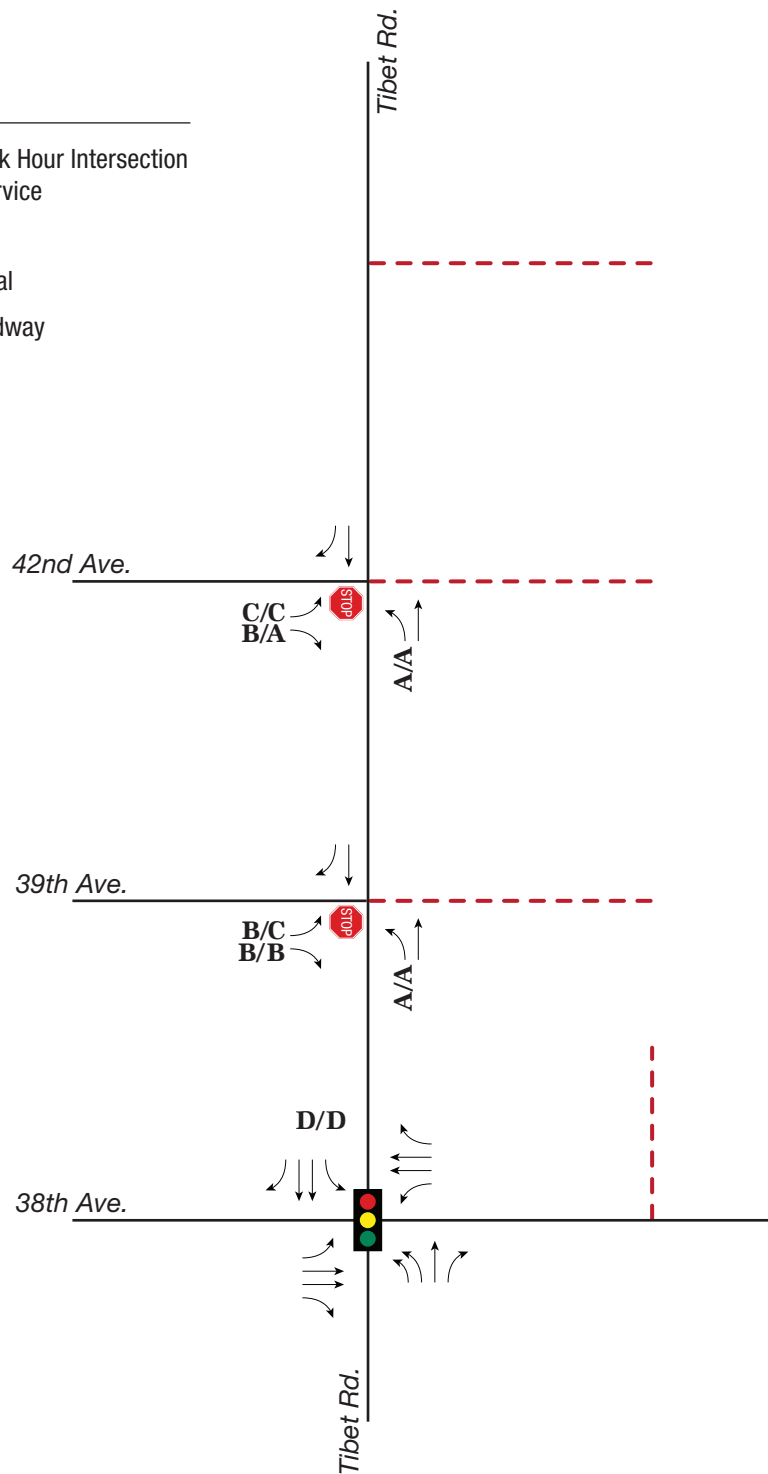


= Stop Sign



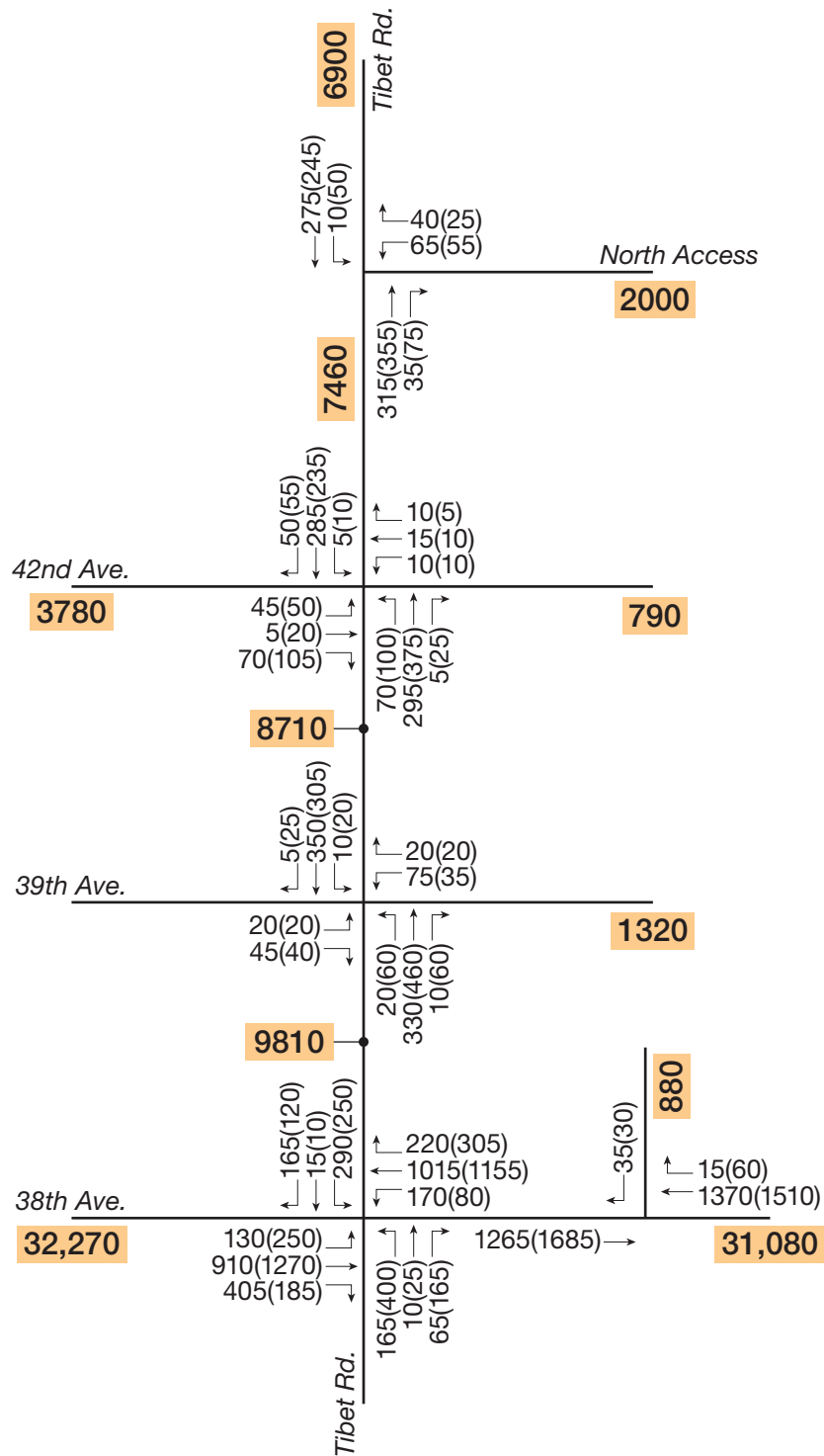
= Traffic Signal

- - - - = Future Roadway



IV.B. Total Future Traffic

The site-generated traffic volumes previously shown on **Figure 3** were added to the 2040 background traffic volumes (**Figure 5**) to produce the Long Range Future total traffic volumes as illustrated on **Figure 6**. As shown, Tibet Road daily volumes would range between about 6,900 and 9,810 VPD within the study area. 38th Avenue is estimated to serve approximately 31,080 to 32,270 VPD in the vicinity of the site.



