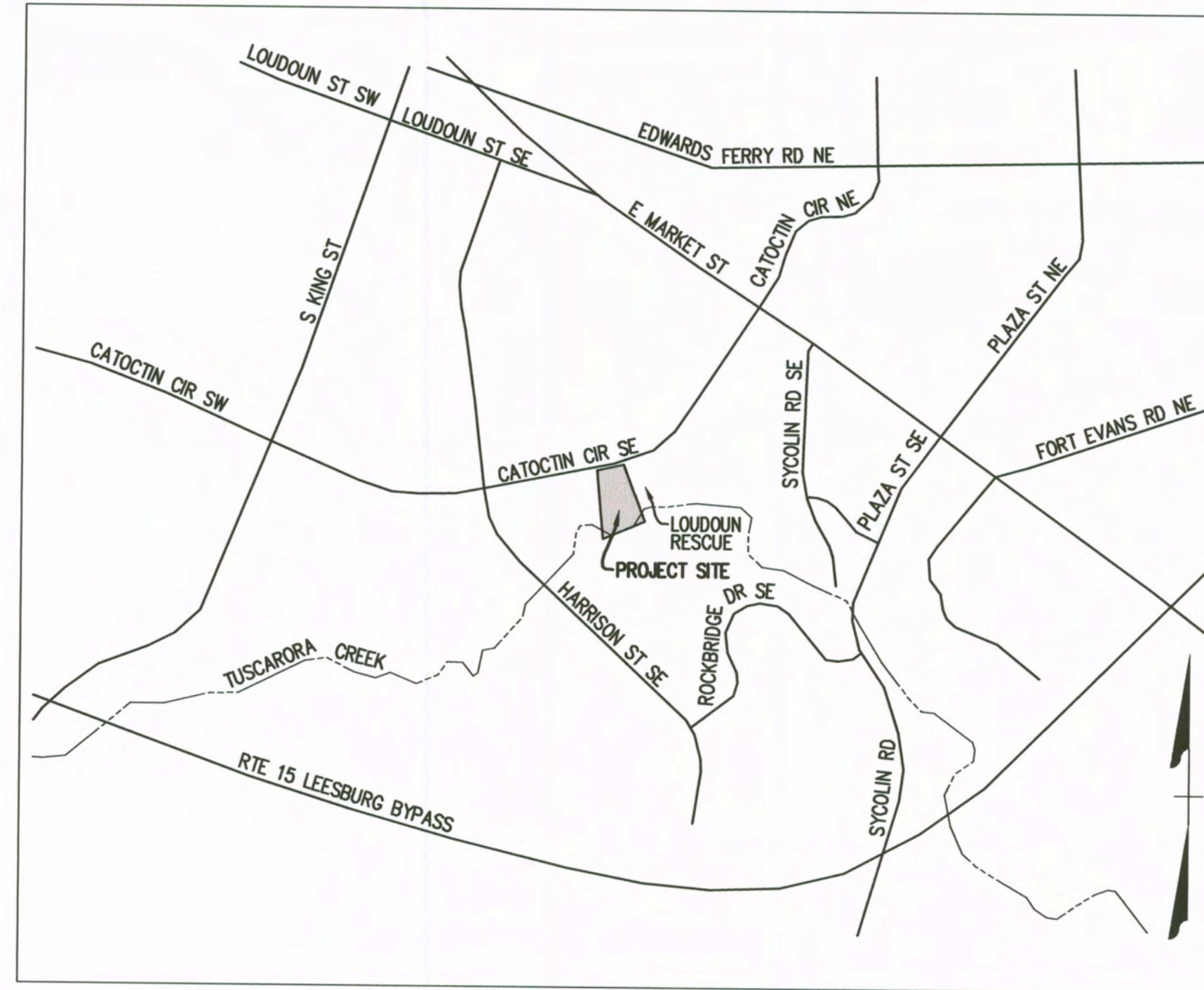


TOWN of LEESBURG, VA

CAPITAL IMPROVEMENT PROGRAM

NOTES

- A. UTILITIES**
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
PRIOR TO DIGGING, NOTIFY THE FOLLOWING:
 - MISS UTILITY - 811
 - WATER AND SEWER - DEPARTMENT OF UTILITIES, THE TOWN OF LEESBURG (703) 7737-7075
 - STORM DRAIN AND TRAFFIC SIGNALS - DEPARTMENT OF PUBLIC WORKS AND CAPITAL PROJECTS, THE TOWN OF LEESBURG (703) 771-2790.
 - TEST PITS SHALL BE SHOWN AT ALL UTILITY CROSSINGS AND AT THE POINT OF CONNECTION TO EXISTING WATER MAINS. AT LEAST 10 DAYS PRIOR TO CONSTRUCTION ACTIVITY THE CONTRACTOR MUST OBTAIN ITS TEST PIT DATA AND COORDINATE WITH THE INSPECTOR. IF THE TEST RESULTS SHOW A POTENTIAL CONFLICT OR NONCOMPLIANCE WITH THE APPROVED PLAN, REVISIONS TO THE PLANS MUST BE SUBMITTED FOR APPROVAL. IN SUCH INSTANCES, NO WORK SHALL COMMENCE UNTIL CONFLICTS ARE RESOLVED AND REVISIONS APPROVED.
 - ALL UNDERGROUND UTILITY CONNECTIONS ARE TO BE PLACED FROM THE UTILITY MAIN TO THE RIGHT-OF-WAY FOR EACH LOT AND ALL UNDERGROUND UTILITY MAINS AND CONNECTIONS MUST BE INSTALLED PRIOR TO THE APPLICATION OF ANY STREET SURFACE.
 - THE CONTRACTOR SHALL BE RESPONSIBLE FOR RETURNING ALL EXISTING FACILITIES AND/OR UTILITIES TO THEIR ORIGINAL CONDITION.
- B. GENERAL**
- A GRADING PERMIT IS TO BE OBTAINED FROM LOUDOUN COUNTY DEPARTMENT OF BUILDING AND DEVELOPMENT BEFORE ANY CONSTRUCTION IS STARTED. TOWN OF LEESBURG WILL OBTAIN THE GRADING PERMIT.
 - THE DESIGN METHODS OF CONSTRUCTION AND FIELD PRACTICES SHALL CONFORM TO THE REQUIREMENTS SET FORTH IN THE TOWN OF LEESBURG DESIGN AND CONSTRUCTION STANDARDS MANUAL AND THE DOCUMENTS REFERENCED THEREIN. ANY DEVELOPER, CONTRACTOR, ENGINEER, OR OWNER INVOLVED IN THE DESIGN AND/OR CONSTRUCTION OF PUBLIC FACILITIES WITHIN LEESBURG'S JURISDICTION, IS EXPECTED TO BE FAMILIAR WITH THE INFORMATION IN THE DESIGN AND CONSTRUCTION STANDARDS MANUAL.
 - ALL ELEVATIONS MUST BE BASED ON USGS SURVEY DATUM AND THE SOURCE INDICATED ON THE PLANS.
 - HORIZONTAL AND VERTICAL CONTROL SURVEYS WERE RUN ON THE GROUND BY THE FOLLOWING FIRM:
ATCS, P.L.C.
DATE: 10/6/2015 METHOD: CONVENTIONAL FIELD-RUN
 - TOPOGRAPHIC MAPPING SHOWN HEREON WAS PERFORMED BY THE FOLLOWING FIRM:
ATCS, P.L.C.
DATE: 10/6/2015 METHOD: CONVENTIONAL FIELD-RUN
 - THE MERIDIAN FOR SURVEY BEARINGS SHOWN HEREON IS VA STATE GRID NORTH AND WAS ESTABLISHED AS FOLLOWS:
NAD1988
 - COORDINATES OF POINTS OR MONUMENTS, IF SHOWN HEREON, ARE COORDINATES OF THE ESTABLISHED AS FOLLOWS:
NAD1983
 - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROCURE ALL APPLICABLE PERMITS, LICENSES, AND CERTIFICATES RELATIVE TO THE TRADES TO COMPLETE THE PROJECT AND FOR THE USE OF SUCH WORK WHEN COMPLETED. COMPLIANCE SHALL BE AT ALL LEVELS: FEDERAL, STATE, COUNTY, AND LOCAL RELATING TO THE PERFORMANCE OF HIS WORK.
- C. SOLID WASTE**
- METHOD OF COLLECTION: N/A
 - IF OTHER THAN CURB-SIDE PICKUP, CONTINUE: _____
 - NUMBER AND SIZE OF CONTAINERS: _____
 - TYPE OF CONTAINER: _____
 - METHODOLOGY USE TO COMPUTE SIZE: _____
 - FREQUENCY OF COLLECTION: _____ TIMES/WEEK (MINIMUM OF 2 TIMES/WEEK)
- D. SANITARY SEWERS**
- A PORT-A-JON WILL BE UTILIZED FOR SEWER SERVICE.
 - SEWER SHED: NORTH TUSCARORA CREEK
 - GRAVITY SYSTEM: N/A PUMPED: N/A
 - PUMP STATION PROPOSED: N/A
 - OFF-SITE SEWER EXTENSIONS REQUIRED: N/A
 - REQUIRED LENGTH OF OFF-SITE SEWER: N/A
 - ALL SANITARY SEWER AND APPURTENANCE INSTALLATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN'S DESIGN AND CONSTRUCTION STANDARDS MANUAL AND THE DOCUMENTS REFERENCED THEREIN.
- E. WATER SYSTEM**
- DOMESTIC WORKING PRESSURE AT HIGHEST FIXTURES: _____ psi
 - ALL WATER MAIN AND APPURTENANCE INSTALLATIONS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE TOWN'S DESIGN AND CONSTRUCTION STANDARDS MANUAL AND THE DOCUMENTS REFERENCED THEREIN.
 - WATER MAINS SHALL BE DESIGNED IN CONFORMANCE WITH THE CURRENT EDITION OF THE WATER WORKS REGULATIONS OF THE VIRGINIA STATE BOARD OF HEALTH.
 - NO EXISTING WATER MAIN VALVES ARE TO BE OPENED OR CLOSED PRIOR TO NOTIFICATION OF THE TOWN OF LEESBURG UTILITY DEPARTMENT, 703-737-7075
- F. FIRE FLOW**
- REQUIRED FIRE FLOW = N/A gpm
 - AVAILABLE FIRE FLOW = _____ gpm
 - FULL SPRINKLER SYSTEM: _____
 - PARTIAL SPRINKLER SYSTEM: _____
 - BOCA BUILDING CLASS UTILIZED: _____
- G. CURRENT SITE INFORMATION**
- TAX MAP NUMBER: 148/K/2/111/F/1
 - LOT AND/OR PARCEL NUMBER: F
 - ZONING: _____
 - DATE OF CURRENT ZONING: _____
 - RESOLUTION NUMBER: N/A
 - REZONING NUMBER: N/A
 - TOTAL AREA: 2.91 ACRES
 - OPEN SPACE AREA: _____
 - STREET AREA: N/A
 - NUMBER OF LOTS CREATED BY SUBDIVISION: N/A
- H. PARKING TABULATIONS ESTABLISHED CORRIDOR COMMERCIAL DISTRICT**
- SPACES REQUIRED: N/A
 - SPACES PROVIDED: 15
 - NO TYPE
- | | |
|----------|-------------|
| 14 | REGULAR |
| PARALLEL | |
| 1 | HANDICAPPED |
| PARALLEL | HC |
- HISTORIC DISTRICT PARKING FEE AT \$ N/A PER SPACE.
 - N/A SPACES REQUIRED = \$ N/A TOTAL
- I. STORM SEWER AND CULVERTS**
- ALL STORM SEWER AND CULVERT INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE TOWN'S DESIGN AND CONSTRUCTION STANDARDS MANUAL AND THE DOCUMENTS REFERENCED THEREIN.
- J. STORMWATER MANAGEMENT**
- WATERSHED: LOWER GOOSE CREEK
 - DETENTION PROVIDED FOR:
 - 2 - YEAR N/A
 - 10 - YEAR N/A
 - OTHER _____ STORM EVENT
 - ADEQUATE CHANNEL:
 - 2 - YEAR N/A
 - 10 - YEAR N/A
 - 25 - YEAR N/A
 - OTHER _____
- K. BMP REQUIRED**
- YES X
NO _____
- L. BEST MANAGEMENT PRACTICES (BMP)**



