

| SYMBOL | DATE | DESCRIPTION | BY |
|--------|----------|---|----|
| R1 | 03.09.16 | ADDED HIC PARKING, REV. GRADES, REV. DRIVE AND ADA ROUTE WIDTH BY REDUCING LANDSCAPE ISLANDS. | |

© 2015 NORRIS & TUNSTALL
 GRADING, DRAINAGE AND EROSION CONTROL PLAN
 NHRMC ADDITIONAL PARKING
 GLEN MEADE LOT
 1915 GLEN MEADE ROAD
 WILMINGTON, N. C.

OWNER/DEVELOPER
 NHRMC
 PO BOX 9000
 WILMINGTON, NC 28402
 910 343-2788

NORRIS & TUNSTALL
 CONSULTING ENGINEERS, P.C.
 902 MARKET STREET
 WILMINGTON, NC 28401
 PHONE (910) 343-9653
 FAX (910) 343-9604
 office@nkteng.com
 license #C-3641

RELOCATED METAL FENCE.
 INSTALL 5' SIDEWALK TO MEET ADA REGULATIONS. 5% MAX. LONGITUDINAL SLOPE AND 2% MAX. CROSS SLOPE.
 INSTALL TEMP. SILT FENCE. SILT FENCE SHALL ALSO SERVE AS TREE PROTECTION.
 24" CURB AND GUTTER, TYP.
 NOTE: ALL HC SPACES AND ACCESS ISLE SHALL MEET ADA CODE. 2% CROSS SLOPE MAX IN EACH DIRECTION.

CONVERT EXIST. CI TO A DI. USE NCDOT TYPE HEAVY DUTY EXPRESSWAY FRAME AND GRATE.
 TEMPORARY GRAVEL CONSTRUCTION ENTRANCE.
 TEMPORARY SILT FENCE.

EXISTING CONCRETE PAD, BACKFLOW PREVENTOR, AND ENCLOSURE.
 DISTURBED AREA BACKFLOW PREVENTOR.
 24" CURB AND GUTTER, TYP.
 EXISTING 8' HIGH MASONRY WALL.
 TREE PROTECTION FENCE, TYPICAL.

CI-3
 T=53.15
 I=50.65

CI-4
 T=53.50
 I=50.75

CI-5
 T=55.00
 I=51.00

CI-2
 T=53.25
 I=50.23

DI-1
 T=54.00
 I=50.13

INSTALL CURB AND GUTTER TO MATCH EXISTING.

INSTALL NEW 5' CONCRETE WALK TO MEET ADA REGULATIONS. 5% MAX. SLOPE LONGITUDINAL AND 2% MAX. CROSS SLOPE. REFER TO C.O.W SIDEWALK DETAIL.

MAINTAIN 4' MIN. SIDEWALK WIDTH AT POWER POLE.

NEW 15" RCP
 I IN=50.04 (EXIST.)

CURB INLET
 FLOW 53.66
 INVI 50.04(15")

For each open utility cut of City streets, a \$325 permit shall be required from the City prior to occupancy and/or project acceptance.

WILMINGTON
 Public Services • Engineering Division
 APPROVED STORMWATER MANAGEMENT PLAN
 Date: 3/17/16 permit # 20160232
 Signed: [Signature]

Approved Construction Plan
 Planning: [Signature] Date: 11/16
 Traffic: [Signature] Date: 1-17-16
 File: [Signature] Date: 3-15-16

NCDENR PWSS WATER PERMIT #: _____ GPD
 WATER CAPACITY: _____ GPD
 DWQ SEWER PERMIT #: _____ GPD
 SEWER CAPACITY: _____ GPD
 SEWER SHED # AND PLANT: _____
 SEWER TO FLOW THROUGH NEI: YES OR NO (CIRCLE ONE)

