



# TERAGAN & ASSOCIATES, INC. ARBORICULTURAL CONSULTANTS

## MEMORANDUM

**DATE:** September 27, 2018

**TO:** Campbell Clarey (Tandem Property Management, Inc.)

**FROM:** Todd Prager, RCA #597, ISA Board Certified Master Arborist

**RE:** Tree Removal and Protection Plan for Tualatin Apartment Project

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### Summary

This report includes tree removal and protection recommendations for construction of the Tualatin Apartment Project at 6645 SW Nyberg Lane.

### Background

Tandem Property Management is proposing to construct the Tualatin Apartment Project at 6645 SW Nyberg Lane in Tualatin. The existing conditions survey with existing tree locations is provided in Attachment 1. The proposed site plan with the trees to be retained and removed is provided in Attachment 2. A preliminary copy of the grading plan is provided in Attachment 3.

The purpose of this report is to:

1. Provide tree removal findings and recommendations based on the proposed site and grading plans; and
2. Provide recommendations for adequately protecting the trees to be retained during construction.

### Tree Assessment

On September 4 and 5, 2018, I completed the inventory of all trees over 8-inches in trunk diameter (DBH) at the project site. The complete inventory data is provided in the tree inventory spreadsheet in Attachment 3. The data collected for each tree includes the tree number, species (common and scientific names), DBH, tree health condition, tree structural condition, pertinent comments, and treatment (remove/retain). The tree numbers in the tree inventory in Attachment 4 correspond to the tree numbers on the existing conditions survey, proposed site plan, and preliminary grading plan in Attachments 1, 2, and 3. The trees were also tagged with their corresponding numbers in the field.

## **Proposed Tree Removal**

A typical minimum recommended tree protection zone encompasses a radius around a tree that is .5 feet per inch of DBH. For example, a tree with a 24-inch DBH would have a minimum protection radius of 12 feet. However, this standard may need to be adjusted on a case by case basis due to tree health, species characteristics, root distribution, whether the tree will be impacted on multiple sides, and other factors.

Attachment 2 along with the preliminary grading plan in Attachment 3 illustrate the proposed construction and grading impacts in relation to the existing trees. Based on the construction and grading impacts, 135 trees over 8-inch DBH are proposed for removal because they are within the construction and grading footprint. Therefore, the removal of these 135 trees meets the tree removal criteria in section 34.230.1(c) of the Tualatin Code because their removal is required "to construct proposed improvements".

Protection recommendations for the 150 trees to be retained are provided in the next section of this report.

## **Tree Protection Recommendations**

The following tree protection measures will be necessary to protect the trees during construction:

- *Tree Protection Fencing*: Erect six foot metal tree protection fencing in the locations shown in Attachment 2 to protect the trees from construction.
- *Elevated Pathway Construction*: An elevated pathway is proposed to be constructed within the critical root zones of trees 1534, 1554, and 1594 at the north end of the site. The portions of the pathway to be constructed within the critical root zones shall be constructed under arborist supervision without heavy equipment in the trees' critical root zones. If the pathway is elevated within the critical root zones and posts are field located to avoid woody roots over 2-inches in diameter, the impacts to the trees should be minimal.
- *Accessway Construction*: The accessway to be constructed from the property to the west of the site shall be constructed under arborist supervision to ensure that the root systems of trees 2020 and 2026 are properly pruned and impacts are minimized when constructing the retaining wall for the accessway.
- *Retaining Wall Construction Along West Property Line*: A retaining wall is proposed to be constructed near the west property line to minimize grading impacts to the neighboring trees in that location. Attachment 5 includes a preliminary plan for the retaining wall to protect the neighboring trees. The retaining wall within the critical root zones of trees 1519, 1529, and 1530 shall be constructed under arborist supervision to ensure that impacts are minimized or the final wall location is adjusted as needed to protect the trees. It should be noted that fill was previously placed on the west sides of trees 1519, 1529, and 1530 which likely impacted that portion of their root systems. However, since it appears that the fill was placed over 20 years ago, new roots have likely grown and become adapted to the new growing

environment. Therefore, the proposed retaining wall impacts on the east side of the trees' root systems are not anticipated to severely impact the trees' health or structural stability.

- *Foundation Excavation:* The building foundation adjacent to trees 1315 through 1320 shall be excavated under arborist supervision to ensure that their root systems are properly pruned and impacts are minimized during excavation.
- *Construction Access:* Note that a seven foot minimum buffer for construction access is proposed for the buildings on the west side of the site. In some cases, this buffer encroaches into the critical root zones of the trees to be retained. A six inch layer of wood chips shall be maintained and replenished as needed throughout construction in the critical root zones of trees 1315 through 1321, and 1519 as shown in Attachment 2 to minimize soil compaction in their root zones. Construction access in these locations shall be limited to foot traffic. If vehicles or heavy equipment access is needed in these locations, the use of steel plates over the woodchips or other methods recommended by the project arborist shall be implemented to minimize compaction.
- *Stump Removal:* The stumps of trees 1322, 2008, and 10273 shall be carefully ground out rather than pulled with an excavator to minimize impacts to the adjacent trees to be retained.
- *Pruning of Trees:* Some of the trees may need to be clearance and/or reduction pruned to allow for construction access. Of particular concern is the anticipated pruning of trees 1315 through 1320 for construction of the adjacent building. Any reduction and/or clearance pruning shall occur prior to construction in accordance with ANSI A300 pruning standards the minimum necessary to allow for construction. Reduction cuts shall be made to lateral branches that are at least one-third to one-half the sizes of the parent branches. All cuts shall be made just outside the branch collars.

Additional tree protection recommendations that are consistent with City of Tualatin standards are provided in Attachment 6.

## **Conclusion**

One hundred thirty-five (135) trees over 8-inch DBH are recommended for removal with construction. The 150 trees to be retained will be protected during construction by adhering to the recommendations in this report. Any change to the tree protection plan shall be completed by the project arborist to ensure that the trees to be retained are properly protected.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,



**Todd Prager**

*ASCA Registered Consulting Arborist #597*

*ISA Board Certified Master Arborist, WE-6723B*

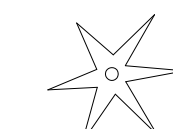

*ISA Qualified Tree Risk Assessor*

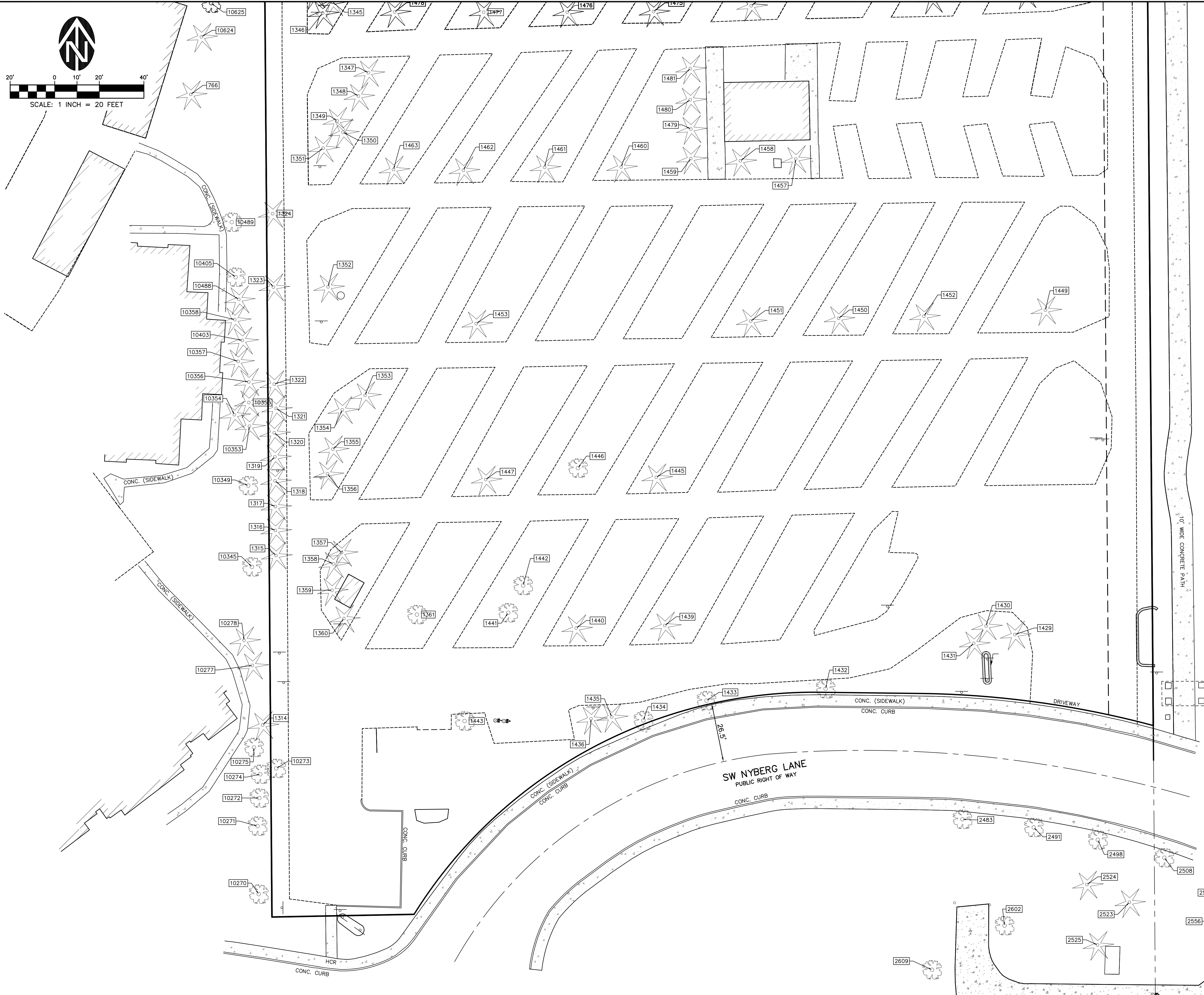
*AICP, American Planning Association*

Enclosures: Attachment 1 – Existing Conditions Survey with Tree Locations  
Attachment 2 – Site Plan with Tree Removal and Protection  
Attachment 3 – Preliminary Grading Plan with Tree Locations  
Attachment 4 – Tree Inventory  
Attachment 5 – Preliminary Retaining Wall Plan with Tree Locations  
Attachment 6 – Tree Protection Recommendations  
Attachment 7 – Assumptions and Limiting Conditions

# Attachment 1

## LEGEND

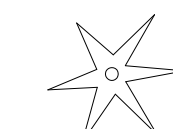
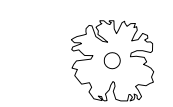
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-  DECIDUOUS TREE

