NOTES

1. REMOVAL OF TREES AND SHRUBS ARE TO BE MINIMIZED AS MUCH AS POSSIBLE. CONTRACTOR TO AVOID AND MINIMIZE DAMAGE TO THOSE TREES AND SHRUBS DETERMINED TO REMAIN.

2. CONTRACTOR TO REPLACE DISTURBED LAWN BY UTILIZING 6" TOPSOIL, SEEDING, AND STRAW.

3. ALL EXISTING SERVICE CONNECTIONS TO REMAIN IN SERVICE AND TO BE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL LOCATE AND MAKE PROVISIONS IN ACCORDANCE WITH THE CITY OF CONCORD AND NCDOT STANDARDS. SEE SHEET 14 FOR TYPICAL ROADWAY CROSS SECTION.

4. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN INGRESS AND EGRESS TO ALL BUSINESSES AND DWELLINGS, AND EASY ACCESS TO FIRE HYDRANTS.

ROAD CLOSED BARRICADE TYPE III NCDOT 1145.01 SEE SHEET 17 FOR CLOSURE PLAN

CONTRACTOR TO REMOVE, PRESERVE, AND RELOCATE EXISTING RIP RAP TO REINSTATE EXISTING DITCH

CONTRACTOR TO REINSTALL AFFECTED PORTIONS OF THE EXISTING IRRIGATION SYSTEM.

CONTRACTOR TO REPLACE EXISTING DRIVEWAY WITH NEW 6" CONCRETE DRIVEWAY. CONTRACTOR TO MATCH EXISTING DRIVEWAY DIMENSIONS AND ELEVATIONS.

CONTRACTOR TO TEMPORARILY RELOCATE EXISTING MAILBOX. MAILBOX SHOULD BE RESET IN ITS ORIGINAL LOCATION AT THE COMPLETION OF PROJECT.

CONTRACTOR TO OPEN CUT ROADWAY AND REPLACE ACCORDING TO CITY OF CONCORD AND NCDOT STANDARDS. SEE SHEET 14 FOR TYPICAL ROADWays CROSS SECTION.

ADDITIONAL CONSTRUCTION ACCESS THRU EDUCATION WAY NW

LIMITS OF DISTURBANCE

ROAD CLOSED BARRICADE TYPE III NCDOT 1145.01 SEE SHEET 17 FOR CLOSURE PLAN

CONTRACTOR TO REMOVE 2 EXISTING 84" CMP'S

CONTRACTOR TO REPLACE EXISTING SPRINKLER HEADS FOR 5901 HAVENCREST CT.

CONTRACTOR TO REMOVE AND REUSE EXISTING RIP RAP TO REINSTATE EXISTING DITCH.

CONTRACTOR TO REMOVE AND REUSE EXISTING RIP RAP TO REINSTATE EXISTING DITCH.

CONTRACTOR TO REMOVE AND REUSE EXISTING RIP RAP TO REINSTATE EXISTING DITCH.
HAVENCREST CT
CULVERT REPLACEMENT
EROSION CONTROL PLAN
PROJECT #: 2016-005
PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

1. REMOVAL OF TREES AND SHRUBS ARE TO BE MINIMIZED AS MUCH AS POSSIBLE. CONTRACTOR TO AVOID AND MINIMIZE DAMAGE TO THOSE TREES AND SHRUBS DETERMINED TO REMAIN.

2. CONTRACTOR TO REPLACE DISTURBED LAWN BY UTILIZING 6in OF TOPSOIL, SEEDING, AND STRAW.

ENGINEER'S SEAL
9-18-2018

NOTE:
STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE NATIVE SPECIES, SUCH AS:
- Elderberry (Sambucus Canadensis)
- Silky dogwood (Cornus amomum)
- Silky willow (Salix sericea).

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STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE NATIVE SPECIES, SUCH AS:
- Elderberry (Sambucus Canadensis)
- Silky dogwood (Cornus amomum)
- Silky willow (Salix sericea).