VICINITY MAP
SCALE: 1"=1,000'

STUDIES, REFERRALS AND APPROVALS REQUIRED PRIOR TO PLAN APPROVAL

| AGENCY INFORMATION | REQ. | NOT REQ. | TOL ID # | COMMENTS |
|-----------------------------------|------|----------|----------|--|
| 1. VA MARINE RESOURCE COMMISSION | | | | |
| A. CORPS OF ENGINEERS | | | | |
| B. DEPT. OF ENVIRONMENTAL QUALITY | | | | |
| 2. FEMA | | | | |
| 3. FAA | | | | |
| 4. VDOT | | | | |
| 5. VA DEPT. OF HEALTH - WATER | | | | |
| 6. VA DEPT. - SEWER | | | | |
| 7. LOUDOUN COUNTY | | | | |
| A. HEALTH DEPARTMENT | | | | |
| B. FIRE MARSHAL | | | | |
| C. E & S CONTROLS | | | | |
| D. BUILDING PERMITS | | | | |
| 8. FLOOD PLAIN STUDY | | | | |
| 9. TRAFFIC STUDY | | | | |
| 10. SOILS REPORT | | | N/A | GEOTECHNICAL REQUIREMENTS INCLUDED ON SHEETS 14-15 |
| 11. ON SITE EASEMENTS | | | | |
| A. LEGAL REVIEW I OR II | | | | |
| B. TECHNICAL REVIEW | | | | |
| C. RECORDED | | | | |
| 12. OFF SITE EASEMENTS | | | | |
| A. LEGAL REVIEW I OR II | | | | |
| B. TECHNICAL REVIEW | | | | |
| C. RECORDED | | | | |
| 13. LETTERS OF PERMISSION | | | | |
| 14. BOARD OF ARCH. REVIEW | | | | |
| 15. VDOT TRAFFIC STUDY REVIEW | | | | |
| 16. BOARD OF ZONING APPEALS | | | | |

SHEET INDEX

| SHEET NO. | TITLE |
|-----------|---|
| 1. | COVERSHEET |
| 2. | TYPICAL NOTES AND DETAILS |
| 3. | SITE DETAILS |
| 4. | EXISTING CONDITIONS / DEMO / TREE PRESERVATION PLAN |
| 5. | SITE PLAN |
| 6. | GRADING PLAN |
| 7. | EROSION AND SEDIMENT CONTROL PH 1 AND 2 |
| 8. | EROSION AND SEDIMENT CONTROL NOTES |
| 9. | EROSION AND SEDIMENT CONTROL DETAILS |
| 10. | LANDSCAPE PLAN |
| 11. | LANDSCAPE CALCULATIONS |
| 12. | LANDSCAPE NOTES AND DETAILS |
| 13. | SWM / BMP PLAN |
| 14. | GEOTECHNICAL RECOMMENDATIONS |
| 15. | GEOTECHNICAL RECOMMENDATIONS |

REVISIONS PRIOR TO APPROVAL

| DATE | DESCRIPTION |
|----------|---------------------------|
| 07/14/16 | TOWN AND COUNTY COMMENTS |
| 09/19/16 | TOWN OF LEESBURG COMMENTS |

VARIATIONS OF SUBDIVISION AND LAND DEVELOPMENT REGULATIONS OR MODIFICATIONS OF THE ZONING ORDINANCE

| ID. NO. | TL REF # | CITATION | PLAN SHEET | DATE APPROVED |
|---------|----------|------------------------------------|------------|---------------|
| 1 | | SECTION 12.8.3 OF ZONING ORDINANCE | 5 & 10 | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

MODIFICATION OR INTERPRETATION OF DCSM BY THE DIRECTOR OF PUBLIC WORKS AND CAPITAL PROJECTS

| ID. NO. | TL REF # | CITATION | PLAN SHEET | DATE APPROVED |
|---------|--------------|---------------------------|------------|---------------|
| 1 | DCSM 7-820.4 | LESS THAN 60' DRIVE ASIDE | 5 | 07/20/16 |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

TOWN OF LEESBURG APPROVALS

| Director | Date |
|-----------------------------------|------|
| Public Works and Capital Projects | |
| Office of Capital Projects | |
| Project Manager | |
| Capital Projects | |
| Land Acquisition Manager | |
| Zoning | |
| Zoning Administrator | |
| Utilities | |
| Director | |
| Parks and Recreation | |
| Director | |

THIS APPROVAL IS NOT A COMMITMENT TO PROVIDE PUBLIC SANITARY SEWER OR WATER.

FOR TOWN USE ONLY

BID SET
10/13/16

CAPITAL IMPROVEMENTS PROGRAM

| | |
|---------------|--|
| PROJECT NAME: | CATOCTIN SKATE PARK |
| OWNER: | TOWN OF LEESBURG, LOUDOUN COUNTY, VA |
| ADDRESS: | 25 WEST MARKET STREET, LEESBURG, VA - 20176 Ph. # (703)-737-6067 |
| ENGINEER: | ATCS, P.L.C. |

REVISIONS TO APPROVED DRAWINGS

| NO. | DATE | SHEETS REVISED | COMMENTS | NO. | DATE | SHEETS REVISED | COMMENTS |
|-----|------|----------------|----------|-----|------|----------------|----------|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| BMP TYPE | REDEVELOPMENT DISTURBED TOTAL SITE AREA (AC) | TOTAL PRE-EXIST. IMPERV. AREA (AC) | TOTAL POST IMPERV. AREA (AC) | TOTAL PERV. AREA (AC) | ACRES TREATED (AC) | IMPERV. AREA TREATED (AC) | PERV. AREA TREATED (AC) | LOC. (VA STATE PLANE COORDINATES (83 NAD)) | STRUCT. NO. /SIZE | BMP CREDIT |
|--------------|--|------------------------------------|------------------------------|-----------------------|--------------------|---------------------------|-------------------------|--|-------------------|------------|
| 1 BMP CREDIT | 0.86 | 0.57 | 0.50 | 0.36 | N/A | N/A | N/A | N/A N/A | | |

SEE VRRM SPREADSHEET ON SHEET 13: THIS PROJECT HAS PURCHASED NUTRIENT CREDITS (0.08 LB./YR.) TO SATISFY WATER QUALITY REQUIREMENTS.

TOWN OF LEESBURG
DEPARTMENT OF PLAN REVIEW (703) 771-2740
DEPARTMENT OF PLANNING AND ZONING (703) 771-2434
DEPARTMENT OF UTILITIES (703) 737-7075
ZONING INSPECTIONS (703) 771-2758
SITE INSPECTIONS (703) 771-2782

UTILITY CONTACTS
GAS - COLUMBIA GAS TRANSMISSION CORP. (703) 327-6331
- WASHINGTON GAS (800) 752-7620
- CNG TRANSMISSION CORP. (814) 683-6171
ELECTRIC - DOMINION VIRGINIA POWER (888) 667-3000
- NOVEC (800) 985-0500
TELEPHONE - AT&T (800) 286-2747
- VERIZON (800) 256-4646
CABLE - COMCAST (888) 375-4888
OTHER - CENTURY LINK (800) 366-8201

ENGINEER: **ATCS, P.L.C.**
ENGINEERING • PLANNING • SURVEYING
2533 Dulles Vista Drive, Suite 300
Herndon, VA 20171
(703) 430-7500 • Fax (703) 430-0889
Chippewa, Va. • Waldorf, Md. • Annapolis, Md.

PROJECT MANAGER: ANNE D. GEIGER, P.E.

PROJECT NAME: **CATOCTIN SKATE PARK**
Town of Leesburg Loudoun County, Virginia

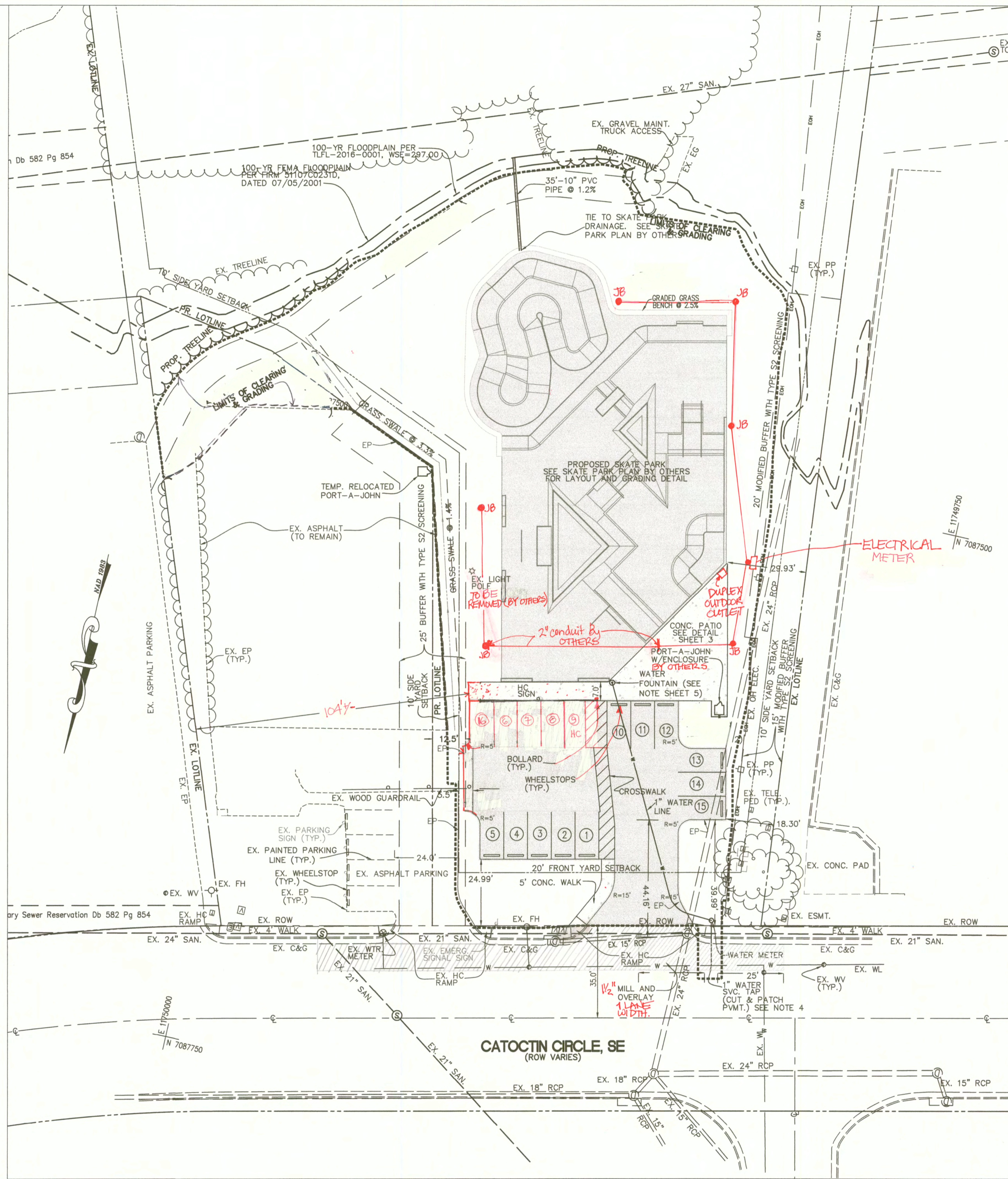
ASSOCIATED PLAN: **TLCI-2016-0003**
C.I.P. NUMBER: _____
VDOT PROJ. NO. _____

