

ADDENDUM NO 01

CITY OF FAIRHOPE

to

Bid No. 011-13

Project No. PW001-13

TROYER BOOTHE ROAD IMPROVEMENTS

The bid documents for this Bid shall be amended, revised and changed in the following particulars provided by Recreation Department:

The bid documents for this Bid shall be amended, revised and changed in the following particulars:

Questions from potential bidders

Answers provided by Dan Ames, Purchasing Manager

Question 1:

Need Clarification on the thickness of asphalt item# 424A280?

Answer 1:

Item # 424A280 is specified to be laid at a rate of 275 pounds per square yard of asphalt compacted in place to the required density. Tolerances for rates and how they will affect payment can be found in section 410.03 and 410.09 of the ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2012 edition.

Question 2:

There are no specifications or details on the hydrant reset pay item# 641E500.

Answer2:

See Section 641.05 (a) 6 of ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2012 edition for basis of payment. All work shall comply with the Standard Specifications for Constructing Sanitary Sewer Facilities and Water Facilities, City of Fairhope. This work will have to be coordinated with and accepted by Fairhope Utilities.

Question 3:

We need specs.Or details on geotextile item #608A000.

Answer 3:

Material shall be placed per section 608 of ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2012 edition. Material shall be Marafi 500X or approved equal.

Question 4:

Silt Fence-Pay Item shows 1300 feet. But plan shows 2600 feet #665J000.

Answer4:

The unit price schedule of values within the Bid Form Section III of the Contract documents will be removed and replaced in its entirety by the attached schedule of values.

Question 5:

Need Clarification on engineering controls item #680A000.

Answer 5:

Engineering Controls shall be re-labeled Geometric Controls. See section 680 of ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2012 edition for clarification on this item.

Question 6:

Need Clarification on sidewalk. Pay item says 1 sq yd. Item # 1002A000

Answer 6:

The unit price schedule of values within the Bid Form Section III of the Contract documents will be removed and replaced in its entirety by the attached schedule of values.

Question 7:

There is no pay item for hay bales. Are they to be added to silt fence item #665J000?

Answer 7:

The unit price schedule of values within the Bid Form Section III of the Contract documents will be removed and replaced in its entirety by the attached schedule of values.

Question 8:

Where are the Traffic Control Markings?

Answer 8:

They are stop bars at each end of the project.

Question 9:

Will the project be in calendar days or working days?

Answer 9:

The project will be in Calendar Days. See Section 108.09 (c) of ALABAMA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION 2012 edition, no time extensions will be granted except for those given in this article.

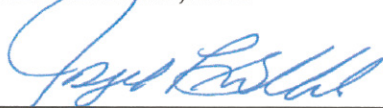
ITEM IV
SCOPE OF WORK AND SPECIFICATIONS rev1

See attached
Section 1003 Arborist / Tree Protection

END SCOPE OF WORK AND SPECIFICATIONS

Submitted by:

PREBLE-RISH, LLC


JOSEPH P. BULLOCK, P.E.



Responders are to sign and include signed Addendum No.1 with submitted bid documents.

Acknowledged:

Company

By

Date

CITY OF FAIRHOPE
TROYER - BOOTHE ROAD IMPROVEMENTS
Project No. PW 001-013
February, 2013

ITEM	UNIT	DESCRIPTION	QTY.	UNIT PRICE	AMOUNT
201A000	Lump Sum	Clearing & Grubbing (Approximately 2 ac)	1		
206D000	Linear Foot	Removing Pipe	20		
209A000	Each	Mailbox Reset, Single	1		
210A000	Cubic Yard	Unclassified Excavation	1375		
210C000	Cubic Yard	Muck Excavation	100		
210D012	Cubic Yard	Borrow Excavation A-2-4	6000		
230A	Rdbd Sta	Roadbed Processing	14		
243A010	Square Yard	Geosynthetic Reinforcement (Tensar TX 140)	3386		
301A012	Square Yard	Crushed Aggregate Base Course, Type B, Plant Mixed, 6"	3222		
401A000	Square Yard	Bituminous Treatment A	3222		
424A280	Ton(s)	Improved Bituminous Concrete Wearing Surface Layer, 1/2" Maximum Aggregate Size Mix, ESAL Range B, (275 lbs/sy)	422		
530B000	Linear Feet	18" Span, 11" Rise Roadway Pipe (Class 3 R.C.)	64		
535A078	Linear Feet	15" Side Drain Pipe (Class 3 R.C.)	200		
600A000	Lump Sum	Mobilization	1		
602A000	Each	Right Of Way Markers	17		
608A000	Square Yard	Seperation Geotextile, Non-Woven	3222		
610A004	Square Yard	Loose Riprap, Class 2, 24" Thick	100		
619B015	Each	18" Span, 11" Rise Roadway Pipe End Treatment (Class 1)	2		
641E500	Each	Fire Hydrant Reset	1		
650A000	Cubic Yard	Topsoil	430		
652A100	Acre(s)	Seeding	1		
654A000	Square Yard	Solid Sodding (Shade Tolerant Species)	4500		
656A010	Acre(s)	Mulching	1		
665F000	Each	Hay Bales	100		
665J000	Linear Feet	Silt Fence, Type A	2600		
665O000	Linear Feet	Silt Fence Removal	2600		
665Q000	Linear Feet	Wattles	100		
680A000	Lump Sum	Geometric Controls	1		
701G250	Linear Feet	Solid White, Class 2, Type A Traffic Stripe (6" Wide)	2680		
701G264	Linear Feet	Solid Yellow, Class 2, Type A Traiffice Strip (6" Wide)	5250		
703A002	Square Foot	Traffic Control Markings, Class 2, Type A (White Stop Bar)	60		
705A031	Each	Pavement Markers, Class A-H, Type 1A	15		
705A037	Each	Pavement Markers, Class A-H, Type 2-D	32		
705A038	Each	Pavement Markers, Class A-H, Type 2-E	52		
710A090	Square Foot	Class 4, Aluminum Flat Sign Panels 0.08" Thickness (Type III Background)	41		
710 B001	Linear Foot	Roadway Sign Post (#3 "U" Channel Galvanized Steel)	96		

CITY OF FAIRHOPE
TROYER - BOOTHE ROAD IMPROVEMENTS

Project No. PW 001-013
February, 2013

ITEM	UNIT	DESCRIPTION	QTY.	UNIT PRICE	AMOUNT
740A000	Lump Sum	Traffic Control Scheme	1		
621C000	Each	Yard Inlet (as detailed)	1		
1000A000	Linear Feet	Timber Guardrail	64		
1000A001	Each	Timber Guardrail End Anchor	4		
1002A000	Square Yard	Pervious Concrete Sidewalk, 6" Thick	730		
1003A000	Lump Sum	Arborist/Tree Protection	1		
1005A000	Linear Feet	18'-7" Span x 5'-4" Rise Aluminum Box Culvert	60		
1005A001	Each	Vertical Concrete Headwalls & Wingwalls (as detailed)	2		
TOTAL					

**SECTION 1003
ARBORIST / TREE PROTECTION**

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This specification covers the requirements for the on site arborist that will be hired by the Contractor and the requirements for protecting and trimming trees that will be preserved.
- B. This specifications refers to the report titled "Boothe Road Extension, Tree Inventory and Assessment", prepared by Gary Ickes II, dated July 9, 2012 and is included as part of this specification by reference. A copy of this report is available from the City of Fairhope on their website.