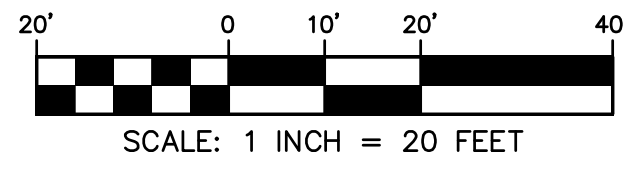




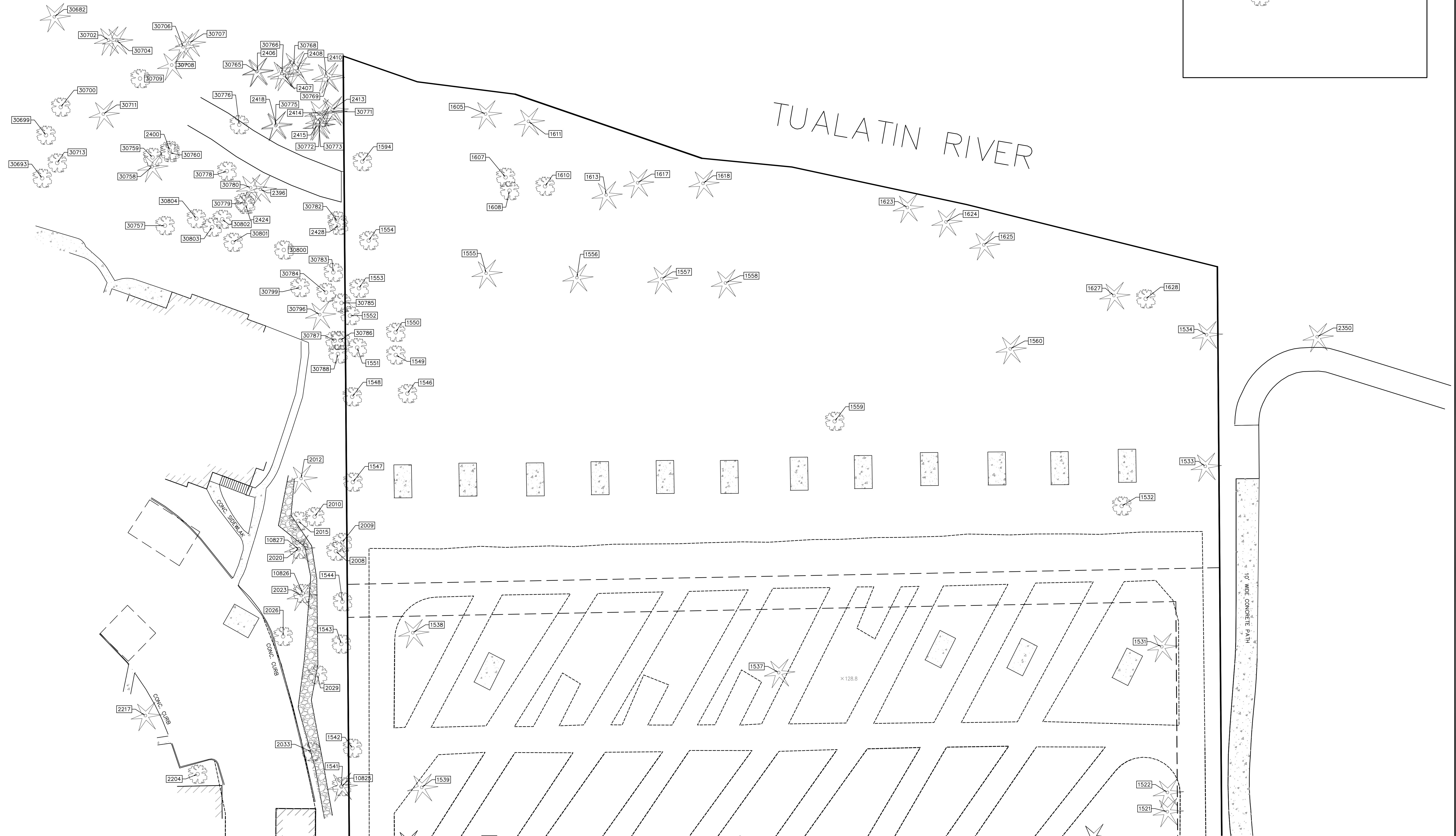
# Attachment 1

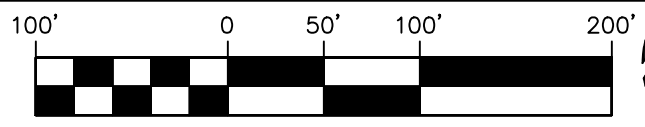
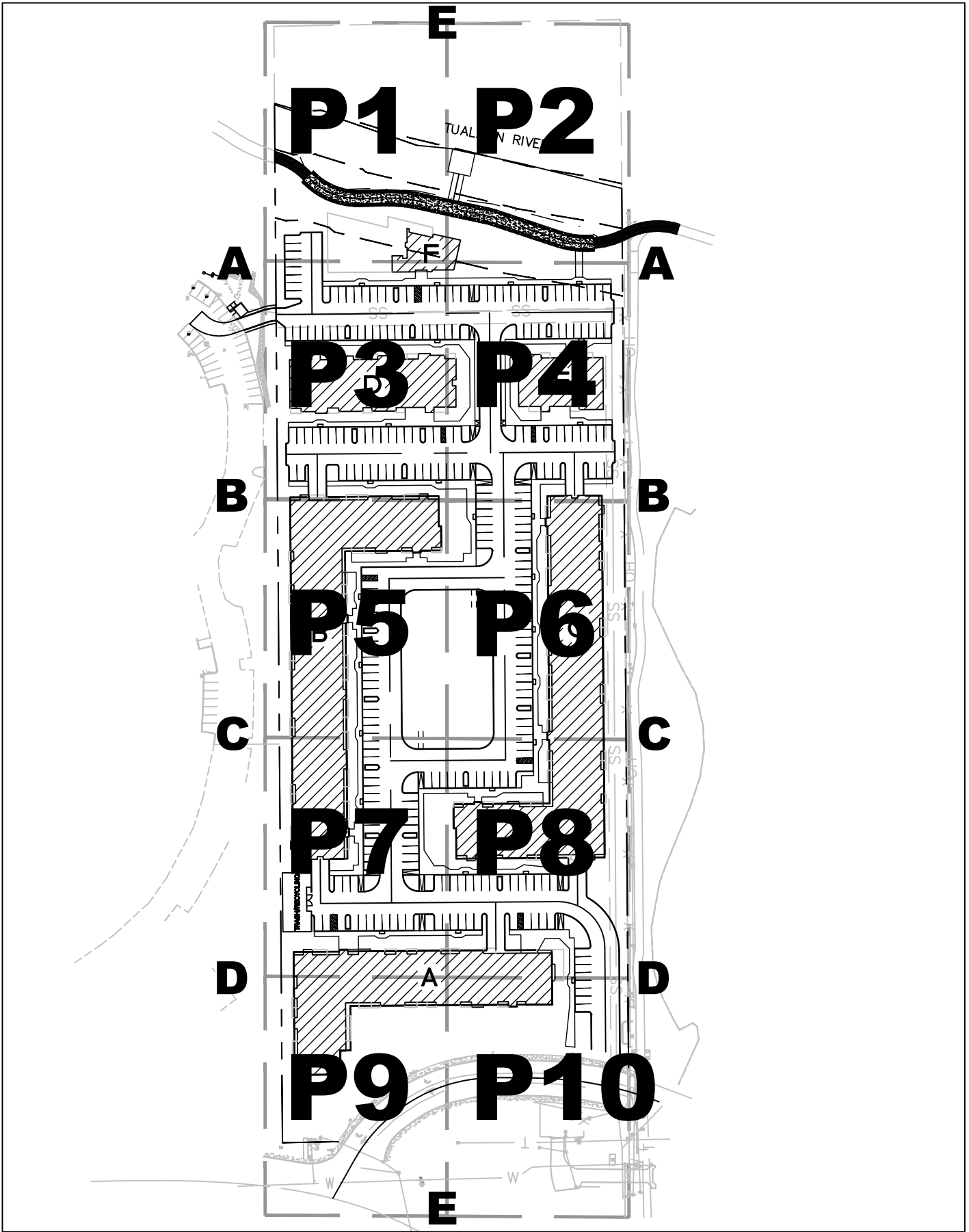
## LEGEND

-  EVERGREEN (CONIFEROUS) TREE
-  DECIDUOUS TREE



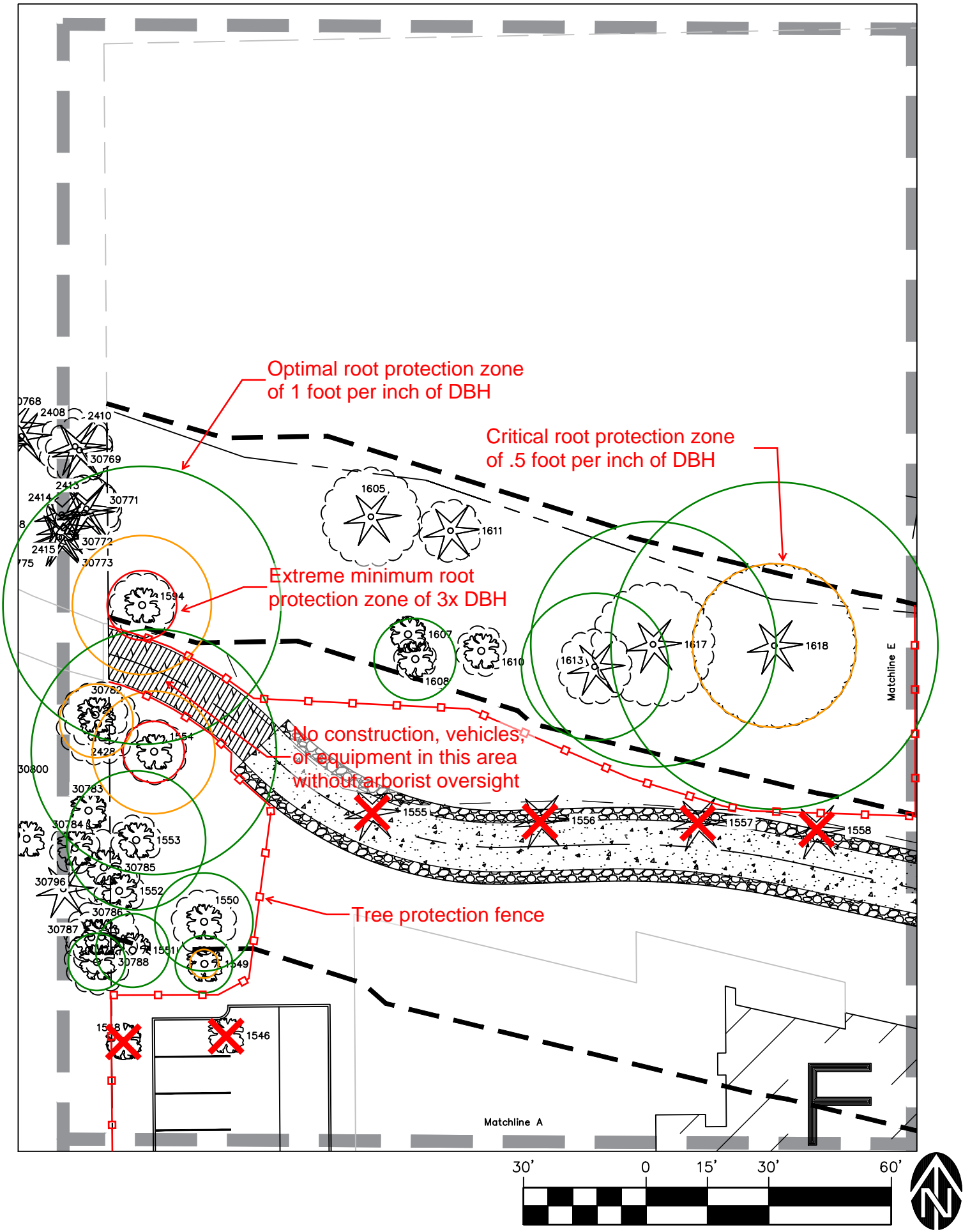
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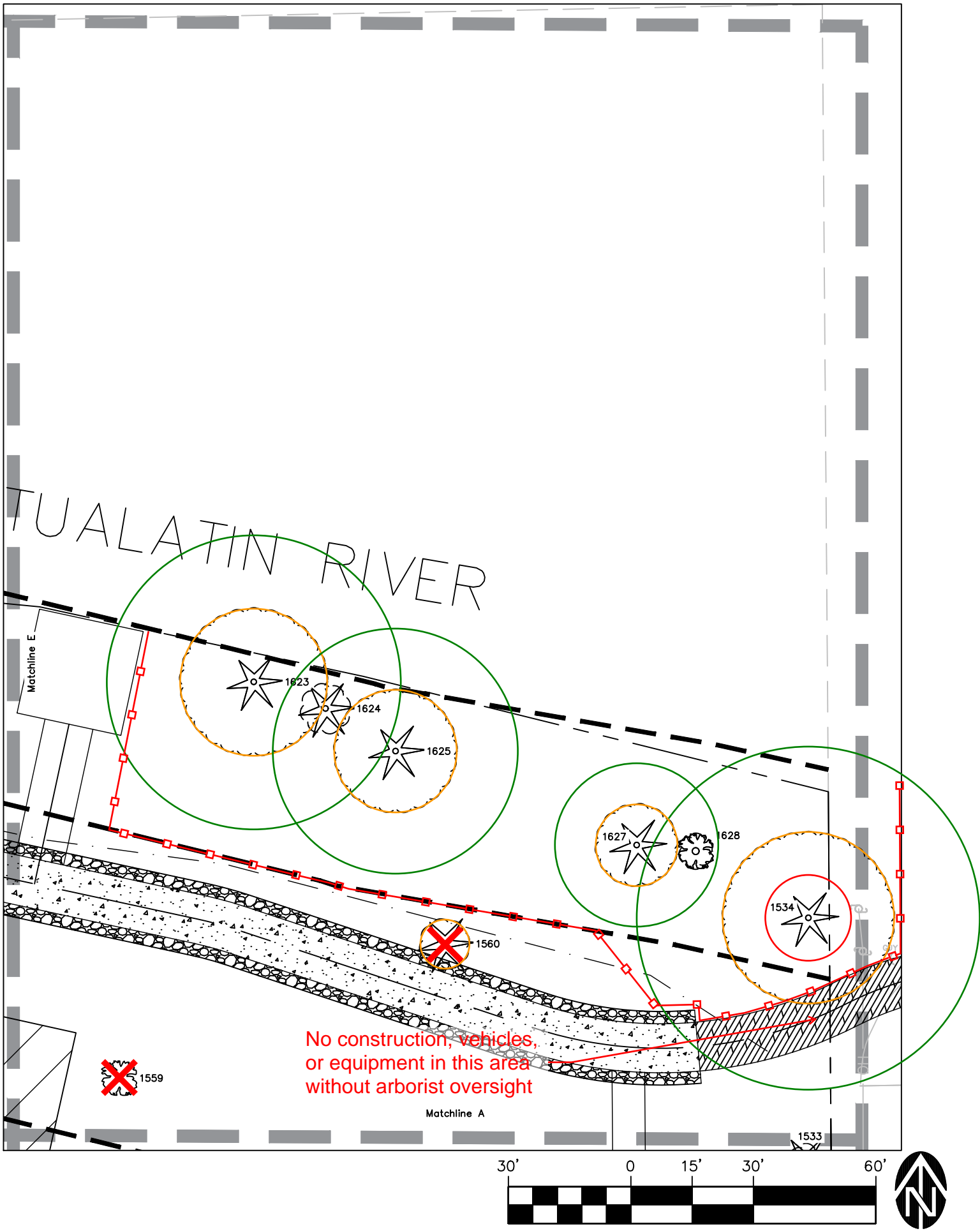


