



H-GAC'S Regional Urban Forestry Summit

PRESERVING COMMUNITY TREES

Unexpected Challenges and Practical Solutions

Jack Hill

Senior Urban Forester; *BURDITT*



Successful Urban Forest Planning

- Is the result of a **PROCESS**
- Involves **COLLABORATION** with other professionals
- Involves the **COOPERATION** of a supportive Client or City
- Team planning and desire
- Clear goals and objectives



Without Appropriate Planning & Project Mgmt.

- Trees may pose major problems to the function of infrastructure, or,
- Infrastructure may pose critical problems to the survival and growth of the urban forest



Typical Urban Forestry Projects

- Root Memorial Square Park
- Metro Light Rail Project
- Allen Parkway Village
- City of Houston Tree Inventory
- College Station Urban Forestry Management Plan
- Parks and Recreation Urban Forest Tech Manual
- Urban Forest Effects Study (UFORE)



Field Data Collection

- **In addition to the traditional data attributes;**
 - Check the impact of utilities and other hardscape
 - Check the correctness of the existing design plan
 - Existing and planned grade impacts and drainage



Design Review

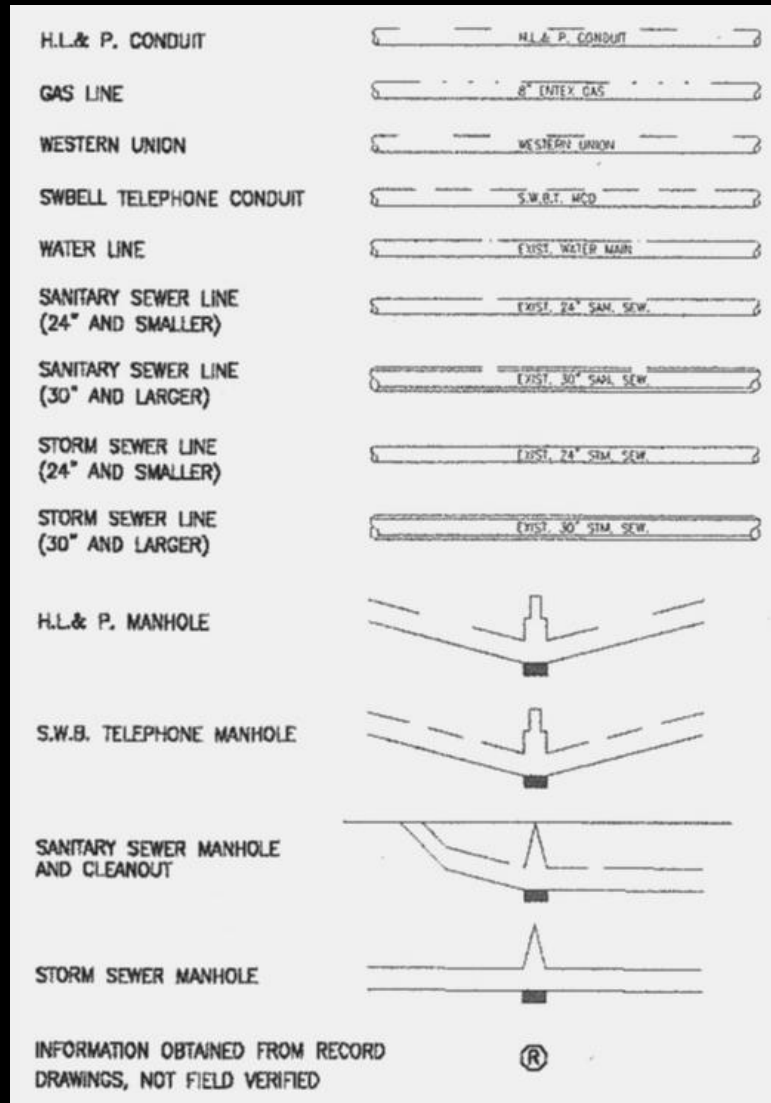
- Each tree's critical root zone (crz) area is examined for impacts from construction
- Out of this analysis comes recommendations for design changes, special construction procedures, tree relocation or removal
- Development of redline markup plans with a findings and recommendations report
- Design review meeting with engineer



Engineering Documents – Symbols of Power

POINT OF INTERSECTION	
POWER POLE	
POWER POLE w/ DOWN GUY	
GAS METER	
GAS VALVE	
HEADER	
BUILDING	
TREE	
WATER METER	
WATER VALVE	
FIRE HYDRANT	
TAPPING SLEEVE & VALVE	
REDUCER	
ROUND CONNECTIONS	
SANITARY SEWER MANHOLE AND CLEANOUT	
STORM SEWER MANHOLE	
STORM SEWER INLETS	
CULVERT & PIPE	
TOP OF CURB OR GUTTER LINE ELEV.	
NORTH OR EAST PROPERTY LINE	
SOUTH OR WEST PROPERTY LINE	
NORTH OR EAST CURB LINE	
SOUTH OR WEST CURB LINE	
CENTERLINE OF RIGHT OF WAY	

Powerful Processes



- Engineers and Architects have **“POWER”**, in part because they have a recognized **PROCESS**
- Urban Foresters must follow a uniform process as well



Urban Foresters Must Read Construction Docs



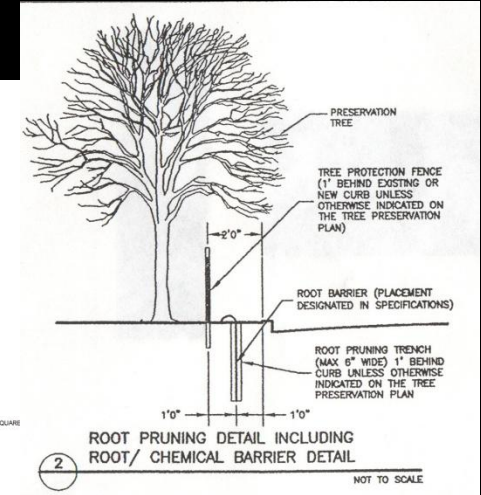
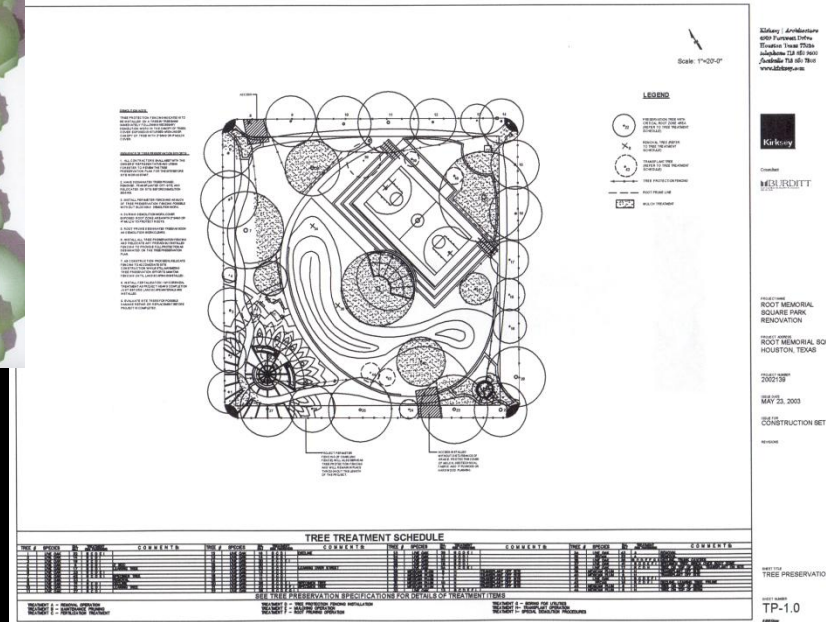