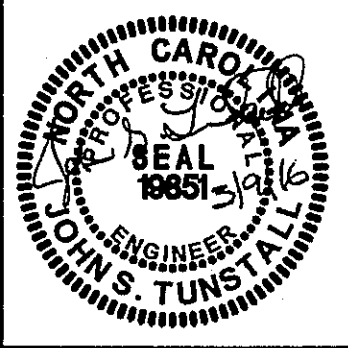
LEGEND

| | |
|--|---------------------------------------|
| | DISTURBED AREA LIMITS |
| | PROPOSED FINISH GRADE SPOT ELEVATION |
| | INLET PROTECTION |
| | DROP INLET WITH INLET PROTECTION (DI) |
| | EXISTING TREE TO BE SAVED |
| | TREE PROTECTION FENCING |
| | TEMPORARY SILT FENCE |

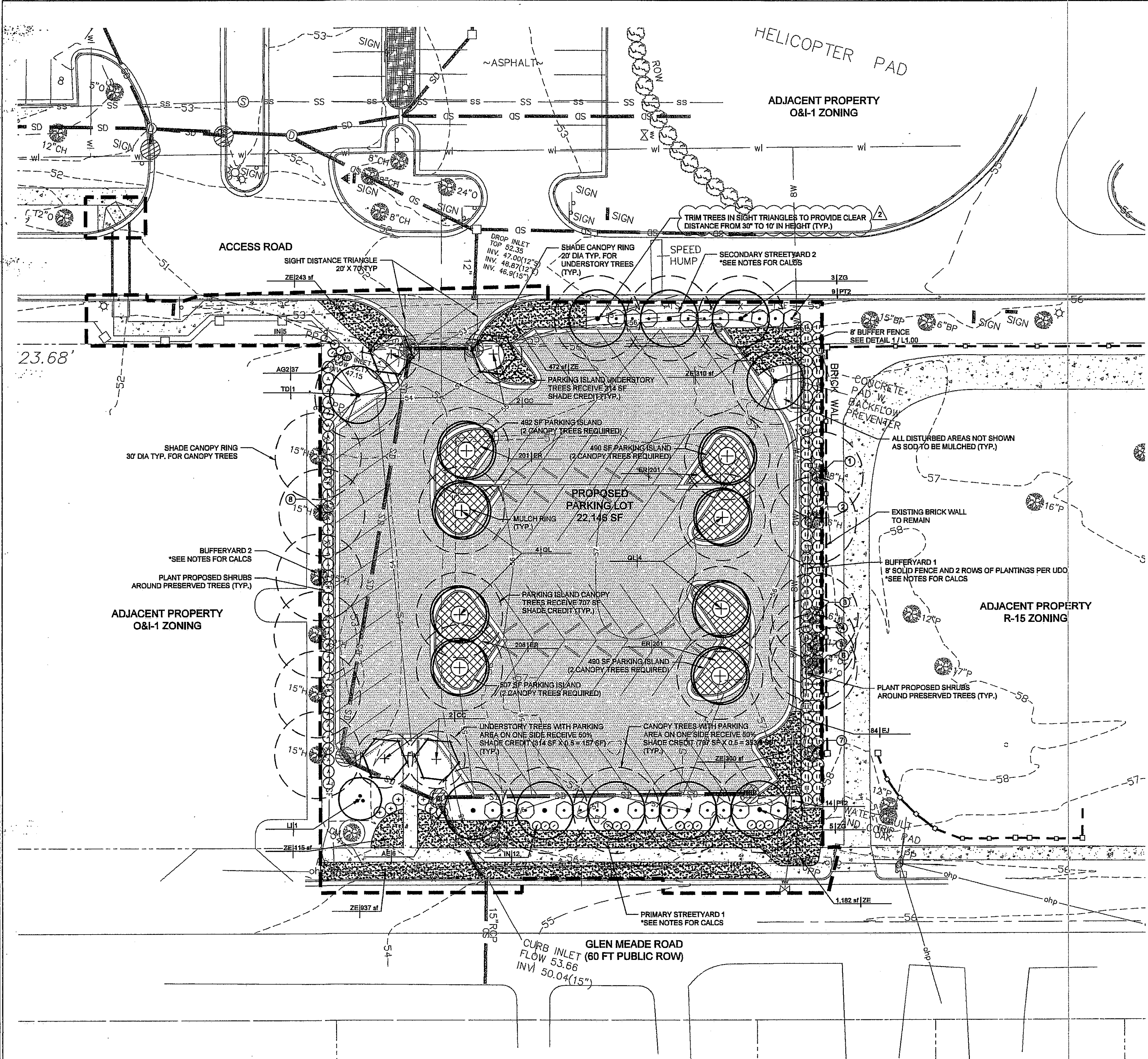
SCALE: 1" = 20'
 0 20 40 60

SURVEYOR
 MICHAEL UNDERWOOD and ASSOCIATES, PA
 102 CINEMA DRIVE, SUITE A
 WILMINGTON, NC 28403
 PHONE: 910-815-0650
 FAX: 910-815-0393
 E-MAIL: muu@btccr.com Firm License #C-0615

15031
 DES. JST
 CKD. JPN
 DRWN. NKS
 DATE 10/2/15



C2



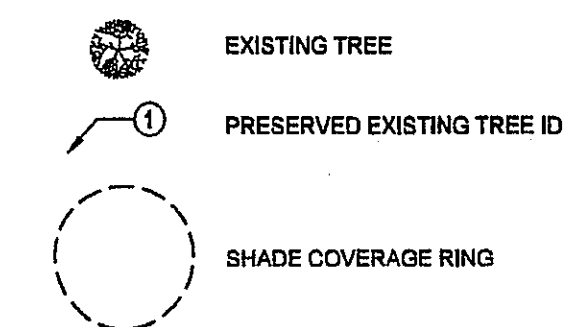
TREE REMOVAL AND MITIGATION

| REGULATED TREES REMOVED | | | | | | |
|-------------------------|---------------|-----|-----------|--------------|----------------------------|--|
| QTY | SPECIES | DBH | TOTAL DBH | % MITIGATION | REPLACEMENT TREES REQUIRED | |
| 1 | PINE | 18" | 18" | 50% | 3 | |
| 2 | DOGWOOD | 6" | 12" | 100% | 4 | |
| 1 | BRADFORD PEAR | 8" | 8" | 25% | 1 | |
| 3 | BRADFORD PEAR | 10" | 30" | 25% | 3 | |