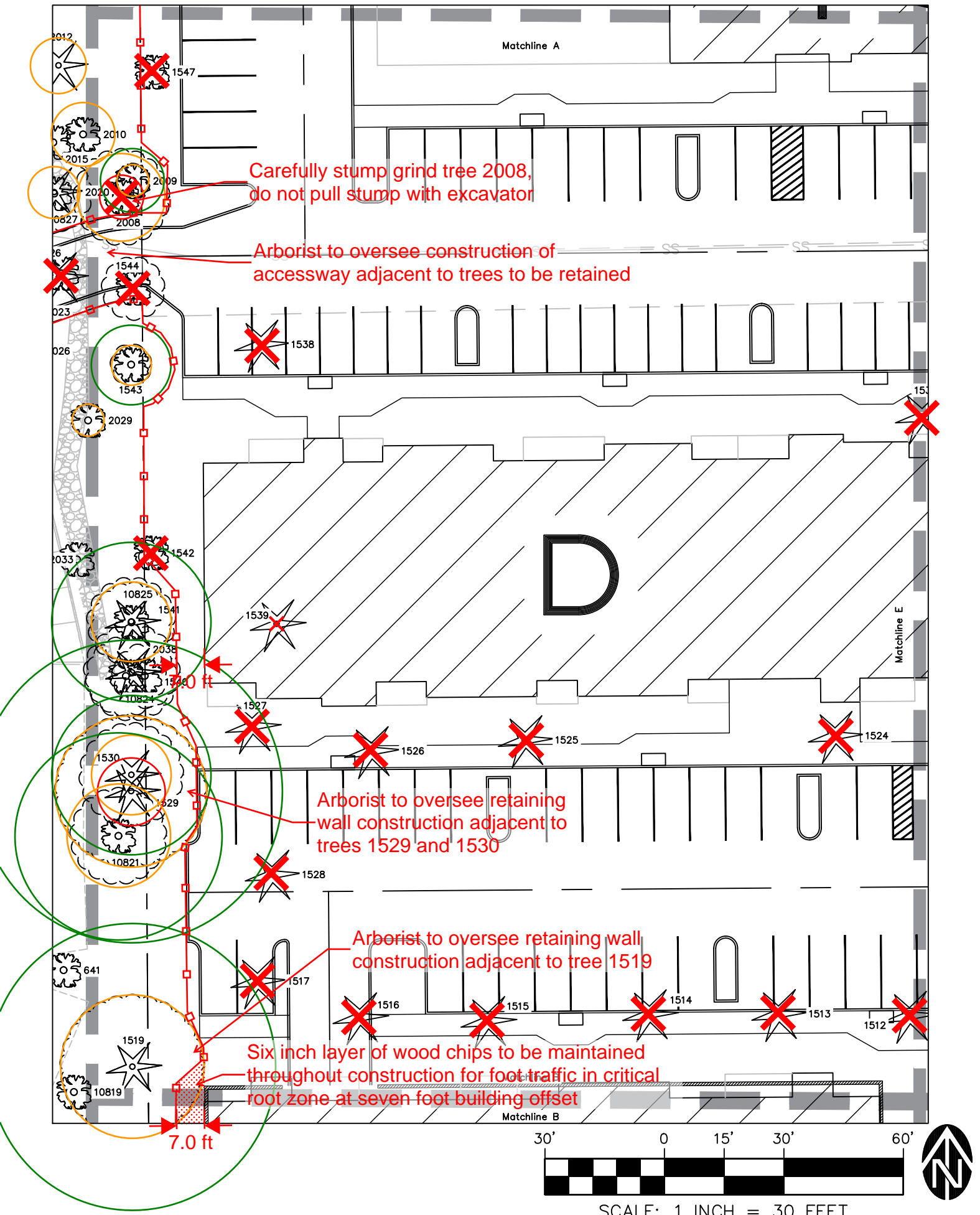


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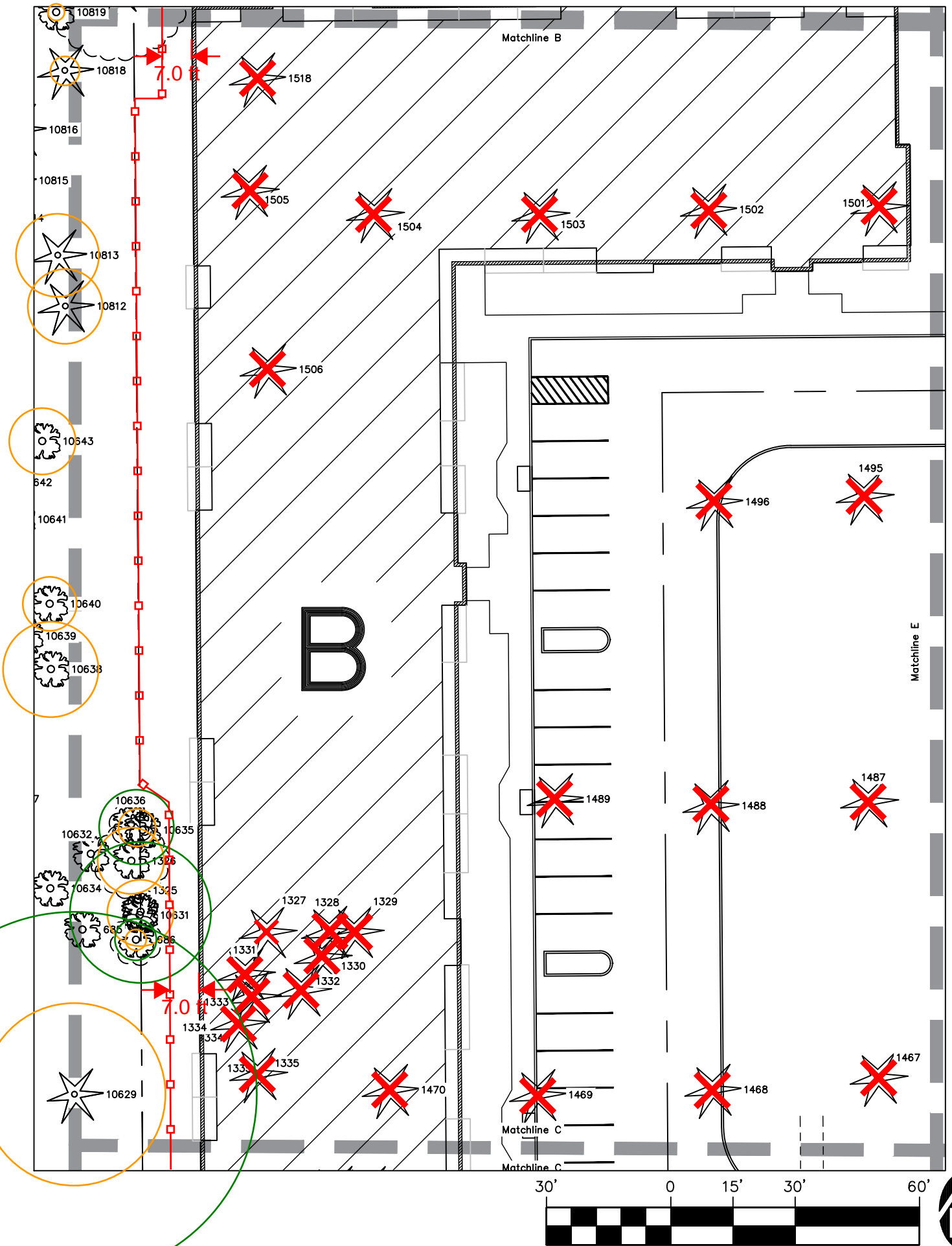