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

XXX = Daily Traffic Volumes

V. EVALUATION

V.A. Level of Service

The Long Range total traffic peak hour intersection operations analysis (which contains LOS worksheets). As shown, study area traffic operations would continue to be acceptable at the study area signalized intersections. As previously noted, the intersection at Tibet Road/38th Avenue would warrant signalization. A traffic signal at this intersection would operate at LOS D during peak times. **Table 2** provides a summary of the LOS for the study area intersections.

Table 2. LOS Summary

Intersection/Movement	2040 Background		2040 Total Traffic	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
38th Ave/Tibet Road				
Traffic Signal				
Northbound Left	E	E	E	E
Northbound Through	C	C	D	D
Northbound Right	C	C	C	D
Southbound Left	E	E	E	E
Southbound Through	C	C	C	D
Southbound Right	C	C	C	C
Eastbound Left	C	C	D	E
Eastbound Through	D	D	D	D
Eastbound Right	C	C	C	B
Westbound Left	D	D	D	C
Westbound Through	D	D	D	D
Westbound Right	B	B	B	B
Tibet Road/39th Ave				
STOP Sign Control (EB/WB)				
Northbound Left	A	A	A	A
Southbound Left	–	–	A	A
Eastbound Left	B	C	C	D
Eastbound Through-Right	B	B	B	B
Westbound Left	–	–	D	D
Westbound Through-Right	–	–	B	B
Tibet Road/42nd Ave				
STOP Sign Control (EB/WB)				
Northbound Left	A	A	A	A
Southbound Left	–	–	A	A
Eastbound Left	C	C	C	D
Eastbound Through-Right	B	A	B	B
Westbound Left	–	–	C	D
Westbound Through-Right	–	–	C	C
Tibet Road/North Access				
Southbound Left	–	–	A	A
Westbound Left	–	–	C	C
Westbound Right	–	–	B	B
38th Ave/RIRO Access				
Southbound Right	–	–	C	C

If SBL is dual lefts, can timing be adjusted to demonstrate better LOS for NBL?

Dual left-turn lanes added to the southbound geometry at this intersection.

SBL volumes are pushing up against normal consideration for dual lefts. Given this movement is LOS E, does SBL need to be dual left?

V.B. Internal Traffic Control

At Tibet Road/42nd Avenue, traffic operations would be acceptable under STOP sign control. Per our previous traffic engineering efforts for CSP 3 and Filing 7, however, this intersection is adjacent to a future school site and could require a protected pedestrian crossing in the future. Therefore, future traffic and pedestrian conditions should be periodically monitored, and appropriate traffic control measures implemented, when warranted. Particular consideration of Warrant 5, School Crossing, would be anticipated. If signalized, the intersection would operate acceptably during peak times.

Traffic control at the internal intersections within Planning Areas 8 & 9 would be unsignalized, with STOP sign control on the minor approaches. **Figure 8** depicts the proposed internal traffic control. Given the limited continuity of the internal local streets, additional traffic calming measures are not envisioned.

V.C. Street Layout

The proposed street layout for Planning Areas 8 & 9 is generally consistent with Section 4.04.I of the City's Roadway Design and Construction Standards, as follows:

- Arterial spacing (38th Avenue, 48th Avenue, Picadilly Road and E-470 are at the approximate one-mile spacing per standards)
- Collector spacing (42nd Avenue and Tibet Road) generally meets the half-mile spacing requirement and is consistent with previous planning at Green Valley Ranch East.
- There are two local street connections and one collector connection to Tibet Road, which forms the western perimeter of the site. Of note, the proposed collector connection to Tibet would provide for a potential future local connection into the Windler site north of Planning Areas 8 & 9. The site plan also shows one local street connection to 38th Avenue on the southern site perimeter.
- There are no cul-de-sacs longer than 500 feet proposed. No dead ends or hammerheads are proposed.
- However, several areas within Planning Areas 8 & 9 require travel on three local streets to connect to an internal destination (Aurora standards specify no more than two local streets to a destination)

LEGEND

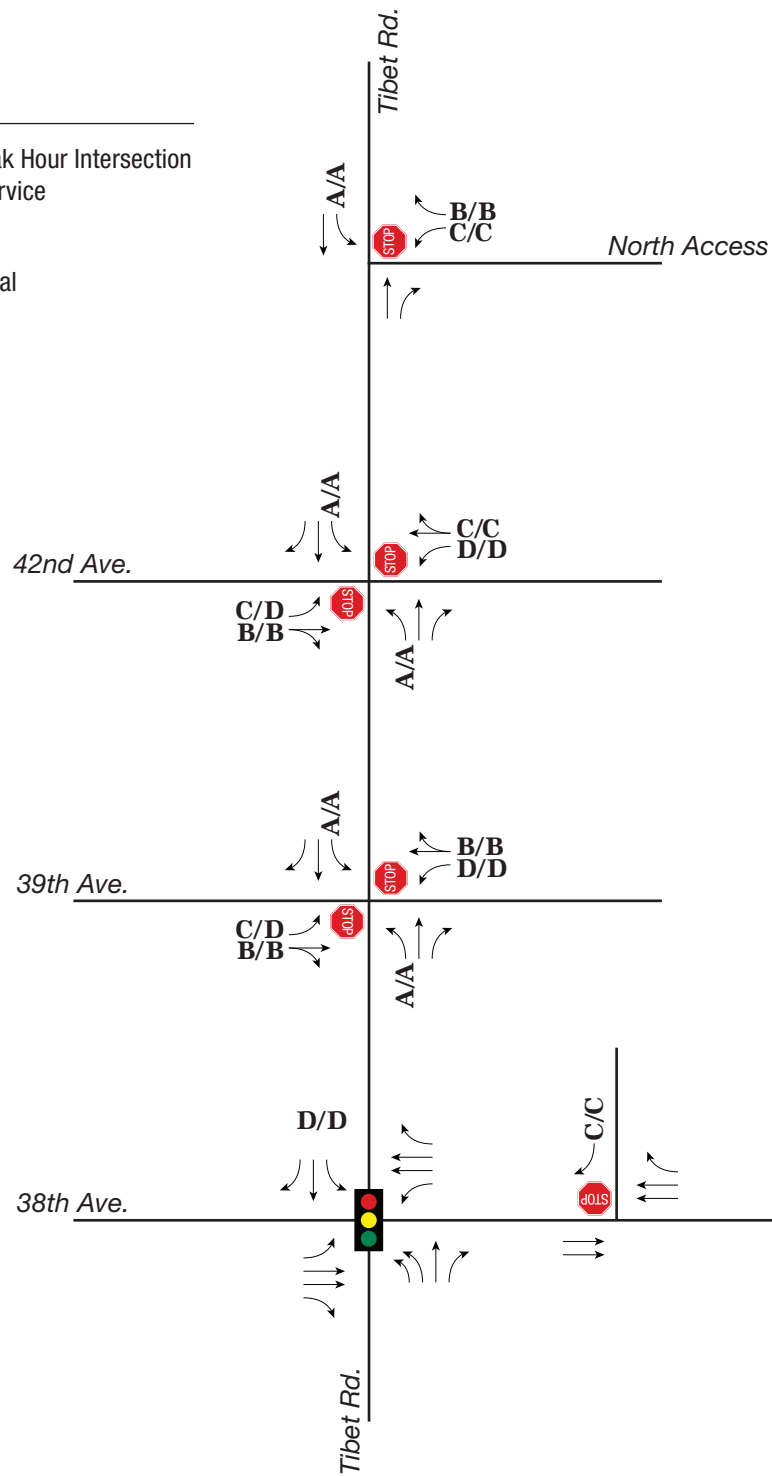
X/X = AM/PM Peak Hour Intersection
Level of Service



= Stop Sign



= Traffic Signal



V.D. Queues

The 95th percentile maximum probable queue lengths for Long Range Future conditions were extracted from the SYNCHRO LOS worksheets. The queue lengths are converted into feet (assuming a typical length of 25 feet per vehicle) and are summarized in **Table 3**. The table also provides CDOT storage requirements per the State Highway Access Code (SHAC). The recommended storage lengths consider both the CDOT criteria and the queueing projections.