PART 2 MANPOWER & MATERIALS

2.01 MANPOWER

- A. All work performed on trees within the tree protection zone shall only be performed by a tree care company with an I.S.A. Certified Arborist or Board Certified Master Arborist on site.
- B. The Arborist shall be required to be on site when all tree and root trimming is performed.
- C. The Arborist shall be on site at least once a week to certify that the work items identified and paid for under this pay item are being performed. Site inspection reports prepared and signed by the Arborist shall be submitted to the Engineer and the City of Fairhope.

2.02 MATERIALS

- A. This scope item will include all required materials and supplies listed in the work items described below including but not limited to mulching, fertilizer, tree protection fence, and water.

PART 3 EXECUTION

3.01 TREE NO. 1 – C.L. STATION 12+00

- A. Canopy-clean the tree of deadwood over ¾ of an inch, crossing limbs, limbs with defects, and sink limbs.
- B. Elevated as needed to provide a minimum clearance of 14.5 feet above the road.

- C. Air-excavate to a depth of twenty inches to expose and cleanly root prune roots with a minimum diameter of one inch within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
- D. Reduce soil compaction and introduce organic matter into the soil by using an air-excavation device to mix amendments into the existing soil from the root flare to the edge of the root cut.
- E. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.
- F. Treatment with a tree growth product such as Cambistat or a product containing the same activate ingredient as a reduced rate corresponding with the expected root area loss.
- G. Apply wood chip mulch to a depth of six inches across the entire area inside the root cut without covering the root flare of the tree.
- H. Install a tree protection fence from the edge of the root pruning area to the edge of the easement.
- I. Irrigate the tree as needed with considerations for normal rainfall for duration of the project.

3.02 TREE NUMBER 50 – STATION 23+00, 20 FEET LEFT OF C.L.

- A. Prune for canopy cleaning of the tree for deadwood over ¾ of an inch in diameter, crossing limbs, limbs with defects, and sink limbs.
- B. Elevated as needed to provide a minimum clearance of 14.5 feet above the road.
- C. Air-excavate to a depth of twenty inches to expose and cleanly root prune roots with a minimum diameter of one inch within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
- D. If the grade outside the root pruning cut must be raised or lowered, a wall must be built to prevent grade change over the remaining portion of rooting area. The design and specifications of the retaining wall will be provided to the tree care company.
- E. Reduce soil compaction and introduce organic matter into the soil by using an air-excavation device to mix the amendments into the existing soil from the root flare to the edge of the root cut.
- F. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.
- G. Treatment with a tree growth product such as Cambistat or equivalent product containing the same activate ingredient as a reduced rate corresponding with the expected root area loss.

- H. Apply wood chip mulch to a depth of six inches across the entire area inside the root cut without covering the root flare of the tree.
- I. Install a tree protection fence from the edge of the root pruning area to the edge of the easement.
- J. Irrigate the tree as needed with considerations for normal rainfall for duration of project.

3.03 REMAINING TREES

- A. Prune for defects as listed in the discussion section as recommended for each tree.
- B. Canopy-clean the tree of deadwood over $\frac{3}{4}$ of an inch, crossing limbs, limbs with defects, and sink limbs.
- C. Elevate as needed to provide a minimum clearance of 14.5 feet above the road.
- D. Install a tree protection fence from the edge of the easement to within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
- E. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.
- F. If the tree loses more than twenty percent of its critical root zone, treatment with a tree growth product such as Cambistat or equivalent product containing the same active ingredient as a reduced rate corresponding with the expected root area loss.
- G. The root area inside the easement will be mulched to a depth of six inches from the tree protection fence to the edge of the easement without covering the root flare of the tree.

3.04 BASIS OF PAYMENT

- A. The Unit Price Bid for this item will be complete compensation in full for performing the scope items outlined in this specification. Including but not limited to having a Certified Arborist on site as described, installing all materials outlined in this specification, and having the Arborist perform weekly inspections with written reports. Payment will be made on a lump sum basis prorated through the duration of the contract in accordance with the following pay item:

1003A – 000 Arborist / Tree Protection LS

Booth Road Extension

Tree Inventory and Assessment

Prepared for:

Mr. Joe Bullock

Preble-Rish, LLC

9949 Bellaton Avenue

Daphne, Alabama 36526

Prepared by:

Gary Ickes II

Ickes Tree Service, Inc.

13520 State Highway 104

Silverhill, Alabama 36576

July 9, 2012

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Summary

Mr. Joe Bullock of Preble-Rish, a professional engineering and surveying firm, contacted me to request a tree inventory and assessment of tree health and structure on the Booth Road Extension project. I meet with Mr. Bullock to discuss his concerns and requirements for the project. I developed the assignment as listed below, which Mr. Bullock authorized. On June 4, 2012, I started the inventory and assessment of the trees. Once finished with the collection, I analyzed the information to determine if the proposed route for the extension was the best location for the roadway to preserve the highest number of trees with best possibility of survival. I found that Mr. Bullock had chosen the best route for the extension since the easement is only thirty feet wide and the proposed roadway is twenty feet wide with several additional feet needed for the construction process, the roadway cannot be placed in the center of the easement without significantly affecting all of the trees located along both edges of the easement. Mr. Bullock had anticipated this problem and shifted part of the roadway to the west to reduce the impact upon some of the trees.

While the proposed extension will necessitate the removal of twelve trees, seven trees have major defects and would require removal whether the roadway was built as shown or not. The shift of roadway moved the extension away from twenty-two trees; therefore reducing construction impact. If the roadway hadn't been shifted to the west, all of the trees would have suffered construction damage to the root plate area of the trees; damage to the root plate area of trees reduces the anchoring ability of the tree leading to an increase in wind throw or failure of the tree during wind events such as severe thunder storms and hurricanes. The trees would also have lost a significant amount of their root system, leading to decline and possible death of a higher number of trees than the number to be removed due to the shift. The trees to be preserved during construction will require additional care depending on the amount of activity in their critical root zone. Trees by their very nature have inherent risk and future evaluation and care will be needed to reduce the possibility of failure.

