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Great Lakes Chapter

Toronto and Region Conservation for The Living City

3rd Annual TRIECA Conference – March 25 & 26, 2014
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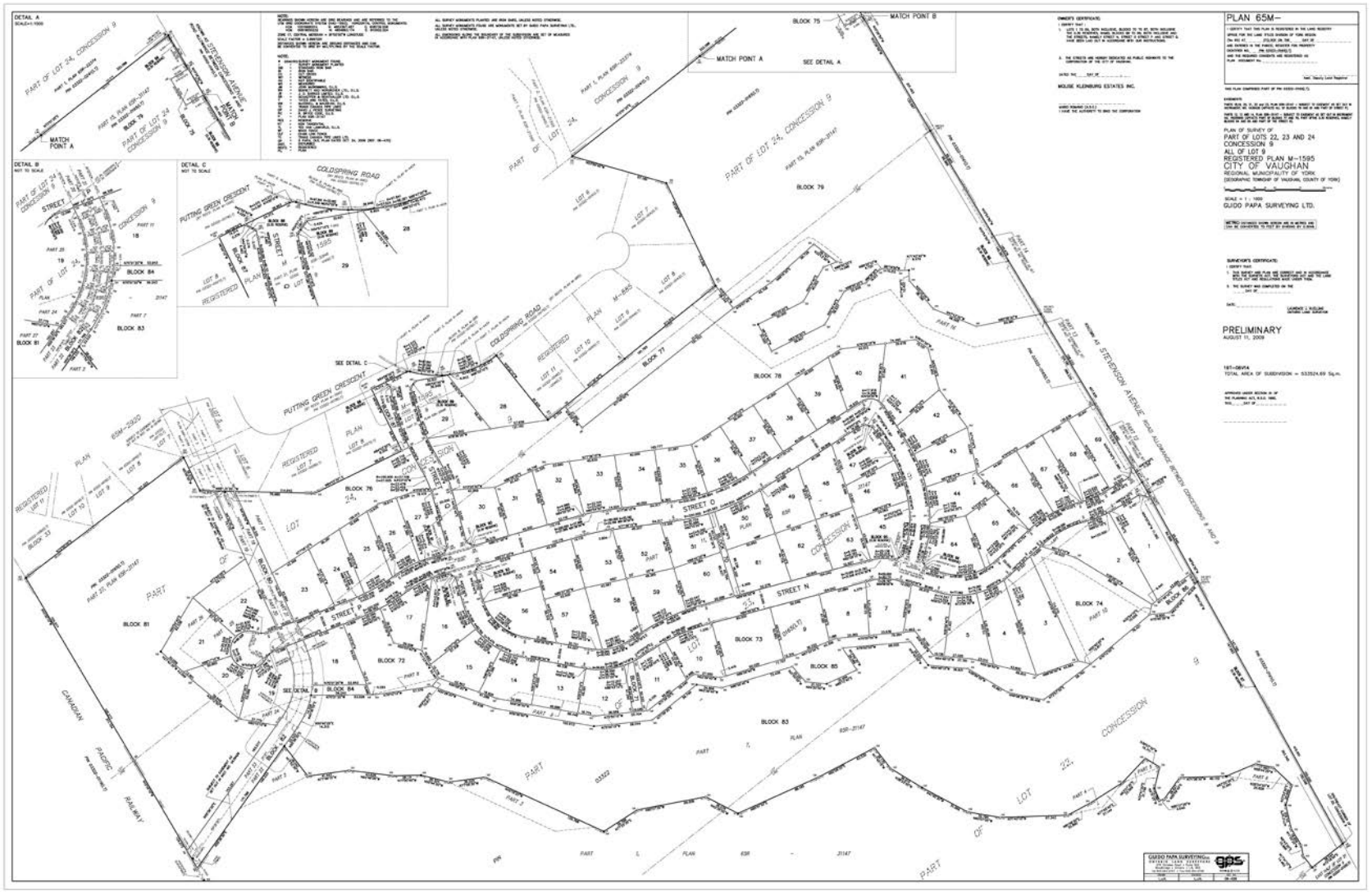
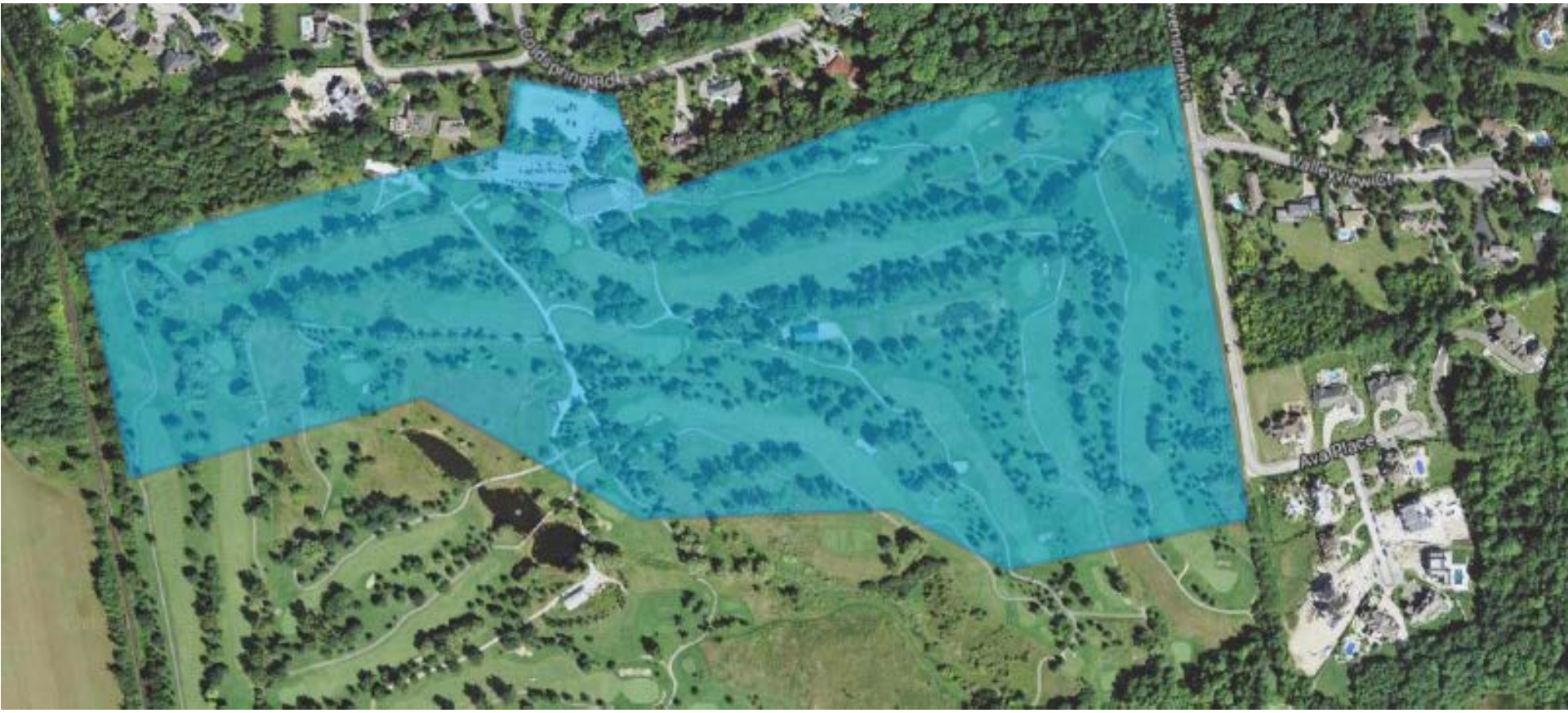
Designing & Implementing Effective ESC Plans