Table 3. Queue Length Summary – Long Range Future

Intersection/Movement	95 % Queue Length (ft)		CDOT Storage Requirement (ft)	Recommended Storage (ft)
	AM Peak Hour	PM Peak Hour		
38 th Ave/Tibet Road	Traffic Signal			
Northbound Left (2-lane)	125	300	400	400
Northbound Right	75	225	185	225
Southbound Left	450	400	290	450
Southbound Right	200	150	185	200
Eastbound Left	150	400	250	400
Eastbound Right	400	125	405	425
Westbound Left	200	75	170	200
Westbound Right	175	250	305	300
Tibet Rd/39 th Ave	STOP Sign			
Northbound Left	25	25	60	75
Northbound Right	–	–	60	75
Southbound Left	0	25	40	50
Southbound Right	–	–	40	50
Eastbound Left	25	25	40	50
Eastbound Thru-Right	25	25	45	50
Westbound Left	50	25	75	75
Westbound Thru-Right	25	25	40	50
Tibet Rd/42 nd Ave	STOP Sign			
Northbound Left	25	25	100	100
Northbound Right	–	–	40	50
Southbound Left	0	0	40	50
Southbound Right	–	–	55	75
Eastbound Left	25	25	50	50
Eastbound Thru-Right	25	25	125	125
Westbound Left	25	25	40	50
Westbound Thru-Right	25	25	40	50
Tibet Rd/North Site Access	STOP Sign			
Northbound Right	–	–	75	75
Southbound Left	0	25	50	50
Westbound Left	25	25	65	75
Westbound Right	25	25	40	50
38 th Ave/Site RIRO Access	STOP Sign			
Westbound Right	–	–	60	75

V.E. Auxiliary Lanes

The site access intersections along Tibet Road and 38th Avenue were evaluated relative to auxiliary lane criteria in the CDOT *State Highway Access Code*. The proposed design for Tibet Road is a two-lane Collector with an assumed 35 MPH posted speed limit (typical for collector roads in Aurora). 38th Avenue is planned to be a four-lane arterial with an assumed speed limit of 40 MPH. For this evaluation, CDOT NR-B criteria was applied. **Table 4** summarizes the auxiliary lane length requirements for the site accesses.

Table 4. Auxiliary Lanes – Planning Areas 8 & 9 Accesses⁽¹⁾

Intersection	Direction	Left-Turn Lane			Right-Turn Lane		
		Storage	Taper	Total	Storage	Taper	Total
39 th Avenue	SB	50	100	150			
	NB				75	100	175
42 nd Avenue	SB	50	100	150			
	NB				50	100	150
North Access	SB	50	100	150			
	NB				75	100	175
RIRO Access	WB				75	144	219
1. Dimensions are given in feet.							

V.F. Recommendations

Consider notes on NBL/SBL for 38th Ave/Tibet

Included in revised report

The roadway and intersection improvements that should ultimately be implemented within the study area include the following:

- Construct 38th Avenue adjacent to the site as a four-lane Arterial.
- Construct Tibet Road as a two-lane Collector.
- Construct the intersection of Tibet Road/38th Avenue to include separate left-turn and right-turn lanes along each approach. Dual left-turn lanes will be required on the northbound approach – all other approaches would have single left-turn lanes. Periodically monitor this intersection and install a traffic signal, when warranted.
- Install STOP-sign control on the westbound approach at Tibet Road/39th Place. Provide a southbound left-turn lane and a northbound right-turn lane.
- Install STOP sign control on the westbound site access approach at the 42nd Avenue/Tibet Road intersection. Provide a southbound left-turn lane and a northbound right-turn lane. Periodically monitor traffic and pedestrian conditions at this intersection. Ultimately, a signal could be warranted due to its proximity to the future school site and the potential need for a protected school crossing.
- Install STOP-sign control on the westbound approach at the Tibet Road/north site access intersection. Provide a southbound left-turn lane and a northbound right-turn lane.
- Install STOP sign control on the southbound RIRO access approach to 38th Avenue. Provide a westbound right-turn lane at this site access.
- Install STOP-sign control at the site-internal intersections as previously depicted.

I would also like to see some discussion/consideration on traffic calming elements (per the pre-app notes), especially on the E/W connection from PA9 to PA8, and the N/S connection within PA9. Those are longer straight sections that will likely generate resident concerns, especially where homes front those streets. This comment was also placed on the Site Plan.

Traffic calming section has been added to the revised report. Recommendations include traffic calming as well.

VI. CONCLUSIONS AND RECOMMENDATIONS

It is currently proposed to develop 568 single-family homes within Green Valley Ranch East Planning Areas 8 & 9. The site is located along the east side of the future Tibet Road alignment, north of the future 38th Avenue alignment. Vehicular access would be via three roadway connections along Tibet Road and one along 38th Avenue.

The proposed development at Planning Areas 8 & 9 would have a trip generation potential of about 4,990 trips per day, with 365 AM peak hour trips and 510 PM peak hour trips. Because the adjacent roadway system has yet to be developed, the potential impacts of the site-generated traffic were evaluated under a Long Range Future scenario. In general, the existing and planned roadway system would have sufficient reserve capacity to accommodate the projected increases. Relative to this, the following findings and recommendations are specific to planning Areas 8 & 9:

- Construct 38th Avenue adjacent to the site as a four-lane Arterial.
- Construct Tibet Road as a two-lane Collector.
- Construct the intersection of Tibet Road/38th Avenue to include separate left-turn and right-turn lanes along each approach. Dual left-turn lanes will be required on the northbound approach – all other approaches would have single left-turn lanes. Periodically monitor this intersection and install a traffic signal, when warranted.
- Install STOP-sign control on the westbound approach at Tibet Road/39th Place. Provide a southbound left-turn lane and a northbound right-turn lane.
- Install STOP-sign control on the westbound site access approach at the 42nd Avenue/Tibet Road intersection. Provide a southbound left-turn lane and a northbound right-turn lane. Periodically monitor traffic and pedestrian conditions at this intersection. Ultimately, a signal could be warranted due to its proximity to the future school site and the potential need for a protected school crossing.
- Install STOP-sign control on the westbound approach at the Tibet Road/north site access intersection. Provide a southbound left-turn lane and a northbound right-turn lane.
- Install STOP-sign control on the southbound RIRO access approach to 38th Avenue. Provide a westbound right-turn lane at this site access.
- Install STOP-sign control at the site-internal intersections as previously depicted on **Figure 8**.