Boring – Small Symbol – BIG HOLE





Tree Preservation Plan



Tree Preservation Plan:

- Tree preservation fencing
- Root pruning
- Mulching
- Pruning
- Transplanting



Urban Forestry-Root Memorial Park

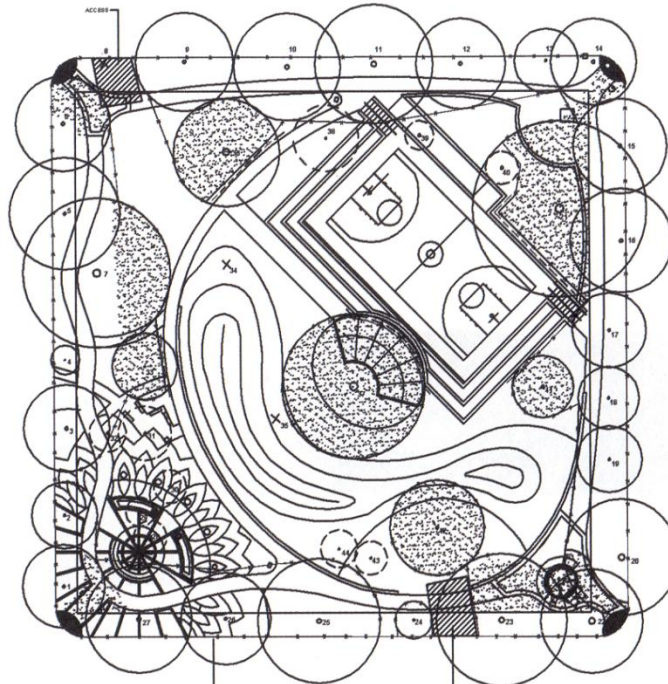
Scale: 1"=20'-0"

WORK CONTRACT

TREE PROTECTION FENCING INDICATED BY TO BE INSTALLED ON A TREE BY TREE BASIS IMMEDIATELY FOLLOWING NECESSARY DEMOLITION WORK IN THE CRUISE OF TREE COVER EXPOSED BY FUNDING AREA OR CRUISE OF TREE WITH FUNDING AREA COVER.

REQUIREMENTS OF TREE PRESERVATION SPECIFICATIONS

1. ALL CONTRACTORS SHALL MEET WITH THE OWNER'S REPRESENTATIVE AND URBAN FORESTRY TO REVIEW THE TREE PRESERVATION PLAN FOR THE SITE BEFORE SITE WORK BEGINS.
2. HAVE DESIGNATED TREE PRUNING REMOVE, TRANSPORTED OFF SITE, AND RELOCATED ON SITE BEFORE DEMOLITION BEGINS.
3. INSTALL PERIMETER FENCE AND ANCHORS OF TREE PRESERVATION FENCING POSSIBLE WITHOUT SIGNIFICANT DISRUPTION TO WORK.
4. SURROUND DEMOLITION WORK WITH BARRIER ROOT ZONE AS SHOWN ON PLAN OR 4' MULCH TO PROTECT ROOTS.
5. ROOT PRUNING DESIGNATED TREES AS SOON AS DEMOLITION WORK BEGINS.
6. INSTALL ALL TREE PRESERVATION FENCING AND RELOCATE ANY PREVIOUSLY INSTALLED FENCING TO PROVIDE FULL PROTECTION AS DESIGNATED ON THE TREE PRESERVATION PLAN.
7. USE CONSTRUCTION PROCEDURES RELOCATE FENCING TO ACCOMMODATE SITE CONSTRUCTION WHILE MAINTAINING TREE PRESERVATION EFFORTS MAINTAIN FENCING ON THE LAND SCAPES INSTALLED.
8. INSTALL ERIGATION / AVOIDANCE TREATMENT AS PRELIMINARY WORK BEFORE JUST BEFORE LANDSCAPE MATERIALS ARE INSTALLED.
9. EVALUATE SITE TREES FOR POSSIBLE DAMAGE REPAIR OR REPLACEMENT BEFORE PROJECTS COMPLETE.



LEGEND

- PRESERVATION TREE WITH CRITICAL ROOT ZONE AREA (REFERS TO TREE TREATMENT SCHEDULE)
- REMOVAL TREE (REFER TO TREE TREATMENT SCHEDULE)
- TRANSPLANT TREE (REFER TO TREE TREATMENT SCHEDULE)
- TREE PROTECTION FENCING
- TREE PRUNE LINE
- MULCH TREATMENT

PROJECT PERIMETER FENCING IS TO BE INSTALLED AT THE PERIMETER OF THE PROJECT. ACCESS IS TO BE MAINTAINED THROUGHOUT THE LENGTH OF THE PROJECT.

TREE TREATMENT SCHEDULE

TREE #	SPECIES	HT.	DBH	CONDITION	COMMENTS	TREE #	SPECIES	HT.	DBH	CONDITION	COMMENTS	TREE #	SPECIES	HT.	DBH	CONDITION	COMMENTS	TREE #	SPECIES	HT.	DBH	CONDITION	COMMENTS
1	2	...	...	...	...	...	3	...	...	...	...	...	4	...	...	...	...	...
...