Molise Kleinburg Estates Inc. Phase 1

Molise Kleinburg - Phase 1



Pre-Development Conditions

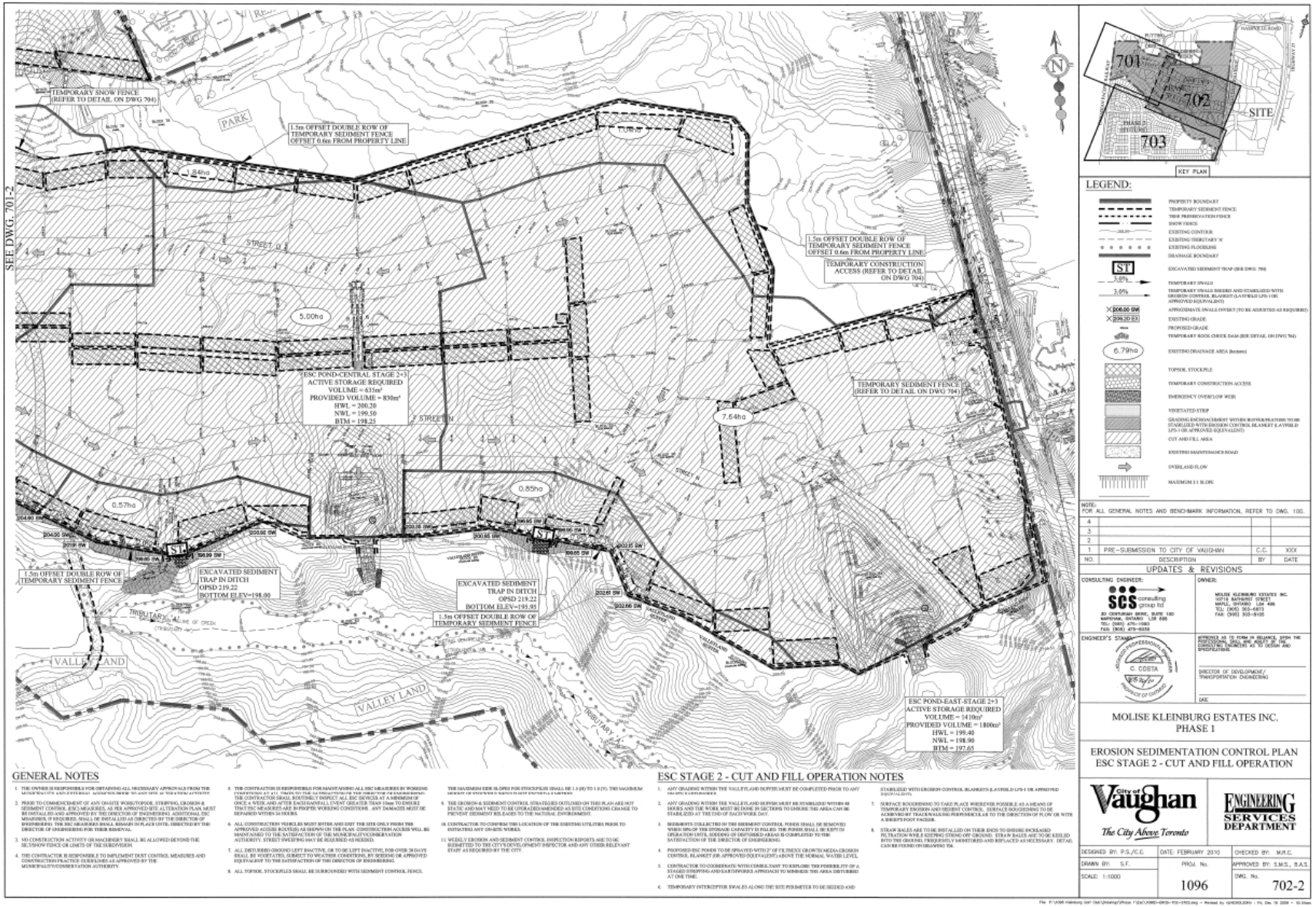


Site Planning & Design Assessment

Erosion and Sediment Control Design Process

- Plan - Identify constraints
- Determine phasing - requirements/constrictions
- Divide site - with respect to critical areas and/or drainage areas
- Select ESC controls - while keeping the end product in mind

ESC Controls Selection



NOTE:
FOR ALL GENERAL NOTES AND BENCHMARK INFORMATION, REFER TO DWG. 100.

NO.	DESCRIPTION	BY	DATE
4			
3			
2			
1	PRE-SUBMISSION TO CITY OF VAUGHAN	C.C.	XXX

UPDATES & REVISIONS

CONSULTING ENGINEER:
SCS consulting group ltd
30 CENTURIAN DRIVE, SUITE 100
MARKHAM, ONTARIO L3R 8B8
TEL: (905) 475-1650
FAX: (905) 475-8335

OWNER:
MOLISE KLEINBURG ESTATES INC.
10718 BATHURST STREET
MAPLE, ONTARIO L6A 4R6
TEL: (905) 303-6973
FAX: (905) 303-9105

ENGINEER'S STAMP

APPROVED AS TO FORM IN RELIANCE, UPON THE PROFESSIONAL SEAL AND ABILITY OF THE CONSULTING ENGINEERS AS TO DESIGN AND SPECIFICATIONS.

DIRECTOR OF DEVELOPMENT/ TRANSPORTATION ENGINEERING

DATE

MOLISE KLEINBURG ESTATES INC.
PHASE 1

EROSION SEDIMENTATION CONTROL PLAN
ESC STAGE 2 - CUT AND FILL OPERATION

City of Vaughan
The City Above Toronto

ENGINEERING SERVICES DEPARTMENT

DESIGNED BY: P.S./C.C.	DATE: FEBRUARY 2010	CHECKED BY: M.R.C.
DRAWN BY: S.F.	PROJ. No. 1096	APPROVED BY: S.M.S., B.A.S.
SCALE: 1:1000		DWG. No. 702-2

GENERAL NOTES

1. THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY APPROVALS FROM THE MUNICIPALITY AND EXTERNAL AGENCIES PRIOR TO ANY SITE ALTERATION ACTIVITY.
2. PRIOR TO COMMENCEMENT OF ANY ON-SITE WORK (TOPSOIL STRIPPING, EROSION & SEDIMENT CONTROL (ESC) MEASURES, AS PER APPROVED SITE ALTERATION PLAN, MUST BE INSTALLED AND APPROVED BY THE DIRECTOR OF ENGINEERING. ADDITIONAL ESC MEASURES, IF REQUIRED, SHALL BE INSTALLED AS DIRECTED BY THE DIRECTOR OF ENGINEERING. THE ESC MEASURES SHALL REMAIN IN PLACE UNTIL DIRECTED BY THE DIRECTOR OF ENGINEERING FOR THEIR REMOVAL.