| 3 | BRADFORD PEAR | 12" | 36" | 25% | 3 | |
| 1 | OAK | 8" | 8" | 100% | 3 | |

| SIGNIFICANT TREES REMOVED | | | | | | |
|---------------------------|---------|-----|-----------|----------------|----------------------------|--|
| QTY | SPECIES | DBH | TOTAL DBH | % MITIGATION | REPLACEMENT TREES REQUIRED | |
| 1 | PINE | 25" | 25" | 50% X 2 = 100% | 9 | |

TOTAL REPLACEMENT TREES REQUIRED FOR MITIGATION: 26

LEGEND



TREE PRESERVATION CREDITS

| PRESERVED TREE INVENTORY | ID | DBH |
|--------------------------|-----|-----|
| 1 | 6" | |
| 2 | 6" | |
| 3 | 6" | |
| 4 | 17" | |
| 5 | 4" | |
| 6 | 4" | |
| 7 | 10" | |
| 8 | 15" | |

| CREDITS FOR PRESERVED TREES | | | | |
|------------------------------------|--------------|-----------------|---------------|----|
| QTY | DBH CATEGORY | CREDIT PER TREE | TOTAL CREDITS | |
| 2 | 2" - 5" | 1 | 2 | |
| 4 | 6" - 11" | 2 | 8 | |
| 2 | 12" - 17" | 3 | 6 | |
| TOTAL CREDITS FOR PRESERVED TREES: | | | | 16 |

MITIGATION AND PRESERVATION CALCS

TREES REQUIRED FOR MITIGATION: 26
 TOTAL CREDITS FOR PRESERVED TREES: 16
 TOTAL PROPOSED TREES: 23
 TOTAL PRESERVED AND PROPOSED TREES: 35*