Introduction

Background

I was contacted by Mr. Joe Bullock of Preble-Rish, LLC, a professional engineering and surveying firm, to consult on the Booth Road Extension project. The project's purpose is to extend Booth Road from Morphy Road south to Nichols Avenue Extension. The path of the extension is along a current easement owned by the Fairhope Single Tax Corporation. The easement is a mixed woodlot of mainly oaks. The easement shows signs of usage in the past. The purpose of my consultation was to recommend the best route for the road which would present the least impact to the largest number of trees and make recommendations for the preservation of the remaining trees.

Assignment

After meeting with Mr. Bullock at the site, I developed the following assignment, which Mr. Bullock authorized.

1. For all trees shown on provided survey of proposed Booth Road extension ,except those excluded by client;
 - a. Measure all tree's **diameter at breast height**¹(DBH) ,as per **ANSI** standards, and record measurement of trees over 24-inches DBH to correct any incorrect measurements
 - b. Identify trees over 24-inches DBH by common and Latin name
 - c. Mark trees with an identification plate or tag for identification and future care
2. On live oaks located from traffic circle to 60-inch live oak on western tree line, as indicted on survey,
 - a. Assess tree health and structure using **Visual Tree Assessment** (VTA) methods, and record using standardized form
 - b. Provide recommendations for health or major defects in structure that could impact road usage or traffic
3. Using VTA methods, determine if major defects are present in remaining trees that could impact road construction or traffic and recommend methods of abatement
4. Develop **critical root zone** (CRZ) and **root plate** measurements from DBH measurements
5. Suggest proper care of trees, as per **ANSI A-300 standards**, for all phases of construction to reduce stress and increase survival rate of affected trees.

Limits of Assignment

All tree assessments where performed from the ground, therefore defects may be present which are not visible from the ground.

Purpose and Use of Report

The purpose of this report is to provide my evaluation of the trees, recommend a route for the roadway which would preserve the largest number of healthy trees, and my recommendations for their care. Mr. Bullock and Preble-Rish, LLC may use this information to make informed decisions about proper tree management before, during, and after the construction of the Booth Road Extension.

Observations

¹ Words in **bold** are defined in the glossary section at the end of the report.

On June 4, 2012, I met with Mr. Joe Bullock at the site to confirm my assignment. Once Mr. Bullock confirmed the scope of work and authorized the assignment, I proceeded to walk the site to become familiar with it and conduct the assessment.

Site Observations

The site runs south from Morphy Road for approximately two hundred feet along a driveway serving several homes. The driveway splits north and south at the beginning of the woodlot. After the driveway splits, the woodlot continues to run south along what appears to be an old pathway. The area where the old pathway or road is located has several areas where it has been cut in grade. I do not know if the cut is man-made or erosion. The site consists of upland trees and understory plants until you approach approximately 1,410 feet south of Morphy Road, where the site changes into a bottom-land trees and understory plants. A small stream is present that crosses the site from the northwest to the southeast. There are signs of very large volumes of water flowing through the area during high rainfall. The site changes back to upland conditions approximately 1610 feet south of Morphy Road continuing until it meets the intersection of Nichols Avenue and Booth Road.

Tree Observations

I started at the north end of the site with the live oak immediately south of the split in the driveways. I started measuring the trees to determine their DBH and recording, using a premade form, their information such as name, height, spread, health and structural condition and rating, and matching the information to the supplied survey (Appendix B). Trees that match the requirements of the assignment were marked using a numbered (1 – 50) circular aluminum tag attached to the tree using an aluminum nail; the tree tags were placed at eye-level on the north side of the tree. Using the recorded information, I developed a spreadsheet (Appendix A) showing common and true names, DBH, health and structure rating, **root plate** radius, CRZ, **construction tolerance**, and recommendations.

The majority of trees on the site are in good to moderate health with several dead trees present. There are several trees either partially or completely **uprooted**. There is a history of tree failure at the site. The majority of **failures** are from **decay** and **cavities** in the affected trees. The majority of the **canopies** of the trees are **codominant** or **intermediate**. The dominate tree at the site is live oak.

Trees

1. Minor issues with codominant stems and multiple attachments in trunk and scaffold limbs

2. Minor issues with codominant stems and multiple attachments in trunk and scaffold limbs
3. Major issues with codominant stems and multiple attachments in trunk and scaffold limbs; with moderate deadwood in the canopy
4. Wounds at the roots and trunk with moderate deadwood in the canopy
5. No defects of importance
6. Minor issues with codominant stems and multiple attachments in trunk and scaffold limbs
7. No defects of importance
8. No defects of importance
9. No defects of importance
10. Moderate issue with codominant stems at the trunk
11. Moderate issues with codominant stems and multiple attachments at the trunk
12. Moderate issues with **taper**, **sweep**, codominant stems, and included bark in the trunk. One limb has excessive end weight.
13. No defects of importance
14. Minor defects on codominant stems, multiple attachments, and included bark in the trunk
15. No defects of importance
16. Major defect with codominant stems and multiple attachments with moderate included bark in the trunk
17. Moderate defects with codominant stems and minor included bark in the trunk
18. No defects of importance
19. Major defect with codominant stems and multiple attachments in trunk and major crack or seam in scaffold limb
20. No defects of importance
21. Sever defects in tree with small foliage, poor twig growth, and poor wound wood development.
22. Girdling root
23. No defects of importance
24. No defects of importance
25. Girdling root and minor defect with codominant stem in trunk
26. Major issues with health and wounds
27. Exposed roots and minor defect with codominant stems in trunk and scaffold limbs
28. Sever defects of codominant stems, multiple attachments, included bark, cracks, and wounds
29. No defects of importance
30. Cavity in trunk 25 feet above ground
31. Major cavity in trunk at four feet above ground
32. No defects of importance
33. Large deadwood in scaffold limbs and canopy
34. Sever defects of codominant stems and included bark in trunk and scaffold limbs
35. Moderate defects of codominant stems and cavity
36. Moderate defects of multiple attachments and included bark in trunk. Conk growing on roots
37. No defects of importance
38. No defects of importance
39. No defects of importance

40. No defects of importance
41. Moderate codominant stem in scaffold limbs and moderate multiple attachments in the trunk
42. Sever multiple attachments in the trunk and scaffold limbs
43. Moderate defect in codominant stem in the trunk
44. No defects of importance
45. No defects of importance
46. Invasive plant
47. Major defect of decay
48. Invasive plant
49. Moderate defect of codominant stem, wounds, and decay in trunk
50. Moderate defects of codominant stems and multiple attachments in the trunk

Discussion

Construction impacts trees in several different ways. The loss of root area and soil compaction is the leading cause of decline and death in trees during and after construction. It may take several years before the full effect of the construction is visible upon the affected trees. The loss of root area impacts the affected trees by reducing the area available for the absorption of water and nutrients, therefore limiting growth, defense, and compartmentalization of decay in trees. Soil compaction is necessary for the construction of roads and sidewalks but significantly reduces the ability of tree roots to penetrate the soil and reduces water and air capacities within the soils. If the soil does not hold sufficient water or air, tree roots will not grow in to these areas.