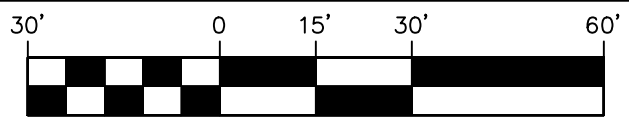
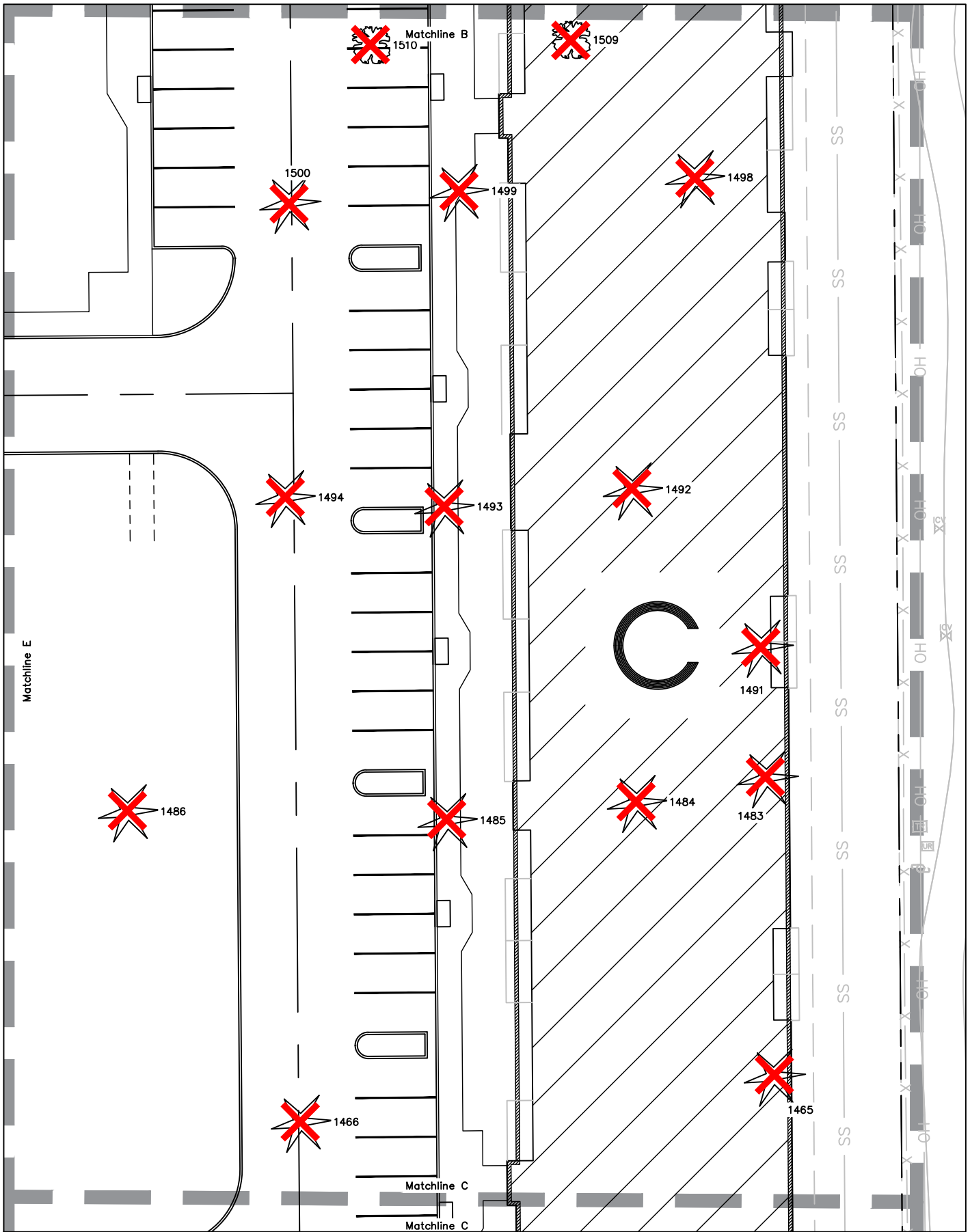






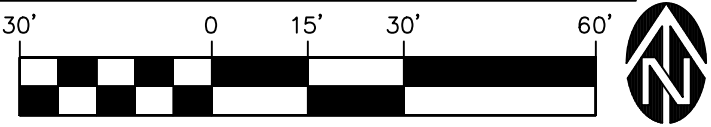
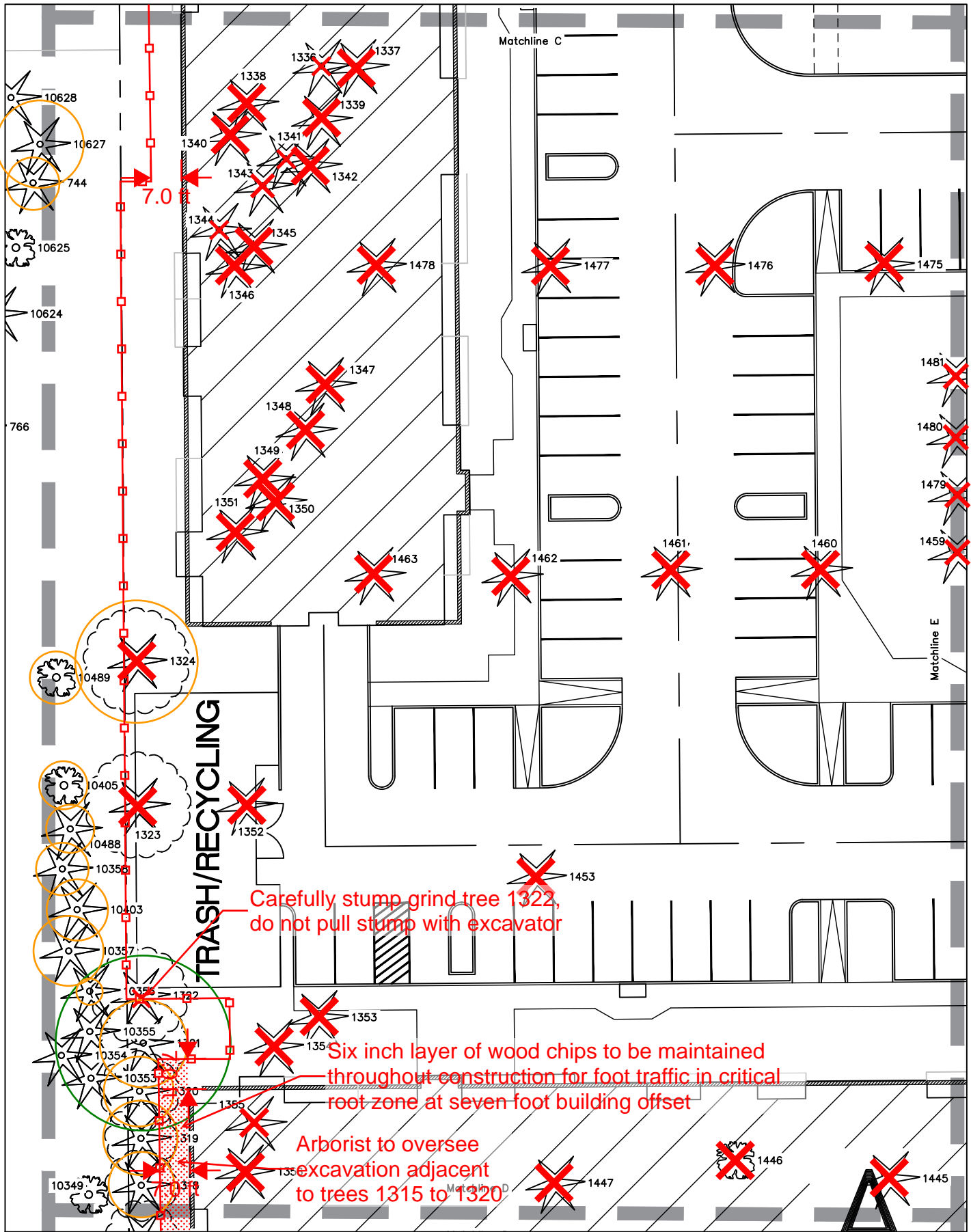


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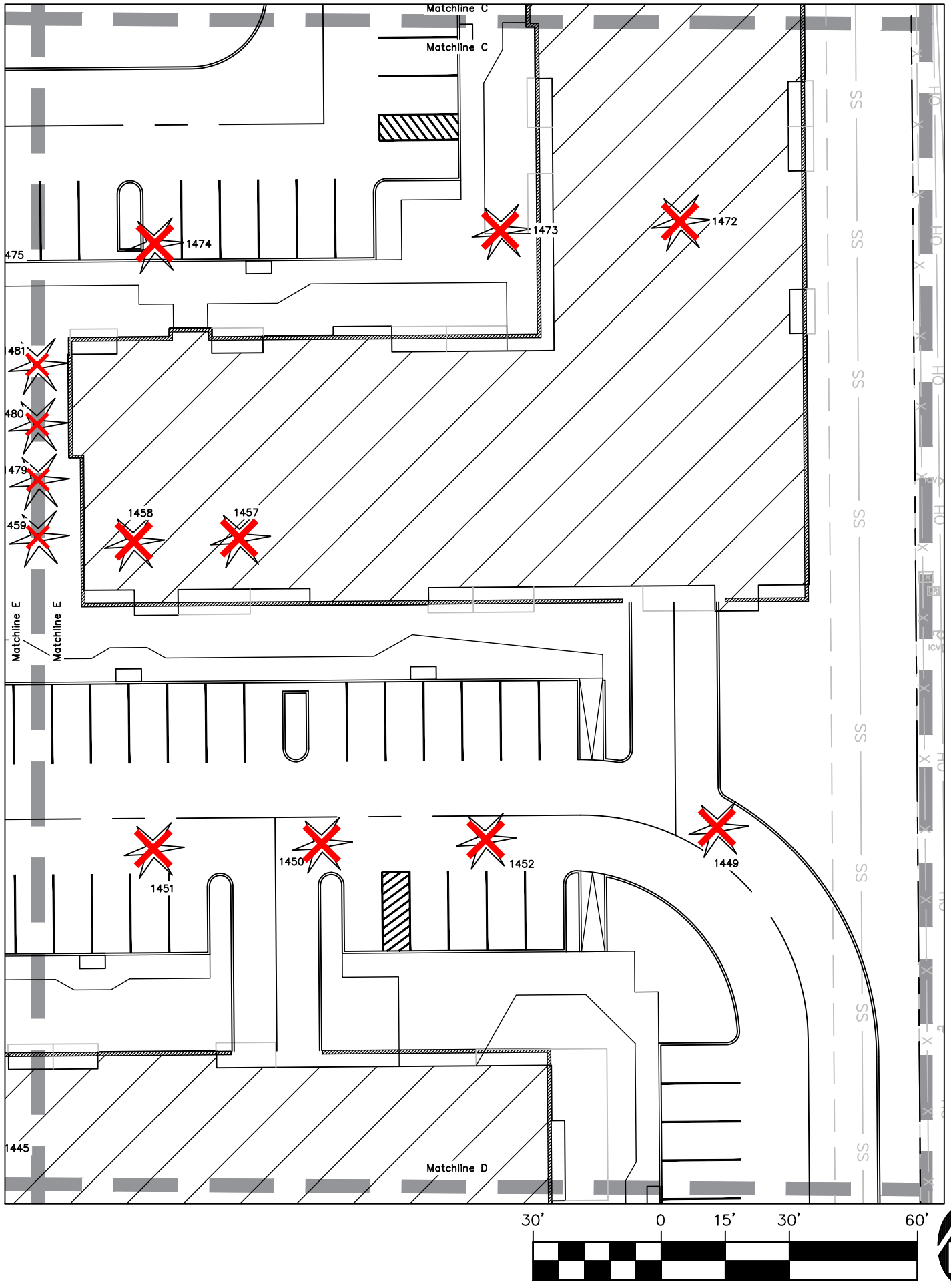