SEE TREE PRESERVATION SPECIFICATIONS FOR DETAILS OF TREATMENT ITEMS

- TREATMENT A - REMOVAL OPERATION
- TREATMENT B - MAINTENANCE PRUNING
- TREATMENT C - FERTILIZATION TREATMENT
- TREATMENT D - TREE PROTECTION FENCING INSTALLATION
- TREATMENT E - MULCHING OPERATION
- TREATMENT F - ROOT PRUNING OPERATION
- TREATMENT G - BORING FOR UTILITIES
- TREATMENT H - TRANSPLANT OPERATION
- TREATMENT I - SPECIAL DEMOLITION PROCEDURES

Kirksey | Architecture
4009 Fortworth Drive
Houston Texas 77026
Telephone 713 850 9400
facsimile 713 850 7808
www.kirksey.com



Consultant
BURDITT
ARCHITECTS

PROJECT NAME
ROOT MEMORIAL SQUARE PARK RENOVATION

PROJECT ADDRESS
ROOT MEMORIAL SQUARE HOUSTON, TEXAS

PROJECT NUMBER
2002139

ISSUE DATE
MAY 23, 2003

ISSUE FOR
CONSTRUCTION SET

REVISIONS

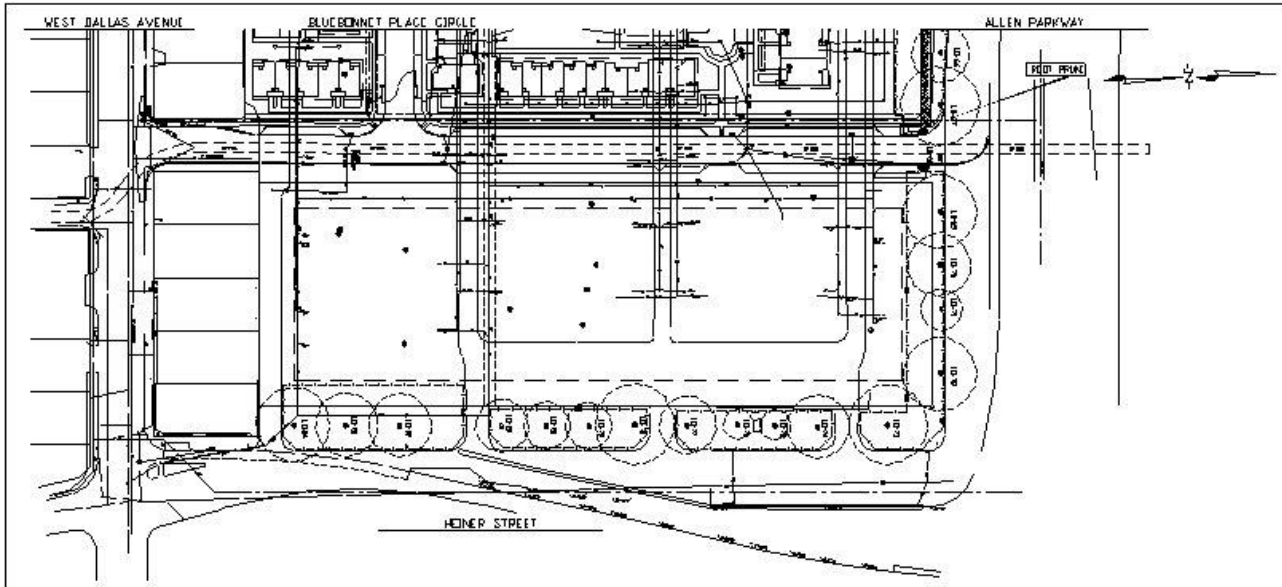
SHEET TITLE
TREE PRESERVATION PLAN

SHEET NUMBER
TP-1.0

A 2003 Day



Tree Preservation Plan




ALLEN PARKWAY VILLAGE
 THE SHERWIN & WANGELL, P.C.
 7-SEALS
 PRESERVATION TREE WITH CRITICAL ROOT AREA (C.R.A.) (SEE SPECIFICATIONS)
 W.D. 24 REMOVAL TREE (SEE SPECIFICATIONS)
 TREE PROTECTION FENCING WITH 2' HIGH SIGNATURE NET (SEE SPECIFICATIONS)
 RED PRIME LINE
 PERMANENT SPECIAL PROTECTION (SEE SPECIFICATIONS)
 IRRIGATION SYSTEM (SEE SPECIFICATIONS)

Key de la Reza AIA Architects

TREE #	SPECIES	DA #	TREATMENT (SEE COMMENTS)	COMMENTS	TREE #	SPECIES	DA #	TREATMENT (SEE COMMENTS)	COMMENTS	TREE #	SPECIES	DA #	TREATMENT (SEE COMMENTS)	COMMENTS
TR-01	Q. AG.	21	REMOVE	REMOVE										
TR-02	Q. AG.	22	REMOVE	REMOVE										
TR-03	Q. AG.	23	REMOVE	REMOVE										
TR-04	Q. AG.	24	REMOVE	REMOVE										
TR-05	Q. AG.	25	REMOVE	REMOVE										
TR-06	Q. AG.	26	REMOVE	REMOVE										
TR-07	Q. AG.	27	REMOVE	REMOVE										
TR-08	Q. AG.	28	REMOVE	REMOVE										
TR-09	Q. AG.	29	REMOVE	REMOVE										
TR-10	Q. AG.	30	REMOVE	REMOVE										
TR-11	Q. AG.	31	REMOVE	REMOVE										
TR-12	Q. AG.	32	REMOVE	REMOVE										
TR-13	Q. AG.	33	REMOVE	REMOVE										
TR-14	Q. AG.	34	REMOVE	REMOVE										
TR-15	Q. AG.	35	REMOVE	REMOVE										
TR-16	Q. AG.	36	REMOVE	REMOVE										
TR-17	Q. AG.	37	REMOVE	REMOVE										
TR-18	Q. AG.	38	REMOVE	REMOVE										
TR-19	Q. AG.	39	REMOVE	REMOVE										
TR-20	Q. AG.	40	REMOVE	REMOVE										
TR-21	Q. AG.	41	REMOVE	REMOVE										
TR-22	Q. AG.	42	REMOVE	REMOVE										
TR-23	Q. AG.	43	REMOVE	REMOVE										
TR-24	Q. AG.	44	REMOVE	REMOVE										
TR-25	Q. AG.	45	REMOVE	REMOVE										
TR-26	Q. AG.	46	REMOVE	REMOVE										
TR-27	Q. AG.	47	REMOVE	REMOVE										
TR-28	Q. AG.	48	REMOVE	REMOVE										
TR-29	Q. AG.	49	REMOVE	REMOVE										
TR-30	Q. AG.	50	REMOVE	REMOVE										
TR-31	Q. AG.	51	REMOVE	REMOVE										
TR-32	Q. AG.	52	REMOVE	REMOVE										
TR-33	Q. AG.	53	REMOVE	REMOVE										
TR-34	Q. AG.	54	REMOVE	REMOVE										
TR-35	Q. AG.	55	REMOVE	REMOVE										
TR-36	Q. AG.	56	REMOVE	REMOVE										
TR-37	Q. AG.	57	REMOVE	REMOVE										
TR-38	Q. AG.	58	REMOVE	REMOVE										
TR-39	Q. AG.	59	REMOVE	REMOVE										
TR-40	Q. AG.	60	REMOVE	REMOVE										
TR-41	Q. AG.	61	REMOVE	REMOVE										
TR-42	Q. AG.	62	REMOVE	REMOVE										
TR-43	Q. AG.	63	REMOVE	REMOVE										
TR-44	Q. AG.	64	REMOVE	REMOVE										
TR-45	Q. AG.	65	REMOVE	REMOVE										
TR-46	Q. AG.	66	REMOVE	REMOVE										
TR-47	Q. AG.	67	REMOVE	REMOVE										
TR-48	Q. AG.	68	REMOVE	REMOVE										
TR-49	Q. AG.	69	REMOVE	REMOVE										
TR-50	Q. AG.	70	REMOVE	REMOVE										