INTERIOR PARKING LOT SHADING

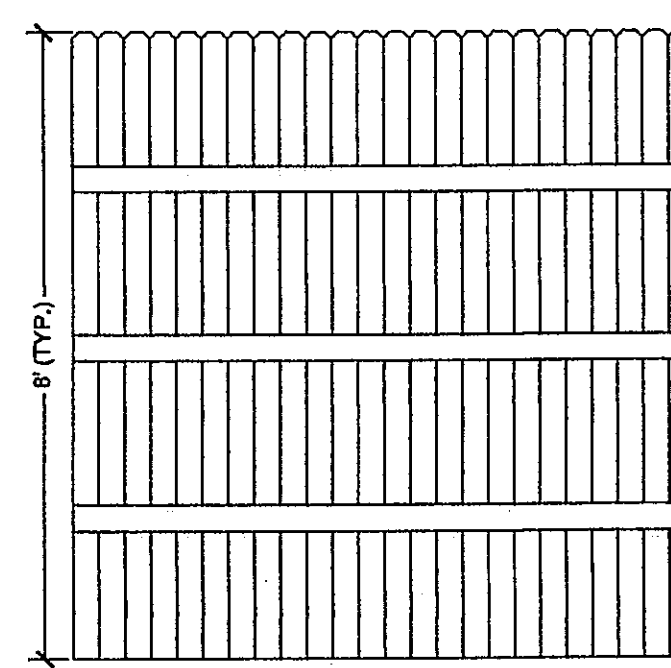
TOTAL PARKING IMPERVIOUS AREA: 22,148 SF
 REQUIRED CANOPY COVERAGE: 22,148 SF X 20% = 4,429 SF
 CANOPY TREES RECEIVING FULL CREDIT: 8 X 707 SF = 5,656 SF
 CANOPY TREES RECEIVING HALF CREDIT: 22 X 353.5 SF = 7,777 SF
 UNDERSTORY TREES RECEIVING FULL CREDIT: 1 X 314 SF = 314 SF
 UNDERSTORY TREES RECEIVING HALF CREDIT: 3 X 157 SF = 471 SF
 TOTAL PROPOSED CANOPY COVERAGE: 14,218 SF

PRIMARY STREET YARD 1

STREET FRONTAGE: 175 LF X 18" = 3150 SF REQUIRED
 CANOPY TREES REQUIRED: 6
 CANOPY TREES PROPOSED: 5*
 *1 UNDERSTORY TREES USED IN LIEU OF 1 CANOPY TREE
 SHRUBS REQUIRED: 32
 SHRUBS PROPOSED: 32

PLANT SCHEDULE

| TREES | QTY | BOTANICAL NAME | COMMON NAME | CONT | CAL | SIZE | REMARKS |
|---------------|----------|-------------------------------------|--------------------------|-------|---------|----------|-------------------------------|
| CC | 4 | CERCIS CANADENSIS | EASTERN REDBUD | B & B | 2" CAL | 8" MIN. | MULTI-STEM |
| LI | 1 | LAGERSTROEMIA INDICA | CRAPPE MYRTLE | B & B | 5-10" H | | |
| QU | 8 | QUERCUS LAURIFOLIA ACUTISIMA | HAWK OAK SAWTOOTH | B & B | 2" CAL | 10-14" H | |
| TD | 2 | TAXODIUM DISTICHUM | BALD CYPRESS | B & B | 2" CAL | 10'-12" | |
| ZG | 8 | ZELKOWIA SEROTINA 'GREEN HAZE' | BAHAMA REDWOOD | B & B | 2" CAL | 10'-12" | TRUNK FREE OF LIMBS BELOW 5' |
| SHRUBS | QTY | BOTANICAL NAME | COMMON NAME | CONT. | HGT. | REMARKS | |
| AE | 8 | ABELIA GRANDIFLORA 'EDWARD GOUCHER' | GLOSSY ABELIA | 3 GAL | 12" MIN | | |
| AG2 | 37 | ABELIA GRANDIFLORA 'CAMELLIA JAP' | GLOSSY ABELIA 'CAMELLIA' | 3 GAL | 3" MIN | | 3" MIN FOR BUFFER |
| EJ | 34 | EUCHARIS JAPONICA 'HEX NEEDLEPOINT' | EVERGREEN SPIDER LILY | 3 GAL | 3" MIN | | 3" MIN FOR BUFFER NEEDLEPOINT |
| IN | 17 | ILEX VOMITORIA 'NANA' | DWARF YALPON | 3 GAL | 12" MIN | | |
| PT2 | 27 | PITOSPORUM TOBIRA | MOCK ORANGE | 3 GAL | 12" MIN | | |
| GROUND COVERS | QTY | BOTANICAL NAME | COMMON NAME | CONT | SF | REMARKS | |
| ER | 811 | EILONYMUS FORTUNEI 'RADICANS' | WINTERCREEPER EILONYMUS | 1 GAL | | | 18" O.C. |
| ZE | 3,559 SF | ZOYSIA JAPONICA 'EMPIRE' | KOREAN GRASS | 90D | | | |