COMPOST FILTER SOCK, FILTER SILT SOXX, DIAMOND SOCK OR SIMILAR

STONE OUTLET

CONSTRUCTION/TREE PROTECTION FENCING

GRANULAR CONSTRUCTION ENTRANCE, PER NCDOT STD. 1607.01

NOTE:
STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE NATIVE SPECIES, SUCH AS:
- Elderberry (Sambucus Canadensis)
- Silky dogwood (Cornus amomum)
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STREAM AREAS IMPACTED DUE TO SITE DEWATERING ACTIVITIES SHALL BE REGRADED TO ITS PRECONSTRUCTION CONTOURS AND REVEGETATED WITH APPROPRIATE NATIVE SPECIES, SUCH AS:
- Elderberry (Sambucus Canadensis)
- Silky dogwood (Cornus amomum)
- Silky willow (Salix sericea).
PROPOSED DOUBLE BARREL CONC. BOX CULVERT @ 0.60%

W = 10'
H = 9.5'
L = 70'

CULVERT STA: 1+27.07 INV IN ELEV: 593.41'
FLOW LINE ELEV: 594.41

CULVERT STA: 1+97.07 INV OUT ELEV: 593.00'
FLOW LINE ELEV: 594.00

PROPOSED SAN. SEWER PIPE

48.85' of 16" DIP @ 0.17%
WITH 36' OF 30" CASING PIPE
WITH CONC. ANCHOR BLOCKS
SEE SEWER PLAN SHEET 9

NOTES
1. CONTRACTOR TO REPLACE EXISTING ROADWAY ACCORDING TO CITY OF CONCORD AND NCDOT STANDARDS. SEE SHT. 13 FOR TYPICAL CROSS SECTION.
2. PRIVATE UTILITIES, OTHER THAN PRIVATE WATER LINES TO BE RELOCATED BY OTHERS.
3. REMOVAL OF TREES AND SHRUBS ARE TO BE MINIMIZED AS MUCH AS POSSIBLE. CONTRACTOR TO AVOID AND MINIMIZE DAMAGE TO THOSE TREES AND SHRUBS DETERMINED TO REMAIN.
4. CONTRACTOR TO INSTALL PEDESTRIAN SAFETY RAIL ALONG HEADWALLS / WINGWALLS. PAINT COLOR SW 6258 FLAT SHEEN, OR EQUIVALENT. SEE DETAIL IN SHT. 12.

PREPARED BY
ENGINEERING DEPARTMENT
CITY OF CONCORD
P.O. BOX 308
CONCORD N.C. 28026
(704) 920-5425

Surveyor's Seal

Engineer's Seal
NOTE:

1. THESE PLANS AND DETAILS ARE MEANT TO SHOW THE GENERAL INTENT OF THE WINGWALL DESIGN. CONTRACTOR SHALL HAVE PRECAST CONCRETE BLOCK GRAVITY WINGWALLS DESIGNED, DETAILED AND SPECIFIED BY MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE LICENSED IN THE STATE OF NORTH CAROLINA.

2. CONTRACTOR SHALL SUBMIT FINAL DESIGN AND CALCULATIONS TO THE CITY OF CONCORD FOR APPROVAL.

3. CONTRACTOR TO INSTALL PEDESTRIAN SAFETY RAIL ALONG HEADWALLS / WINGWALLS. PAINT COLOR SW 6258 FLAT SHEEN, OR EQUIVALENT. SEE DETAIL IN SHEET 12.
NOTE:

1. THESE PLANS AND DETAILS ARE MEANT TO SHOW THE GENERAL INTENT OF THE WINGWALL DESIGN. CONTRACTOR SHALL HAVE PRECAST CONCRETE GRAVITY WINGWALLS DESIGNED, DETAILED AND SPECIFIED BY MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE LICENSED IN THE STATE OF NORTH CAROLINA.

2. CONTRACTOR SHALL SUBMIT FINAL DESIGN AND CALCULATIONS TO THE CITY OF CONCORD FOR APPROVAL.

3. STORM PIPE OUTLET ELEVATION SHALL BE ADJUSTED TO FIT THROUGH WINGWALL UNIT LAYOUT. CHANGES SHALL BE APPROVED BY THE ENGINEER.