SEE TREE PRESERVATION AND TREATMENT SPECIFICATIONS FOR DETAILS OF TREATMENT STEPS

TREATMENT A - REMOVAL OPERATION (TOP TREES IN PRESERVATION AREAS ONLY)
 TREATMENT B - MAINTENANCE PRUNING (TOP BRANCH AND CLEARANCE PRUNING ONLY)
 TREATMENT C - FERTILIZATION TREATMENT
 TREATMENT D - RED PRIME LINE
 TREATMENT E - MISCOPING OPERATION
 TREATMENT F - TREE PROTECTION FENCING INSTALLATION
 TREATMENT G - IRRIGATION SYSTEM INSTALLATION
 TREATMENT H - SPECIAL FERTILIZER (SEE INDICATION IN CONSTRUCTION PLANS)
 TREATMENT I - RED PRIME LINE CHEMICAL SUPPLY INSTALLATION

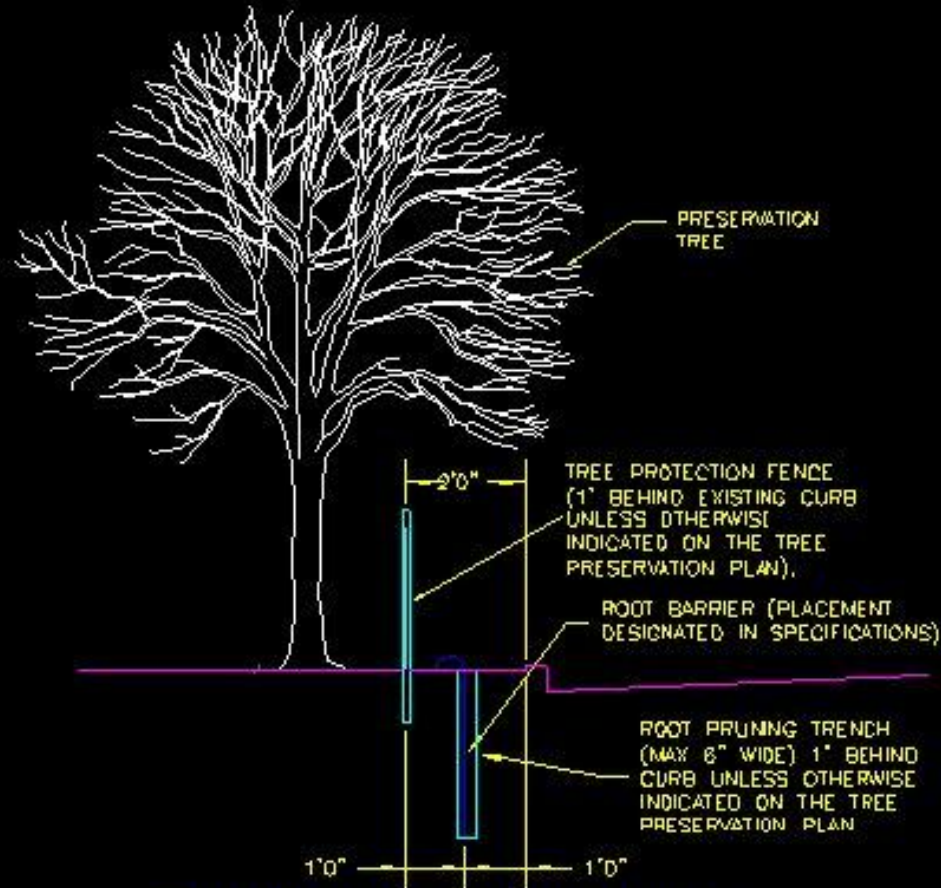
DATE: _____
 DRAWN BY: _____
 CHECKED BY: _____
 SCALE: _____
 SHEET NO: TP-6
 TOTAL SHEETS: 67



Tree Treatment Schedule

SPECIES	DBH	TREATMENT	NOTES
Live Oak	20	A	Remove
Live Oak	25	B,C,D	
Hackberry	10	B,C,D,G	
Red Oak	15	B,C,D	Hazard Prune
Chinese Tallow	12	B,F	
Cedar Elm	22	A	Hazard Remove