TOWN NUMBER: _____

SUBMISSION DATE: JUNE 30, 2016

Sheet 1 of 15

REVISION 10/11/2013



LEGEND

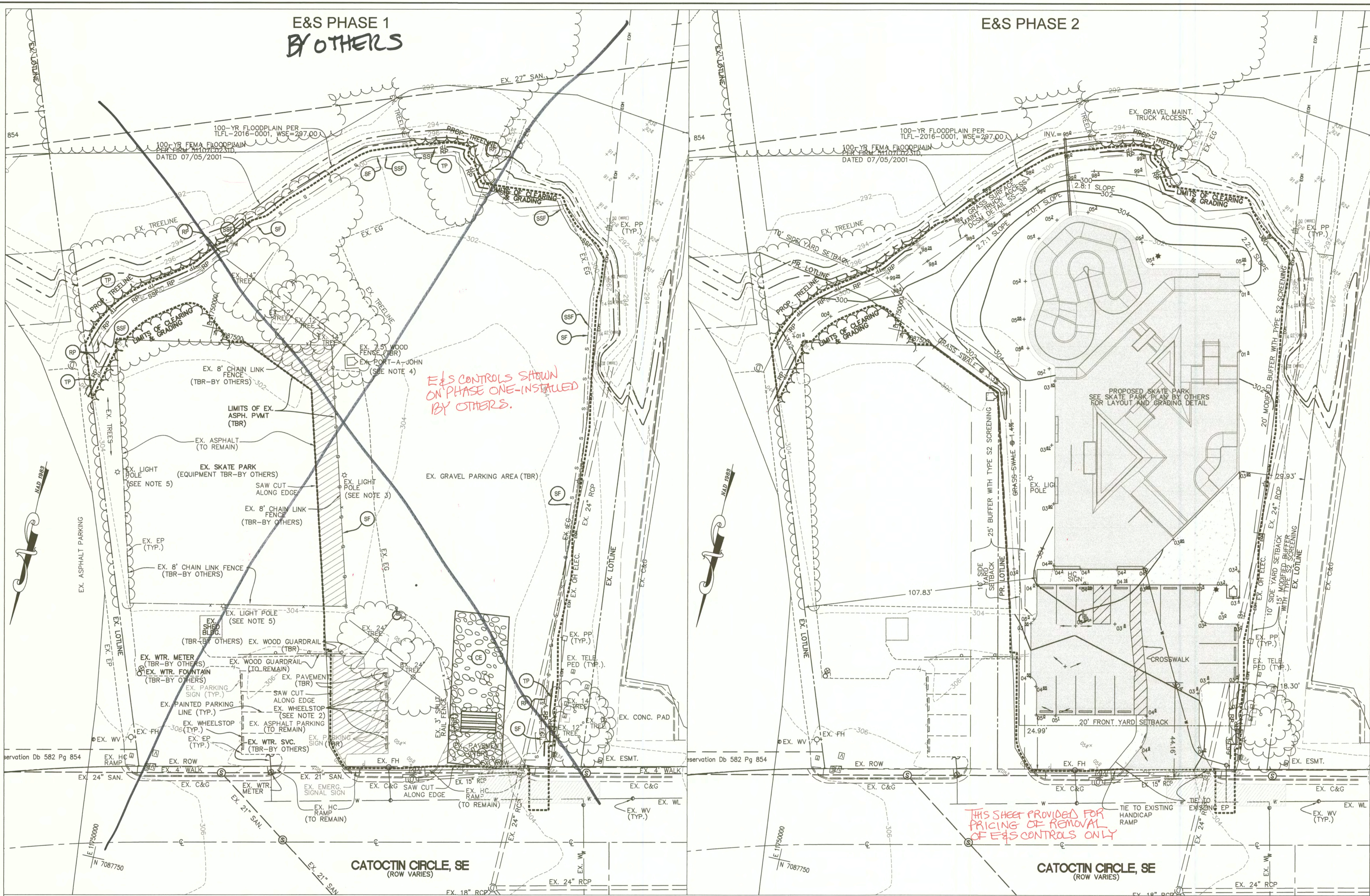
- LEGAL RIGHT-OF-WAY
- SITE BOUNDARY
- ADJOINING PROPERTY LINE
- EXISTING CURB & GUTTER
- EX 15" RCP --- EXISTING STORM SEWER
- TP-1 --- REQUIRED TEST PIT
- PROPOSED STREET SIGN
- EXISTING INLET
- EXISTING STM. SEW. STRUCTURE #
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- PROP. FITTINGS: CROSS, BEND, TEE
- PROPOSED VALVE
- JB --- JUNCTION BOX

- NOTES:**
1. MOST DEPENDABLE PEDESTAL DRINKING FOUNTAIN, TEXTURED BLACK WITH CUT-OFF VALVE AND LOW POINT DRAIN
 2. APPROXIMATE LOCATION OF PROPOSED LIGHTS. EXACT LOCATION NEEDS TO BE SPECIFIED BY THE CONTRACTOR. THE CONTRACTOR NEEDS TO PROVIDE A PROPOSED LIGHTING PLAN DEMONSTRATING THAT THE SITE LIGHTING MEETS CURRENT LUMEN REQUIREMENTS
 3. THE PORT-A-JOHN ENCLOSURE WILL BE PROVIDED BY OTHERS.
 4. TRENCH TO BE BACKFILLED WITH 21-A TO SUBGRADE IN ROADWAY

| | |
|--|---|
| <p>TOWN AND COUNTY COMMENTS</p> <p>ADDRESS TOL COMMENTS</p> | |
| <p>1 07/14/16</p> | <p>02 09/16/16</p> |
| <p>MANAGER: L.D. CARUTHERS</p> <p>DESIGN BY: C.D.N.</p> <p>DRAWN BY: C.D.N.</p> <p>SURV. CHIEF: T.A.L.</p> | <p>CHKD BY: L.D.C.</p> <p>CHKD BY: L.D.C.</p> <p>DATE: 08/08/2016</p> <p>FELDBOOK NO. N/A</p> |
| <p>CLIENT: OFFICE OF CAPITAL PROJECTS TOWN OF LEEBSBURG 2553 DULLES VIEW DRIVE, SUITE 300 LEEBSBURG, VA 20176-6601</p> | |
| <p>ATCS, P.L.C.</p> <p>ENGINEERING • PLANNING • SURVEYING</p> <p>2553 Dulles View Drive, Suite 300 Herndon, VA 20171</p> <p>(703) 430-7500 • Fax (703) 430-0689 Culpeper, Va. • Waldorf, Md. • Annapolis, Md.</p> | |
| <p>TITLE PLAN</p> <p>CATOCTIN SKATE PARK</p> <p>141 CATOCTIN CIRCLE, SE</p> <p>LOCATED IN TOWN OF LEEBSBURG LOUDOUN COUNTY, VIRGINIA</p> | |
| <p>SHEET NO. 5 OF 15</p> <p>DWG. NO. 7058.0002</p> | |

E&S PHASE 1
BY OTHERS

E&S PHASE 2



E&S CONTROLS SHOWN ON PHASE ONE-INSTALLED BY OTHERS.

THIS SHEET PROVIDED FOR PRICING OF REMOVAL OF E&S CONTROLS ONLY

((THIS SHEET IS FOR EROSION AND SEDIMENT CONTROL PURPOSES ONLY))

EROSION CONTROL DEVICE SYMBOL LEGEND

| | | | | |
|--|------------------|---|--------------------------------|--------------|
| SUPER SILT FENCE SEE DETAIL ON SHEET 21 | SUPER SILT FENCE | TEMPORARY GRAVEL CONSTRUCTION ENTRANCE STD. & SPEC. 3.02 | ROOT PRUNING DCSM STD. VS-2 | ROOT PRUNING |
| TREE PROTECTION STD. & SPEC. 3.38 | TREE PROTECTION | SILT FENCE STD. & SPEC. 3.05 | SILT FENCE | |

| | | | | |
|---|--|---|---|--|
| <p>ATCS, P.L.C. ENGINEERING • PLANNING • SURVEYING 2553 Dulles View Drive, Suite 300 Herndon, VA 20171 (703) 430-7500 • Fax (703) 430-0889 Ouppaper, Va. • Waldorf, Md. • Annapolis, Md.</p> | | <p>CLIENT OFFICE OF CAPITAL PROJECTS TOWN OF LEESBURG 25 W. MARKET STREET LEESBURG, VA 20176-2801</p> | <p>MANAGER: L.D. CARUTHERS DESIGN BY: C.D.N. DRAWN BY: C.D.N. SURV. CHIEF: T.A.L. FIELDBOOK NO: N/A</p> | <p>07/14/16 TOWN AND COUNTY COMMENTS</p> |
| <p>TITLE EROSION AND SEDIMENT CONTROL PLAN PH 1 AND 2</p> | | <p>SCALE 1"=20' 0 10 20 40 60</p> | <p>DATE</p> | <p>NO.</p> |
| <p>PROJECT CATOCTIN SKATE PARK 141 CATOCTIN CIRCLE, SE LOCATED IN TOWN OF LEESBURG LOUDOUN COUNTY, VIRGINIA</p> | | <p>REVISION</p> | <p>DATE</p> | <p>NO.</p> |
| <p>SHEET NO. 7 OF 15</p> | | <p>DATE</p> | <p>NO.</p> | <p>NO.</p> |
| <p>DWG. NO. 7058.00002</p> | | <p>DATE</p> | <p>NO.</p> | <p>NO.</p> |

EROSION AND SEDIMENT CONTROL NOTES

PROJECT DESCRIPTION

THIS PROJECT PROPOSES TO CLEAR, GRADE AND DISTURB 0.86 ACRES FOR CONSTRUCTION AND DEVELOPMENT OF A SKATE PARK AND PARKING LOT IN THE TOWN OF LEESBURG. THE SITE IS LOCATED ALONG CATOCTIN CIRCLE.

A PRELIMINARY CUT AND FILL ANALYSIS HAS BEEN PREPARED SHOWING ABOUT 950 CUBIC YARDS OF CUT AND 600 CUBIC YARDS OF FILL FOR A NET OF 350 CUBIC YARDS TO BE REMOVED. THESE AMOUNTS DO NOT TAKE INTO ACCOUNT ANY SOIL CONDITIONS OR CONSTRUCTION MATERIAL THICKNESS AND DO NOT REPRESENT THE ACTUALLY CUT AND FILL ON THE SITE. THE CONTRACTOR NEEDS TO VERIFY THE ACTUALLY CUT AND FILL NUMBERS PRIOR TO CONSTRUCTION.

EXISTING SITE DESCRIPTION

THIS SITE IS PREDOMINANTLY COVERED BY AN EXISTING GRAVEL PARKING LOT WITH A WOODED AREA COVERING THE SOUTHERN SIDE OF THE PROPERTY. TUSCARORA CREEK MEANDERS ON AND OFF THE PROPERTY ALONG THE SOUTHERN PROPERTY LINE AND OUTFALLS TO THE WEST OF THE SITE. THE SITE RELATIVELY FLAT WITHIN THE EXISTING GRAVEL PARKING LOT WITH SLOPES INCREASING ALONG THE EDGE OF THE PARKING LOT INTO THE WOODED AREA OF THE SITE.

ADJACENT AREAS

THE SITE IS SURROUNDED TO THE NORTH, EAST AND WEST BY EXISTING COMMERCIAL DEVELOPMENTS. TO THE SOUTH RUNS TUSCARORA CREEK WITH A RESIDENTIAL COMMUNITY LOCATED ON THE OPPOSITE SIDE OF TUSCARORA CREEK.

OFF-SITE AREAS

NO GRADING SHALL BE PERMITTED OFF-SITE. SEE PLAN FOR LIMITS FOR DELINEATION OF ON-SITE GRADING. ANY STOCKPILING OR BORROWING ON-SITE SHALL MEET THE MS-2 REQUIREMENTS. ANY OFF-SITE OFFSITE BORROW OR SURPLUS MAY REQUIRE SEPARATE PERMIT AND SHALL CONSULT WITH TOWN OF LEESBURG.