The critical root zone is the minimum rooting area needed to maintain tree health. Any intrusion into the CRZ of more than twenty percent of the radius will require the use of a tree growth regulator such as Cambistat or similar product. The dosage rate should be reduced to correspond with the expected reduction in the root system. If the dosage is not reduced, the tree will become over regulated and the recovery period will be increased. The use of Cambistat will increase non-woody root production and reduce twig elongation. The reduction in growth allows the tree to reallocate energy into other areas. The use of a tree growth regulator will not guarantee the survival of the tree but rather reduce the recovery period by causing the tree to increase non-woody root growth to replace part of the last portion.

Since the easement is only thirty feet wide and the proposed roadway is twenty feet wide with several additional feet needed for the construction process, the roadway cannot be placed in the center of the easement without significantly affecting all of the trees located along the edges of the easement. Preble-Rish had anticipated this problem and shifted part of the roadway to the west to reduce the impact upon the trees located on the eastern edge of the easement while necessitating the removal of twelve trees over twenty-four inches DBH within the proposed path of the roadway. The shift of the

roadway will decrease construction impact upon twenty-two trees over twenty-four inches DBH. While this shift in the roadway will reduce the impact of construction upon the eastern trees, the trees will still be impacted; however the impact is significantly reduced and will increase the probability of their survival.

The twelve trees located within the proposed roadway are eleven live oaks and one *Q. nigra* or water oak and are identified as 14-17, 21, 22, 25 -28, 34, and 42; trees 14, 16, 21, 26, 28, 34, and 42 have major defects and should be removed regardless of the pathway of the road. The twenty-two trees located on the eastern edge of the easement are all live oaks and are identified as 12, 13, 18 – 20, 23, 24, 29 - 33, 35 – 41, and 43 – 45; tree 19 has a major limb defect which requires an aerial inspection to determine whether the tree needs pruning or removal .

Trees

1. Prune for reduction of defects
2. Prune for reduction of defects
3. Prune for reduction of defects and evaluate again
4. Prune for reduction of defects
5. Prune
6. Prune for reduction of defects
7. Prune
8. Prune
9. Prune
10. Prune for reduction of defects
11. Prune for reduction of defects
12. Prune for reduction of defects
13. Prune
14. Removal of tree
15. Prune
16. Removal of tree
17. Prune for reduction of defects
18. Prune
19. Perform an aerial inspection to determine if pruning will reduce the defect to an acceptable level
20. Prune
21. Removal of tree
22. Prune for reduction of defects
23. Prune
24. Prune
25. Removal of girdling root and prune for reduction of defects
26. Removal of tree
27. Prune for reduction of defects

28. Removal of tree
29. Prune
30. Perform aerial inspection of cavity to determine if tree needs removal or pruning
31. Removal of tree
32. Prune
33. Prune for reduction of defects
34. Removal of tree
35. Prune for reduction of defects since failure of defect would be away from the roadway
36. Prune for reduction of defects
37. Prune
38. Prune
39. Prune
40. Prune
41. Prune for reduction of defects
42. Removal of tree
43. Prune for reduction of defects
44. Prune
45. Prune
46. Removal of tree
47. Removal of tree
48. Removal of tree
49. Prune for reduction of defects
50. Prune for reduction of defects

Conclusion

Since the easement is only thirty feet wide and the proposed roadway is twenty feet wide with several additional feet needed for the construction process, the roadway cannot be placed in the center of the easement without significantly affecting all of the trees located along both edges of the easement. Preble-Rish had anticipated this problem and shifted part of the roadway to the west to reduce the impact upon some of the trees. If the roadway hadn't been shifted to the west, all of the trees would have suffered construction damage to the root plate area of the trees; damage to the root plate area of trees, reduces the anchoring ability of the tree leading to an increase in wind throw or failure of the tree during wind events such as severe thunder storms and hurricanes. The trees would also have lost a significant amount of their root system, leading to decline and possible death of a higher number of trees than the number to be removed due to the shift. The trees to be preserved during construction will require additional care. Trees by their very nature have inherent risk and future evaluation and care will be needed to reduce the possibility of failure.

Qualifications

A tree care company must meet the following requirements in order to qualify to perform any work on the project.

1. An International Society of Arboriculture Certified Arborist (CA) or Board Certified Master Arborist (BCMA) must be on staff.
 - a. The staff CA or BCMA must be present for root pruning being performed by their company.
 - b. The staff CA or BCMA must be able to visit the site within one hour of being requested while their company is providing care to the project trees during normal business hours.
2. The tree care company must maintain a minimum of two million dollars general aggregate of general liability insurance with errors and omission coverage.
3. The tree care company must maintain the State of Alabama minimum requirement of workers compensation insurance, even if they employ less than five employees.
4. The tree care company must have verifiable experience in tree preservation. A list of at least three previous projects for tree preservation with a sales total of more than \$1,000.00 per job excluding non-preservation services.
5. All recommendations are to be performed by the tree care company and may not be subcontracted.
6. All work must comply with ANSI A-300 standards and all workers must follow **ANSI Z133.1** standards and OSHA requirements.

Failure to follow the above requirements, in part or full, may result in the termination of the contract with or without notice depending on the severity of the violation.

Recommendations

Tree #1

1. **Canopy-clean** the tree of deadwood over ¾ of an inch, crossing limbs, limbs with defects, and sink limbs.
2. **Elevated** as needed to provide a minimum clearance of 14.5 feet above the road.
3. **Air-excavate** to a depth of twenty inches to expose and cleanly root prune roots with a minimum diameter of one inch within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
4. Reduce soil compaction and introduce organic matter into the soil by using an air-excitation device to mix amendments into the existing soil from the root flare to the edge of the root cut.
5. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.

6. Treatment with a tree growth product such as Cambistat or a product containing the same activate ingredient as a reduced rate corresponding with the expected root area loss.
7. Apply wood chip mulch to a depth of six inches across the entire area inside the root cut without covering the root flare of the tree.
8. Install a **tree protection fence** from the edge of the root pruning area to the edge of the easement.
9. Irrigate the tree as needed with considerations for normal rainfall for as long as a consulting arborist recommends.

Tree #50

1. Prune for canopy cleaning of the tree for deadwood over $\frac{3}{4}$ of an inch in diameter, crossing limbs, limbs with defects, and sink limbs.
2. Elevated as needed to provide a minimum clearance of 14.5 feet above the road.
3. Air-excavate to a depth of twenty inches to expose and cleanly root prune roots with a minimum diameter of one inch within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
4. If the grade outside the root pruning cut must be raised or lowered, a wall must be built to prevent grade change over the remaining portion of rooting area. The design and specifications of the retaining wall will be provided to the tree care company.
5. Reduce soil compaction and introduce organic matter into the soil by using an air-excitation device to mix the amendments into the existing soil from the root flare to the edge of the root cut.
6. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.
7. Treatment with a tree growth product such as Cambistat or a product containing the same activate ingredient as a reduced rate corresponding with the expected root area loss.
8. Apply wood chip mulch to a depth of six inches across the entire area inside the root cut without covering the root flare of the tree.
9. Install a tree protection fence from the edge of the root pruning area to the edge of the easement.
10. Irrigate the tree as needed with considerations for normal rainfall for as long as a consulting arborist recommends.