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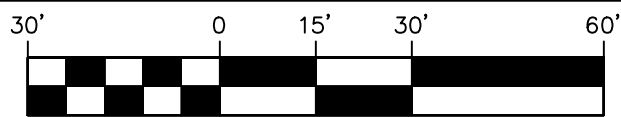
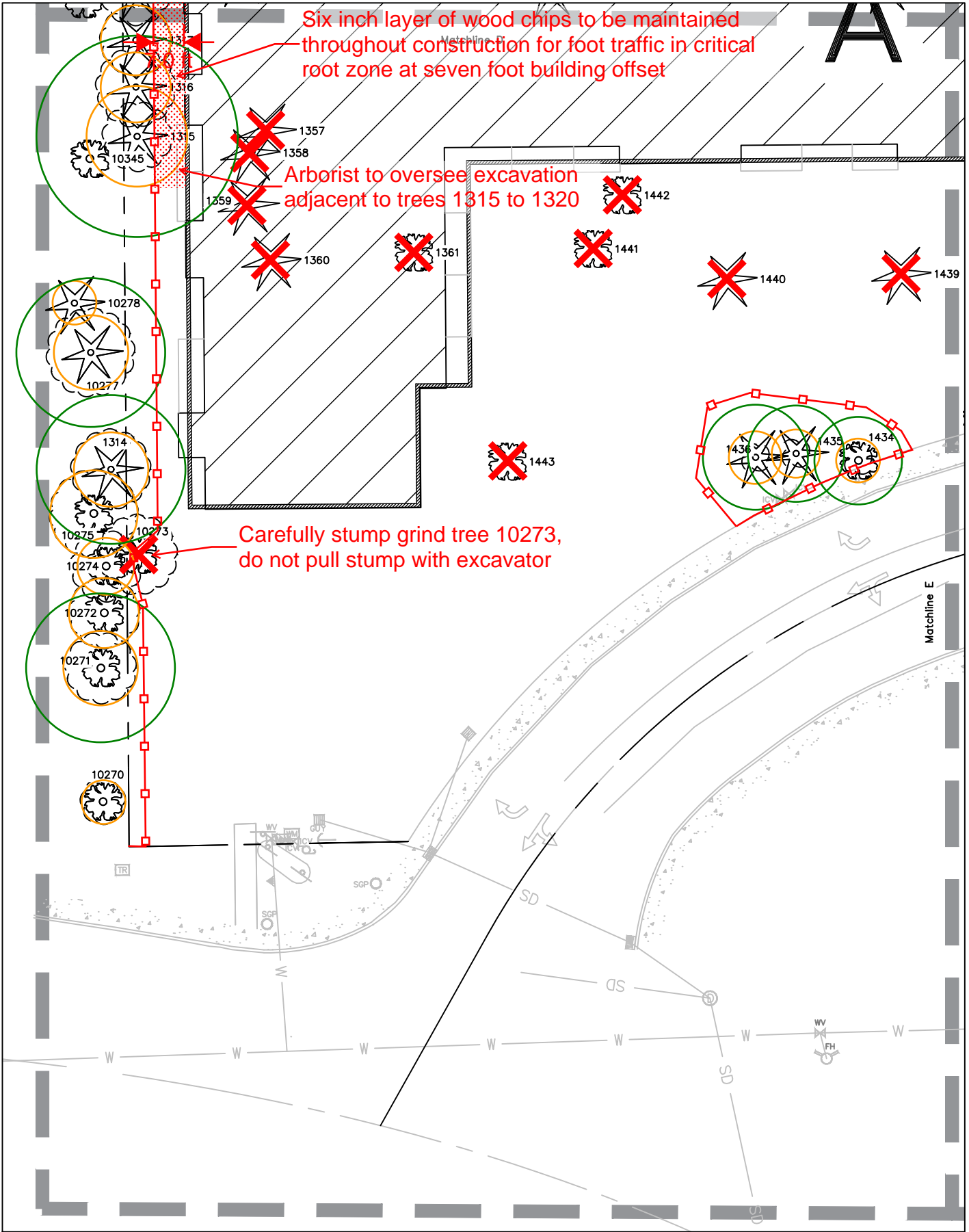


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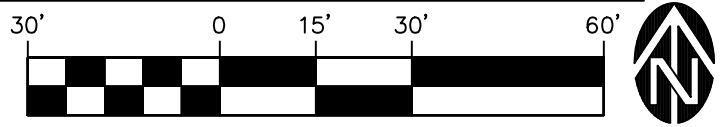
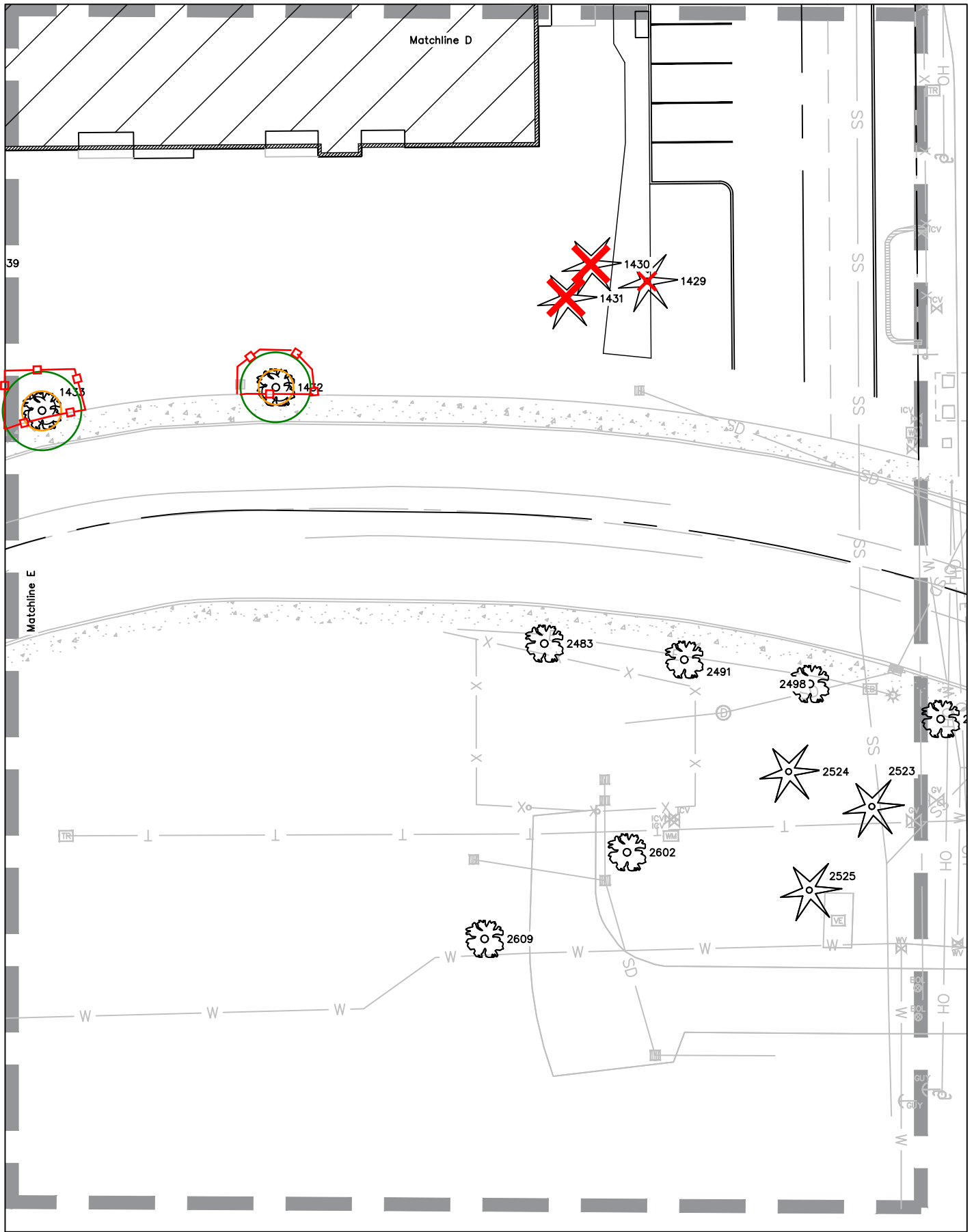
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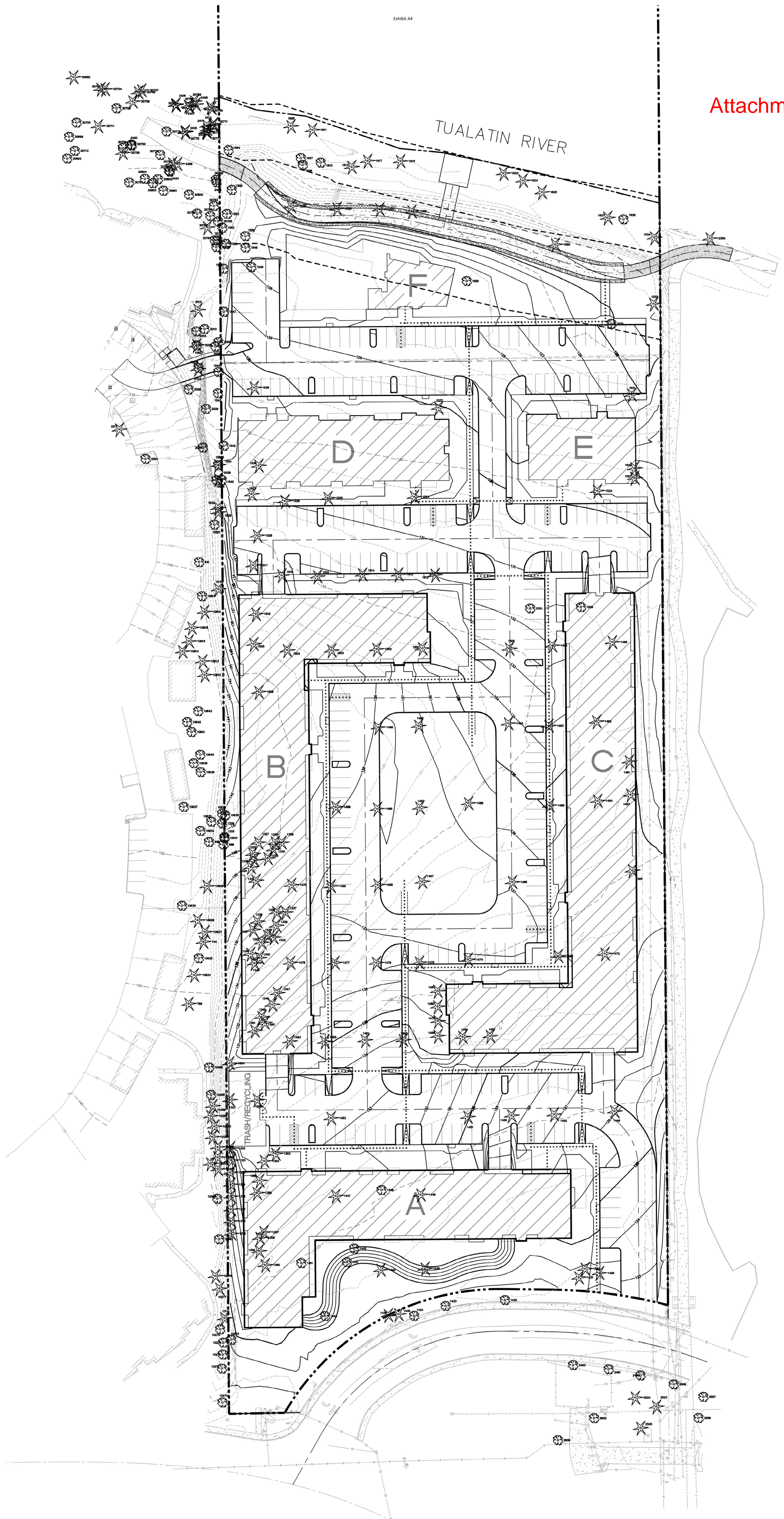