CRITICAL AREAS

THE PROPERTY CONTAINS FLOODPLAIN OF TUSCARORA CREEK LOCATED ALONG THE SOUTHERN SIDE OF THE SITE. NO FILL SHALL BE DONE WITHIN THIS FLOODPLAIN. THIS PROJECT PROPOSED TO SAVE THREE (3) TREES ON THE NORTHWEST CORNER OF THE SITE, SPECIAL CARE SHOULD BE TAKEN TO MINIMIZE IMPACTING THESE TREES. (SEE TREE PRESERVATION PLAN).

SOILS

SEE SHEET TWO (2) FOR SOIL INFORMATION

EROSION AND SEDIMENT CONTROL MEASURES

UNLESS OTHERWISE INDICATED, ALL VEGETATIVE AND STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CONSTRUCTED AND MAINTAINED ACCORDING TO THE MINIMUM STANDARDS AND SPECIFICATIONS OF VIRGINIA EROSION AND SEDIMENT CONTROL HANDBOOK.

PHASE 1 CONTROLS ARE INTENDED TO ESTABLISH ENTRANCE AND PERIMETER CONTROLS WHICH INCLUDES A CONSTRUCTION ENTRANCE WITH WASH RACK (CE), SILT FENCE (SF), SUPER SILT FENCE (SSF), TREE PROTECTION (TP), ETC. AS SHOWN ON THESE PLANS.

PHASE 2 CONTROLS ARE INTENDED TO PROVIDE CONTROL DURING THE FINAL STAGES OF CONSTRUCTION. PHASE 1 CONTROLS ARE TO REMAIN IN PLACE UNTIL SUCH TIME THAT THEIR REMOVAL IS REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS OR WITH THE APPROVAL OF THE SITE INSPECTOR.

THE SITE INSPECTOR HAS THE AUTHORITY TO ADD, DELETE OR MOVE CONTROLS AS NECESSARY IN THE FIELD DUE TO SITE CONDITIONS.

STRUCTURAL PRACTICES

DETAILS OF THE EROSION CONTROL DEVICES ARE PROVIDED ON THE DETAIL SHEETS OF THIS PLAN.

- 1. TEMPORARY CONSTRUCTION ENTRANCE - 3.02: A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE WITH WASH RACK SHALL BE INSTALLED AT THE ENTRANCE FROM THE PUBLIC STREET. CONSTRUCTION VEHICLES WILL BE REQUIRED TO WASH THEIR WHEELS BEFORE ENTERING THE STREET.
- 2. SILT FENCE BARRIER - 3.05: SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWN SLOPE OF DISTURBED AREAS TO FILTER SEDIMENT-LADEN RUNOFF.
- 3. TREE PROTECTION - 3.38: A FENCE BARRIER WILL BE PLACED AROUND TREES AND VEGETATED AREAS THAT ARE NOT TO BE DISTURBED FOR PROTECTION FROM CONSTRUCTION ACTIVITIES.
- 4. SUPER SILT FENCE - SEE DETAIL IN THESE PLANS: SUPER SILT FENCE SEDIMENT BARRIERS WILL BE INSTALLED DOWN SLOPE OF DISTURBED AREAS TO FILTER SEDIMENT-LADEN RUNOFF.
- 5. DUST CONTROL - 3.39: IN AREAS SUBJECT TO SURFACE AND AIR MOVEMENT OF DUST WHERE ON SITE AND OFF SITE DAMAGE IS LIKELY TO OCCUR IF PREVENTIVE MEASURES ARE NOT TAKEN.
- 6. SOIL TEST SHALL BE PROVIDED TO DETERMINE SITE SPECIFIC LIME AND FERTILIZER SPECIFICATIONS.

VEGETATIVE PRACTICES

- 1. TOP SOILING (STOCKPILE) - 3.30: TOPSOIL SHALL BE STRIPPED FROM GRADED AREAS AND STOCKPILED FOR LATER USE AS REQUIRED. STOCKPILE LOCATIONS SHALL BE LOCATED ON-SITE AND SHALL BE STABILIZED WITH TEMPORARY VEGETATION. STOCKPILES SHALL BE LOCATED SO THAT ANY SOIL LOSS DUE TO EROSION SHALL BE CAPTURED BY E&S DEVICES SHOWN ON THIS PLAN.
- 2. TEMPORARY SEEDING - 3.31: TEMPORARY SEEDING SHALL BE PROVIDED FOR ALL DENUDED AREAS WHICH ARE TO BE LEFT DORMANT FOR EXTENDED PERIODS OF TIME. DENUDED AREAS SHALL BE SEED WITH FAST GERMINATING TEMPORARY VEGETATION IMMEDIATELY FOLLOWING GRADING. SELECTION OF THE SEED MIXTURE WILL DEPEND ON THE TIME OF YEAR IT IS APPLIED. SOIL TESTING SHALL BE PERFORMED TO DETERMINE APPROPRIATE FERTILIZER REQUIREMENTS AND PH VALUES. LIME AND FERTILIZER SHALL BE APPLIED AS REQUIRED.
- 3. PERMANENT SEEDING - 3.32: AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING AFTER REACHING FINAL GRADE. SEED, FERTILIZER AND LIME SHALL BE APPLIED AS SPECIFIED IN THE VESCH. DURING SEEDING OPERATIONS, EROSION CONTROL, BLANKETS AND MULCH SHALL BE USED TO HELP PREVENT EROSION AND ALLOW SEED TO GERMINATE PROPERLY. SOIL TESTING SHALL BE PERFORMED TO DETERMINE APPROPRIATE FERTILIZER REQUIREMENTS AND PH VALUES. LIME AND FERTILIZER SHALL BE APPLIED AS REQUIRED.

DUST CONTROL

DUST CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH THE VESCH STD. & SPEC. 3.39 TO PREVENT SURFACE AND AIR MOVEMENT OF DUST FROM EXPOSED SOIL SURFACES AND REDUCE THE PRESENCE OF AIRBORNE SUBSTANCES WHICH MAY PRESENT HEALTH HAZARDS, TRAFFIC SAFETY PROBLEMS, OR HARM ANIMAL OR PLANT LIFE DURING LAND DISTURBING, DEMOLITION AND CONSTRUCTION ACTIVITIES. APPROVED TEMPORARY MEASURES INCLUDE:

- 1. VEGETATIVE COVER - REFER TO STD. & SPEC. 3.31.
- 2. MULCH - REFER TO STD. & SPEC. 3.35.
- 3. TILLAGE - ROUGHENING OF THE GROUND SURFACE.
- 4. IRRIGATION - WATER SPRINKLED ON GROUND SURFACE.
- 5. SPRAY-ON ADHESIVES - SPRAYED ONTO GROUND SURFACE.
- 6. STONE - REFER TO STD. & SPEC. 3.3.
- 7. BARRIERS - BOARD FENCE, WIND FENCE, SEDIMENT FENCE OR SIMILAR BARRIER.
- 8. CALCIUM CHLORIDE - CHEMICAL TREATMENT OF GROUND SURFACE.

SEQUENCE OF CONSTRUCTION

PHASE I

ALL PHASE ONE CONTROLS SHALL BE AS SHOWN ON THE PHASE I EROSION & SEDIMENT CONTROL PLAN. ALL PHASE ONE CONTROLS APPROVED ON PLANS PLAN AND/OR APPROVED BY THE SITE INSPECTOR SHALL BE IN PLACE AND WORKING PRIOR TO COMMENCEMENT OF ANY PROPOSED WORK ON THIS SITE.

- 1. INSTALL INLET PROTECTION AT ALL EXISTING INLETS WHERE SHOWN.
- 2. CLEAR THE AREA FOR THE INSTALLATION OF THE CONSTRUCTION ENTRANCE AND INSTALL CONSTRUCTION ENTRANCE AND WASH RACK.
- 3. INSTALL TREE PROTECTION FENCING ALONG THE LIMITS OF CLEARING AND GRADING AND COMMENCE ROOT PRUNING OPERATIONS AS NOTED ON THE TREE PROTECTION PLAN.
- 4. CLEAR THE AREA ALONG THE LIMITS OF CLEARING AND GRADING AS NEEDED TO INSTALL THE SILT FENCE AND SUPER SILT FENCE. ONLY CLEAR THE AREA AS NEEDED TO INSTALL THE PERIMETER CONTROLS. INSTALL SILT FENCE AND SUPPER SILT FENCE.
- 5. CLEAR AND GRUB THE REMAINDER OF THE SITE LEAVING PHASE 1 CONTROLS IN PLACE.
- 6. THROUGHOUT THE CUT AND FILL EARTHWORK OPERATIONS POSITIVE FLOW SHALL BE MAINTAINED TO THE EROSION AND SEDIMENT CONTROL DEVICES AS INTENDED.

PHASE II

CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.

ALL PHASE I CONTROLS ARE TO REMAIN IN PLACE UNTIL AREAS UPSTREAM OF THEM HAVE BEEN STABILIZED OR HAVE OTHERWISE BEEN PROTECTED WITH OTHER APPROPRIATE E&S DEVICE(S).

- 1. THROUGHOUT THE GRADING OPERATIONS POSITIVE FLOW SHALL BE MAINTAINED TO THE EROSION AND SEDIMENT CONTROL DEVICES AS INTENDED. AS THE FINAL GRADES ARE BEING ESTABLISHED THE EROSION AND SEDIMENT CONTROL DEVICES SHALL BE ADJUSTED/RELOCATED IF REQUIRED, WITHIN THE LIMITS OF CLEARING AND GRADING, TO MAINTAIN POSITIVE FLOW TO THE DEVICES.
- 2. EARTHEN STOCKPILES NOT CONTINUOUSLY WORKED SHALL BE STABILIZED WITH TEMPORARY OR PERMANENT VEGETATION AND/OR PROTECTED WITH SILT FENCE.
- 3. ROUGH GRADING THE SITE BRING THE GRADES NEAR FINAL GRADE.
- 4. INSTALL THE PARKING LOT AND SKATE PARK.
- 5. TOPSOIL SHALL BE REDISTRIBUTED OVER DISTURBED AREAS ONCE FINAL SUBGRADES ARE ESTABLISHED. PERMANENT VEGETATIVE STABILIZATION SHALL BE IMMEDIATELY APPLIED TO AREAS RECEIVING TOPSOIL. TOPSOIL SHALL BE PLACED IN ACCORDANCE WITH STD & SPEC. 3.30, TO A COMPACTED DEPTH OF NOT LESS THAN 2 INCHES AND PREFERABLY 4 INCHES.

PERMANENT SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER FINAL GRADING. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE REMOVED AS CONSTRUCTION IS COMPLETED AND DENUDED AREAS ARE STABILIZED.

PERMANENT STABILIZATION

ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE STABILIZED WITH PERMANENT SEEDING WITHIN 7 DAYS AFTER REACHING FINAL GRADE. SEEDING WILL BE DONE WITH KENTUCKY 31 TALL FESCUE ACCORDING TO THE STANDARDS AND SPECIFICATIONS OF THE VESCH. PERMANENTLY SEEDED AREAS SHALL BE PROTECTED DURING ESTABLISHMENT WITH MULCH. SOME MULCH REQUIREMENTS DIFFER FOR THE SUMMER AND WINTER PERIODS. REFER TO VESCH STD. & SPEC. 3.35 FOR SPECIFIC APPLICATION REQUIREMENTS. CUT AND FILL SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED.

TEMPORARY STABILIZATION

TEMPORARY SEEDING AND MULCHING SHALL BE REQUIRED ONCE AN AREA IS DENUDED FOR A MAXIMUM OF 7 DAYS EXCEPT FOR THAT PORTION OF THE SITE IN WHICH WORK WILL BE CONTINUOUS BEYOND 30 DAYS. SOME MULCH REQUIREMENTS DIFFER FOR THE SUMMER AND WINTER PERIODS, REFER TO VESCH STD. & SPEC. 3.35 FOR SPECIFIC APPLICATION REQUIREMENTS. FOR WINTER STABILIZATION, ANY AREA DENUDED FOR 14 DAYS AFTER NOVEMBER 1 SHALL BE SEEDED AND MULCHED WITH THE APPROPRIATE SEED MIXTURE AS SPECIFIED IN CHAPTER 3 OF THE VESCH.