Root Pruning Detail

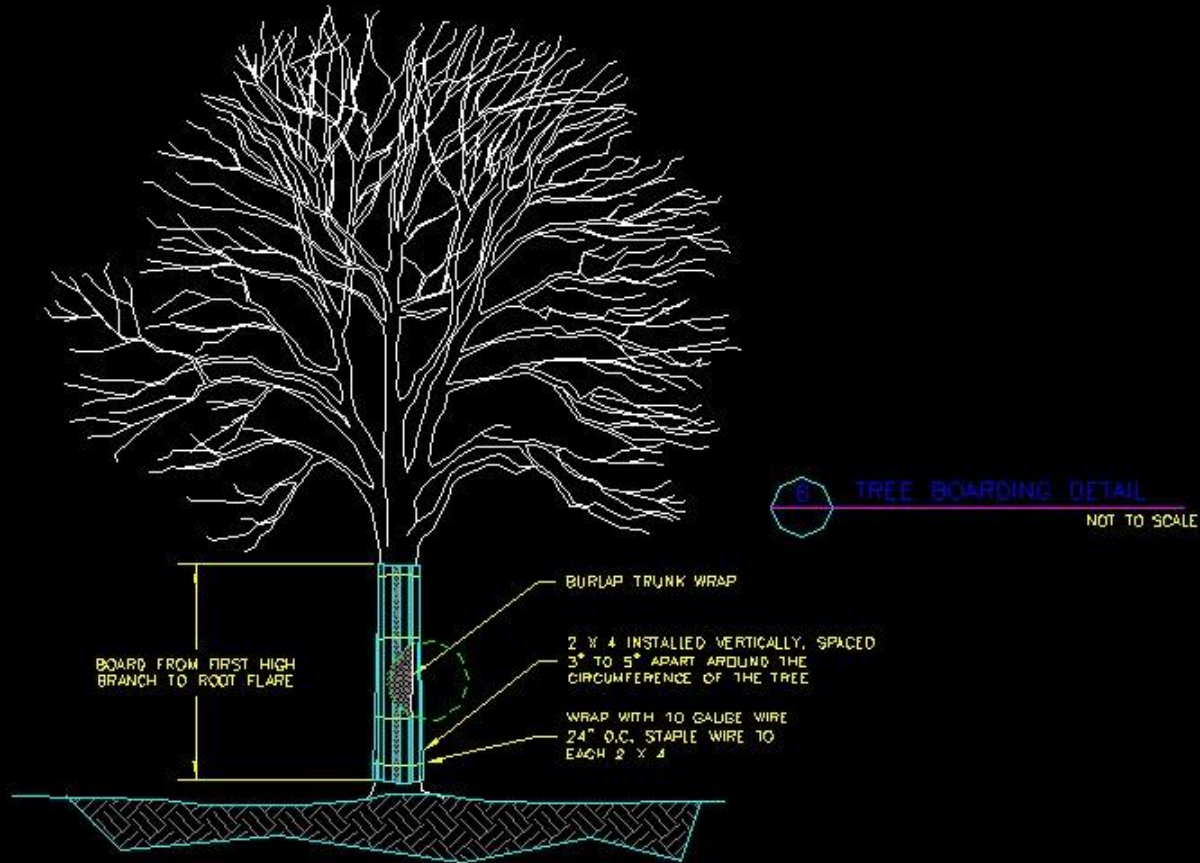


ROOT PRUNING DETAIL INCLUDING
ROOT/ CHEMICAL BARRIER DETAIL



NOT TO SCALE

Boarding Detail





Boarding to Prevent Equipment Damage



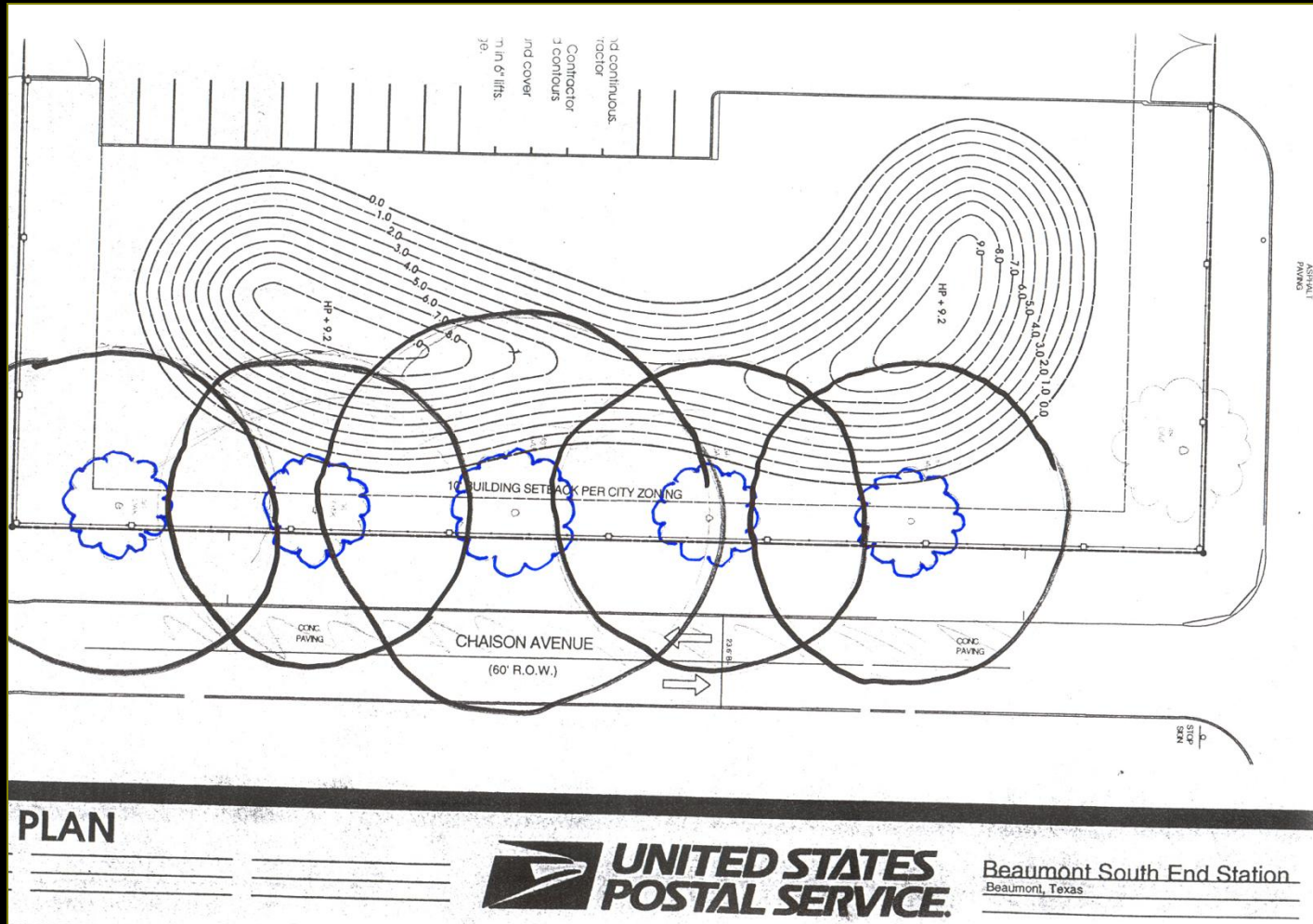


Construction Administration

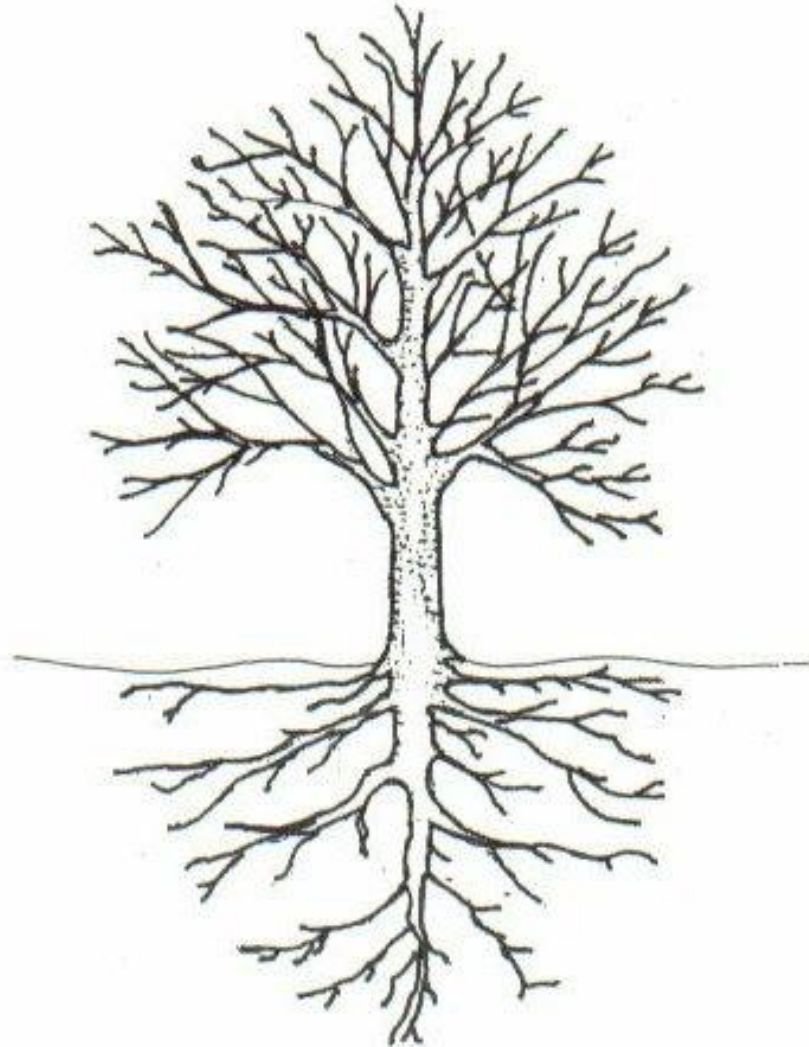
- Preparing the tree preservation plan techniques for bidding
- Laying out the treatment areas
- Coordination with the selected contractor