APPENDIX A. TRIP GENERATION

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 174

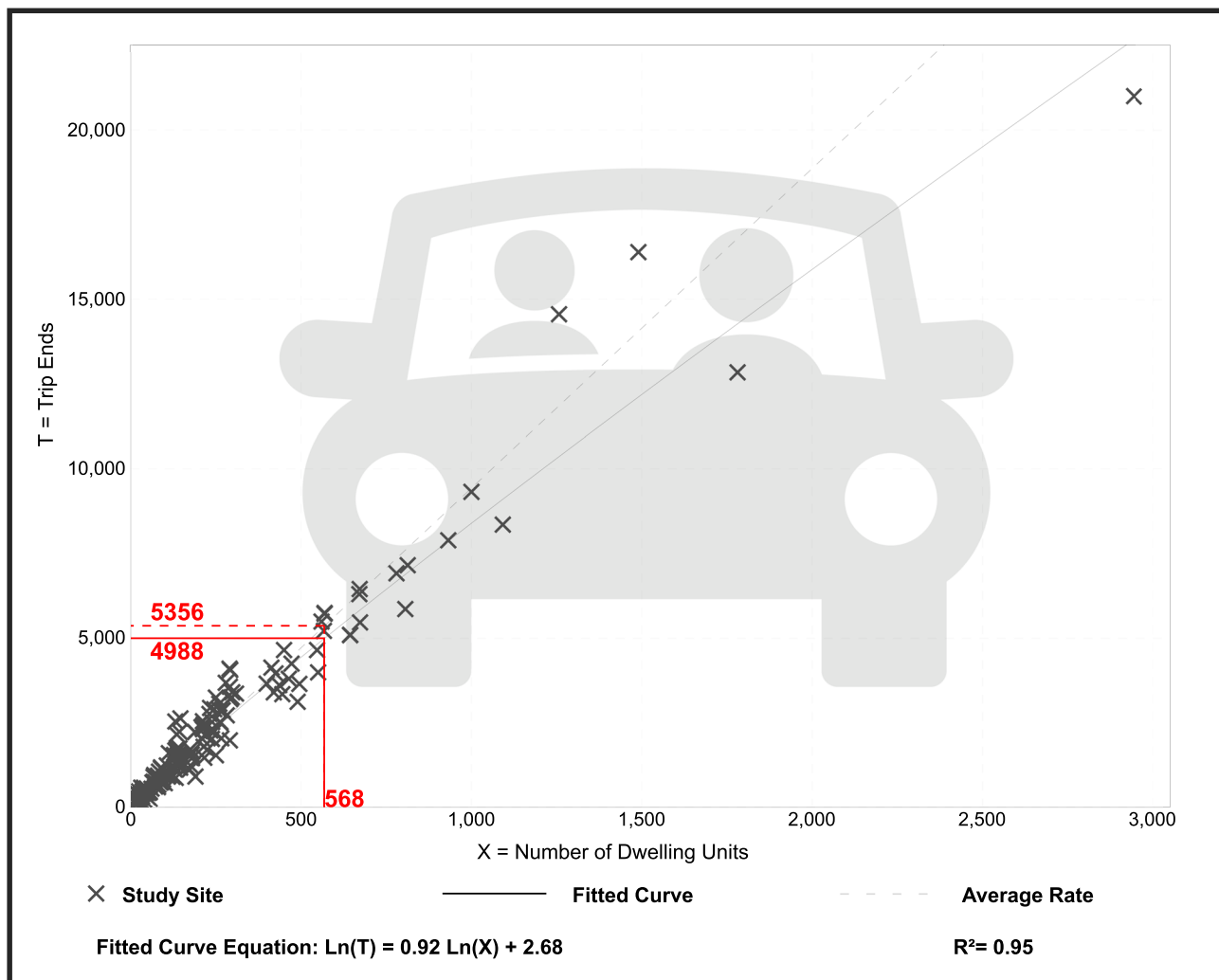
Avg. Num. of Dwelling Units: 246

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.43	4.45 - 22.61	2.13

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 192

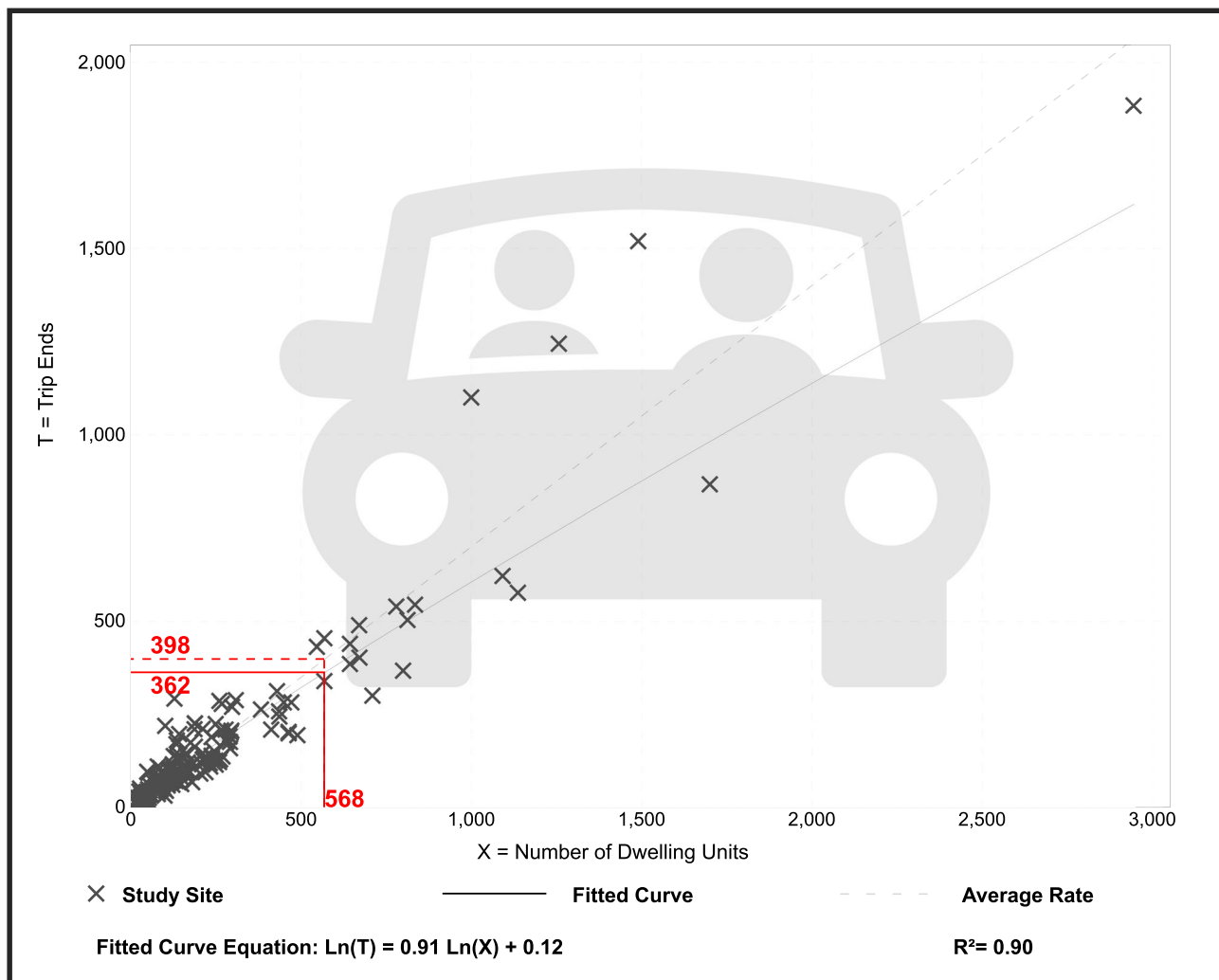
Avg. Num. of Dwelling Units: 226

Directional Distribution: 26% entering, 74% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.70	0.27 - 2.27	0.24