MANAGEMENT STRATEGIES

- 1. CONSTRUCTION SHOULD BE SEQUENCED SO THAT GRADING OPERATIONS CAN BEGIN AND END AS QUICKLY AS POSSIBLE.
- 2. SEDIMENT TRAPPING MEASURES SHALL BE INSTALLED AS A FIRST STEP IN GRADING.
- 3. TEMPORARY SEEDING OR OTHER STABILIZATION SHALL FOLLOW IMMEDIATELY AFTER GRADING.
- 4. AREAS WHICH ARE NOT TO BE DISTURBED SHALL BE CLEARLY MARKED BY FLAGS, SIGNS, ETC.
- 5. THE JOB SUPERINTENDENT SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL PRACTICES.
- 6. ALL CUT AND FILL SLOPES SHALL BE GRADED IN SUCH A MANNER AS TO MINIMIZE EROSION. THIS MAY INCLUDE SURFACE ROUGHENING (STD. & SPEC. 3.29) PRIOR TO VEGETATIVE STABILIZATION.
- 7. CARE SHOULD BE TAKEN TO ENSURE THAT CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE.
- 8. IF WATER IS FOUND SEEPING FROM A SLOPE FACE, ADEQUATE DRAINAGE OR PROTECTION SHALL BE PROVIDED PER THE VESCH, FOR EXAMPLE SUBSURFACE DRAIN, STD. AND SPEC. 3.28.
- 9. EROSION AND SEDIMENT CONTROL DEVICES SHALL BE REMOVED AS CONSTRUCTION IS COMPLETED AND DENUDED AREAS ARE STABILIZED, ONLY AFTER APPROVAL BY THE INSPECTOR. AREAS DISTURBED BY REMOVAL OF TEMPORARY E&S DEVICES SHALL BE PERMANENTLY STABILIZED.
- 10. THE TOWN OF LEESBURG DIRECTOR OF PUBLIC WORKS AND CAPITAL PROJECTS APPROVAL SHALL BE REQUIRED FOR LOCATION OF ALL STOCKPILES PRIOR TO THE PLACEMENT OF SOILS.
- 11. NO UNPROTECTED, DISTURBED AREA SHALL DRAIN TO ROADWAY PAVEMENTS SUCH THAT THE SUBBASE, BASE, OR WEARING SURFACE IS CONTAMINATED BY SILT TRAPPED AT LOW POINTS OR INLETS.

MAINTENANCE

- 1. IN GENERAL, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED DAILY AND AFTER EACH SIGNIFICANT RAINFALL. THE FOLLOWING ITEMS WILL BE CHECKED IN PARTICULAR:
 - A. EARTHEN BERMS SHALL BE CHECKED REGULARLY FOR EROSION OR DETERIORATION.
 - B. WATER SEEPAGE FROM ANY SLOPES WILL REQUIRE STABILIZATION AND ADEQUATE DRAINAGE PROTECTION.
 - C. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO SEE THAT A GOOD STAND OF GRASS IS MAINTAINED. AREAS SHOULD BE FERTILIZED AND RE-SEED AS NEEDED.
 - D. SILT SHALL BE REMOVED FROM THE SEDIMENT TRAPPING MEASURES AS NEEDED TO INSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION.
 - E. ALL DAMAGED EROSION AND SEDIMENT CONTROL DEVICES SHALL BE REPAIRED BY THE END OF THE DAY.
 - F. ALL STREETS SHALL BE KEPT IN A SAFE AND CLEAN CONDITION AT ALL TIMES.

MINIMUM STANDARDS

MS#

- 1. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DENUDED AREAS WITHIN SEVEN DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE. TEMPORARY SOIL STABILIZATION SHALL BE APPLIED WITHIN SEVEN DAYS TO DENUDED AREAS THAT MAY NOT BE FINAL GRADE BUT WILL REMAIN DORMANT FOR LONGER THAN 14 DAYS. PERMANENT STABILIZATION SHALL BE APPLIED TO AREAS THAT ARE TO BE LEFT DORMANT FOR MORE THAN ONE YEAR. NOTES ARE PROVIDED FOR VEGETATIVE STABILIZATION MEASURES.
- 2. DURING CONSTRUCTION OF THE PROJECT, SOIL STOCKPILES AND BORROW AREAS SHALL BE STABILIZED OR PROTECTED WITH SEDIMENT TRAPPING MEASURES. THE APPLICANT IS RESPONSIBLE FOR THE TEMPORARY PROTECTION AND PERMANENT STABILIZATION OF ALL SOIL STOCKPILES ON SITE AS WELL AS BORROW AREAS AND SOIL INTENTIONALLY TRANSPORTED FROM THE PROJECT SITE. NOTES ARE PROVIDED FOR STOCKPILE STABILIZATION MEASURES.
- 3. A PERMANENT VEGETATIVE COVER SHALL BE ESTABLISHED ON DENUDED AREAS NOT OTHERWISE PERMANENTLY STABILIZED. PERMANENT STABILIZATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL A GROUND COVER IS ACHIEVED THAT IS UNIFORM, MATURE ENOUGH TO SURVIVE AND WILL INHIBIT EROSION. NOTES ARE PROVIDED FOR VEGETATIVE STABILIZATION MEASURES.
- 4. SEDIMENT BASINS AND TRAPS, PERIMETER DIKES, SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND-DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPSLOPE LAND DISTURBANCE TAKES PLACE. NOTES ARE PROVIDED FOR THE STABILIZATION MEASURES TO BE PROVIDED WITH THIS PLAN.
- 5. STABILIZATION MEASURES SHALL BE APPLIED TO EARTHEN STRUCTURES SUCH AS DAMS, DIKES AND DIVERSIONS IMMEDIATELY AFTER INSTALLATION. NOTES ARE PROVIDED FOR THE STABILIZATION MEASURES.
- 6. SEDIMENT TRAPS AND SEDIMENT BASINS SHALL BE DESIGNED AND CONSTRUCTED BASED UPON THE TOTAL DRAINAGE AREA TO BE SERVED BY THE TRAP OR BASIN. THE PROVIDED SEDIMENT TRAP IS DESIGNED ACCORDINGLY.
- 7. CUT AND FILL SLOPES SHALL BE DESIGNED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES THAT ARE FOUND TO BE ERODING EXCESSIVELY WITHIN ONE YEAR OF PERMANENT STABILIZATION SHALL BE PROVIDED WITH ADDITIONAL SLOPE STABILIZATION MEASURES UNTIL THE PROBLEM IS CORRECTED. NOTES ARE PROVIDED FOR THE ADDITIONAL STABILIZATION MEASURES.
- 8. CONCENTRATED RUNOFF SHALL NOT FLOW DOWN CUT OR FILL SLOPES UNLESS CONTAINED WITHIN AN ADEQUATE TEMPORARY OR PERMANENT CHANNEL, FLUME OR SLOPE DRAIN STRUCTURE. NOTES ARE PROVIDED FOR THIS TREATMENT.
- 9. WHENEVER WATER SEEPS FROM A SLOPE FACE, ADEQUATE DRAINAGE OR OTHER PROTECTION SHALL BE PROVIDED. NOTES ARE PROVIDED FOR THIS TREATMENT.
- 10. ALL STORM SEWER INLETS THAT ARE MADE OPERABLE DURING CONSTRUCTION SHALL BE PROTECTED SO THAT SEDIMENT WATER CANNOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR OTHERWISE TREATED TO REMOVE SEDIMENT. INLET PROTECTION IS PROVIDED FOR THIS PURPOSE.
- 11. BEFORE NEWLY CONSTRUCTED STORMWATER CONVEYANCE CHANNELS OR PIPES ARE MADE OPERATIONAL, ADEQUATE OUTLET PROTECTION AND ANY REQUIRED TEMPORARY OR PERMANENT CHANNEL LINING SHALL BE INSTALLED IN BOTH THE CONVEYANCE CHANNEL AND RECEIVING CHANNEL. OUTLET PROTECTION AND RIPRAP LINING IS PROVIDED FOR THIS PURPOSE.
- 12. WHEN WORK IN A LIVE WATERCOURSE IS PERFORMED, PRECAUTIONS SHALL BE TAKEN TO MINIMIZE ENCROACHMENT, CONTROL SEDIMENT TRANSPORT AND STABILIZE THE WORK AREA TO THE GREATEST EXTENT POSSIBLE DURING CONSTRUCTION. NONERODIBLE MATERIAL SHALL BE USED FOR THE CONSTRUCTION OF CAUSEWAYS AND COFFERDAMS. EARTHEN FILL MAY BE USED FOR THESE STRUCTURES IF ARMORED BY NONERODIBLE COVER MATERIALS.
- 13. WHEN A LIVE WATERCOURSE MUST BE CROSSED BY CONSTRUCTION VEHICLES MORE THAN TWICE IN ANY SIX-MONTH PERIOD, A TEMPORARY STREAM CROSSING CONSTRUCTED OF NONERODIBLE MATERIAL SHALL BE PROVIDED.
- 14. ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS PERTAINING TO WORKING OR CROSSING LIVE WATERCOURSE SHALL BE MET.
- 15. THE BED AND BANKS OF A WATERCOURSE SHALL BE STABILIZED IMMEDIATELY AFTER WORK IN THE WATERCOURSE IS COMPLETED.
- 16. UNDERGROUND UTILITY LINES SHALL BE INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS IN ADDITION TO OTHER APPLICABLE CRITERIA:
 - A. NO MORE THAN 500 LINEAR FEET OF TRENCH MAY BE OPEN AT ONE TIME.
 - B. EXCAVATED MATERIAL SHALL BE PLACED ON UPHILL SIDE OF TRENCHES.
 - C. EFFLUENT FROM DEWATERING OPERATIONS SHALL BE FILTERED OR PASSED THROUGH AN APPROVED SEDIMENT TRAPPING DEVICE, OR BOTH, AND DISCHARGED IN A MANNER THAT DOES NOT ADVERSELY AFFECT FLOWING STREAMS OR OFF-SITE PROPERTY.
 - D. MATERIAL USED FOR BACKFILLING TRENCHES SHALL BE PROPERLY COMPACTED IN ORDER TO MINIMIZE EROSION AND REMOTE STABILIZATION.
 - E. RESTABILIZATION SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THESE REGULATIONS.
 - F. APPLICABLE SAFETY REGULATIONS SHALL BE COMPLIED WITH.
 - G. UTILITY CONSTRUCTION NOTES ARE PROVIDED IN THE PLANS. EROSION AND SEDIMENT CONTROL MEASURES ARE PROVIDED FOR UTILITY CONSTRUCTION.
- 17. WHERE CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED OR PUBLIC ROADS, PROVISIONS SHOULD BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT BY VEHICULAR TRACKING ONTO THE PAVED SURFACE. WHERE SEDIMENT IS TRANSPORTED ONTO A PAVED OR PUBLIC ROAD SURFACE, THE ROAD SURFACE SHALL BE CLEANED THOROUGHLY AT THE END OF EACH DAY. SEDIMENT SHALL BE REMOVED FROM THE ROADS BY SHOVELING OR SWEEPING AND TRANSPORTED TO A SEDIMENT CONTROL DISPOSAL AREA. STREET WASHING SHALL BE ALLOWED ONLY AFTER SEDIMENT IS REMOVED IN THIS MANNER. THIS PROVISION SHALL APPLY TO INDIVIDUAL DEVELOPMENT LOTS AS WELL AS TO LARGER LAND-DISTURBING ACTIVITIES. A CONSTRUCTION ENTRANCE AND NOTES ARE PROVIDED FOR THIS PURPOSE.
- 18. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED, UNLESS OTHERWISE AUTHORIZED BY THE LOCAL PROGRAM AUTHORITY. TRAPPED SEDIMENT AND THE DISTURBED SOIL AREAS RESULTING FROM THE DISPOSITION OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED TO PREVENT FURTHER EROSION AND SEDIMENTATION. NOTES ARE PROVIDED FOR THIS TREATMENT.
- 19. PROPERTIES AND WATERWAYS DOWNSTREAM FROM DEVELOPMENT SITES SHALL BE PROTECTED FROM SEDIMENT DEPOSITION, EROSION AND DAMAGE DUE TO INCREASES IN VOLUME, VELOCITY AND PEAK FLOW RATE OF STORMWATER RUNOFF FOR THE STATED FREQUENCY STORM OF 24-HOUR DURATION. AN ADEQUATE OUTFALL EXIST FOR THE SITE SO NO STORMWATER MANAGEMENT HAS BEEN PROVIDED.