3. NO CONSTRUCTION ACTIVITY OR MACHINERY SHALL BE ALLOWED BEYOND THE SILT/SNOW FENCE OR LIMITS OF THE SUBDIVISION.
4. THE CONTRACTOR IS RESPONSIBLE TO IMPLEMENT DUST CONTROL MEASURES AND CONSTRUCTION PRACTICE GUIDELINES AS APPROVED BY THE MUNICIPALITY/CONSERVATION AUTHORITY.
5. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ALL ESC MEASURES IN WORKING CONDITION AT ALL TIMES TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING. THE CONTRACTOR SHALL ROUTINELY INSPECT ALL ESC DEVICES AT A MINIMUM OF ONCE A WEEK AND AFTER EACH RAINFALL EVENT GREATER THAN 10mm TO ENSURE THAT ESC MEASURES ARE IN PROPER WORKING CONDITIONS. ANY DAMAGES MUST BE REPAIRED WITHIN 24 HOURS.
6. ALL CONSTRUCTION VEHICLES MUST ENTER AND EXIT THE SITE ONLY FROM THE APPROVED ACCESS ROUTE(S) AS SHOWN ON THE PLAN. CONSTRUCTION ACCESS WILL BE MAINTAINED TO THE SATISFACTION OF THE MUNICIPALITY/CONSERVATION AUTHORITY. STREET SWEEPING MAY BE REQUIRED AS NEEDED.
7. ALL DISTURBED GROUND LEFT INACTIVE, OR TO BE LEFT INACTIVE, FOR OVER 30 DAYS SHALL BE VEGETATED, SUBJECT TO WEATHER CONDITIONS, BY SEEDING OR APPROVED EQUIVALENT TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.
8. ALL TOPSOIL STOCKPILES SHALL BE SURROUNDED WITH SEDIMENT CONTROL FENCE.
9. THE EROSION & SEDIMENT CONTROL STRATEGIES OUTLINED ON THIS PLAN ARE NOT STATIC AND MAY NEED TO BE UPGRADED/AMENDED AS SITE CONDITIONS CHANGE TO PREVENT SEDIMENT RELEASES TO THE NATURAL ENVIRONMENT.
10. CONTRACTOR TO CONFIRM THE LOCATION OF THE EXISTING UTILITIES PRIOR TO INITIATING ANY ON-SITE WORKS.
11. WEEKLY EROSION AND SEDIMENT CONTROL INSPECTION REPORTS ARE TO BE SUBMITTED TO THE CITY'S DEVELOPMENT INSPECTOR AND ANY OTHER RELEVANT STAFF AS REQUIRED BY THE CITY.