Data Plot and Equation



Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 208

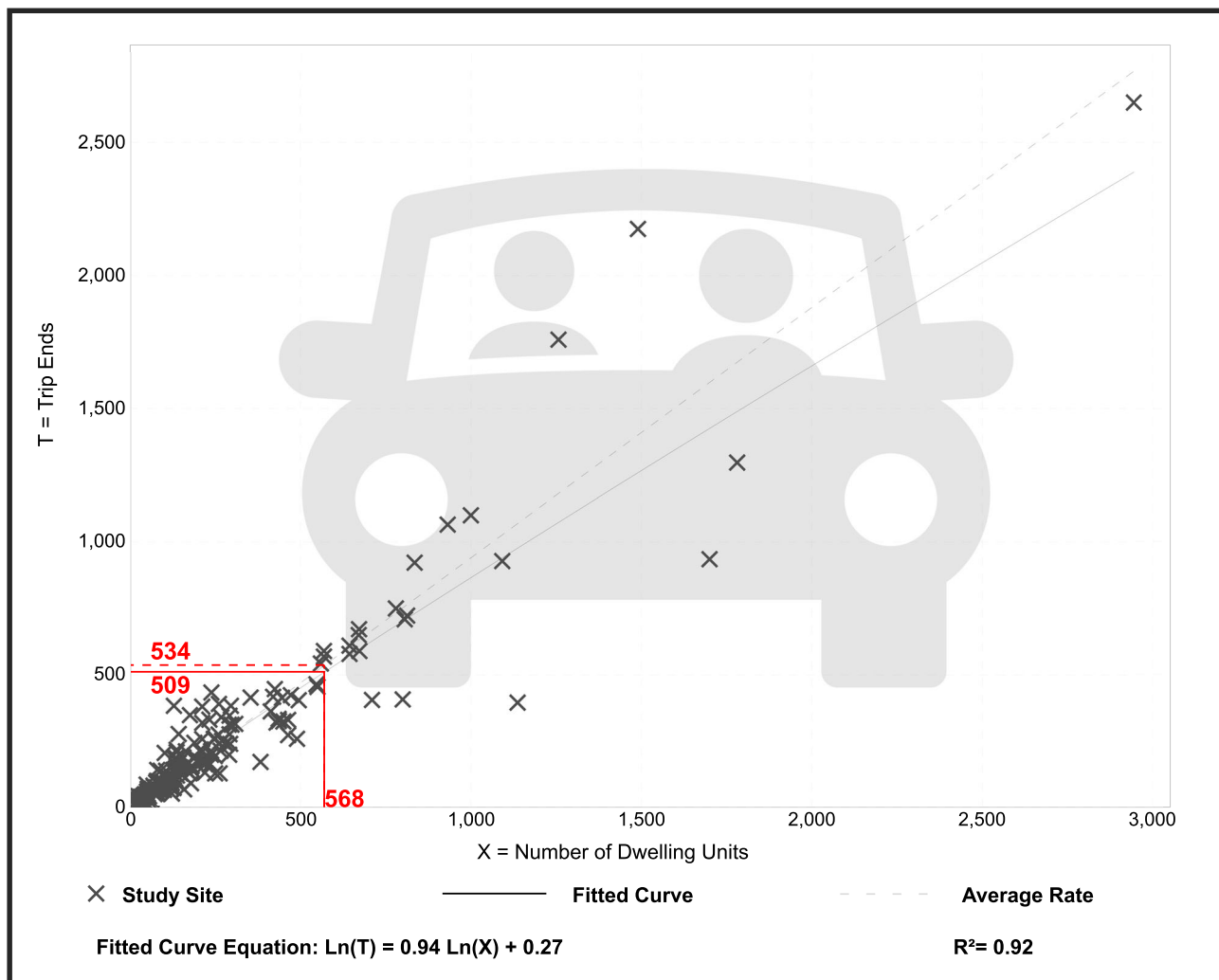
Avg. Num. of Dwelling Units: 248

Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.94	0.35 - 2.98	0.31

Data Plot and Equation



























APPENDIX B. EXISTING CONDITIONS LOS

HCM 6th Signalized Intersection Summary 2: Tibet Rd & 38th Ave

Long Range Background AM Peak Hour

























02/10/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	910	405	170	980	210	165	10	65	210	15	105
Future Volume (veh/h)	95	910	405	170	980	210	165	10	65	210	15	105
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	989	440	185	1065	228	179	11	71	228	16	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	1195	646	239	1305	811	246	534	585	258	672	652
Arrive On Green	0.05	0.34	0.34	0.08	0.37	0.37	0.07	0.29	0.29	0.14	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	103	989	440	185	1065	228	179	11	71	228	16	114
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.5	30.7	27.3	7.9	32.5	9.8	6.1	0.5	3.6	15.1	0.7	5.5
Cycle Q Clear(g_c), s	4.5	30.7	27.3	7.9	32.5	9.8	6.1	0.5	3.6	15.1	0.7	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	1195	646	239	1305	811	246	534	585	258	672	652
V/C Ratio(X)	0.53	0.83	0.68	0.77	0.82	0.28	0.73	0.02	0.12	0.88	0.02	0.17
Avail Cap(c_a), veh/h	212	1407	740	276	1555	923	648	534	585	334	672	652
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	28.3	36.6	29.2	28.2	34.3	16.7	54.6	30.8	25.0	50.3	24.9	22.4
Incr Delay (d2), s/veh	2.2	3.7	2.1	11.3	3.0	0.2	4.1	0.1	0.4	19.6	0.1	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(50%),veh/ln	2.0	13.8	10.7	4.1	14.4	3.6	2.8	0.2	1.4	8.1	0.3	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	40.3	31.3	39.4	37.3	16.9	58.7	30.9	25.4	69.9	24.9	23.0
LnGrp LOS	C	D	C	D	D	B	E	C	C	E	C	C
Approach Vol, veh/h		1532			1478			261			358	
Approach Delay, s/veh		37.1			34.4			48.5			52.9	
Approach LOS		D			C			D			D	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.9	38.8	14.5	44.8	13.0	47.6	10.8	48.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.5	19.5	12.5	47.5	22.5	19.5	7.5	52.5				
Max Q Clear Time (g_c+I1), s	17.1	5.6	9.9	32.7	8.1	7.5	6.5	34.5				
Green Ext Time (p_c), s	0.3	0.2	0.1	7.6	0.5	0.3	0.0	8.3				
Intersection Summary												
HCM 6th Ctrl Delay			38.4									
HCM 6th LOS			D									
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings
2: Tibet Rd & 38th Ave

Long Range Background AM Peak Hour

02/09/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	910	405	170	980	210	165	10	65	210	15	105
Future Volume (vph)	95	910	405	170	980	210	165	10	65	210	15	105
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	5	3	8	1	5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5		9.5	22.5	9.5
Total Split (s)	12.0	52.0	27.0	17.0	57.0	27.0	27.0	24.0		27.0	24.0	12.0
Total Split (%)	10.0%	43.3%	22.5%	14.2%	47.5%	22.5%	22.5%	20.0%		22.5%	20.0%	10.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	None
Act Effect Green (s)	49.0	41.6	58.1	57.5	46.0	70.1	12.0	29.0	45.3	19.6	36.6	48.5
Actuated g/C Ratio	0.41	0.35	0.48	0.48	0.38	0.58	0.10	0.24	0.38	0.16	0.30	0.40
v/c Ratio	0.58	0.81	0.44	0.78	0.78	0.22	0.52	0.02	0.11	0.79	0.03	0.16
Control Delay	30.2	40.9	2.7	47.5	36.8	1.5	56.4	41.2	7.3	67.5	34.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	40.9	2.7	47.5	36.8	1.5	56.4	41.2	7.3	67.5	34.6	5.7
LOS	C	D	A	D	D	A	E	D	A	E	C	A
Approach Delay		29.2			32.7			42.4			46.4	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 19.5 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 33.3









Intersection LOS: C







Intersection Capacity Utilization 64.1%







ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Tibet Rd & 38th Ave

 Ø1	 Ø2 (R)	 Ø3	 Ø4
27 s	24 s	17 s	52 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
27 s	24 s	12 s	57 s

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	45	20	295	285	5
Future Vol, veh/h	20	45	20	295	285	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	49	22	321	310	5
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	675	310	315	0	-	0
Stage 1	310	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	419	730	1245	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	411	730	1245	-	-	-
Mov Cap-2 Maneuver	411	-	-	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.5	0.5		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1245	-	411	730	-	-
HCM Lane V/C Ratio	0.017	-	0.053	0.067	-	-
HCM Control Delay (s)	7.9	-	14.2	10.3	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	0.2	-	-

























Intersection						
Int Delay, s/veh	2.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	40	70	70	245	220	40
Future Vol, veh/h	40	70	70	245	220	40
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	76	76	266	239	43
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	657	239	282	0	-	0
Stage 1	239	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	430	800	1280	-	-	-
Stage 1	801	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	405	800	1280	-	-	-
Mov Cap-2 Maneuver	405	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.8	1.8		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1280	-	405	800	-	-
HCM Lane V/C Ratio	0.059	-	0.107	0.095	-	-
HCM Control Delay (s)	8	-	15	10	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	0.3	-	-