Remaining trees

1. Prune for defects as listed in the discussion section as recommended for each tree.
2. Canopy-clean the tree of deadwood over $\frac{3}{4}$ of an inch, crossing limbs, limbs with defects, and sink limbs.
3. Elevate as needed to provide a minimum clearance of 14.5 feet above the road.

4. Install a tree protection fence from the edge of the easement to within one foot of the edge of the proposed roadway or construction area, whichever one is closer to the tree.
5. Fertilize the tree using a fertilizer developed for trees at the rate of 1/18 pound of nitrogen per diameter inch.
6. If the tree loses more than twenty percent of its critical root zone, treatment with a tree growth product such as Cambistat or a product containing the same active ingredient at a reduced rate corresponding with the expected root area loss.
7. The root area inside the easement will be mulched to a depth of six inches from the tree protection fence to the edge of the easement without covering the root flare of the tree.

Glossary

ANSI – American National Standards Institute

ANSI A-300 standard – Standards for proper tree care

ANSI Z133.1 standards – Standards for safety in arboricultural operations

Canopy – The above ground portion of the tree consisting of limbs, branches, twigs, and leaves

Canopy-clean – pruning for deadwood, suckers, and crossing limbs

Cavity – A void in the tree wood caused by decay

Codominant – stems or limbs of equal or similar size with a common point of attachment, or two tree canopies sharing the same area equally or almost equally.

Construction tolerance – The ability of the tree to withstand stress caused during construction

Critical Root Zone (CRZ) – The minimum area of the tree's root system which must be preserved to maintain the tree in a healthy state.

Diameter at Breast Height (DBH) – The diameter of the tree measured at 54 inches above grade or the narrowest point below an enlargement of the trunk.

Decay – A fungal disease which reduces wood strength and in advanced states can cause the failure of a tree.

Failure – The breakage in the root, trunk, or canopy area of the tree causing a portion or entire tree to fall.

Intermediate – When a tree's canopy is not equal to the neighboring trees

Root plate – The area composed of the anchoring roots supporting the tree

Sweep – The turn of a limb or trunk is abnormal

Taper – The reduction in trunk or limb diameter as from the point of attachment to the end of the trunk or limb.

Tree Protection Fence – A structure built to prevent access to the CRZ

Uprooted – Failure of the tree's root system or the soil allowing the tree to fall