4. CONTRACTOR TO INSTALL PEDESTRIAN SAFETY RAIL ALONG HEADWALLS/ WINGWALLS. PAINT COLOR SW 6258 FLAT SHEEN, OR EQUIVALENT. SEE DETAIL IN SHEET 12.
PROPOSED SAN. SEWER 218.10' of 16" DIP SEWER PIPE @ 0.17%

PROPOSED 27.14' of 18" RCP (CLASS II) @ 6.53%

PROPOSED C.B.#1
STA: 0+66.43
RIM FL: 605.14
BACK OF CURB: 605.88
INV IN: 601.77 18" RCP "NW"
INV OUT: 597.02 18" RCP "E"

CONNECT PROPOSED 11.36' of 18" RCP (CLASS II) @ 0.29%
TO EX. 18" RCP AFFECTED BY CULVERT
EXCAVATION. CONNECTION LOCATION TO BE DETERMINED IN THE FIELD.

PROPOSED DOUBLE BARREL CONC. BOX CULVERT @ 0.60%
W = 10'
H = 9.5'
L = 70'

PROPOSED C.B.#2
STA: 1+18.58
RIM: 605.70
TOP OF CURB ELEV: 606.36
INV IN: 602.18 15" RCP "S"
INV OUT: 598.01 18" RCP "E"

CONNECT PROPOSED 10.56' of 15" RCP @ 1.15%
TO EX. 15" RCP AFFECTED BY CULVERT
EXCAVATION. CONNECTION LOCATION TO BE DETERMINED IN THE FIELD.

NOTE:
1. REMOVE EXISTING STORM SEWER IN CONFLICT WITH CULVERT CONSTRUCTION.
2. CONTRACTOR TO PROVIDE TEMPORARY STORM DURABLE CONSTRUCTION.
3. STORM PIPE OUTLET ELEVATION SHALL BE ADJUSTED TO FIT THROUGH WINGWALL UNIT LAYOUT. CHANGES SHALL BE APPROVED BY THE ENGINEER.
CONTRACTOR TO MAINTAIN SEWER SERVICE CONNECTIONS AT ALL TIMES.

1. ALL EXISTING SERVICE CONNECTIONS TO REMAIN IN SERVICE AND TO BE PROTECTED IN ACCORDANCE WITH THE CITY OF CONCORD FOR PROTECTION.
NOTE:
1. ALL PROPOSED WATER MAIN TO HAVE RESTRAINED JOINTS.
2. PROPOSED WATER LINE LENGTH IS APPROXIMATE. ACTUAL LENGTH AND LOCATION TO BE DETERMINED IN THE FIELD.
3. ALL EXISTING SERVICE CONNECTION TO REMAIN IN SERVICE AND TO BE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL LOCATE AND MAKE PROVISIONS IN ACCORDANCE WITH THE CITY OF CONCORD FOR PROTECTION.

NOTE:
1. NATURAL GAS LINE CROSSING WATER LINE.
2. MAINTAIN MIN SEPARATION.

NOTE:
1. SEWER LINE TO BE REMOVED.
2. MAINTAIN MIN SEPARATION.
3. STORM SEWER CROSSING WATER LINE INV ELEV: 599.50
   STORM PIPE INV ELEV: 602.10
   MAINTAIN MIN SEPARATION.