ESC STAGE 2 - CUT AND FILL OPERATION NOTES

1. ANY GRADING WITHIN THE VALLEYLAND BUFFER MUST BE COMPLETED PRIOR TO ANY GRADING IN OTHER AREAS.
2. ANY GRADING WITHIN THE VALLEYLAND BUFFER MUST BE STABILIZED WITHIN 48 HOURS AND THE WORK MUST BE DONE IN SECTIONS TO ENSURE THIS AREA CAN BE STABILIZED AT THE END OF EACH WORK DAY.
3. SEDIMENTS COLLECTED IN THE SEDIMENT CONTROL PONDS SHALL BE REMOVED WHEN 50% OF THE STORAGE CAPACITY IS FILLED. THE PONDS SHALL BE KEPT IN OPERATION UNTIL GRADING OF DISTURBED AREAS IS COMPLETED TO THE SATISFACTION OF THE DIRECTOR OF ENGINEERING.
4. PROPOSED ESC PONDS TO BE SPRAYED WITH 2" OF TERRA GROW'EM MEDIA EROSION CONTROL BLANKET (OR APPROVED EQUIVALENT) ABOVE THE NORMAL WATER LEVEL.
5. CONTRACTOR TO COORDINATE WITH CONSULTANT TO EXPLORE THE POSSIBILITY OF A STAGED STRIPPING AND EARTHWORKS APPROACH TO MINIMIZE THE AREA DISTURBED AT ONE TIME.
6. TEMPORARY INTERCEPTOR SWALES ALONG THE SITE PERIMETER TO BE SEEDED AND STABILIZED WITH EROSION CONTROL BLANKETS (LA FOLLE LPS-1 OR APPROVED EQUIVALENT).
7. SURFACE ROUGHENING TO TAKE PLACE WHEREVER POSSIBLE AS A MEANS OF TEMPORARY EROSION AND SEDIMENT CONTROL. SURFACE ROUGHENING TO BE ACHIEVED BY TRACKWALKING PERPENDICULAR TO THE DIRECTION OF FLOW OR WITH A SHEEP'S FOOT PACKER.
8. STRAW BALES ARE TO BE INSTALLED ON THEIR ENDS TO ENSURE INCREASED FILTRATION WHILE KEEPING STRING OFF GROUND. STRAW BALES ARE TO BE KEILED INTO THE GROUND, FREQUENTLY MONITORED AND REPLACED AS NECESSARY. DETAIL CAN BE FOUND ON DRAWING 704.

ESC Controls Selection

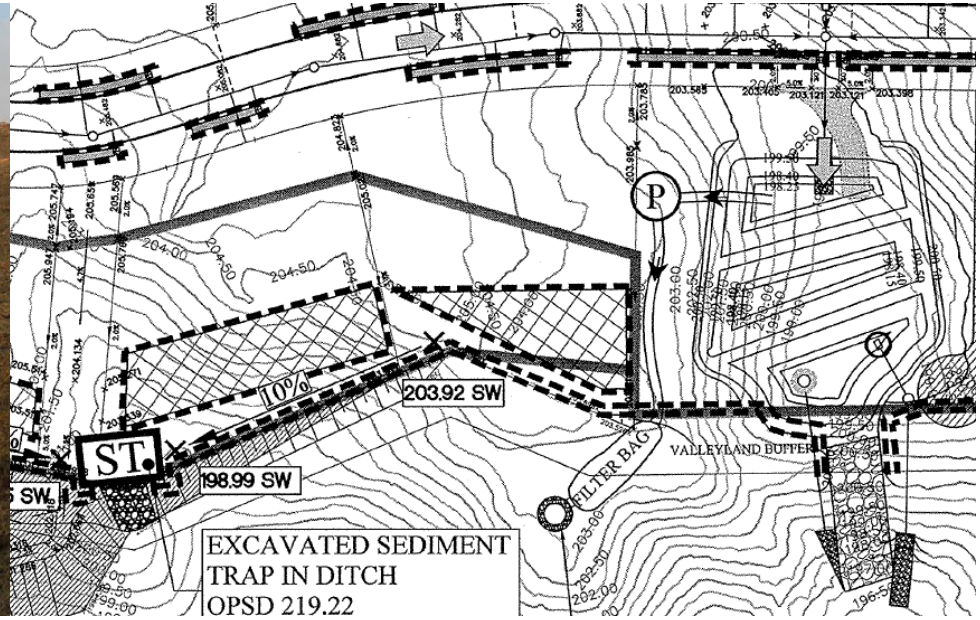
Site Access

- Temporary Construction Access Design Requirements
- Temporary Construction Access Design Location
- Existing ROW maintenance requirements