8' SOLID WOOD FENCE

Approved Const. Plan
 Date: 3/14/16
 Planning: [Signature]
 Traffic: [Signature]
 File: [Signature] 3-15-16

NOTES
 1. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW BY LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION.

LANDSCAPING NOTES:

- ALL TREES TO BE A MINIMUM OF 2" IN CALIPER AND MUST MEET THE AMERICAN STANDARD FOR NURSERY STOCK.
- TREE PROTECTION NOTE: TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO ANY DEMOLITION, LAND DISTURBANCE OR ISSUANCE OF A GRADING PERMIT AND SHALL INCLUDE WARNING SIGNS POSTED IN BOTH ENGLISH AND SPANISH, AS FOLLOWS: "NO TRESPASSING/TREE PROTECTION AREA/PROHIBIDO ENTRAR / ZONA PROTECTORA PARA LOS ARBOLES."
- PROTECTION OF EXISTING VEGETATION: AT THE START OF GRADING INVOLVING THE LOWERING OF EXISTING GRADE AROUND A TREE OR STRIPPING OF TOPSOIL, A CLEAN, SHARP, VERTICAL CUT SHALL BE MADE AT THE EDGE OF THE TREE SAVE AREA AT THE SAME TIME AS OTHER EROSION CONTROL MEASURES ARE INSTALLED. THE TREE PROTECTION FENCING SHALL BE INSTALLED ON THE SIDE OF THE CUT FARTHEST AWAY FROM THE TREE TRUNK AND SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION IN THE VICINITY OF THE TREE IS COMPLETE. NO STORAGE OF MATERIALS, FILL, OR EQUIPMENT AND NO TRESPASSING SHALL BE ALLOWED WITHIN THE BOUNDARY OF THE PROTECTED AREA.
- ROOT ZONE PROTECTION AREA: VARIES BASED ON LOCAL JURISDICTION HAVING AUTHORITY. CONTRACTOR SHALL COMPLY WITH LOCAL JURISDICTIONAL REQUIREMENTS. NO DISTURBANCE ALLOWED WITHIN THIS AREA. AREA MUST BE PROTECTED WITH BOTH TREE PROTECTION FENCING AND WARNING SIGNS.
- SEED BED PREPARATION: ALL AREAS TO BE SEEDBED ARE TO RECEIVE A MINIMUM OF 2" OF APPROVED TOPSOIL. ALL DEBRIS, ROCKS, ETC. LARGER THAN 2" ARE TO BE REMOVED. ALL LARGE CONCENTRATIONS OF GRAVEL & DEBRIS REGARDLESS OF SIZE ARE TO BE REMOVED PRIOR TO SEEDING OR PLANTING.
- ALL PLANT BED AREAS ARE TO RECEIVE A MINIMUM OF 6" OF APPROVED TOPSOIL.
- SOIL SHOULD BE TESTED AND AMENDED WITH LIME AND FERTILIZER FOR HARDWOOD TREES ACCORDING TO NCDP PROCEDURES. SCARIFY PLANT PIT WALLS. CONSULT LANDSCAPE ARCHITECT FOR ALTERNATE COMPLIANCE.
- SHREDDED HARDWOOD MULCH 3" DEEP EXCEPT AT CROWN OF PLANT UNLESS OTHERWISE NOTED. FLARE AT CROWN SHOULD BE REVEALED. BACKFILL CONSISTS OF THOROUGHLY BROKEN UP NATIVE SOIL. TOTAL VOLUME OF BACKFILL SHOULD BE AMENDED WITH UP TO ONE THIRD FINE BARK MULCH. PIECES SHOULD BE NO LARGER THAN WHAT PASSES THROUGH A ONE INCH SCREEN. IF ADDITIONAL SOIL IS REQUIRED FOR BACKFILL DUE TO DETRIMENTAL SUBSOIL DRAINAGE CONDITIONS, USE SOIL SIMILAR TO EXISTING NATIVE SOIL. ADDITIONAL SOIL TO BE APPROVED BY LANDSCAPE ARCHITECT. MAXIMUM SAUCER HEIGHT IS 6 INCHES.
- TOP OF ROOTBALL TO BE RAISED 2-3 INCHES ABOVE EXISTING GRADE.
- FOR B&B PLANTS, NATURAL FIBER BURLAP SHOULD BE TURNED DOWN BY 1/3 TOTAL HEIGHT OF ROOT BALL. PLASTIC FIBER BURLAP AND WIRE BASKETS SHOULD BE REMOVED TO 2/3 OF TOTAL HEIGHT OF ROOT BALL.
- CONTRACTOR IS RESPONSIBLE FOR KEEPING THE TREE UPRIGHT AND PLUMB THROUGHOUT THE WARRANTY PERIOD. IF STABILIZATION IS NECESSARY SEE STAKING IN TREE DETAIL. ORANGE FLAGGING TAPE SHOULD BE ATTACHED TO SUPPORT WIRE. STAKING SHOULD BE REMOVED BY CONTRACTOR AT END OF ONE YEAR WARRANTY PERIOD OR AS DIRECTED BY GROUNDS MANAGEMENT.
- USE STANDARD "GATOR" BAGS FOR WATERING TREES IN AREAS NOT UNDER IRRIGATION. INCORPORATE TERRA-SORB (OR EQUAL) AS PER MANUFACTURERS RECOMMENDATIONS, FOR AREAS NOT UNDER IRRIGATION.
- USE "BIO-BARRIER" OR EQUIVALENT ACCORDING TO MANUFACTURER'S RECOMMENDATION FOR TREES THAT WILL BE PLANTED WITHIN 10' OF PAVEMENT
- LANDSCAPING/C.O. STANDARDS NOTE: ALL LANDSCAPING MUST BE IN PLACE PRIOR TO REQUEST FOR A CERTIFICATE OF COMPLIANCE.