- Oversight of the process as installed



Most Tree Surveys Are Inaccurate



Misconceptions Continue



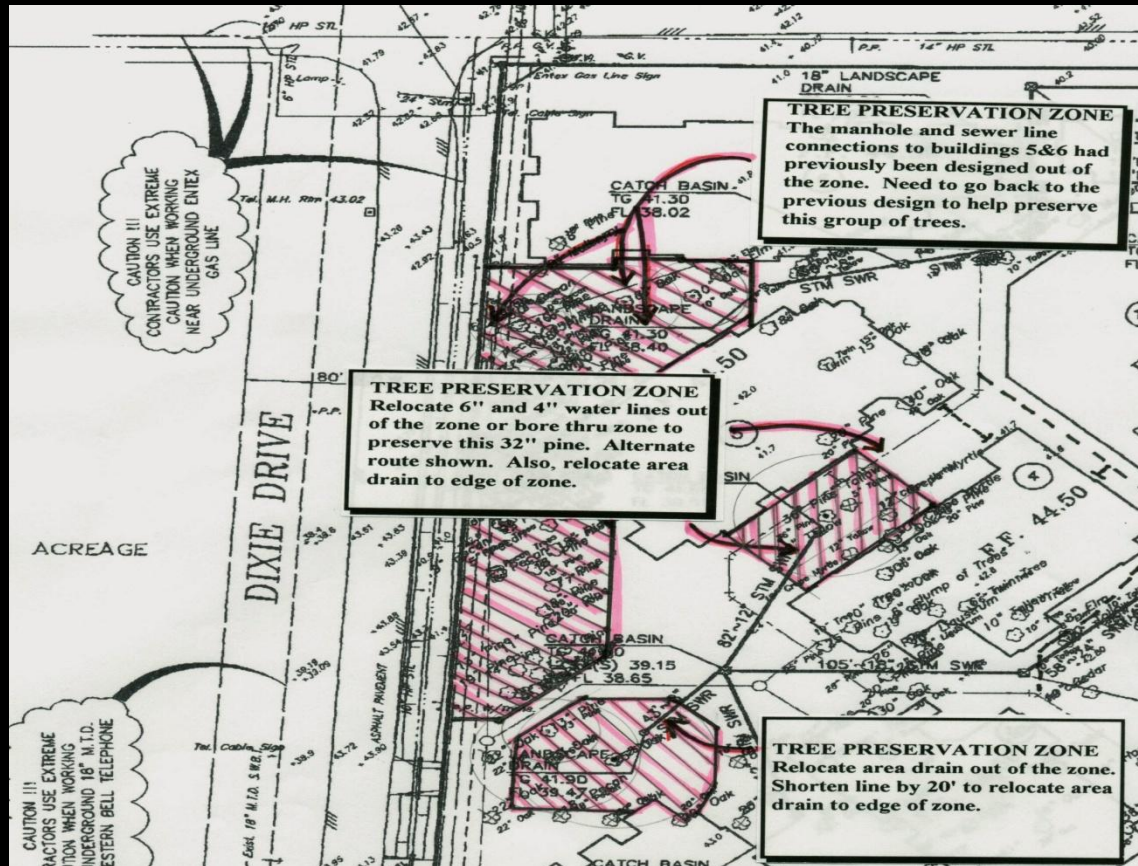


The Real Thing





Field Design – Red Line Markup





Site Monitoring

- After all the assessment, planning, and documentation.....
- Site monitoring, or making sure the planning makes its way to the “field”, is critical and lacking in today’s construction projects.
- Check for compliance to the tree preservation plan