1 07/14/16 TOWN AND COUNTY COMMENTS

| | | |
|-----|------|----------|
| NO. | DATE | REVISION |
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| | | |

COMMONWEALTH OF VIRGINIA
COUNTY OF LEESBURG
L.D. CARUTHERS
L.D.C.
L.D.C.
L.D.C.
DATE: 08/02/2016
T.A.L.
FIELDBOOK NO. N/A

CLIENT: OFFICE OF CAPITAL PROJECTS
2555 MARKET STREET
LEESBURG, VA 20176-2001

SCALE: 1"=20'

ATCS, P.L.C.
ENGINEERING • PLANNING • SURVEYING
2553 Dulles View Drive, Suite 300
Herndon, VA 20171
(703) 430-7500 • Fax (703) 430-0889
Culpeper, Va. • Waldorf, Md. • Annapolis, Md.

TITLE: EROSION AND SEDIMENT CONTROL NOTES

CATOCTIN SKATE PARK
141 CATOCTIN CIRCLE, SE

LOCATED IN
TOWN OF LEESBURG
LOUDOUN COUNTY, VIRGINIA

SHEET NO. 8 OF 15

DWG. NO. 7058.00002

encounter difficulties with perched conditions than those operations undertaken in the summer or fall. For long-term planning purposes, we strongly urge that mass grading operations be undertaken to coincide with favorable weather periods.

ANALYSIS AND RECOMMENDATIONS

The recommendations outlined in this report are based on the 3 soil borings recently performed by ECS, the work previously completed under ECS Project No. 25221 and 25221-A the site location plan, and the preliminary information provided to us by ATCS. The site generally appears suitable for the design and construction of the proposed development, which will include a new skate park with a small maintenance/storage building and other ancillary features. The primary factors that could affect the proposed development are the presence of existing fill soils and the potential for highly plastic soils. More detailed analysis and recommendations are included in the following sections.

Foundations

As noted in the Subsurface Conditions section of this report, a significant amount of existing undocumented fill was encountered onsite. In order to mitigate detrimental effects associated with post-construction consolidation of the undocumented material either a system of Rammed Aggregate Piers, or under-cut and replacement of existing fill materials combined with a shallow foundation system are recommended. These methods are further discussed in the following sections and are intended for the skate park play area and buildings only.

Detailed information for the proposed skate park structures and layout was not provided. We understand that the park will consist of paved areas (concrete or asphalt), ramps, a small maintenance or storage building, and other ancillary structures such as shade or pavilion structures. We have assumed that maximum column loads will be less than 10 kips and maximum wall loads will be less than 1 kip per linear foot.

The foundation design recommendations provided in this section are based on the proper implementation of the remedial recommendations including undercut and replacement of the existing fill soils with select material as described herein.

Undercut and Replacement

The existing fill encountered at the site is not expected to be suitable for direct support of the proposed Skate Park improvements. Accordingly we recommend that the existing fill be undercut to a depth of 8 feet below the planned lowest park slab level and be backfilled with new engineered fill placed and compacted as recommended herein. Care should be taken to avoid damage to adjacent structures when excavating for the proposed undercut. Specifically, undercut excavations should not impact the existing foundations for the Loudoun County Volunteer Rescue Squad (LCVRS) building. We recommend that a 1(horizontal):1(vertical) be maintained between the outside edge of the footings for the LCVRS building and the bottom of the excavation made for the Skate Park. Foundations constructed after the partial removal and replacement work recommended above has been completed may be designed using an allowable soil bearing pressure of 3,000 pounds per square foot (psf) The allowable soil bearing pressure refers to that pressure which may be

Shallow foundations supported by soils improved by RAP's are often capable of providing bearing pressures of 5,000 psf. Actual design bearing pressures should be designed by the RAP design/build contractor and be based on structural loads provided by the Skate Park design engineer. An on-site modulus test should be performed to confirm the amount of compression that an individual ground improvement element will experience at the maximum theoretical element top of pier stress. Tests should be monitored full time by ECS. One modulus test should be performed on a ground improvement element located in the weakest area of the site. Loading of the test pier should be conducted up to approximately 150% of the maximum theoretical stress to which the elements will be subjected. At 100% of the maximum theoretical element stress, settlement of the footing supported by the element should not exceed one inch.

It is recommended that the installer's QC program be monitored full time by ECS. For the Rammed Aggregate Pier system, the QC program includes observation and testing of the modulus test pier, verification of bottom stabilization, measurement of placement depths and aggregate used in each test and production pier

Seismic Site Classification (IBC)

The International Building Code (IBC) 2012 and Chapter 20 of ASCE 7 require site classification for seismic design based on the upper 100 feet of a soil profile. Where site specific data are not available to a depth of 100 feet, appropriate soil properties are permitted to be estimated by the registered design professional preparing the soils report based on known geologic conditions. The seismic site class definitions for the weighted average of either the SPT N-values or the shear wave velocities in the upper 100 feet of the soil profile are presented in Chapter 20 of ASCE 7 and in the table below.

Table 2: IBC Seismic Site Classification

| Site Class | Soil Profile Name | Shear Wave Velocity, Vs, (feet/s) | Standard Penetration Test (SPT) N-value |
|------------|-------------------------------|-----------------------------------|---|
| A | Hard Rock | Vs > 5,000 fps | N/A |
| B | Rock | 2,500 < Vs ≤ 5,000 fps | N/A |
| C | Very dense soil and soft rock | 1,200 < Vs ≤ 2,500 fps | N _{AVG} > 50 bpf |
| D | Stiff Soil Profile | 600 ≤ Vs ≤ 1,200 fps | 15 ≤ N _{AVG} ≤ 50 bpf |
| E | Soft Soil Profile | Vs < 600 fps | N _{AVG} < 15 bpf |

In the absence of actual shear wave (Vs) data, we utilized the Standard Penetration Test (SPT) N-values recorded from the borings. Considering the shallow rock surface encountered at this site and on our experience with other projects in the area, we recommend that the design for the buildings be based on a seismic site classification of Site Class D.

PROJECT CONSTRUCTION RECOMMENDATIONS

Subgrade Preparation and Earthwork Operations

The subgrade preparation should consist of stripping all surface cover materials, topsoil, and any other soft or unsuitable material from the building and pavement areas. We recommend that site stripping depths account for the topsoil and possible variations in topsoil thickness between boring locations. We recommend the earthwork clearing be extended a minimum of 10 feet beyond the building/structure and pavement limits. The limits discussed in this paragraph define the expanded building and pavement limits.

Due to the presence of a significant thickness of existing undocumented fill soils at the site two options were provided for site preparation. Partial undercut and replacement or the use of RAP's should be evaluated. Once the final park layout is available, we can provide more detailed recommendations for the location and extent of the spread foundations. Landscape areas and sidewalk will not require undercut and replacement, while the more critical building and skate area likely will require undercut and replacement.

Care must be exercised to identify unsuitable materials, and cause their removal. Procedures such as proofrolling, observation, or test pitting operations may be utilized to assist in identifying the presence of unsuitable materials, as required. The preparation of fill subgrades, as well as proposed structures or pavement subgrades should be observed on a full-time basis. These observations should be performed by the GER, or their representative, to document the unsuitable materials that have been removed, and that the subgrade is suitable for support of the proposed construction and/or fills. Procedures such as proofrolling, observation, or test pitting operations may be utilized to assist in identifying the presence of unsuitable materials, as required.

Pavement areas should be thoroughly evaluated with proofrolling at the time of construction to identify areas that may be unsuitable. Provided a suitable proofroll result is obtained, undercutting of the existing fill in the parking lot area may not be necessary. We recommend that the GER or their authorized representative be present during initial stripping and during excavation of the building footprint to help in delineating suitable and unsuitable materials. Any unsuitable areas identified should be undercut and replaced with suitable fill material compacted as described in this report or otherwise remediated as directed by the GER.

After stripping to the desired grade, and prior to fill placement, the stripped surface should be observed by the GER or their authorized representative. Proofrolling using a loaded dump truck, having an axle weight of at least 10 tons, may be used at this time to aid in identifying localized soft or unsuitable material which should be removed. Any soft or unsuitable materials encountered during this proofrolling should be removed and replaced with an approved backfill compacted to the criteria given below in the section entitled Fill Placement.

Soil bridging lifts within the development limits should not be used. Excessive settlement of the structures may occur when bridging lifts are utilized in structural areas. Any soft areas should be removed or stabilized in place with geosynthetics and engineered fill as necessary. Recommendations regarding in-place stabilization of soft or unsuitable subgrade materials should be provided by the GER at the time of construction.

Large, front loading trash dumpsters frequently impose concentrated front-wheel loads on pavements during loading. In a similar manner, truck loading docks can also experience very high turning wheel loads. This type of loading typically results in rutting of the pavement and ultimately pavement failures. Therefore, we recommend that the pavement in trash pickup

areas consist of a 6-inch thick, mesh reinforced concrete slab with a minimum unconfined compressive strength of 4,000 psi.

Fill Placement

In general, new engineered fill materials for use as backfill, or for support of pavements should consist of an approved material, free of organic matter, debris, cobbles, and rock fragments greater than 4 inches in diameter. The engineered fill should also have a Liquid Limit and Plasticity Index less than or equal to 45 and 20, respectively, unless they are shown to have "very low" expansion potential. Unacceptable fill materials include topsoil and organic materials (OH, OL, and PT), and high plasticity Elastic SILT (MH) or Fat CLAY (CH) that cannot be shown to have "very low" expansion potential.

The existing fill materials on site may be suitable for use as fill, but they will have to be evaluated further at the time of construction. Our borings encountered deleterious materials in our samples consisting of asphalt, roots, and metal. Other deleterious materials and debris may be encountered between boring locations or in unexplored areas of the site. Therefore, provisions and budget for removing deleterious materials and other unsuitable constituents from the soil will have to be considered. Alternatively, the project should expect to haul in suitable material for use as fill and plan for the potential cost of hauling off bad material that is removed. Soils classified as Lean Clay with unacceptably high Plasticity Index were not encountered in any of the recently performed borings; however, past explorations on the site have encountered CH materials. These materials would not be acceptable for reuse as fill. The suitability of any on-site materials for reuse as engineered fill should be evaluated at the time of construction by the GER or their representative.

Any onsite suitable soil may require moisture content adjustments, such as the application of discing or other drying techniques or spraying of water prior to use as controlled fill materials. The planning of earthwork operations should recognize and account for these efforts and increased costs.

Fill materials should be placed in lifts not exceeding 8 inches in loose thickness and moisture conditioned to within ±2 percentage points of the optimum moisture content. Where controlled fill will have a total thickness not exceeding 8 feet, the soil should be compacted to a minimum of 95% of the maximum dry density obtained in accordance with ASTM Standard D 698, Standard Proctor Method or Virginia Test Method (VTM-1). The upper 1-foot of subgrades for pavement areas should be compacted to a minimum of 98% of VTM-1 or ASTM D 698.