Client:
 NORRIS & TUNSTALL CONSULTING ENGINEERS, P.C.
 902 MARKET STREET WILMINGTON, NC 28401
 T: 910.343.8653 F: 910.343.8604

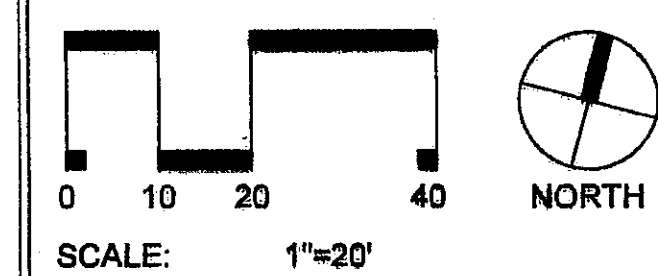
NHRMC PARKING LOT

Vicinity map:
 TREE + PLANT SUBSTITUTIONS
 3/14/16
 Freeman Landscape, Inc.
 910.796.1166
 JAMES FREEMAN - Nels # 71



SITE PLAN PERMIT

| No. | Date | Description |
|-----|------------|-------------------|
| 1 | 01.07.2016 | PER CITY COMMENTS |
| 2 | 01.13.2016 | PER CITY COMMENTS |



PLANTING PLAN

Project number: C15086 Sheet:
 Date: 12.04.2015
 Drawn by:
 Approved by: **L1.00**

C:\2015\15086 - NHRMC Parking Lot\DWG\SS1 - Design\C15086-1.00-Planting Plan.dwg Jan 13, 2016 - 1:39pm