Visual Tree Assessment – An evaluation of the tree's structure from the ground

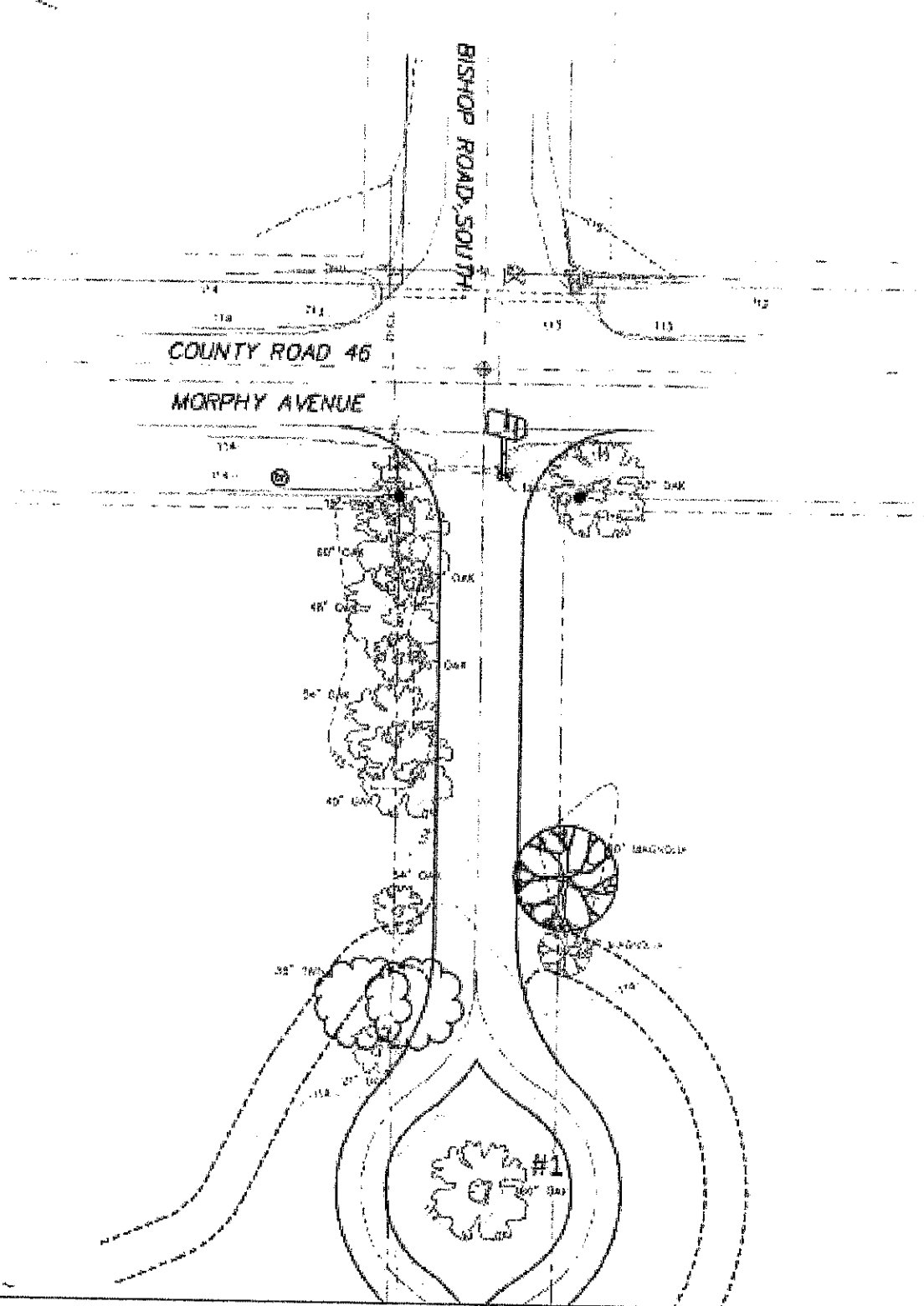
Appendix A - Tree Summary Table

ID TAG #	SPECIES		RATING			ROOT		
	COMMON NAME	LATIN NAME	HEALTH	STRUCTURE	DBH	PLATE	CRZ*	CT*
1	live oak	<i>Quercus virginiana</i>	3	2	49	11	36.8	g m
2	live oak	<i>Quercus virginiana</i>	3	2	34.3	10	25.7	g m
3	live oak	<i>Quercus virginiana</i>	3	2	47.5	11	35.6	g m
4	live oak	<i>Quercus virginiana</i>	3	2	34	10	25.5	g m
5	live oak	<i>Quercus virginiana</i>	3	3	29.5	10	22.1	g m
6	live oak	<i>Quercus virginiana</i>	3	2	43.5	11	32.6	g m
7	live oak	<i>Quercus virginiana</i>	3	3	34	10	25.5	g m
8	live oak	<i>Quercus virginiana</i>	3	3	28.8	10	21.6	g m
9	live oak	<i>Quercus virginiana</i>	3	3	38	11	28.5	g m
10	live oak	<i>Quercus virginiana</i>	3	2	35.8	10	26.9	g m
11	live oak	<i>Quercus virginiana</i>	3	3	42.5	11	31.9	g m
12	live oak	<i>Quercus virginiana</i>	3	2	44.5	11	33.4	g m
13	live oak	<i>Quercus virginiana</i>	3	3	35.2	10	26.4	g m
14	live oak	<i>Quercus virginiana</i>	3	1	55	11	41.3	g m
15	live oak	<i>Quercus virginiana</i>	3	3	24	10	18.0	g m
16	live oak	<i>Quercus virginiana</i>	3	1	29.7	10	22.3	g m
17	live oak	<i>Quercus virginiana</i>	3	1	37.8	11	28.4	g m
18	live oak	<i>Quercus virginiana</i>	3	3	36.5	10	27.4	g m
19	live oak	<i>Quercus virginiana</i>	3	1	47.8	11	35.9	g m
20	live oak	<i>Quercus virginiana</i>	3	3	46.8	11	35.1	g m
21	live oak	<i>Quercus virginiana</i>	2	1	37.4	11	28.1	g m
22	live oak	<i>Quercus virginiana</i>	3	2	24.2	10	18.2	g m
23	live oak	<i>Quercus virginiana</i>	3	3	25.5	10	19.1	g m
24	live oak	<i>Quercus virginiana</i>	3	3	34.1	10	25.6	g m
25	live oak	<i>Quercus virginiana</i>	3	2	25	10	18.8	g m
26	live oak	<i>Quercus virginiana</i>	3	1	38.3	11	28.7	g m
27	live oak	<i>Quercus virginiana</i>	3	2	37.7	11	28.3	g m
28	live oak	<i>Quercus virginiana</i>	3	1	73.5	11	55.1	g m
29	live oak	<i>Quercus virginiana</i>	3	3	36.4	10	27.3	g m
30	live oak	<i>Quercus virginiana</i>	3	2	36.4	10	27.3	g m
31	water oak	<i>Quercus nigra</i>	3	1	25.8	10	25.8	m
32	live oak	<i>Quercus virginiana</i>	3	2	34.8	10	26.1	g m
33	live oak	<i>Quercus virginiana</i>	3	2	45.3	11	34.0	g m
34	live oak	<i>Quercus virginiana</i>	2	1	65.7	11	49.3	g m
35	live oak	<i>Quercus virginiana</i>	3	2	27.1	10	20.3	g m
36	live oak	<i>Quercus virginiana</i>	3	2	65.5	11	49.1	g m
37	live oak	<i>Quercus virginiana</i>	3	3	55.1	11	41.3	g m