Special Demolition Treatments





Zero Curb Cut



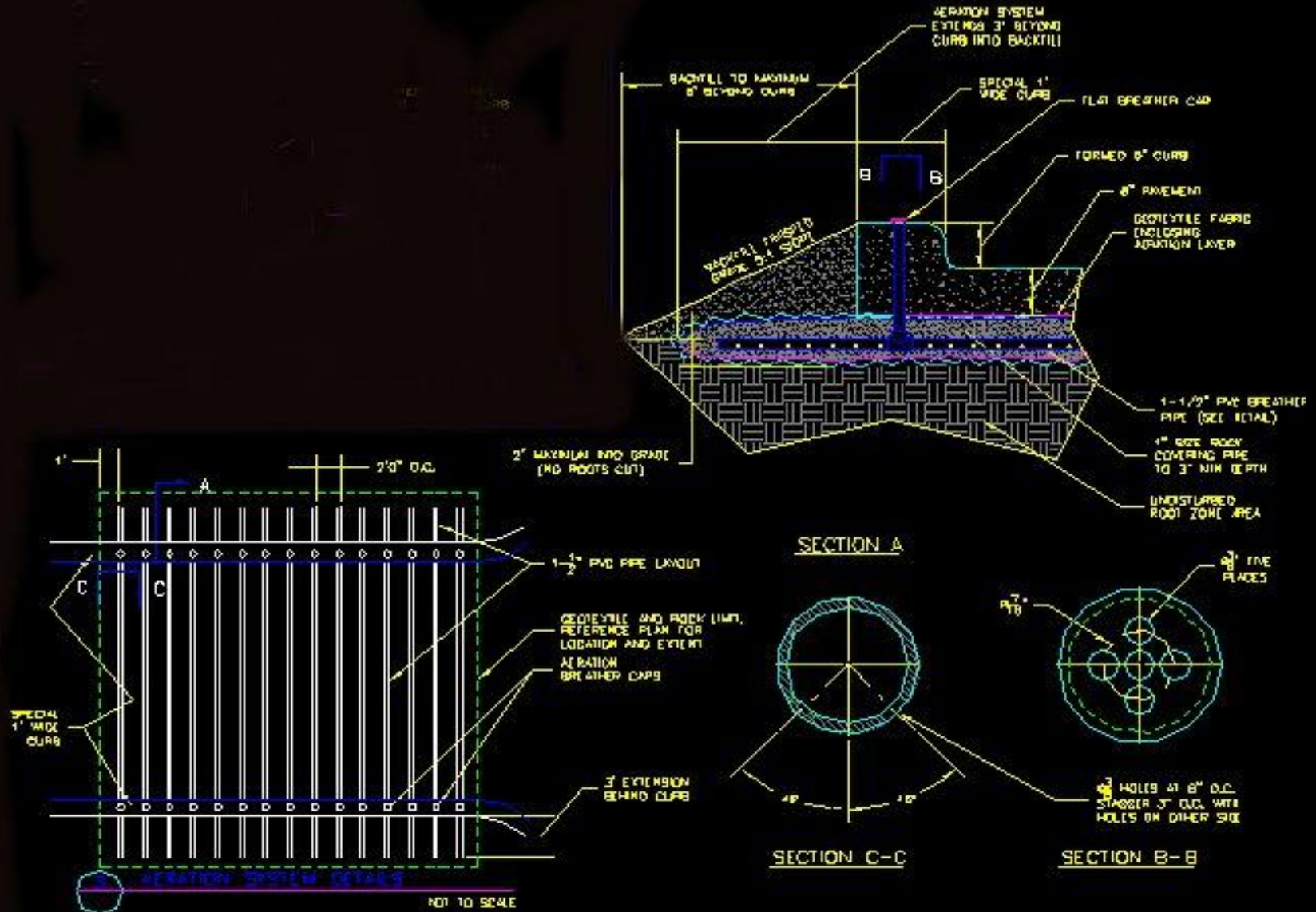




Aeration Systems – When to use

If more than 30 percent of a significant tree's CRZ is to be encroached by pavement for a parking or driveway area, then an aeration system installation shall be required to help preserve the tree.