Because of the moisture and disturbance sensitive nature of the silt and clay soils at the site, the initial 1 to 2 lifts of fill may need to be compacted without vibratory efforts. Vibratory compaction equipment may cause disturbance of the near surface site soil and upward migration of moisture into the engineered fill which could inhibit compaction efforts. After placement of the initial one to two lifts, vibratory compaction can proceed, if appropriate.

The expanded footprint of the proposed structures or pavement and fill areas should be well-defined, including the limits of the fill zones at the time of fill placement. Grade control should be maintained throughout the fill placement operations. All fill operations should be observed on a full-time basis by a qualified soil technician to determine that the specified compaction

requirements are being met. A minimum of one compaction test per 2,500 square feet of area should be tested in each lift placed. The elevation and location of the tests should be clearly identified at the time of fill placement. Care should be taken to avoid damage to adjacent structures when excavating for the proposed undercut. Specifically, undercut excavations should not impact the existing foundations for the Loudoun County Volunteer Rescue Squad building.

Compaction equipment suitable to the soil type used as fill should be used to compact the fill material. Theoretically, any equipment type can be used as long as the required density is achieved. Ideally, a steel drum roller would be most efficient for compacting and sealing the surface soils. All areas receiving fill should be graded to facilitate positive drainage from building pad and pavement areas of any free water associated with precipitation and surface runoff.

Fill materials should not be placed on frozen soil, and all frozen soil should be removed prior to continuation of fill operations. Borrow fill materials should not contain frozen materials at the time of placement. All frost-heaved soil should be removed prior to placement of fill, stone, concrete, or asphalt.

Highly Plastic Soils

High plasticity Fat CLAY (CH) was not encountered in the recently performed borings; however highly plastic soils are often present in areas underlain by diabase bedrock. Although highly plastic soils were not encountered in our borings, they may be encountered in unexplored areas or between sampled locations, and have also been previously encountered on the property. These soils can develop significant shrink/swell problems with variations in moisture content. If the field work is conducted during the winter or early spring months, it is expected that even the non-plastic clay and silt soils at the surface may need to be removed or dried prior to fill placement. As earthwork operations proceed, additional Atterberg Limits and Expansion Index tests are recommended in order to evaluate suitability of questionable on-site soils. High plasticity soils that cannot be shown to have "very low" expansion potential should be dealt with in accordance with the recommendations presented below.

Where expansive soils are encountered within 2 feet below the foundation bearing level, the foundations may either step down to bear at a depth of 5 feet below finished exterior grade, or the footings may be undercut and backfilled to the original bearing elevation. However, both existing fill remediation methods recommended herein will effectively remove or lessen this concern.

Undercutting of the footings and backfilling with granular backfill or gravel is not recommended, as this would create a reservoir condition that could saturate the plastic soils. Undercut footings shall be backfilled with properly compacted, suitable fine grained soil or preferably, lean concrete to the original bearing elevation. Footings constructed in plastic clay soils should be excavated using a neat excavation and backfilled entirely with lean concrete. If the footings are stepped down to bear at a minimum depth of 5 feet below the finished exterior grades, the footings may bear on either high or low plasticity soils. At this depth, the footings are considered to be below the depth of typical seasonal moisture change. In addition, floor slabs and pavements constructed in areas of high plasticity soils should be underlain by at least 2 feet of compacted, non-expansive suitable fill.

transmitted to the foundation bearing soils in excess of the final minimum surrounding overburden pressure. During construction, the bearing capacity at the final footing excavation should be tested in the field by the GER or authorized representative to document that the in-situ bearing capacity at the bottom of each footing excavation is adequate for the design loads.

Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 1 to 3-inch thick "mud mat" of "lean" concrete be placed on the bearing soils before the placement of reinforcing steel.

Settlement of a structure is a function of the compressibility of the natural soils, the design bearing pressure, column loads, fill depths, and the elevation of the footing with respect to the original ground surface. For the anticipated loads of the skate park, total settlement values of less than 1 inch are expected.

Foundations should be placed at a depth to provide adequate frost cover protection. Therefore, we recommend foundations be placed at a minimum depth of 2 feet below the finished grade. Before the placement of concrete, a vapor barrier should be placed on top of the granular material to provide additional moisture protection.

All continuous load-bearing wall foundations should be suitably reinforced. To provide continuity and to reduce the effects of differential settlements, the longitudinal reinforcing steel should be extended into any column footings situated along the wall footings and the foundations should be constructed as a continuous unit though monolithic concrete placement to the greatest extent practical. The reinforcing steel also should be continuous through the building corners. Where top and bottom steel is included in the continuous wall foundations, a minimum footing thickness of 1 foot should be provided. Prior to the placement of any foundation concrete, the steel reinforcement should be examined to document that the bars are properly sized and positioned in accordance with the foundation plans and specifications.

Rammed Aggregate Piers For Slab Support

It was noted that previous construction activities onsite had resulted in the placement of 13± feet to 17± feet of uncontrolled fill in the area of the skate park. Due to the large costs associated with the partial removal and replacement of this uncontrolled fill, ECS has provided alternative recommendations for Skate Park support.

ECS recommends that Rammed Aggregate Piers (RAP) can be utilized for support of the Skate Park in lieu of partial undercut and replacement of soils. Rammed Aggregate Piers have been in use since 1988 for soil reinforcement applications. They consist of highly densified aggregate that is placed in controlled lifts. By reinforcing and stiffening the supporting soils with elements the composite soil will be capable of supporting a significantly higher load, while reducing and controlling settlement within the uncontrolled fill. RAP's are typically designed and constructed as a design-build effort by experienced contractors. We can recommend a RAP design-build contract for this work if desired.

The subgrade preparation should consist of stripping all surface cover materials, topsoil, and any other soft or unsuitable material from the building and pavement areas. We recommend that site stripping depths account for the topsoil and possible variations in topsoil thickness between boring locations. We recommend the earthwork clearing be extended a minimum of 10 feet beyond the building/structure and pavement limits. The limits discussed in this paragraph define the expanded building and pavement limits.

Due to the presence of a significant thickness of existing undocumented fill soils at the site two options were provided for site preparation. Partial undercut and replacement or the use of RAP's should be evaluated. Once the final park layout is available, we can provide more detailed recommendations for the location and extent of the spread foundations. Landscape areas and sidewalk will not require undercut and replacement, while the more critical building and skate area likely will require undercut and replacement.

Care must be exercised to identify unsuitable materials, and cause their removal. Procedures such as proofrolling, observation, or test pitting operations may be utilized to assist in identifying the presence of unsuitable materials, as required. The preparation of fill subgrades, as well as proposed structures or pavement subgrades should be observed on a full-time basis. These observations should be performed by the GER, or their representative, to document the unsuitable materials that have been removed, and that the subgrade is suitable for support of the proposed construction and/or fills. Procedures such as proofrolling, observation, or test pitting operations may be utilized to assist in identifying the presence of unsuitable materials, as required.

Pavement areas should be thoroughly evaluated with proofrolling at the time of construction to identify areas that may be unsuitable. Provided a suitable proofroll result is obtained, undercutting of the existing fill in the parking lot area may not be necessary. We recommend that the GER or their authorized representative be present during initial stripping and during excavation of the building footprint to help in delineating suitable and unsuitable materials. Any unsuitable areas identified should be undercut and replaced with suitable fill material compacted as described in this report or otherwise remediated as directed by the GER.

After stripping to the desired grade, and prior to fill placement, the stripped surface should be observed by the GER or their authorized representative. Proofrolling using a loaded dump truck, having an axle weight of at least 10 tons, may be used at this time to aid in identifying localized soft or unsuitable material which should be removed. Any soft or unsuitable materials encountered during this proofrolling should be removed and replaced with an approved backfill compacted to the criteria given below in the section entitled Fill Placement.

Soil bridging lifts within the development limits should not be used. Excessive settlement of the structures may occur when bridging lifts are utilized in structural areas. Any soft areas should be removed or stabilized in place with geosynthetics and engineered fill as necessary. Recommendations regarding in-place stabilization of soft or unsuitable subgrade materials should be provided by the GER at the time of construction.

Large, front loading trash dumpsters frequently impose concentrated front-wheel loads on pavements during loading. In a similar manner, truck loading docks can also experience very high turning wheel loads. This type of loading typically results in rutting of the pavement and ultimately pavement failures. Therefore, we recommend that the pavement in trash pickup

requirements are being met. A minimum of one compaction test per 2,500 square feet of area should be tested in each lift placed. The elevation and location of the tests should be clearly identified at the time of fill placement. Care should be taken to avoid damage to adjacent structures when excavating for the proposed undercut. Specifically, undercut excavations should not impact the existing foundations for the Loudoun County Volunteer Rescue Squad building.

Compaction equipment suitable to the soil type used as fill should be used to compact the fill material. Theoretically, any equipment type can be used as long as the required density is achieved. Ideally, a steel drum roller would be most efficient for compacting and sealing the surface soils. All areas receiving fill should be graded to facilitate positive drainage from building pad and pavement areas of any free water associated with precipitation and surface runoff.

Fill materials should not be placed on frozen soil, and all frozen soil should be removed prior to continuation of fill operations. Borrow fill materials should not contain frozen materials at the time of placement. All frost-heaved soil should be removed prior to placement of fill, stone, concrete, or asphalt.

Highly Plastic Soils

High plasticity Fat CLAY (CH) was not encountered in the recently performed borings; however highly plastic soils are often present in areas underlain by diabase bedrock. Although highly plastic soils were not encountered in our borings, they may be encountered in unexplored areas or between sampled locations, and have also been previously encountered on the property. These soils can develop significant shrink/swell problems with variations in moisture content. If the field work is conducted during the winter or early spring months, it is expected that even the non-plastic clay and silt soils at the surface may need to be removed or dried prior to fill placement. As earthwork operations proceed, additional Atterberg Limits and Expansion Index tests are recommended in order to evaluate suitability of questionable on-site soils. High plasticity soils that cannot be shown to have "very low" expansion potential should be dealt with in accordance with the recommendations presented below.

Where expansive soils are encountered within 2 feet below the foundation bearing level, the foundations may either step down to bear at a depth of 5 feet below finished exterior grade, or the footings may be undercut and backfilled to the original bearing elevation. However, both existing fill remediation methods recommended herein will effectively remove or lessen this concern.

Undercutting of the footings and backfilling with granular backfill or gravel is not recommended, as this would create a reservoir condition that could saturate the plastic soils. Undercut footings shall be backfilled with properly compacted, suitable fine grained soil or preferably, lean concrete to the original bearing elevation. Footings constructed in plastic clay soils should be excavated using a neat excavation and backfilled entirely with lean concrete. If the footings are stepped down to bear at a minimum depth of 5 feet below the finished exterior grades, the footings may bear on either high or low plasticity soils. At this depth, the footings are considered to be below the depth of typical seasonal moisture change. In addition, floor slabs and pavements constructed in areas of high plasticity soils should be underlain by at least 2 feet of compacted, non-expansive suitable fill.

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| ADDRESS COMMENTS 08/19/16 NO. DATE REVISION | | | | | |
| CLIENT OFFICE OF CAPITAL PROJECTS TOWN OF LEESBURG 25 W. MARKET STREET LEESBURG, VA 20176-2901 | MANAGER: L.D. CARUTHERS | DESIGN BY: C.D.N. | CHECK BY: L.D.C. | DRAWN BY: C.D.N. | CHECK BY: L.D.C. |
| SCALE 1"=20' 0 10 20 40 60 | SURV. CHIEF: T.A.L. DATE: 08/09/2016 | FIELDBOOK NO. N/A | | | |
| TITLE GEOTECHNICAL RECOMMENDATIONS CATOCTIN SKATE PARK 141 CATOCTIN CIRCLE, SE LOCATED IN TOWN OF LEESBURG LOUDOUN COUNTY, VIRGINIA | ATCS, P.L.C. ENGINEERING • PLANNING • SURVEYING 2553 Dulles View Drive, Suite 300 Herndon, VA 20171 (703) 430-7500 • Fax (703) 430-0889 Culpeper, Va. • Waldorf, Md. • Annapolis, Md. | | | | |
| SHEET NO. 14 OF 15 | | | | | |
| DWG. NO. 7058.00002 | | | | | |

Construction Groundwater Control

The long term continuous groundwater table at the site is expected to be below the depth of construction for this project. However, groundwater conditions encountered at the site are strongly influenced by surface water flow and infiltration. Specifically, water that enters the site migrates downward to the interface of the fill soils, natural soil, and rock. Once the water reaches the less permeable natural soil or rock, the water travels laterally, often over large distances. Such perched groundwater conditions may be encountered during construction operations. The perched groundwater conditions are seasonal in nature. While perched groundwater conditions may not be encountered during the summer months, such conditions can occur in the winter and late spring months.