HCM 6th Signalized Intersection Summary

2: Tibet Rd & 38th Ave

Long Range Background PM Peak Hour

02/10/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	910	405	170	980	210	165	10	65	210	15	105
Future Volume (veh/h)	95	910	405	170	980	210	165	10	65	210	15	105
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	989	440	185	1065	228	179	11	71	228	16	114
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	1195	646	239	1305	811	246	534	585	258	672	652
Arrive On Green	0.05	0.34	0.34	0.08	0.37	0.37	0.07	0.29	0.29	0.14	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	103	989	440	185	1065	228	179	11	71	228	16	114
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	4.5	30.7	27.3	7.9	32.5	9.8	6.1	0.5	3.6	15.1	0.7	5.5
Cycle Q Clear(g_c), s	4.5	30.7	27.3	7.9	32.5	9.8	6.1	0.5	3.6	15.1	0.7	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	195	1195	646	239	1305	811	246	534	585	258	672	652
V/C Ratio(X)	0.53	0.83	0.68	0.77	0.82	0.28	0.73	0.02	0.12	0.88	0.02	0.17
Avail Cap(c_a), veh/h	212	1407	740	276	1555	923	648	534	585	334	672	652
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	28.3	36.6	29.2	28.2	34.3	16.7	54.6	30.8	25.0	50.3	24.9	22.4
Incr Delay (d2), s/veh	2.2	3.7	2.1	11.3	3.0	0.2	4.1	0.1	0.4	19.6	0.1	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(95%),veh/ln	3.6	19.9	16.0	7.3	20.6	6.5	5.0	0.4	2.5	12.8	0.6	3.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.6	40.3	31.3	39.4	37.3	16.9	58.7	30.9	25.4	69.9	24.9	23.0
LnGrp LOS	C	D	C	D	D	B	E	C	C	E	C	C
Approach Vol, veh/h	1532			1478			261			358		
Approach Delay, s/veh	37.1			34.4			48.5			52.9		
Approach LOS	D			C			D			D		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.9	38.8	14.5	44.8	13.0	47.6	10.8	48.6				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	22.5	19.5	12.5	47.5	22.5	19.5	7.5	52.5				
Max Q Clear Time (g_c+I1), s	17.1	5.6	9.9	32.7	8.1	7.5	6.5	34.5				
Green Ext Time (p_c), s	0.3	0.2	0.1	7.6	0.5	0.3	0.0	8.3				

Intersection Summary

HCM 6th Ctrl Delay 38.4

HCM 6th LOS D

























Notes

User approved pedestrian interval to be less than phase max green.

Timings
2: Tibet Rd & 38th Ave

Long Range Background PM Peak Hour

02/09/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	910	405	170	980	210	165	10	65	210	15	105
Future Volume (vph)	95	910	405	170	980	210	165	10	65	210	15	105
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	5	3	8	1	5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5		9.5	22.5	9.5
Total Split (s)	12.0	52.0	27.0	17.0	57.0	27.0	27.0	24.0		27.0	24.0	12.0
Total Split (%)	10.0%	43.3%	22.5%	14.2%	47.5%	22.5%	22.5%	20.0%		22.5%	20.0%	10.0%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	None
Act Effect Green (s)	49.0	41.6	58.1	57.5	46.0	70.1	12.0	29.0	45.3	19.6	36.6	48.5
Actuated g/C Ratio	0.41	0.35	0.48	0.48	0.38	0.58	0.10	0.24	0.38	0.16	0.30	0.40
v/c Ratio	0.58	0.81	0.44	0.78	0.78	0.22	0.52	0.02	0.11	0.79	0.03	0.16
Control Delay	30.2	40.9	2.7	47.5	36.8	1.5	56.4	41.2	7.3	67.5	34.6	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	40.9	2.7	47.5	36.8	1.5	56.4	41.2	7.3	67.5	34.6	5.7
LOS	C	D	A	D	D	A	E	D	A	E	C	A
Approach Delay		29.2			32.7			42.4			46.4	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 19.5 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.81

Intersection Signal Delay: 33.3









Intersection LOS: C







Intersection Capacity Utilization 64.1%







ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Tibet Rd & 38th Ave

 Ø1	 Ø2 (R)	 Ø3	 Ø4
27 s	24 s	17 s	52 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
27 s	24 s	12 s	57 s

Intersection						
Int Delay, s/veh	1.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	40	60	375	250	25
Future Vol, veh/h	20	40	60	375	250	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	43	65	408	272	27
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	810	272	299	0	-	0
Stage 1	272	-	-	-	-	-
Stage 2	538	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	349	767	1262	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	331	767	1262	-	-	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	734	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	12.2	1.1		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1262	-	331	767	-	-
HCM Lane V/C Ratio	0.052	-	0.066	0.057	-	-
HCM Control Delay (s)	8	-	16.6	10	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	0.2	-	-

























Intersection						
Int Delay, s/veh	3.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	105	100	295	170	45
Future Vol, veh/h	35	105	100	295	170	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	114	109	321	185	49
Major/Minor	Minor2	Major1		Major2		
Conflicting Flow All	724	185	234	0	-	0
Stage 1	185	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	393	857	1333	-	-	-
Stage 1	847	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	361	857	1333	-	-	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	585	-	-	-	-	-
Approach	EB	NB		SB		
HCM Control Delay, s	11.4	2		0		
HCM LOS	B					
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1333	-	361	857	-	-
HCM Lane V/C Ratio	0.082	-	0.105	0.133	-	-
HCM Control Delay (s)	7.9	-	16.1	9.8	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	0.3	0.5	-	-

APPENDIX C. SHORT RANGE FUTURE BACKGROUND TRAFFIC LOS

HCM 6th Signalized Intersection Summary 2: Tibet Rd & 38th Ave

Long Range Total Traffic AM Peak Hour

























02/11/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	910	405	170	980	220	165	10	65	290	15	165
Future Volume (veh/h)	130	910	405	170	980	220	165	10	65	290	15	165
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	989	440	185	1065	239	179	11	71	315	16	179
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	213	1195	646	241	1258	865	246	443	510	342	669	674
Arrive On Green	0.07	0.34	0.34	0.08	0.35	0.35	0.07	0.24	0.24	0.19	0.36	0.36
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	141	989	440	185	1065	239	179	11	71	315	16	179
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	6.2	30.7	27.3	8.0	33.2	9.7	6.1	0.5	3.8	20.8	0.7	8.8
Cycle Q Clear(g_c), s	6.2	30.7	27.3	8.0	33.2	9.7	6.1	0.5	3.8	20.8	0.7	8.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	213	1195	646	241	1258	865	246	443	510	342	669	674
V/C Ratio(X)	0.66	0.83	0.68	0.77	0.85	0.28	0.73	0.02	0.14	0.92	0.02	0.27
Avail Cap(c_a), veh/h	219	1318	701	291	1466	958	648	443	510	364	669	674
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	28.9	36.6	29.2	28.4	35.8	14.6	54.6	35.1	28.9	47.6	25.0	22.4
Incr Delay (d2), s/veh	7.0	4.2	2.4	9.7	4.3	0.2	4.1	0.1	0.6	27.6	0.1	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(95%),veh/ln	5.4	20.0	16.1	7.3	21.3	6.3	5.0	0.5	2.8	17.5	0.6	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.9	40.8	31.6	38.1	40.0	14.8	58.7	35.2	29.5	75.2	25.0	23.3
LnGrp LOS	D	D	C	D	D	B	E	D	C	E	C	C
Approach Vol, veh/h	1570			1489			261			510		
Approach Delay, s/veh	37.8			35.7			49.8			55.4		
Approach LOS	D			D			D			E		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	27.5	32.9	14.7	44.9	13.0	47.4	12.6	47.0				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	24.5	19.5	13.5	44.5	22.5	21.5	8.5	49.5				
Max Q Clear Time (g_c+I1), s	22.8	5.8	10.0	32.7	8.1	10.8	8.2	35.2				
Green Ext Time (p_c), s	0.2	0.2	0.2	6.6	0.5	0.5	0.0	7.3				
Intersection Summary												
HCM 6th Ctrl Delay	40.1											
HCM 6th LOS	D											
Notes												
User approved pedestrian interval to be less than phase max green.												