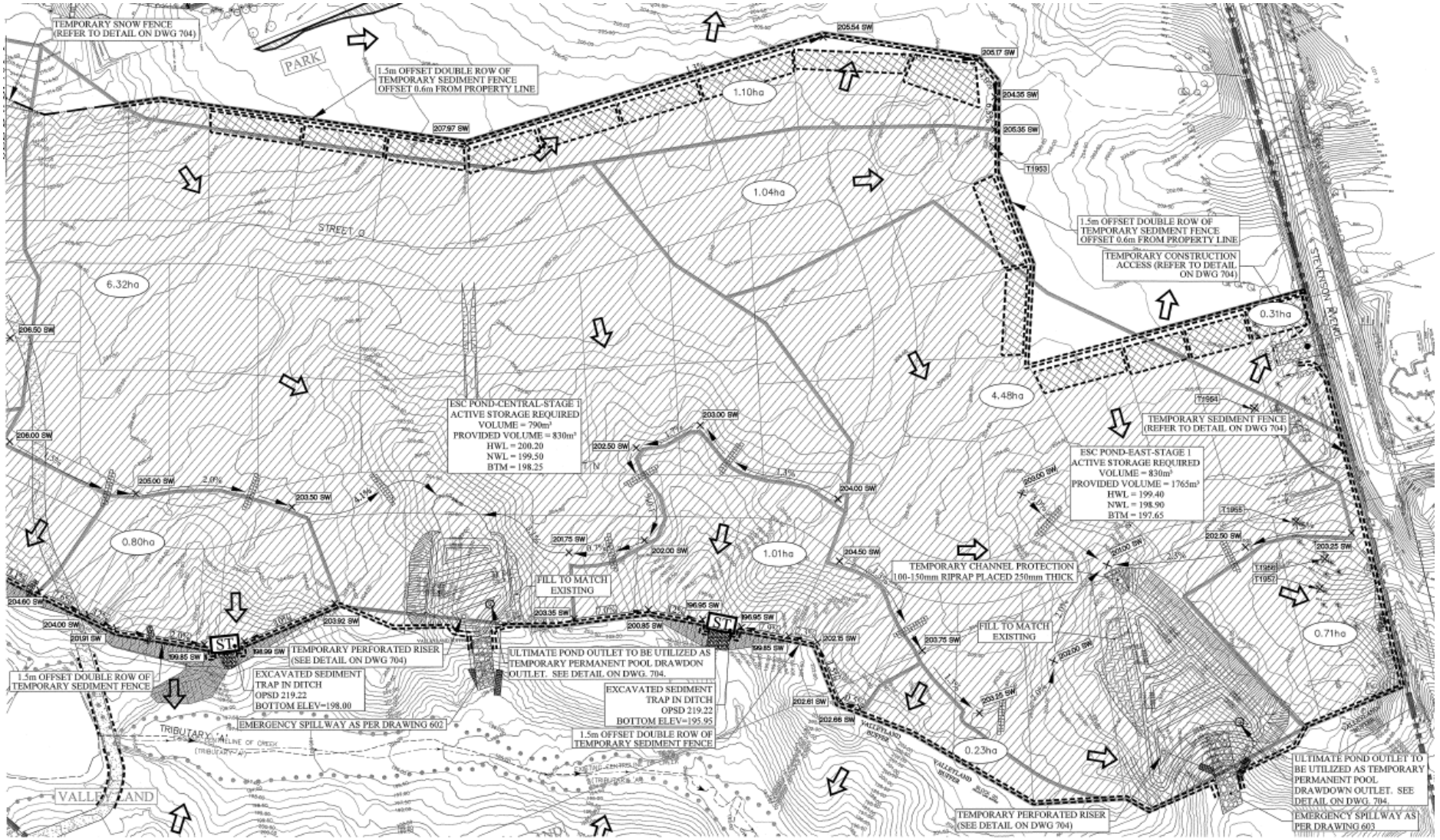
ESC Controls Selection

Critical Areas

- Works required within valley feature
- ESC Pond/Ultimate Pond outlet construction
- Protection of future LID's