Aeration Detail



Aeration System – Layout & Construction





Aeration System – Layout & Construction





Aeration System – Layout & Construction



Aeration System - Fill





Aeration System – Post-Fill





Aeration System - Protection





Aeration System - Protection





Aeration Pipe





Aeration System - Rebar





Aeration Curb Construction



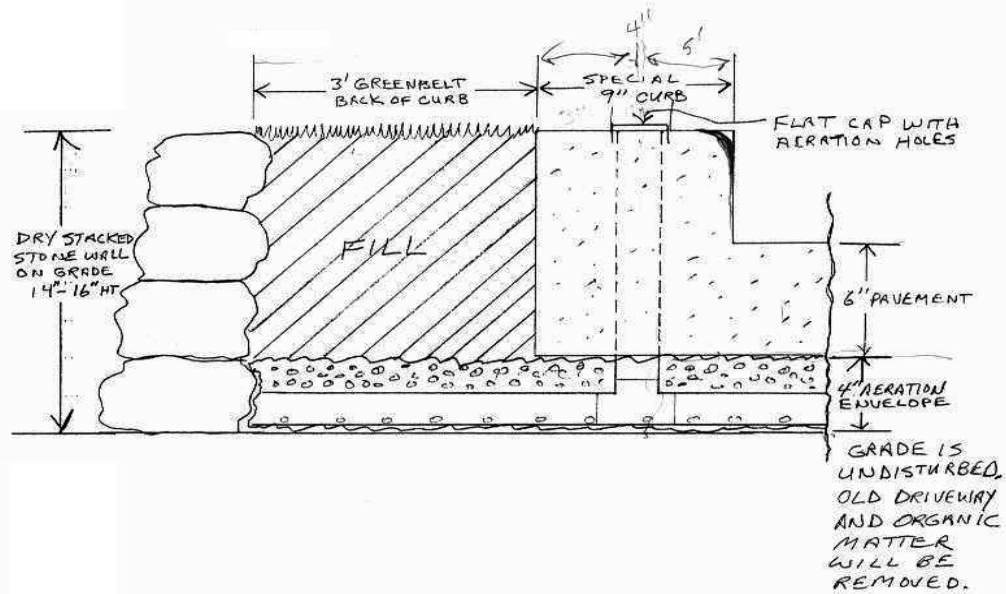


Completed Curb Aeration



Aeration System Detail Drawing

AERATION SYSTEM DETAIL

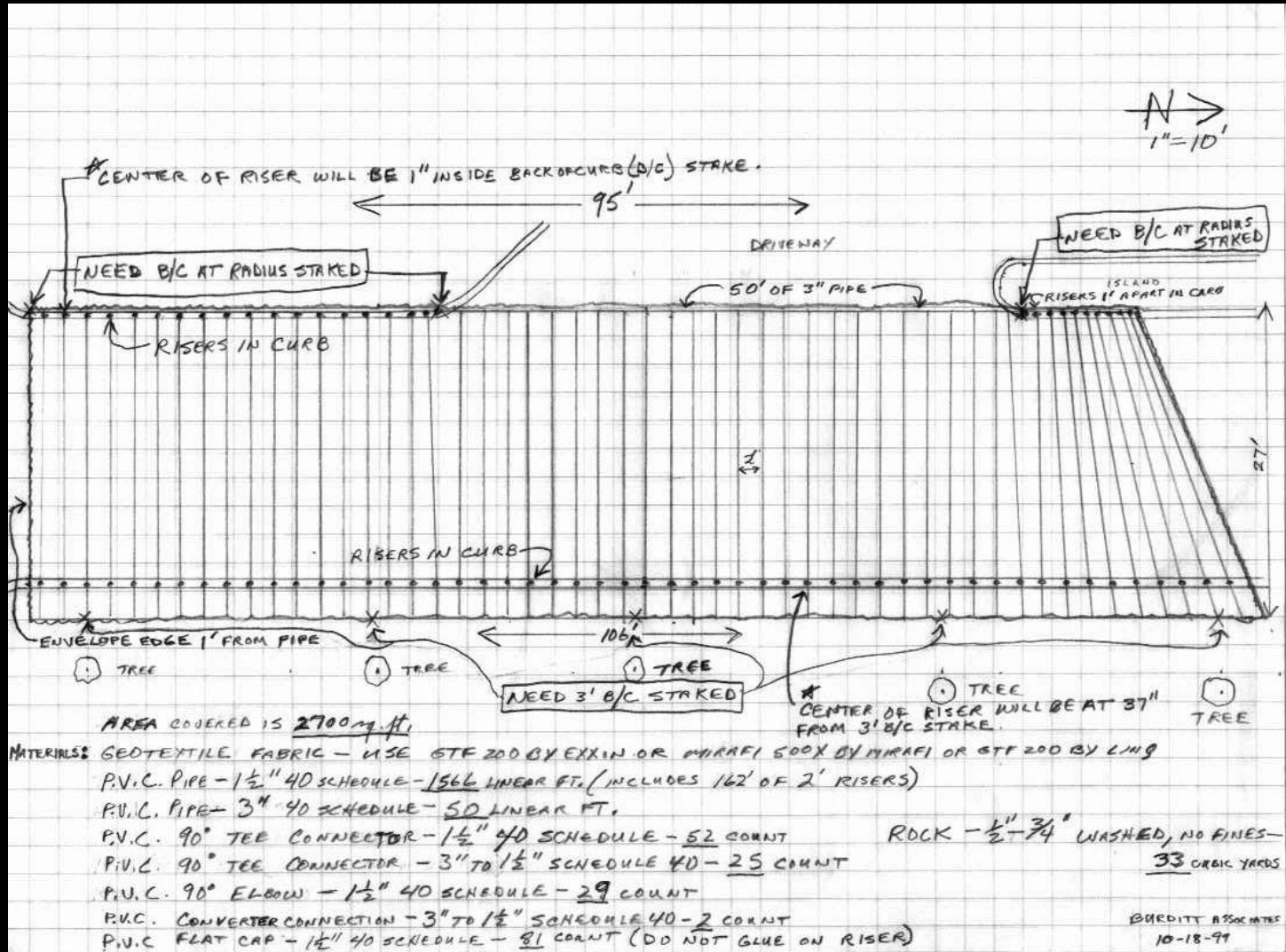


CROSS SECTION AT WALL

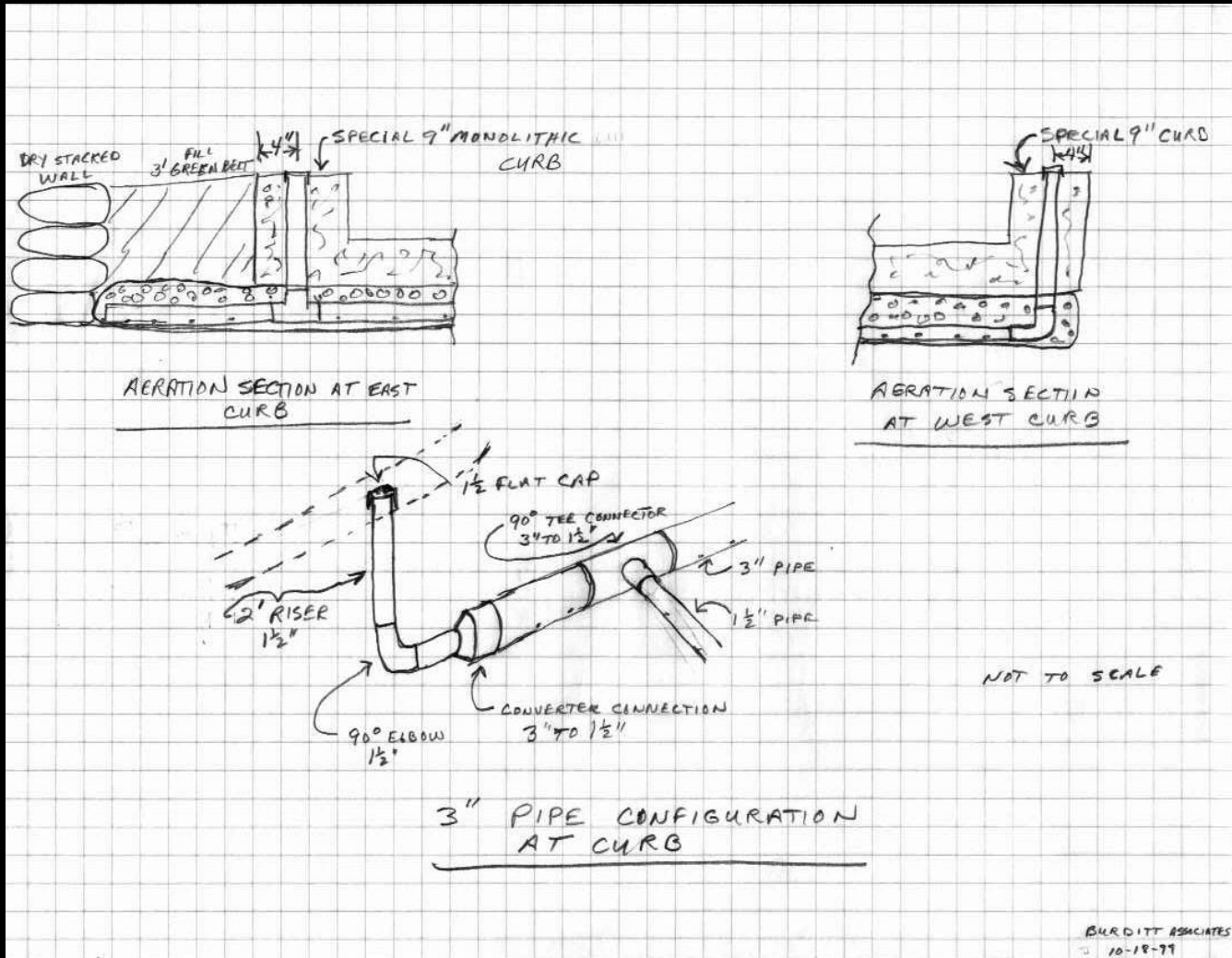
- NOT TO SCALE -



Field Design – Red Line Markup



Field Design – Red Line Markup





Gates at Hermann Park





Gates at Hermann Park





Conroe FUMC – Piping Layout





Conroe FUMC – Aeration Layer Covered





Houston METRO Light Rail at North Bound Museum District Station





Why Plan?

- Remember, trees can't move; therefore they must adapt to new environments
- The question is... can the tree adapt to its new environment fast enough?
- Will the adaptation be according to a specified plan?



This Tree Could Not Adapt Improper Preservation Planning