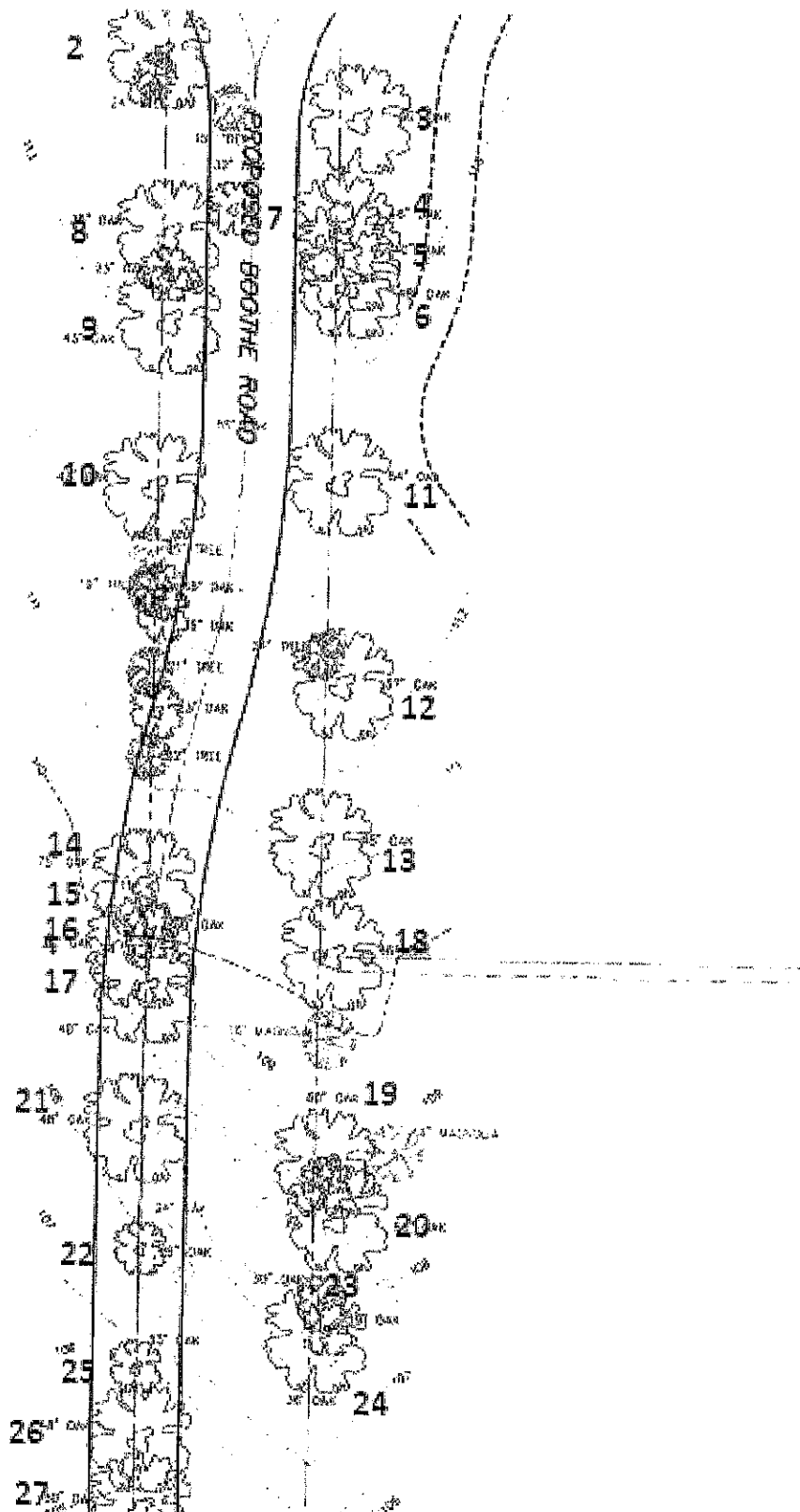
Appendix A - Tree Summary Table

ID TAG #	SPECIES		RATING					
	COMMON NAME	LATIN NAME	HEALTH	STRUCTURE	DBH	ROOT PLATE	CRZ*	CT*
38	live oak	<i>Quercus virginiana</i>	3	2	51.1	11	38.3	g m
39	live oak	<i>Quercus virginiana</i>	3	2	40.9	11	30.7	g m
40	live oak	<i>Quercus virginiana</i>	3	3	24	10	18.0	g m
41	live oak	<i>Quercus virginiana</i>	3	2	35.7	10	26.8	g m
42	water oak	<i>Quercus nigra</i>	3	1	29.7	10	29.7	m
43	live oak	<i>Quercus virginiana</i>	3	2	36.3	10	27.2	g m
44	live oak	<i>Quercus virginiana</i>	3	3	24	10	18.0	g m
45	live oak	<i>Quercus virginiana</i>	3	3	37.8	10	28.4	g m
46	camphor	<i>Cinnamomum camphora</i>						
47	water oak	<i>Quercus nigra</i>						
48	camphor	<i>Cinnamomum camphora</i>						
49	red oak	<i>Quercus falcata</i>	3	2	31.3	10	39.1	g m
50	live oak	<i>Quercus virginiana</i>	3	2	28.5	10	21.4	