NOTE:
1. STORM SEWER CROSSING WATER LINE INV ELEV: 591.00
   STORM PIPE INV ELEV: 602.10
   MAINTAIN MIN SEPARATION.
CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN EROSION AND SEDIMENTATION PERMIT FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES FOR ANY NEW OFF-SITE BORROW AREA. ANY OFF-SITE BORROW AND WASTE REQUIRED FOR THIS PROJECT MUST COME FROM AN APPROVED EROSION CONTROL PLAN SITE, A SITE REGULATED UNDER THE MINING ACT OF 1971, OR A LANDFILL REGULATED BY THE DIVISION OF SOLID WASTE MANAGEMENT. DEBRIS FROM DEMOLITION ACTIVITIES SHOULD BE DISPOSED OF AT AN APPROVED FACILITY.
NOTES:
1. CONSTRUCT PROPOSED STEEL PIPE RAIL OF 2" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.
2. REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.
3. WHEN PAINTING IS REQUIRED IN THE PLANS, SMOOTH, CLEAN AND PREPARE GALVANIZED SURFACES IN ACCORDANCE WITH SECTION 1080 AND THE ASTM D6386 STANDARD.
4. WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD.
5. VERTICAL POSTS TO BE EVENLY SPACED.
6. CONTRACTOR SHALL HAVE SAFETY RAIL CONNECTIONS DESIGNED, DETAILED AND SPECIFIED BY THE HEADWALLS/WINGWALLS MANUFACTURER OR MANUFACTURER'S REPRESENTATIVE LICENSED IN THE STATE OF NORTH CAROLINA. DESIGN MUST MEET LOADING REQUIREMENTS IN OSHA STANDARD 1910.29(B)(3) AND 1910.29(B)(5). CONTRACTOR SHALL SUBMIT FINAL DESIGN AND CALCULATIONS TO THE CITY OF CONCORD FOR APPROVAL.
7. PEDESTRIAN SAFETY RAIL
1. No part of the sill shall be placed above the elevation of the stream bed.
2. Set the structure slightly higher on both sides of the invert to provide a thalweg.
3. The sill shall be constructed with flat-sided boulders of a size, shape, and depth as specified in the details.
4. Filter fabric shall be used to seal the gap between the sill and the stream bed. Under the coarse backfill, the fabric shall be placed to the invert of the sill. The fabric shall be fully tucked or trimmed as needed.
5. Coarse backfill of the boulders shall be of a type, size, and gradation as specified in the detail. Coarse backfill shall be placed to the invert of the sill, extending upstream from the sill a distance specified in the detail.
6. Top of rock sill shall follow the floodplain surface and shall be flush with the floodplain surface.
7. The Boulder Sill is generally constructed as follows:
   A. Over-excavate stream bed to a depth equal to the total thickness of the boulders.
   B. Install filter fabric.
   C. Install Boulder. There shall be no seams in the center of the stream bed (at the thalweg, the lowest point of the channel). There shall be no gaps between boulders.
   D. Place coarse backfill behind boulders ensuring that any voids between the boulders are filled.
   E. Install stream bank stabilization per plans.

9-18-2018
HAVENCREST CT
CULVERT REPLACEMENT & STREAM PUMP AROUND DETAIL

DEWATERING SEDIMENT FILTER BAG

PUMP AROUND DETAIL

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PROJECT # : 2016-006

DEWATERING SEDIMENT FILTER BAG

PUMP AROUND DETAIL

ENGINEER'S SEAL

9-18-2018

9-18-2018

9-18-2018
TRAFFIC CONTROL NOTES
1. THE CONTRACTOR SHALL MAINTENANCE TRAFFIC CONTROL AS DESCRIBED HEREIN UNLESS THE CONTRACTOR SUBMITS AN ALTERNATE TRAFFIC CONTROL PLAN TO THE CITY OF CONCORD ENGINEER OR THEIR DESIGNEE. THE CONTRACTOR MAY BE DIRECTED TO MODIFY TRAFFIC CONTROL IF, IN THE ENGINEER'S OPINION, TRAFFIC IS NOT MOVING SAFELY OR EFFICIENTLY.

2. THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN INGRESS AND EGRESS TO ALL BUSINESSES AND DWELLINGS, AND EASY ACCESS TO FIRE HYDRANTS.

3. POSITION WING BARRICADES ON SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.

LEGEND
- CLOSED
- DETOUR
- CONES
- DETOUR FOR NORTH & SOUTH BOUND ROAD
- ROAD CLOSED AHEAD AT HAVENCREST LOCAL TRAFFIC ONLY
- 60"x30" TYPE III WING BARRICADE
- 30"x30" W20-3
- 48"x30" (TYP)
### Surface Water Impacts

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Station (From/To)</th>
<th>Structure Size/Type</th>
<th>Permanent SW impacts (ac)</th>
<th>Temporary SW impacts (ac)</th>
<th>Existing Channel Impacts Width (ft)</th>
<th>Existing Channel Impacts Depth (Ft)</th>
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</thead>
<tbody>
<tr>
<td>S1</td>
<td>0+60 / 0+80</td>
<td>Impervious Dike/Dewatering</td>
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<td>S2</td>
<td>0+84 / 1+27</td>
<td>Stream grading, rock sills and RipRap on excavated channel bank</td>
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<tr>
<td>S3</td>
<td>1+27 / 1+47</td>
<td>Double barrel concrete box culvert</td>
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<td>S4</td>
<td>1+51 / 2+18</td>
<td>Stream grading, rock sills and RipRap on excavated channel bank</td>
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<tr>
<td>S5</td>
<td>2+45 / 2+65</td>
<td>Impervious Dike/Dewatering</td>
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