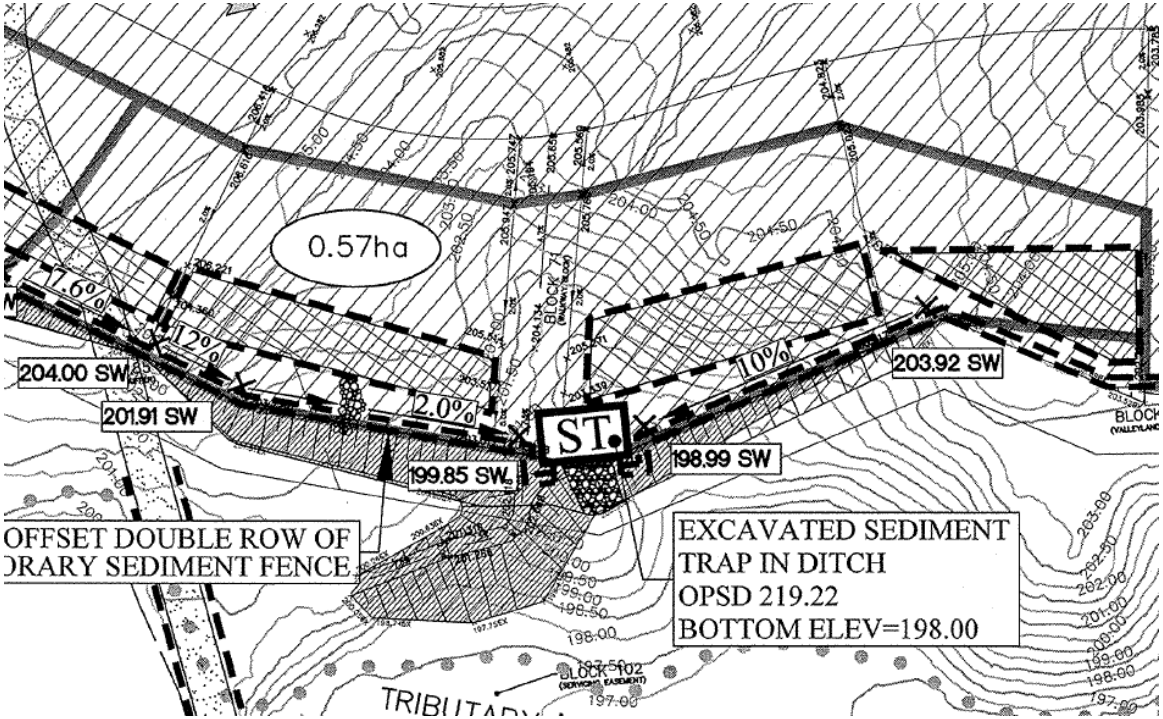
ESC Controls Selection



ESC Controls Selection

Perimeter Controls

- Lot level topsoil piles along perimeter
- Perimeter Swales and check dams
- Location of single & double sediment fence



ESC Controls Selection

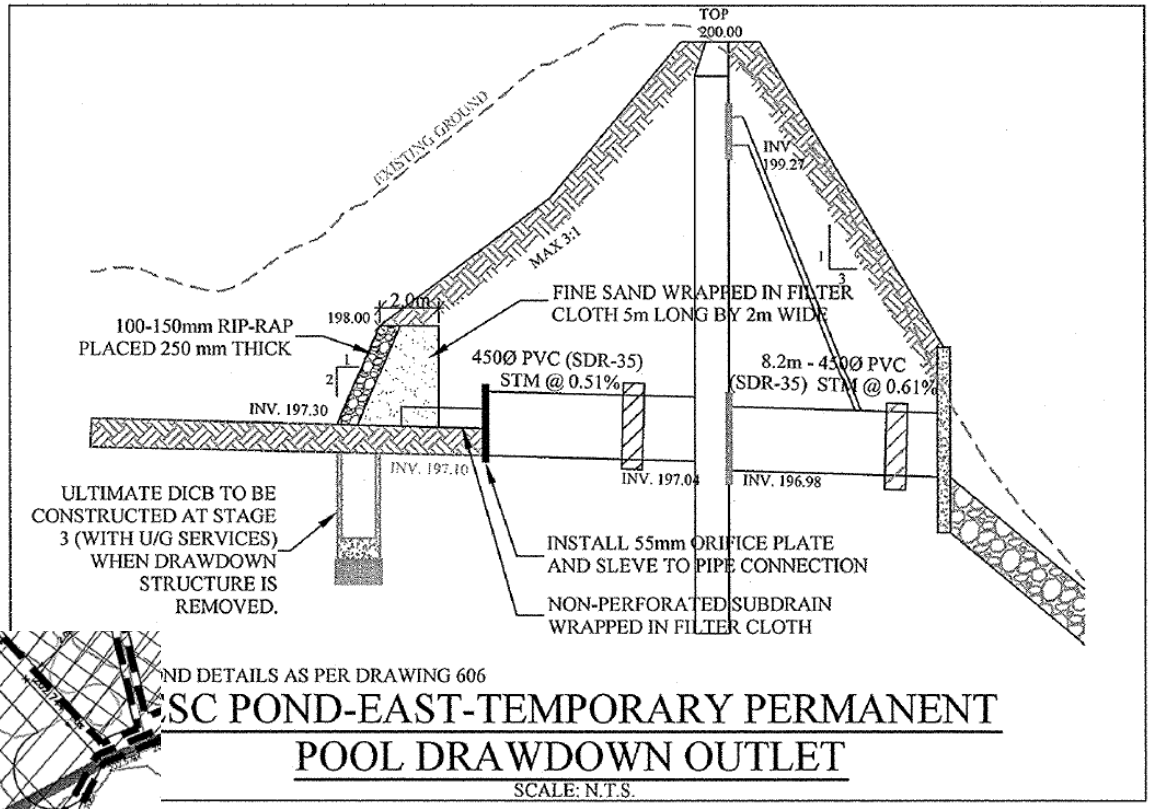
Erosion Controls

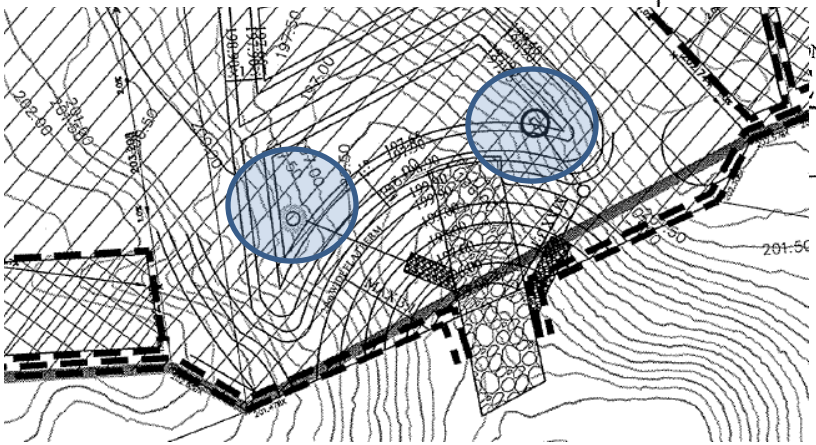
- Immediate stabilization of works within valley feature
- Stabilization of perimeter swales that span multiple phases of construction
- ESC Ponds and Stockpiles stabilized with compost and seed
- Surface roughening