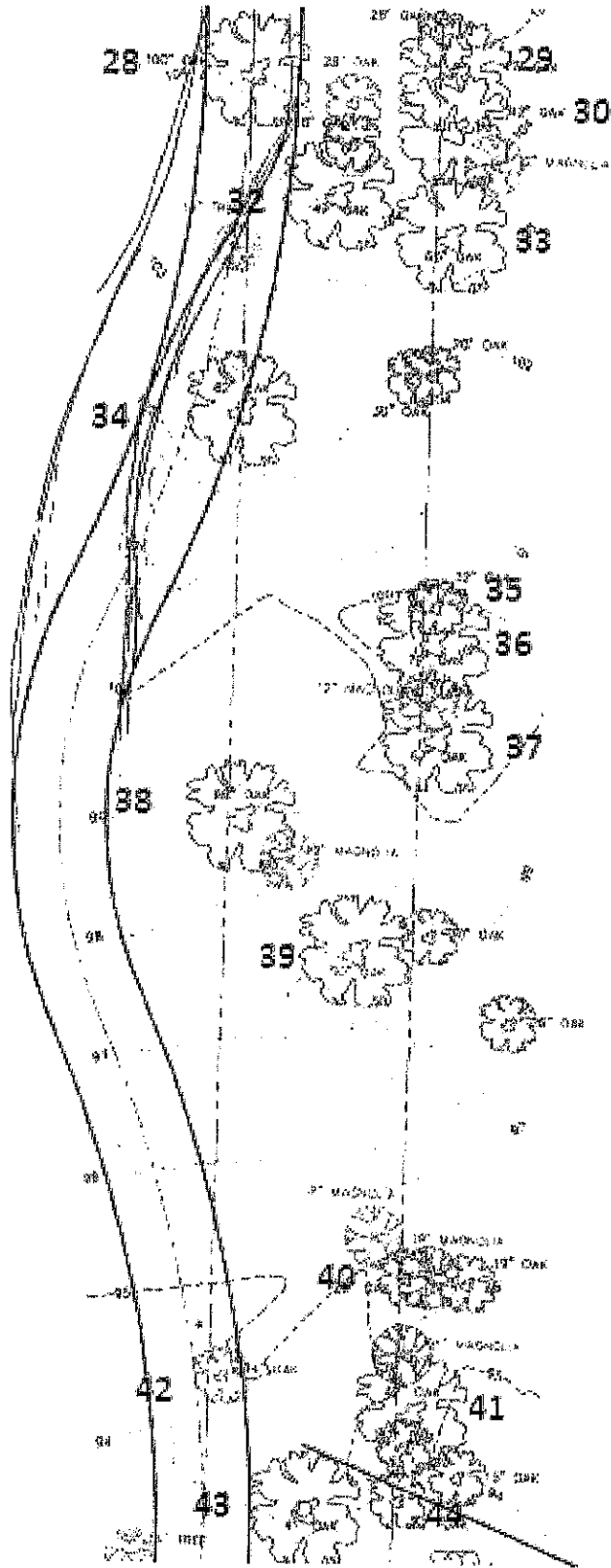
Appendix B - Survey



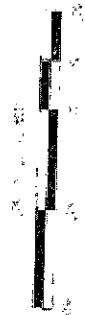
Appendix B – Survey



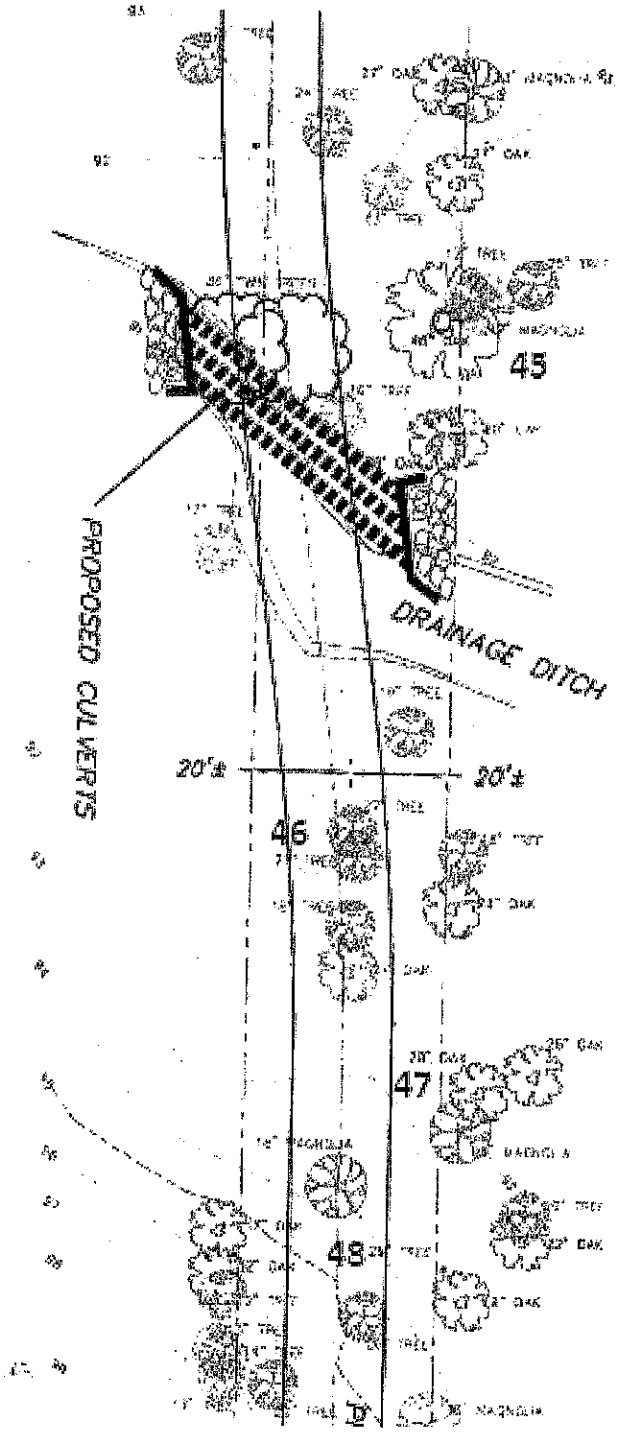
Appendix B – Survey



FAIRHOPE SINGLE TAX CORPORATION
PROPOSED BOOTH ROAD EXTENSION
ALTERNATE 12



Appendix B – Survey

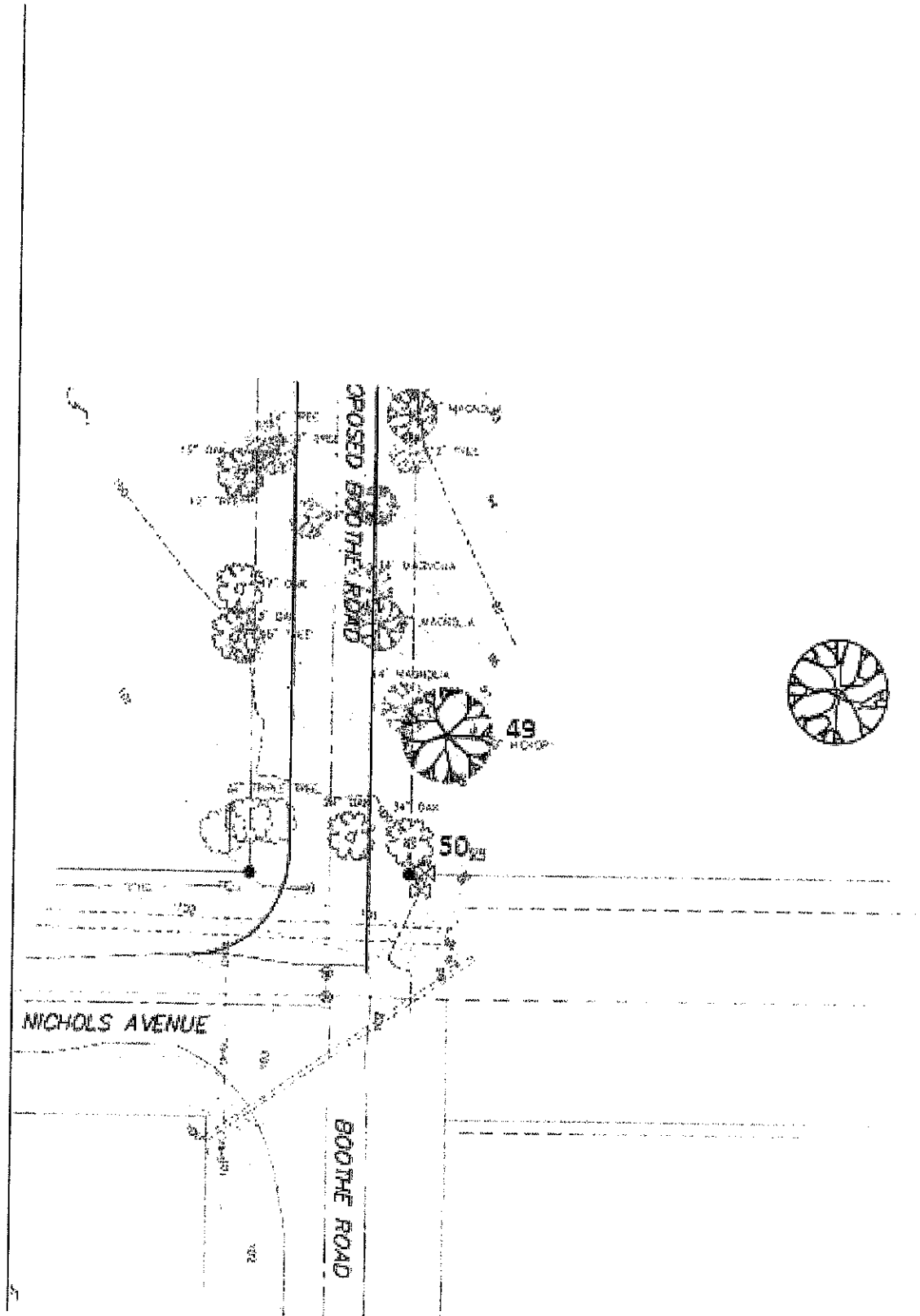


- CENTERLINE OF RESERVED RIGHT-OF-WAY

PREBLE-RISH, LLC
 CONSULTING ENGINEERS
 CIVIL • SURVEYING • SITE PLANNING

251 600 9900
 234 JENKINS BLVD
 WYOMING, WY 82001

Appendix B – Survey



Appendix C - Certificate of Performance

Certification of Performance

I, Gary Ickes II, certify that:

- I have personally inspected the trees and the property referred to in this report and have stated my findings accurately. The extent of the evaluation is stated in the attached report.
- I have no current or prospective interest in the vegetation or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
- The analysis, opinions, and conclusions stated herein are my own and are based on current scientific procedures and facts.
- My analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.
- No one provided significant professional assistance to me, except as indicated within the report.
- My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the International Society of Arboriculture, American Society of Consulting Arborists, and the Tree Care Industry Association. I have been involved in the field of Arboriculture in a full-time capacity for a period of more than 20 years.

Appendix D – Assumptions and Limiting Conditions

Assumptions & Limiting Conditions

1. Any legal description provided to the consultant/appraiser is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
3. The consultant shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
4. Loss and alteration of any part of this report invalidates the entire report.
5. Possession of this report or a copy thereof does not imply the right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.
6. Neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his qualifications.
7. This report and values expressed herein represent the opinion or the consultant/appraiser, and the consultant fee is in no way contingent upon the reporting of a specified value, a stipulated results, the occurrence of a subsequent event, nor upon any finding to be reported.
8. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
9. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.