Timings
2: Tibet Rd & 38th Ave

Long Range Total Traffic AM Peak Hour

02/11/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	910	405	170	980	220	165	10	65	290	15	165
Future Volume (vph)	130	910	405	170	980	220	165	10	65	290	15	165
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	5	3	8	1	5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5		9.5	22.5	9.5
Total Split (s)	13.0	49.0	27.0	18.0	54.0	29.0	27.0	24.0		29.0	26.0	13.0
Total Split (%)	10.8%	40.8%	22.5%	15.0%	45.0%	24.2%	22.5%	20.0%		24.2%	21.7%	10.8%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	None
Act Effect Green (s)	49.3	40.9	57.4	56.7	44.7	73.6	12.0	24.5	41.2	24.4	36.9	49.8
Actuated g/C Ratio	0.41	0.34	0.48	0.47	0.37	0.61	0.10	0.20	0.34	0.20	0.31	0.42
v/c Ratio	0.76	0.82	0.45	0.77	0.81	0.22	0.52	0.03	0.12	0.88	0.03	0.24
Control Delay	48.4	42.3	2.8	46.0	38.9	1.5	56.4	42.7	8.0	71.5	33.9	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.4	42.3	2.8	46.0	38.9	1.5	56.4	42.7	8.0	71.5	33.9	9.7
LOS	D	D	A	D	D	A	E	D	A	E	C	A
Approach Delay		31.8			33.7			42.7			48.6	
Approach LOS		C			C			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 19.5 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 35.5









Intersection LOS: D











Intersection Capacity Utilization 68.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Tibet Rd & 38th Ave











 Ø1	 Ø2 (R)	 Ø3	 Ø4
29 s	24 s	18 s	49 s
 Ø5	 Ø6 (R)	 Ø7	 Ø8
27 s	26 s	13 s	54 s







Intersection												
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	20	5	45	75	5	20	20	330	10	10	350	5
Future Vol, veh/h	20	5	45	75	5	20	20	330	10	10	350	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	100	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	5	49	82	5	22	22	359	11	11	380	5

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	824	816	380	835	810	359	385	0	0	370	0	0
Stage 1	402	402	-	403	403	-	-	-	-	-	-	-
Stage 2	422	414	-	432	407	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	292	311	667	287	314	685	1173	-	-	1189	-	-
Stage 1	625	600	-	624	600	-	-	-	-	-	-	-
Stage 2	609	593	-	602	597	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	273	302	667	257	305	685	1173	-	-	1189	-	-
Mov Cap-2 Maneuver	273	302	-	257	305	-	-	-	-	-	-	-
Stage 1	613	595	-	612	589	-	-	-	-	-	-	-
Stage 2	573	582	-	548	592	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	13.9		22		0.5		0.2	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1173	-	-	273	595	257	548	1189	-	-
HCM Lane V/C Ratio	0.019	-	-	0.08	0.091	0.317	0.05	0.009	-	-
HCM Control Delay (s)	8.1	-	-	19.3	11.7	25.4	11.9	8.1	-	-
HCM Lane LOS	A	-	-	C	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0.3	0.3	1.3	0.2	0	-	-

Intersection												
Int Delay, s/veh	3.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	5	70	10	15	10	70	295	5	5	285	50
Future Vol, veh/h	45	5	70	10	15	10	70	295	5	5	285	50
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	49	5	76	11	16	11	76	321	5	5	310	54
Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	809	798	310	861	847	321	364	0	0	326	0	0
Stage 1	320	320	-	473	473	-	-	-	-	-	-	-
Stage 2	489	478	-	388	374	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	299	319	730	276	299	720	1195	-	-	1234	-	-
Stage 1	692	652	-	572	558	-	-	-	-	-	-	-
Stage 2	561	556	-	636	618	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	267	297	730	231	279	720	1195	-	-	1234	-	-
Mov Cap-2 Maneuver	267	297	-	231	279	-	-	-	-	-	-	-
Stage 1	648	649	-	535	522	-	-	-	-	-	-	-
Stage 2	501	520	-	563	616	-	-	-	-	-	-	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s	15.1			17.2			1.6			0.1		
HCM LOS	C			C								
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR		
Capacity (veh/h)	1195	-	-	267	665	231	370	1234	-	-		
HCM Lane V/C Ratio	0.064	-	-	0.183	0.123	0.047	0.073	0.004	-	-		
HCM Control Delay (s)	8.2	-	-	21.5	11.2	21.4	15.5	7.9	-	-		
HCM Lane LOS	A	-	-	C	B	C	C	A	-	-		
HCM 95th %tile Q(veh)	0.2	-	-	0.7	0.4	0.1	0.2	0	-	-		

























Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	65	40	315	35	10	275
Future Vol, veh/h	65	40	315	35	10	275
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	43	342	38	11	299
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	663	342	0	0	380	0
Stage 1	342	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	426	701	-	-	1178	-
Stage 1	719	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	422	701	-	-	1178	-
Mov Cap-2 Maneuver	422	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	728	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	13.4	0	0.3			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 422 701 1178	-	-		
HCM Lane V/C Ratio	-	- 0.167 0.062 0.009	-	-		
HCM Control Delay (s)	-	- 15.2 10.5 8.1	-	-		
HCM Lane LOS	-	- C B A	-	-		
HCM 95th %tile Q(veh)	-	- 0.6 0.2 0	-	-		

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1265	1370	15	0	35
Future Vol, veh/h	0	1265	1370	15	0	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1375	1489	16	0	38
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	745
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	357
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	357
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		16.3		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	357		
HCM Lane V/C Ratio	-	-	-	0.107		
HCM Control Delay (s)	-	-	-	16.3		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.4		

HCM 6th Signalized Intersection Summary 2: Tibet Rd & 38th Ave

Long Range Total PM Peak Hour

























02/11/2022

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	1270	185	80	1125	305	400	25	165	250	10	120
Future Volume (veh/h)	250	1270	185	80	1125	305	400	25	165	250	10	120
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
Work Zone On Approach	No			No			No			No		
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	272	1380	201	87	1223	332	435	27	179	272	11	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	298	1581	939	170	1281	839	509	358	375	301	398	542
Arrive On Green	0.13	0.44	0.44	0.04	0.36	0.36	0.15	0.19	0.19	0.17	0.21	0.21
Sat Flow, veh/h	1781	3554	1585	1781	3554	1585	3456	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	272	1380	201	87	1223	332	435	27	179	272	11	130
Grp Sat Flow(s),veh/h/ln	1781	1777	1585	1781	1777	1585	1728	1870	1585	1781	1870	1585
Q Serve(g_s), s	13.4	42.3	7.1	3.7	40.3	15.0	14.7	1.4	11.7	18.0	0.6	7.1
Cycle Q Clear(g_c), s	13.4	42.3	7.1	3.7	40.3	15.0	14.7	1.4	11.7	18.0	0.6	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	1581	939	170	1281	839	509	358	375	301	398	542
V/C Ratio(X)	0.91	0.87	0.21	0.51	0.95	0.40	0.85	0.08	0.48	0.90	0.03	0.24
Avail Cap(c_a), veh/h	313	1581	939	201	1288	842	677	358	375	349	398	542
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	34.7	30.2	11.4	28.2	37.4	16.8	49.9	39.8	39.4	48.9	37.4	28.3
Incr Delay (d2), s/veh	28.7	5.7	0.1	2.4	15.5	0.3	8.1	0.4	4.3	23.9	0.1	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(95%),veh/ln	15.6	26.0	4.5	3.0	27.3	9.3	11.2	1.3	8.7	15.1	0.5	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	35.9	11.5	30.6	52.9	17.1	58.0	40.2	43.8	72.8	37.5	29.3
LnGrp LOS	E	D	B	C	D	B	E	D	D	E	D	C
Approach Vol, veh/h	1853				1642				641		413	
Approach Delay, s/veh	37.3				44.5				53.3		58.2	
Approach LOS	D				D				D		E	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	24.8	27.5	9.9	57.9	22.2	30.1	20.0	47.8				
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5				
Max Green Setting (Gmax), s	23.5	18.5	7.5	52.5	23.5	18.5	16.5	43.5				
Max Q Clear Time (g_c+I1), s	20.0	13.7	5.7	44.3	16.7	9.1	15.4	42.3				
Green Ext Time (p_c), s	0.3	0.3	0.0	5.9	0.9	0.3	0.1	1.0				
Intersection Summary												
HCM 6th Ctrl Delay	44.0											
HCM 6th LOS	D											
Notes												