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TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
641	Raywood ash	<i>Fraxinus oxycarpa</i> 'Raywood'	5	good	fair	multiple leaders	retain
685	sweet cherry	<i>Prunus avium</i>	5	good	good		retain
686	sweet cherry	<i>Prunus avium</i>	5	good	good	not tagged, size estimated because of limited access	retain
744	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	fair	one sided	retain
766	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	fair	lower branch dieback	retain
1314	western red cedar	<i>Thuja plicata</i>	17	good	good		retain
1315	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	fair	one sided	retain
1316	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	fair	north/south crown growth suppressed by adjacent trees	retain
1317	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	fair	north/south crown growth suppressed by adjacent trees	retain
1318	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	north/south crown growth suppressed by adjacent trees	retain
1319	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	north/south crown growth suppressed by adjacent trees	retain
1320	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	fair	north/south crown growth suppressed by adjacent trees	retain
1321	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	north/south crown growth suppressed by adjacent trees	retain
1322	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	one sided	remove
1323	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	good		remove
1324	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	good		remove
1325	n/a	n/a	n/a	n/a	n/a	same as 10631	n/a
1326	sweet cherry	<i>Prunus avium</i>	16	good	fair	multiple leaders	retain
1327	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	fair	thin crown, moderately one sided	remove
1328	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	fair	thin crown, one sided	remove
1329	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	fair	fair	thin crown, one sided	remove
1330	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	fair	fair	thin crown, moderately suppressed	remove
1331	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	fair	fair	thin crown, one sided	remove
1332	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	very poor	very poor	extensive dieback	remove
1333	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	fair	fair	moderately suppressed, thin crown	remove
1334	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	fair	one sided	remove

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1335	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	good	good		remove
1336	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	fair	thin crown, one sided	remove
1337	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	fair	thin crown, one sided	remove
1338	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	good	thin crown	remove
1339	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	fair	good	thin crown	remove
1340	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	very poor	very poor	dead	remove
1341	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	poor	poor	suppressed	remove
1342	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	very poor	very poor	dead	remove
1343	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	good	good		remove
1344	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	fair	fair	one sided, thin crown	remove
1345	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	poor	poor	top dieback	remove
1346	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	fair	one sided	remove
1347	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	fair	moderately one sided, dead top	remove
1348	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	fair	one sided, dead top	remove
1349	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	fair	moderately one sided	remove
1350	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	very poor	very poor	dead	remove
1351	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	fair	moderately one sided, thin crown	remove
1352	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	fair	fair	thin crown, moderately one sided	remove
1353	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	good	fair	moderately one sided	remove
1354	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	very poor	very poor	dead	remove
1355	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	moderately one sided	remove
1356	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	moderately one sided	remove
1357	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	fair	moderately one sided	remove
1358	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	moderately one sided	remove
1359	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	moderately one sided	remove
1360	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	moderately one sided	remove
1361	Norway maple	<i>Acer platanoides</i>	10	good	fair	multiple leaders with included bark	remove
1429	Austrian pine	<i>Pinus nigra</i>	11	good	good		remove
1430	Austrian pine	<i>Pinus nigra</i>	11	good	good		remove
1431	Austrian pine	<i>Pinus nigra</i>	10	good	good		remove
1432	callery pear	<i>Pyrus calleryana</i>	8	good	fair	multiple leaders	retain
1433	callery pear	<i>Pyrus calleryana</i>	9	fair	fair	multiple leaders, suckers at base of trunk	retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1434	callery pear	<i>Pyrus calleryana</i>	10	good	fair	multiple leaders	retain
1435	Austrian pine	<i>Pinus nigra</i>	11	good	fair	codominant stems	retain
1436	Austrian pine	<i>Pinus nigra</i>	12	good	fair	codominant stems	retain
1439	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	fair	good	think crown	remove
1440	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	fair	codominant at 3'	remove
1441	Norway maple	<i>Acer platanoides</i>	11	good	fair	multiple leaders	remove
1442	Norway maple	<i>Acer platanoides</i>	10	good	fair	multiple leaders with included bark	remove
1443	Norway maple	<i>Acer platanoides</i>	22	fair	fair	multiple leaders at 3'	remove
1445	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	good		remove
1446	Norway maple	<i>Acer platanoides</i>	8	good	fair	multiple leaders	remove
1447	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1449	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	good		remove
1450	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	very poor	very poor	<i>Phaeolus schweinitzii</i> conk at base of trunk	remove
1451	n/a	n/a	n/a	n/a	n/a	not present	n/a
1452	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1453	Douglas-fir	<i>Pseudotsuga menziesii</i>	31	good	good		remove
1457	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	good		remove
1458	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	fair	good	think crown	remove
1459	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	fair	multiple leaders at 25', not tagged, size estimated because of thick blackberry growth and wasp nest	remove
1460	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1461	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1462	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	good		remove
1463	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	fair	good	thin crown	remove
1465	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	good		remove
1466	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good		remove
1467	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	fair	codominant at 25'	remove
1468	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good		remove
1469	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good		remove
1470	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	fair	good	thin crown, large circling root	remove

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1472	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	good		remove
1473	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good		remove
1474	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	fair	codominant at 10'	remove
1475	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1476	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1477	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	fair	codominant at 7'	remove
1478	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	fair	codominant at 6'	remove
1479	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	very poor	very poor	dying	remove
1480	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	very poor	very poor	dead	remove
1481	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	fair	good	thin crown	remove
1483	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1484	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good		remove
1485	Douglas-fir	<i>Pseudotsuga menziesii</i>	40	good	fair	codominant at 40'	remove
1486	Douglas-fir	<i>Pseudotsuga menziesii</i>	31	good	good		remove
1487	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	good		remove
1488	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good		remove
1489	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1491	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	good		remove
1492	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	fair	history of branch failure	remove
1493	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good		remove
1494	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1495	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good		remove
1496	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	good		remove
1498	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	good		remove
1499	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good		remove
1500	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	very poor	very poor	dead, fell over	remove
1501	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	very poor	very poor	dead	remove
1502	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1503	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	good		remove
1504	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1505	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	good		remove
1506	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	good		remove

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1509	honeylocust	<i>Gleditsia triacanthos</i>	10	good	fair	multiple leaders	remove
1510	honeylocust	<i>Gleditsia triacanthos</i>	9	good	fair	multiple leaders	remove
1512	Douglas-fir	<i>Pseudotsuga menziesii</i>	31	good	good		remove
1513	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good		remove
1514	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	good		remove
1515	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	good	moderately thin crown	remove
1516	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good		remove
1517	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	fair	moderately one sided	remove
1518	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	poor	fair	top dieback, thin crown, codominant at 20'	remove
1519	Douglas-fir	<i>Pseudotsuga menziesii</i>	36	good	good	not tagged, size estimated because of limited access, fill at 6' from west side of trunk	retain
1521	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	fair	one sided, codominant at 6'	remove
1522	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	fair	one sided	remove
1523	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	good		remove
1524	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	fair	codominant at 25', lost top	remove
1525	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good		remove
1526	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	good		remove
1527	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	fair	moderately one sided	remove
1528	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	fair	moderately one sided	remove
1529	Douglas-fir	<i>Pseudotsuga menziesii</i>	38	good	fair	one sided, fill up to west side of trunk	retain
1530	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	one sided, fill up to west side of trunk, previously lost top with kinked mid trunk	retain
1531	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	fair	codominant at top	remove
1532	Crimson King maple	<i>Acer platanoides</i> 'Crimson King'	8	fair	fair	multiple leaders, sunscald	remove
1533	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	good		retain
1534	Douglas-fir	<i>Pseudotsuga menziesii</i>	42	fair	fair	thin crown, branch dieback, size estimated, not tagged because of limited access	retain
1537	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	good		remove
1538	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	very poor	very poor	dead	remove



TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1539	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	good	thin crown	remove
1541	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good	50% live crown ratio, size estimated, not tagged because surrounded by poison oak, same as tree 10825	retain
1542	wild plum	<i>Prunus americana</i>	6	poor	poor	significant dieback, multiple leaders, size estimated, not tagged because surrounded by poison oak	remove
1543	Oregon ash	<i>Fraxinus latifolia</i>	10	fair	fair	thin crown, multiple leaders, size estimated, not tagged because surrounded by poison oak	retain
1544	Oregon ash	<i>Fraxinus latifolia</i>	16	good	fair	one sided, multiple leaders, size estimated, not tagged because surrounded by poison oak	remove
1546	Oregon ash	<i>Fraxinus latifolia</i>	16	fair	fair	thin crown, multiple leaders	remove
1547	English hawthorn	<i>Crataegus monogyna</i>	12	good	fair	codominant at 3', one sided	remove
1548	Oregon ash	<i>Fraxinus latifolia</i>	10	fair	fair	one sided, covered with ivy	remove
1549	red alder	<i>Alnus rubra</i>	7	fair	fair	one sided	retain
1550	red alder	<i>Alnus rubra</i>	12	good	good		retain
1551	Oregon ash	<i>Fraxinus latifolia</i>	9	good	fair	one sided	retain
1552	English hawthorn	<i>Crataegus monogyna</i>	12	poor	poor	smothered by ivy	retain
1553	Oregon ash	<i>Fraxinus latifolia</i>	12	very poor	very poor	dead	retain
1554	Oregon ash	<i>Fraxinus latifolia</i>	30	fair	poor	multiple scaffold failures	retain
1555	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	good	not tagged, size estimated because of limited access	remove
1556	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	multiple leaders	remove
1557	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	competing upright leaders	remove
1558	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	codominant at 4'	remove
1559	flowering cherry	<i>Prunus serrulata</i>	20	very poor	very poor	dying, not tagged, size estimated because of limited access	remove
1560	shore pine	<i>Pinus contorta</i> var. <i>contorta</i>	12	good	fair	multiple leaders, not tagged, size estimated because of limited access	remove
1594	Oregon ash	<i>Fraxinus latifolia</i>	34	good	fair	multiple leaders	retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1605	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	good	fair	50% live crown ratio because lower trunk covered with ivy, not tagged, size estimated because of limited access	retain
1607	English hawthorn	<i>Crataegus monogyna</i>	8	good	fair	multiple leaders, not tagged, size estimated because of limited access	retain
1608	English hawthorn	<i>Crataegus monogyna</i>	10	good	fair	multiple leaders, not tagged, size estimated because of limited access	retain
1610	Oregon ash	<i>Fraxinus latifolia</i>	12	fair	good	thin crown, not tagged, size estimated because of limited access	retain
1611	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	previously lost top with newly grown top, 50% live crown ratio because lower trunk covered with ivy, not tagged, size estimated because of limited access	retain
1613	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	very poor	very poor	90% dead, not tagged, size estimated because of limited access	retain
1617	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	fair	50% live crown ratio because lower trunk covered with ivy, not tagged, size estimated because of limited access	retain
1618	grand fir	<i>Abies grandis</i>	40	fair	poor	33% live crown ratio because lower trunk covered with ivy, not tagged, size estimated because of limited access	retain
1623	Douglas-fir	<i>Pseudotsuga menziesii</i>	36	fair	fair	moderately thin crown, codominant stem, significant ivy on lower trunk, not tagged, size estimated because of limited access	retain
1624	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	poor	poor	suppressed, not tagged, size estimated because of limited access	retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
1625	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	fair	fair	moderately thin crown, lost top, not tagged, size estimated because of limited access	retain
1627	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	fair	fair	thin crown, not tagged, size estimated because of limited access	retain
1628	English hawthorn	<i>Crataegus monogyna</i>	8	good	fair	multiple leaders, extensive ivy, not tagged, size estimated because of limited access	retain
2008	black cottonwood	<i>Populus trichocarpa</i>	22	good	fair	codominant at top	remove
2009	Oregon ash	<i>Fraxinus latifolia</i>	8	good	fair	one sided	retain
2010	Oregon ash	<i>Fraxinus latifolia</i>	16	fair	fair	one sided, decay seam in lower trunk	retain
2012	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	very poor	very poor	dead	retain
2015	English laurel	<i>Prunus laurocerasus</i>	10	good	fair	multiple leaders	retain
2020	western red cedar	<i>Thuja plicata</i>	13	good	good	same as 10827	retain
2023	western red cedar	<i>Thuja plicata</i>	17	good	good	same as 10826	remove
2026	Raywood ash	<i>Fraxinus oxycarpa</i> 'Raywood'	11	good	fair	multiple leaders	retain
2029	English hawthorn	<i>Crataegus monogyna</i>	8	good	fair	multiple leaders	retain
2033	orchard apple	<i>Malus domestica</i>	12	fair	fair	multiple leaders, not maintained for fruit production	retain
2204	red maple	<i>Acer rubrum</i>	13	good	fair	multiple leaders	retain
2217	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	good		retain
2350	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	good	good		retain
2414	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	one sided, 60% live crown ratio, marginal trunk taper	remove
2418	western red cedar	<i>Thuja plicata</i>	9	very poor	very poor	dying, 95% dead	retain
2428	Oregon ash	<i>Fraxinus latifolia</i>	18	fair	fair	one sided, same as 30782	retain
2483	callery pear	<i>Pyrus calleryana</i>	8	good	fair	multiple leaders	retain
2491	callery pear	<i>Pyrus calleryana</i>	9	good	fair	multiple leaders	retain
2498	callery pear	<i>Pyrus calleryana</i>	8	good	fair	multiple leaders	retain
2508	callery pear	<i>Pyrus calleryana</i>	6	good	fair	multiple leaders	retain
2523	giant sequoia	<i>Sequoiadendron giganteum</i>	11	good	good		retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
2524	giant sequoia	<i>Sequoiadendron giganteum</i>	15	good	good		retain
2525	giant sequoia	<i>Sequoiadendron giganteum</i>	20	good	good		retain
2556	Norway maple	<i>Acer platanoides</i>	4	fair	fair	sunscauld, multiple leaders	retain
2557	callery pear	<i>Pyrus calleryana</i>	6	good	fair	multiple leaders	retain
2602	red oak	<i>Quercus rubrum</i>	6	good	good		retain
2609	pin oak	<i>Quercus palustris</i>	4	good	fair	multiple leaders	retain
10270	callery pear	<i>Pyrus calleryana</i>	10	fair	fair	branch dieback, multiple leaders	retain
10271	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	moderately one sided	retain
10272	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	fair	moderately one sided	retain
10273	wild plum	<i>Prunus americana</i>	15	poor	poor	multiple leaders, watersprouts, dieback and decay	remove
10274	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	fair	moderately one sided	retain
10275	western red cedar	<i>Thuja plicata</i>	20	good	good		retain
10277	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	good		retain
10278	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	good	fair	moderately one sided	retain
10345	white ash	<i>Fraxinus americana</i>	14	good	fair	multiple leaders, overextended codominant leader	retain
10349	white ash	<i>Fraxinus americana</i>	10	good	fair	multiple leaders	retain
10353	western red cedar	<i>Thuja plicata</i>	7	good	good		retain
10354	western red cedar	<i>Thuja plicata</i>	13	good	good		retain
10355	western red cedar	<i>Thuja plicata</i>	8	good	good		retain
10356	western red cedar	<i>Thuja plicata</i>	6	good	good		retain
10357	western red cedar	<i>Thuja plicata</i>	16	good	good		retain
10358	western red cedar	<i>Thuja plicata</i>	12	good	good		retain
10403	western red cedar	<i>Thuja plicata</i>	14	good	good		retain
10405	white ash	<i>Fraxinus americana</i>	11	good	fair	multiple leaders	retain
10488	western red cedar	<i>Thuja plicata</i>	11	good	good		retain
10489	white ash	<i>Fraxinus americana</i>	12	good	fair	multiple leaders	retain
10624	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	good	fair	one sided	retain
10625	white ash	<i>Fraxinus americana</i>	14	good	fair	multiple leaders	retain
10627	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	one sided	retain
10628	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	one sided	retain