The degree of fracturing within the rock materials can be increased and altered significantly by grading and blasting operations. Therefore, it is common to have "springs" develop in areas which were previously dry once initial grading operations have commenced. These conditions should be anticipated and can be handled through the use of French drains installed on the uphill side of any excavations performed on site. In addition, French drains may need to be installed in areas where springs develop.

The surface of the site should be kept properly graded in order to enhance drainage of the surface water away from the proposed building and pavement areas during the construction phase. We recommend that an attempt be made to enhance the natural drainage without interrupting its pattern.

It is critically important that planning operations consider construction groundwater control. One of the more cost effective techniques that can be utilized for groundwater control, we believe, is through the prudent utilization of French drains, and in planning utility installations. For example, any utility installation that requires a gravity feed, such as sewer lines, can be effectively converted into "French drains" to help assist in groundwater control. A French Drain Installation Detail is included in the Appendix of this report.

Utility Installation

Each of the borings generally encountered existing fill soils which are firm and are expected to be suitable for support of the utility pipes. All loose, organic, or otherwise unsuitable materials encountered at the utility pipe subgrade should be removed. The pipe subgrade should be thoroughly compacted by the contractor prior to placement of the bedding stone. The trench subgrade should be observed and probed for density by the GER to evaluate the suitability of materials encountered. Any relatively isolated, thin soft or yielding areas should be undercut or replaced with suitable compacted fill or pipe bedding material.

It is recommended that fill placed for support of the utilities meet the requirements for compacted backfill given in this report. The utility pipes should be provided with granular bedding material. The granular bedding material should consist of at least 6-inches of coarse, open-graded gravel or crushed stone. Compacted backfill should be free of topsoil, root, ice or any other material designated by the GER as unsuitable. The backfill should be placed in shallow horizontal layers of maximum 8 inch loose thickness and compacted with necessary

type of compaction equipment to obtain at least 95% and 90% of the maximum dry density per ASTM D 698 or VTM-1 in paved and nonpaved (landscaped) areas, respectively. In areas within a VDOT right-of-way an increased compaction density of 100% of the maximum dry density will apply for the upper 6 inches of the pavement subgrade. All backfill should be placed and compacted at a moisture content to facilitate adequate compaction without significant yielding of the surface, and should generally be within 2 percentage points of the optimum moisture content per standard Proctor tests.

The backfill below buildings, structures and pavements should consist of materials meeting the requirements for compacted fill given in this report. The backfill in unpaved areas can consist of the material removed from the trench excavation. The on-site fine-grained soils, as well as some of the coarse-grained soils or weathered rock materials are generally considered suitable for reuse as backfill; however, the moisture content of these soils may be excessively high to obtain adequate compaction, and drying of these materials may be necessary. Where significant pumping or yielding of the surface observed during compaction, the materials should either be removed or scarified and allowed to dry to a moisture content that will permit adequate compaction. In many cases the underlying soils may be dry of optimum moisture and thus, will require wetting in order to achieve good compaction.

Temporary and Permanent Slopes

Temporary fill slopes constructed of on site native silty or clayey soils should be limited to a maximum gradient of approximately 2H:1V. The temporary slopes should also be thoroughly vegetated to help reduce erosion of the surficial soils. Temporary excavation slopes cut in the native silty or clayey soils should be no steeper than as indicated by OSHA and VOSHA protocol. Permanent slopes constructed of native soils should generally be 3H:1V or flatter. Slopes steeper than 3H:1V should be designed by the GER. Gradients as steep as 2H:1V may be achieved through the use of select aggregate or engineered rock fills, as well as through the installation of geosynthetics in native soils, but again, must be designed by the GER. Small landscape berms (4 feet in height or less) may be as steep as 1H:1V but should be compacted as structural fill and thoroughly vegetated immediately upon completion.

General Construction Considerations

Prior to the placement of footing concrete, the footings should be cleaned and free of standing water, mud, or other deleterious materials that may affect the performance of the footings. Furthermore, the GER should carefully observe and test all footing subgrades to determine that they are representative of the soil types identified in our soil borings.

Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. We recommend that the building excavations be excavated to approximately one foot above the design finish floor elevation. The remaining one foot grading and footing excavation can then be made the same day the concrete placement is scheduled. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, we recommend that a 1 to 3-inch thick "mud-mat" of "lean" concrete be placed on the bearing soils before the placement of reinforcing steel.

Proper compaction of controlled fill is an important aspect of this project. Therefore, we recommend that all fill operations be observed on a full-time basis by a qualified soil technician to determine if minimum compaction requirements are being met. This individual should also verify that the proper geogrid product is being used and that it is placed as recommended herein.

The surficial soils contain fines that are considered moderately to highly erodible. The Contractor should provide and maintain good site drainage during earthwork operations to help maintain the integrity of the surficial soils. All erosion and sedimentation shall be controlled in accordance with sound engineering practice and current County requirements.

In a dry and undisturbed state, the majority of the soil at the site will provide good subgrade support for fill placement and construction operations. However, when wet, this soil will degrade quickly with disturbance from contractor operations. Therefore, good site drainage should be maintained during earthwork operations which would help maintain the integrity of the soil.

Closing

This report has been prepared in order to aid in the evaluation of this project. The analysis and recommendations submitted in this report are based upon the data obtained from the soil borings and tests performed at the locations as indicated on the Boring Location Diagram and other information referenced in this report. This report does not reflect any variations that may occur between the test locations. In the performance of the subsurface exploration, specific information is obtained at specific locations at specific times. However, it is a well known fact that variations in soil and rock conditions exist on most sites between boring locations and also such situations as groundwater levels vary from time to time. The nature and extent of variations may not become evident until the course of construction. If variations then appear evident, it will become necessary for a reevaluation of the recommendations for this report after performing onsite observations during the construction period and noting the characteristics and variations.

This report was prepared for the sole use of ATCS, PLC, the Town of Leesburg, and their consultants, the only intended beneficiaries of our work. The scope is limited to this specific project and locations described herein and our description of the project represents our understanding of the significant aspects relative to it. In the event of any change in the nature or location of the proposed construction outlined in this report or the accompanying plans and specifications, we should be informed so that the changes can be reviewed and the conclusions of this report modified or approved in writing by the design engineer.

No other party should rely on the information contained herein without prior written consent of ECS Mid-Atlantic, LLC.



September 6, 2016

Larry D. Caruthers
ATCS, PLC
2553 Dulles View Drive
Suite 300
Herndon, Virginia 20171

ECS Project No. 01:25221

Reference: Review of Reinforced Earth Mat Detail, New Skate Park, Town of Leesburg, Virginia

Dear Mr. Caruthers:

As discussed in the project conference call on August 29, 2016, ECS Mid-Atlantic, LLC (ECS) has completed the review of the construction detail for installation of the reinforced earth mat (REM) at the subject site created by Spohn Ranch Skate Parks, received August 30, 2016. Representatives from the Town of Leesburg and the design/build contractor, Spohn Ranch Skate Parks, participated in the reference conference call. The REM was described in our previously submitted geotechnical report (ECS Report 25221, dated October 28, 2015). In our previous geotechnical report, a REM consisting of 2-feet of select graded aggregate material and two layers of biaxial geogrid was recommended.

ECS has been in discussions with the Town of Leesburg and the contractor regarding the construction of the REM with the geometry of the proposed skate park. The proposed skate park will generally have two main sections. The first section will consist of a street course with small ramps or quarter pipes placed at or near grade. The second section will consist of a bowl with large radius curves. The skate park surfacing will consist of reinforced concrete or shotcrete.

During our previous geotechnical exploration, several potential issues related to the subsurface conditions were identified, including deep existing fills and a potential for karst bedrock. Issues associated with the subsurface conditions may manifest as loosening or raveling of soils below the concrete surface. The REM is intended to provide some resistance to settlement due to loosening of the subgrade soils. Based on our discussions with the owner and contractor, we understand that the owner is willing to accept a slightly higher level of risk associated with the unknown conditions of the deep existing fills on-site and the potential for karst activity in order to reduce the thickness of the REM in certain areas and thereby reduce overall construction costs.

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ECS Project No. 01:25221
September 6, 2016
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The provided REM detail indicates that a 1-foot thick REM with one layer of geogrid will be placed below the street course section of the park. The bowl section of the park will have a 2-foot thick REM with two layers of geogrid placed below the bearing surfaces of the bowl. The bearing surfaces of the bowl include the upper deck, bottom of the bowl and bottom 1/3 of the bowl transition. We understand from the park designer (Spohn Ranch), that the bowl transition is generally supported by the bottom 1/3 portion and the deck and does not require soil support for the upper 2/3 of the transition; therefore, loosening of the subgrade soils in the upper 2/3 of the bowl transition should not cause significant distress to the bowl structure.

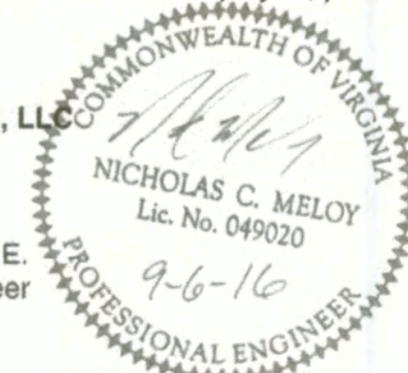
Generally, the provided detail appears suitable for construction of the proposed skate park and will provide a level of resistance to settlement should the subgrade soils become loosened over time due to the subsurface conditions. If significant loosening of the subgrade occurs from soil raveling, internal settlement of the existing fills or karst, it is possible that the settlement will be transferred through to the concrete surface and repairs will have to be made. Repairs may include, but are not limited to, removal of the concrete surface to relevel and recompact the subgrade or filling of voids with grout or polyurethane injection. If areas of unsuitable soils are encountered during construction of the skate park, additional undercutting and replacement may be required, especially in areas where the REM section has been reduced or eliminated.

We appreciate this opportunity to be of continued service to ATCS, PLC and the Town of Leesburg on this project. If you have any questions regarding the information and recommendations contained herein, or if we may be of further assistance to you in any way during planning or construction of this project, please do not hesitate to contact us.

Respectfully,

ECS MID-ATLANTIC, LLC

Nicholas C. Meloy, P.E.
Senior Project Engineer



Andrew R. Shontz, P.G.
Principal Engineering Geologist

Attachment: Spohn Ranch Site Remediation Plan and Detail (2 sheets)

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| MANAGER: L.D. CARUTHERS | CHKD BY: L.D.C. | DATE: 09/09/2016 | NO. | DATE | REVISION |
| DESIGN BY: C.D.N. | DRAWN BY: C.D.N. | DATE: 09/09/2016 | | | |
| SURV. CHIEF: T.A.L. | FELDBOOK NO. N/A | | | | |
| CLIENT: OFFICE OF CAPITAL PROJECTS, TOWN OF LEESBURG, 25 W MARKET STREET, LEESBURG, VA 20176-2901 | | | | | |
| SCALE: 1"=20' (0 to 60 feet) | | | | | |
| ATCS, P.L.C. ENGINEERING • PLANNING • SURVEYING 2553 Dulles View Drive, Suite 300 Herndon, VA 20171 (703) 430-7500 • Fax (703) 430-0889 Culpeper, Va. • Waldorf, Md. • Annapolis, Md. | | | | | |
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