ESC Controls Selection

Sediment Controls

- Temporary ESC Ponds
  - Utilized ultimate dry ponds ultimate outlet
  - Created wet cells and double forebay
  - Installed sand filter drawdown



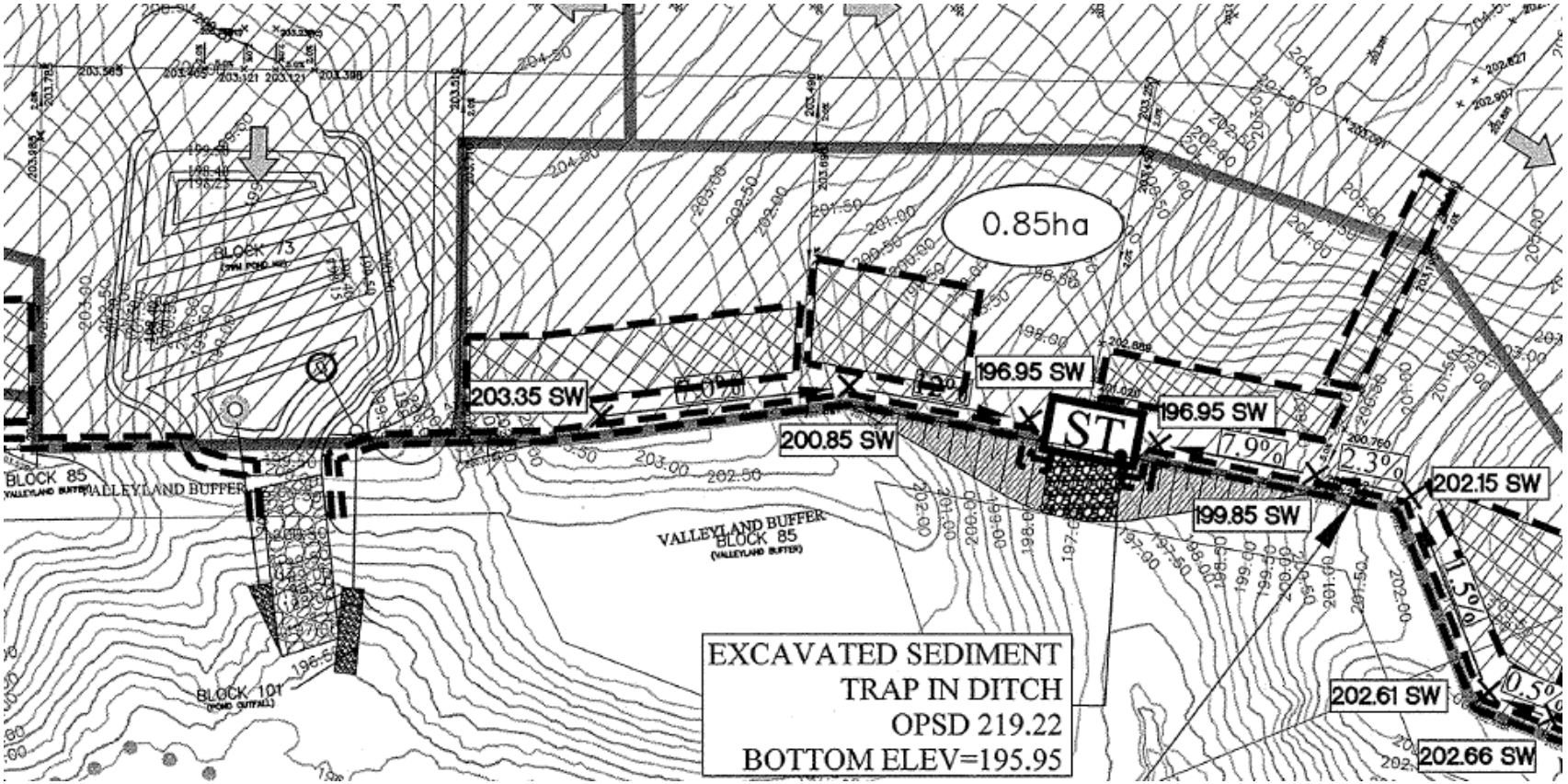


ESC Controls Selection

Sediment Controls

- Sediment Traps
- Temporary diversion swales with straw bales
- Inlet protection at catchbasins
- Inlet protection at proposed enhanced swales with infiltration beds