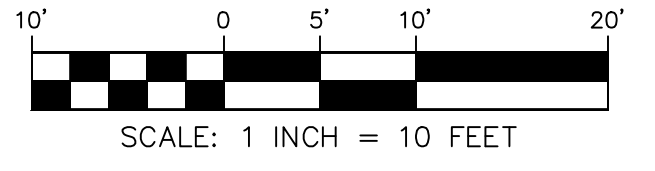
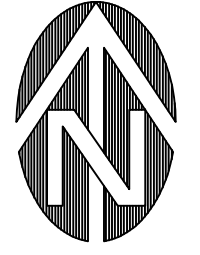
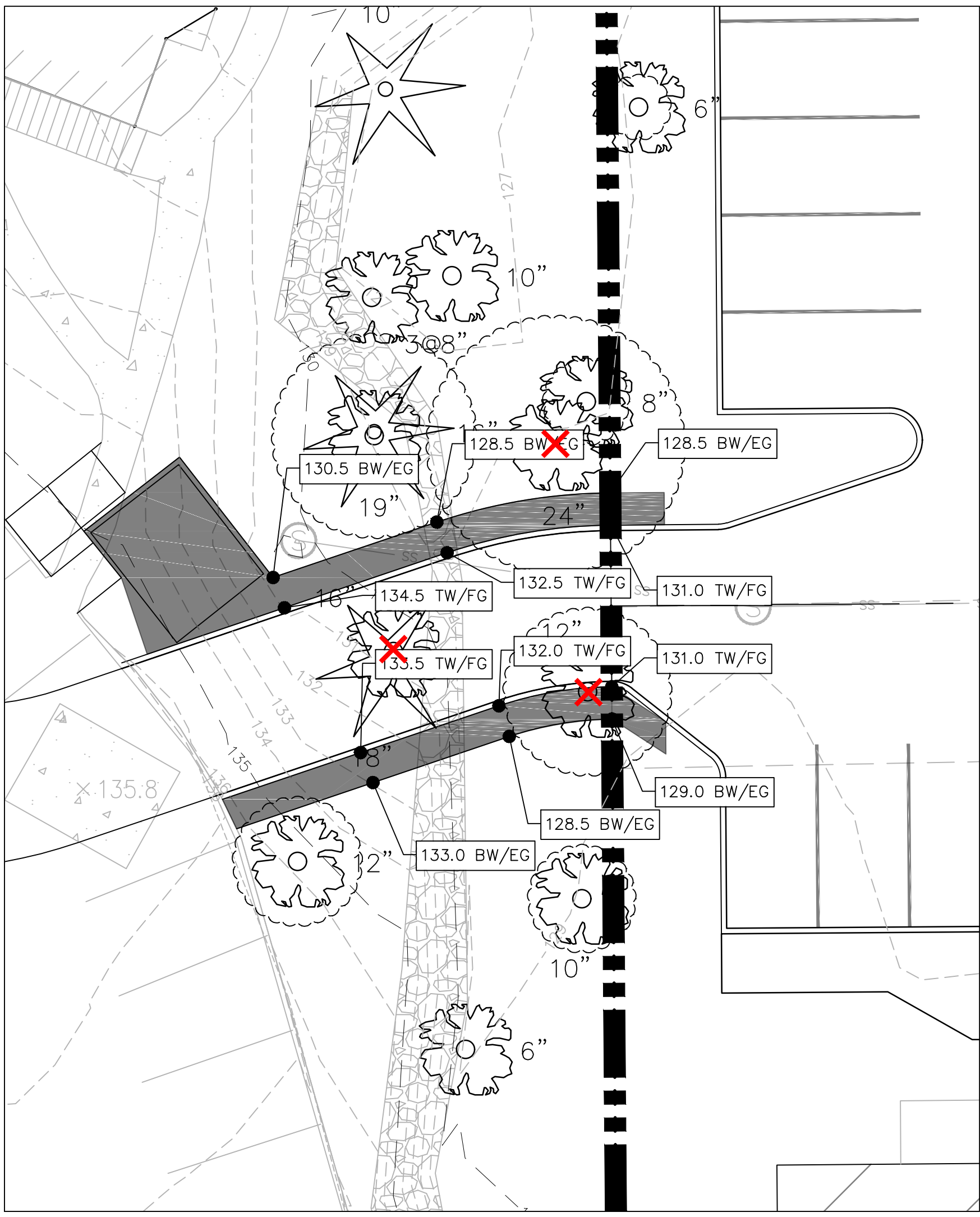
TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
10629	Douglas-fir	<i>Pseudotsuga menziesii</i>	44	good	good	fill at 5' from west side of trunk	retain
10630	white ash	<i>Fraxinus americana</i>	13	good	fair	multiple leaders	retain
10631	sweet cherry	<i>Prunus avium</i>	14,6,8	good	fair	multiple leaders at ground level, same as 1325	retain
10632	sweet cherry	<i>Prunus avium</i>	6	good	fair	one sided	retain
10634	crabapple	<i>Malus sp.</i>	7	poor	poor	multiple leaders, extensive root suckers, thin crown	retain
10635	sweet cherry	<i>Prunus avium</i>	8,5	very poor	very poor	dying, multiple leaders at ground level, same as 10636	retain
10636	n/a	n/a	n/a	n/a	n/a	same as 10635	n/a
10637	crabapple	<i>Malus sp.</i>	8	poor	poor	multiple leaders, root suckers, thin crown	retain
10638	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	fair	one sided	retain
10639	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	fair	one sided, large wound at lower trunk	retain
10640	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	fair	one sided	retain
10641	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	fair	one sided	retain
10642	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	good	fair	one sided	retain
10643	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	good		retain
10812	western red cedar	<i>Thuja plicata</i>	18	good	fair	multiple leaders at 2'	retain
10813	western red cedar	<i>Thuja plicata</i>	20	good	fair	codominant at 2' with included bark	retain
10814	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	moderately one sided	retain
10815	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	fair	one sided	retain
10816	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	fair	one sided	retain
10818	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	poor	poor	dead top	retain
10819	Raywood ash	<i>Fraxinus oxycarpa</i> 'Raywood'	4	fair	fair	multiple leaders, one sided	retain
10821	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	fair	one sided, fill up to west side of trunk	retain
30682	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	fair	one sided, 50% live crown ratio	retain
30693	Oregon ash	<i>Fraxinus latifolia</i>	11	good	fair	multiple leaders	retain
30699	western red cedar	<i>Thuja plicata</i>	13	very poor	very poor	90% dead	retain
30700	western red cedar	<i>Thuja plicata</i>	20	poor	poor	failed at 15', weakly attached new leader, significant decay	retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
30702	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	fair	fair	one sided, 40% live crown ratio	retain
30704	Douglas-fir	<i>Pseudotsuga menziesii</i>	24	fair	fair	one sided, 33% live crown ratio	remove
30706	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	moderately suppressed, marginal trunk taper, 40% live crown ratio	retain
30707	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	fair	one sided, 40% live crown ratio	retain
30708	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	one sided	retain
30709	n/a	n/a	n/a	n/a	n/a	not located	n/a
30711	western red cedar	<i>Thuja plicata</i>	16	fair	poor	multiple leaders at 6', 10" leader failed	retain
30713	sweet cherry	<i>Prunus avium</i>	12	good	fair	multiple leaders	retain
30757	casacara	<i>Rhamnus purshiana</i>	9	good	fair	multiple leaders	retain
30758	western red cedar	<i>Thuja plicata</i>	13	very poor	very poor	dead 15' snag	retain
30759	sweet cherry	<i>Prunus avium</i>	10	fair	fair	thin crown, one sided	retain
30760	sweet cherry	<i>Prunus avium</i>	9	good	good	same as 2400	retain
30765	grand fir	<i>Abies grandis</i>	11	good	fair	moderately one sided, same as 2406	retain
30766	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	fair	50% live crown ratio, marginal trunk taper, same as 2407	retain
30768	western red cedar	<i>Thuja plicata</i>	18	good	good	same as 2408	retain
30769	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	fair	fair	one sided, 60% live crown ratio, same as 2410	retain
30771	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	one sided, 60% live crown ratio, marginal trunk taper, same as 2413	retain
30772	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	poor	poor	lost top, overtopped by adjacent trees, same as 30773 and 2415	retain
30776	western red cedar	<i>Thuja plicata</i>	15	very poor	very poor	dead, 20' snag, not a threat to pathway	retain
30778	n/a	n/a	n/a	n/a	n/a	not located	n/a
30779	Oregon ash	<i>Fraxinus latifolia</i>	9	fair	fair	high crown, same as 2429	retain
30780	western red cedar	<i>Thuja plicata</i>	16,6	very poor	very poor	90% dead, lean over trail, same as 2396	retain
30783	Oregon ash	<i>Fraxinus latifolia</i>	10	fair	fair	significant lean, overtopped by adjacent trees	retain
30784	Oregon ash	<i>Fraxinus latifolia</i>	12	poor	poor	lost top , extensive epicormic growth	retain