Timings
2: Tibet Rd & 38th Ave

Long Range Total PM Peak Hour

02/11/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	250	1270	185	80	1125	305	400	25	165	250	10	120
Future Volume (vph)	250	1270	185	80	1125	305	400	25	165	250	10	120
Turn Type	pm+pt	NA	pm+ov	pm+pt	NA	pm+ov	Prot	NA	pt+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	2 3	1	6	7
Permitted Phases	4		4	8		8						6
Detector Phase	7	4	5	3	8	1	5	2	2 3	1	6	7
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	9.5	22.5	9.5	9.5	22.5	9.5	9.5	22.5		9.5	22.5	9.5
Total Split (s)	21.0	57.0	28.0	12.0	48.0	28.0	28.0	23.0		28.0	23.0	21.0
Total Split (%)	17.5%	47.5%	23.3%	10.0%	40.0%	23.3%	23.3%	19.2%		23.3%	19.2%	17.5%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5		4.5	4.5	4.5
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	None
Act Effect Green (s)	64.0	52.3	76.9	50.7	43.5	69.6	20.2	20.9	32.6	21.6	22.3	42.8
Actuated g/C Ratio	0.53	0.44	0.64	0.42	0.36	0.58	0.17	0.17	0.27	0.18	0.19	0.36
v/c Ratio	0.91	0.90	0.18	0.52	0.95	0.31	0.76	0.08	0.36	0.86	0.03	0.22
Control Delay	65.8	40.2	1.4	28.9	53.9	1.9	56.2	44.3	19.5	71.9	43.1	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	65.8	40.2	1.4	28.9	53.9	1.9	56.2	44.3	19.5	71.9	43.1	17.4
LOS	E	D	A	C	D	A	E	D	B	E	D	B
Approach Delay		39.8			42.1			45.4			54.0	
Approach LOS		D			D			D			D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 19.5 (16%), Referenced to phase 2:NBT and 6:SBT, Start of Yellow

Natural Cycle: 100

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 42.7









Intersection LOS: D

Intersection Capacity Utilization 76.7%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Tibet Rd & 38th Ave











			
Ø1	Ø2 (R)	Ø3	Ø4
28 s	23 s	12 s	57 s
			
Ø5	Ø6 (R)	Ø7	Ø8
28 s	23 s	21 s	48 s

Intersection												
Int Delay, s/veh	3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱	↰	↱	↰	↱
Traffic Vol, veh/h	20	5	40	35	5	20	60	460	60	20	305	25
Future Vol, veh/h	20	5	40	35	5	20	60	460	60	20	305	25
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	100	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	22	5	43	38	5	22	65	500	65	22	332	27

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1052	1071	332	1044	1033	500	359	0	0	565	0	0
Stage 1	376	376	-	630	630	-	-	-	-	-	-	-
Stage 2	676	695	-	414	403	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	204	221	710	207	232	571	1200	-	-	1007	-	-
Stage 1	645	616	-	470	475	-	-	-	-	-	-	-
Stage 2	443	444	-	616	600	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	182	204	710	179	215	571	1200	-	-	1007	-	-
Mov Cap-2 Maneuver	182	204	-	179	215	-	-	-	-	-	-	-
Stage 1	610	602	-	445	449	-	-	-	-	-	-	-
Stage 2	398	420	-	561	587	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	16.8		23.6		0.8		0.5	
HCM LOS	C		C					







Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1200	-	-	182	557	179	429	1007	-	-
HCM Lane V/C Ratio	0.054	-	-	0.119	0.088	0.213	0.063	0.022	-	-
HCM Control Delay (s)	8.2	-	-	27.4	12.1	30.5	14	8.7	-	-
HCM Lane LOS	A	-	-	D	B	D	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	0.3	0.8	0.2	0.1	-	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	20	105	10	10	5	100	375	25	10	235	55
Future Vol, veh/h	50	20	105	10	10	5	100	375	25	10	235	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	100	-	0	100	-	100
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	22	114	11	11	5	109	408	27	11	255	60

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	925	930	255	1001	963	408	315	0	0	435	0	0
Stage 1	277	277	-	626	626	-	-	-	-	-	-	-
Stage 2	648	653	-	375	337	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	250	267	784	222	256	643	1245	-	-	1125	-	-
Stage 1	729	681	-	472	477	-	-	-	-	-	-	-
Stage 2	459	464	-	646	641	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	222	241	784	164	231	643	1245	-	-	1125	-	-
Mov Cap-2 Maneuver	222	241	-	164	231	-	-	-	-	-	-	-
Stage 1	665	674	-	430	435	-	-	-	-	-	-	-
Stage 2	405	423	-	529	635	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	17		22.2		1.6		0.3	
HCM LOS	C		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1245	-	-	222	576	164	294	1125	-	-
HCM Lane V/C Ratio	0.087	-	-	0.245	0.236	0.066	0.055	0.01	-	-
HCM Control Delay (s)	8.2	-	-	26.4	13.2	28.5	18	8.2	-	-
HCM Lane LOS	A	-	-	D	B	D	C	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.9	0.9	0.2	0.2	0	-	-

Intersection						
Int Delay, s/veh	2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	25	355	75	50	245
Future Vol, veh/h	55	25	355	75	50	245
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	100	0	-	100	100	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	60	27	386	82	54	266
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	760	386	0	0	468	0
Stage 1	386	-	-	-	-	-
Stage 2	374	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	374	662	-	-	1094	-
Stage 1	687	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	356	662	-	-	1094	-
Mov Cap-2 Maneuver	356	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	662	-	-	-	-	-
Approach	WB	NB	SB			
HCM Control Delay, s	15.1	0	1.4			
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1WBLn2	SBL	SBT		
Capacity (veh/h)	-	- 356 662 1094				
HCM Lane V/C Ratio	-	- 0.168 0.041 0.05				
HCM Control Delay (s)	-	- 17.1 10.7 8.5				
HCM Lane LOS	-	- C B A				
HCM 95th %tile Q(veh)	-	- 0.6 0.1 0.2				

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑	↗		↗
Traffic Vol, veh/h	0	1685	1510	60	0	30
Future Vol, veh/h	0	1685	1510	60	0	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	0	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1832	1641	65	0	33
Major/Minor	Major1	Major2		Minor2		
Conflicting Flow All	-	0	-	0	-	821
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	-	0	318
Stage 1	0	-	-	-	0	-
Stage 2	0	-	-	-	0	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	-	-	-	-	-	318
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Approach	EB	WB		SB		
HCM Control Delay, s	0	0		17.6		
HCM LOS				C		
Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1		
Capacity (veh/h)	-	-	-	318		
HCM Lane V/C Ratio	-	-	-	0.103		
HCM Control Delay (s)	-	-	-	17.6		
HCM Lane LOS	-	-	-	C		
HCM 95th %tile Q(veh)	-	-	-	0.3		