ESC Controls Selection

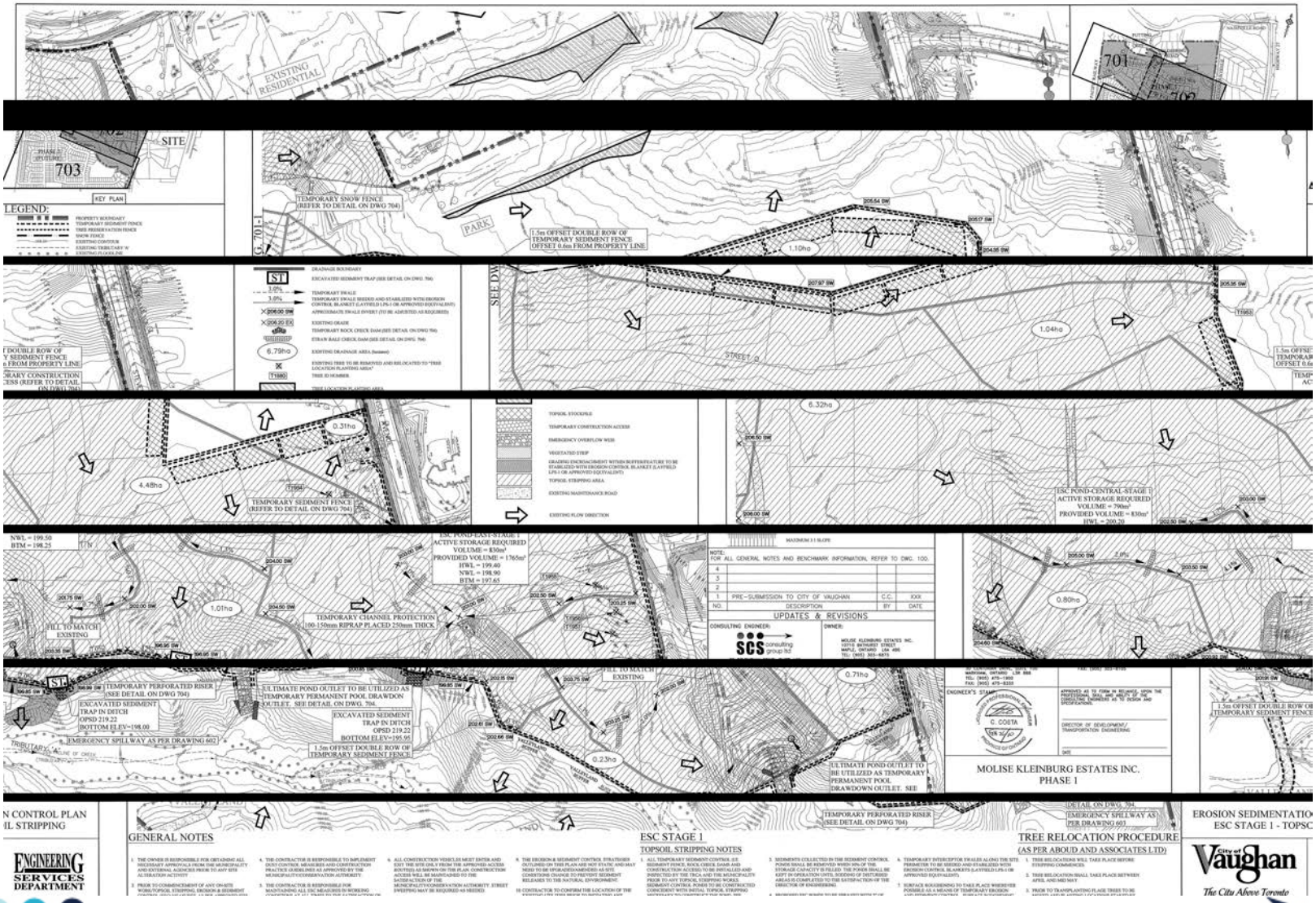


Communication & Coordination

ESC Drawings

- Development of General Notes
- Stage Specific Notes
  - Topsoil Stripping
  - Earthworks
  - Servicing
  - House Construction
- Details Page

Construction & Implementation



Communication & Coordination

The earlier the better!

- Pre-Consultation Meeting with Municipality, Region, Conservation Authority, etc.
- Owner needs to be engaged in process as they are ultimately held responsible
- Ensure what is being proposed can be constructed; come up with solution if required that satisfies all requirements on drawings.

Construction & Implementation

Pre-Construction Meeting

- Identify inspection program
- Identify critical areas and associated construction schedule
- Identify any non-typical ESC construction requirements
- Discussion regarding phasing requirements

Construction & Implementation

From the perimeter in…

- Install site construction access, perimeter controls, and temporary ESC Ponds
- Take direction from Stage appropriate notes & General Notes
- Inspect and Document prior to initiating earth moving

Looking Back

What Worked

- Stabilized perimeter swales with check dams
- Topsoil piles kept on proposed lots at pre-grade elevation
- Completing all works within critical valley feature at beginning with immediate stabilization

Looking Back

Looking Back

Items to improve on moving forward

- Low flow drawdown outlet in ESC Ponds – location
- Temporary interceptor swales and associated check dams – flexibility
- Sediment trap design/maintenance - maintenance

Looking Back

Can't plan for Everything

- Previous golf course had varying depths of 'mixed' fill
- Existing culvert not picked up on topographic survey as mostly buried
  - Downstream impacts were noted on inspection
  - Due to unknown structure, no pre-construction documentation of area
  - Downstream remediation was onus of owner despite potential external factors

Looking Back

Summary

Site Planning and Design Assessment

- Plan
- Determine Phasing
- Divide Site
- Select ESC Controls that are feasible

Communication and Coordination

Construction, Implementation & Inspection

- Pre-construction inspection and meeting
- Implement ESC Controls "perimeter-in"
- Inspect and document (and repeat)
- Involve all parties when the plan is required to evolve

Thank you

Questions, Comments or Presentation Information

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