TREE NO.	COMMON NAME	SCIENTIFIC NAME	DBH <sup>1</sup>	CONDITION <sup>2</sup>	STRUCTURE <sup>2</sup>	COMMENTS	TREATMENT
30785	Oregon ash	<i>Fraxinus latifolia</i>	21	good	fair	multiple leaders	retain
30786	Oregon ash	<i>Fraxinus latifolia</i>	20	fair	fair	covered with ivy	retain
30787	Oregon ash	<i>Fraxinus latifolia</i>	7,7,6	fair	fair	covered with ivy, multiple leaders at ground level	retain
30788	Oregon ash	<i>Fraxinus latifolia</i>	7	fair	fair	covered with ivy	retain
30796	Oregon ash	<i>Fraxinus latifolia</i>	9	fair	fair	codominant at 15', covered with ivy	retain
30799	Oregon ash	<i>Fraxinus latifolia</i>	18	fair	fair	one sided, multiple leaders	retain
30800	western red cedar	<i>Thuja plicata</i>	18	very poor	very poor	95% dead	retain
30801	Oregon ash	<i>Fraxinus latifolia</i>	18	good	fair	one sided	retain
30802	Oregon ash	<i>Fraxinus latifolia</i>	11	good	fair	one sided, multiple leaders	retain
30803	Oregon ash	<i>Fraxinus latifolia</i>	11	good	fair	one sided, multiple leaders	retain
30804	Oregon ash	<i>Fraxinus latifolia</i>	6,4,2	good	fair	multiple leaders at 1'	retain

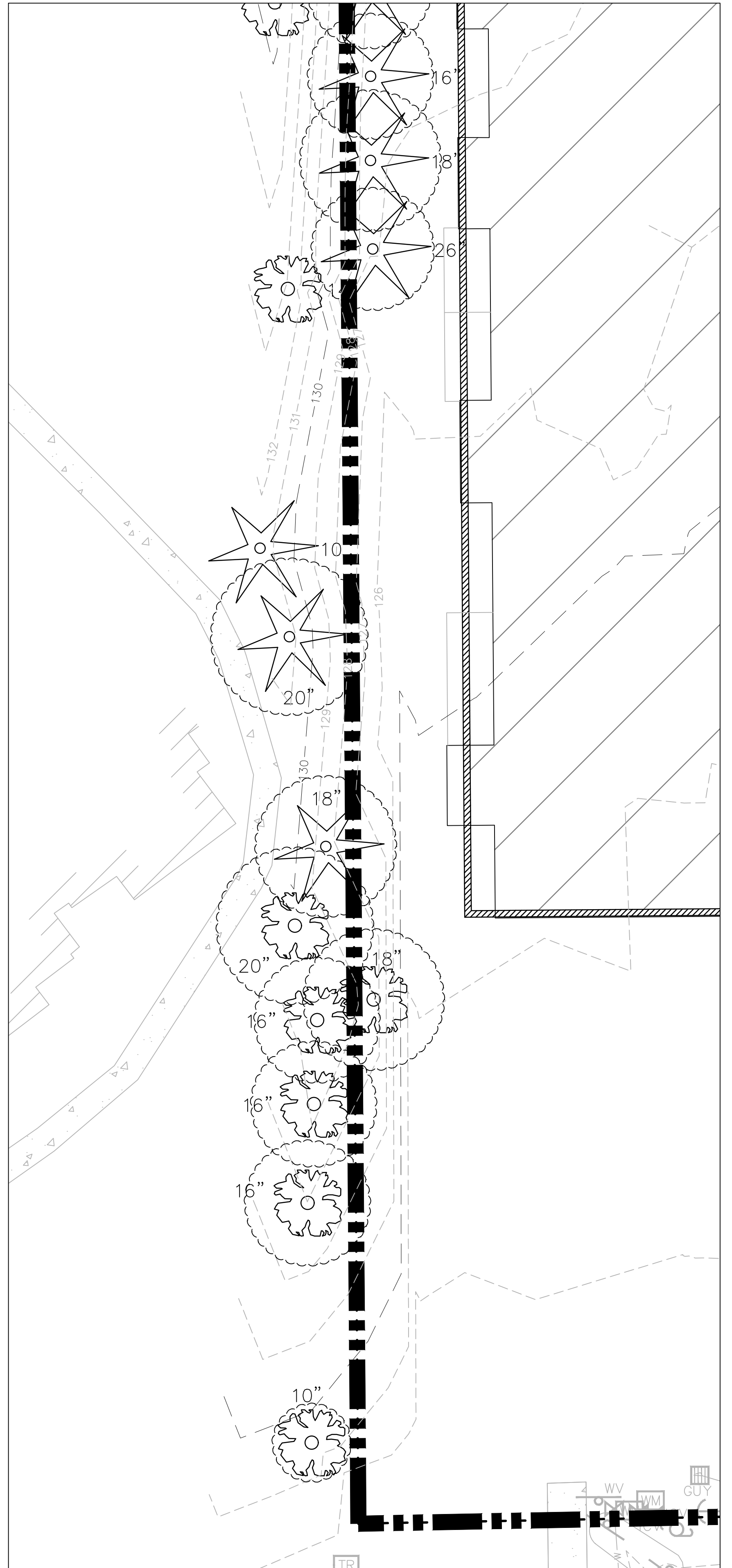
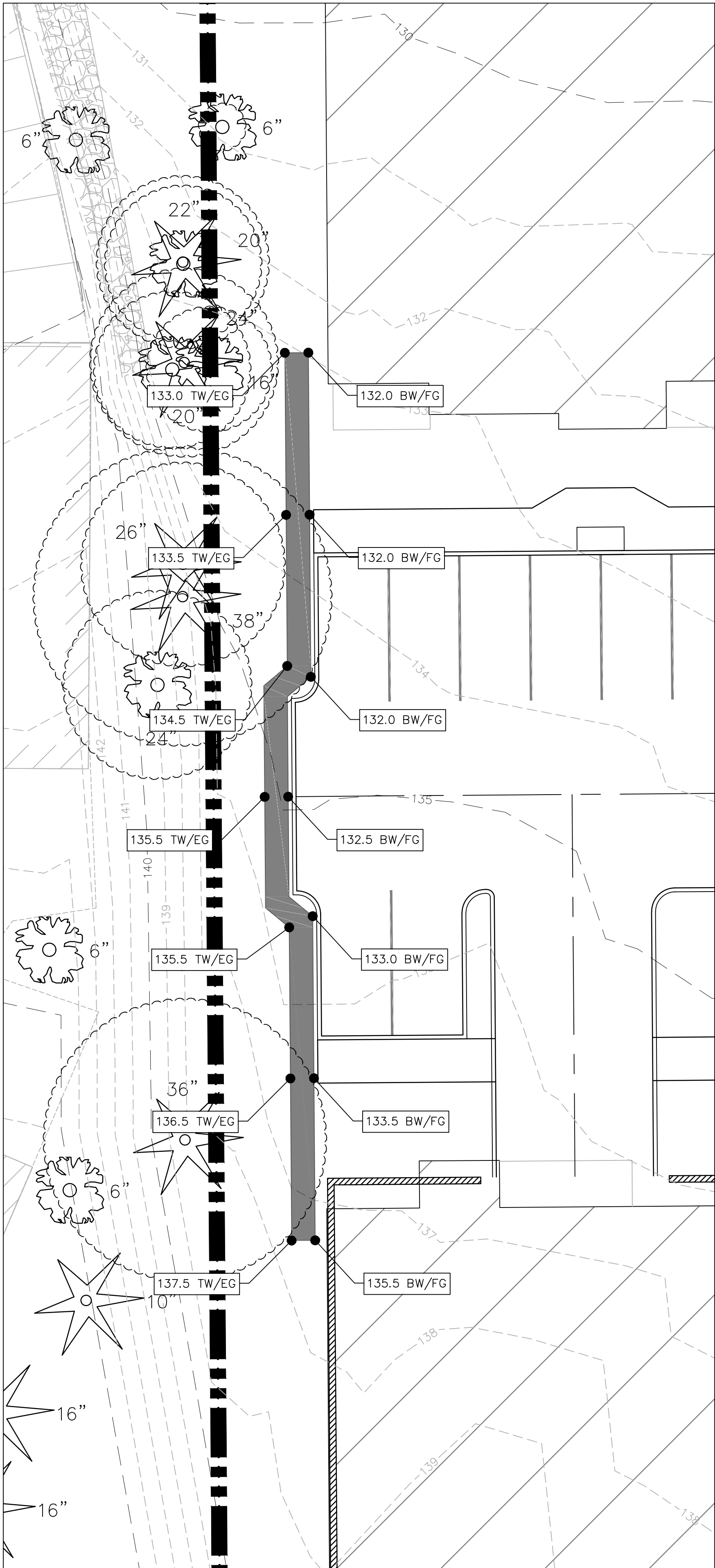
<sup>1</sup>DBH is the trunk diameter in inches measured per International Society of Arboriculture (ISA) standards.

<sup>2</sup>Condition and Structure ratings range from very poor, poor, fair, to good.



SCALE: 1 INCH = 10 FEET

# Attachment 5





## **Attachment 6**

### **Tree Protection Recommendations**

The following recommendations will help to ensure that the trees to be retained are adequately protected:

#### Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
  - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
  - b. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the *Guide for Plant Appraisal* by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
  - a. Trees to remain on site will be protected by installation of tree protection fencing as shown in Attachment 2.
  - b. The fencing should be put in place before the ground is cleared in order to protect the trees and the soil around the trees from disturbances.
  - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
  - d. Fencing should consist of 6-foot high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging, or falling down.
  - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
  - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

**TREE PROTECTION ZONE**

**DO NOT REMOVE OR ADJUST THE LOCATION OF THIS**  
**TREE PROTECTION FENCING**  
**UNAUTHORIZED ENCROACHMENT MAY RESULT IN FINES**

Please contact the project arborist if alterations to the location of the tree protection fencing are necessary.

Todd Prager, Project Arborist, Teragan & Associates, 971-295-4835

- b. Signage should be placed every 75-feet or less.

### During Construction

1. Protection Guidelines Within the Tree Protection Zones:
  - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
  - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
  - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
  - d. Construction trailers should not to be parked/placed within the tree protection zones.
  - e. No vehicles should be allowed to park within the tree protection zones.
  - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have woody roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

### After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Provide for the ongoing inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
6. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

## **Attachment 7**

### **Assumptions and Limiting Conditions**

1. Any legal description provided to the consultant is assumed to be correct. The site plans and construction information provided by Westlake Consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
  - Provide tree removal findings and recommendations based on the proposed site and grading plans; and
  - Provide recommendations for adequately protecting the trees to be retained during construction.