GENERAL NOTES

1. Utility information is based upon field measurements and the best available records. Field data is limited to that which is visible and can be measured. This does preclude the existence of other underground items. Record information is based upon data collected from both private and public sources. The completeness and/or accuracy of these records cannot be guaranteed except insofar as they can be verified by the field measurements. It shall be the Contractor's responsibility to make arrangements with the franchise utilities prior to work to confirm the exact location and elevation of utilities.

2. All materials and workmanship shall strictly conform to the City of Rockwall Standards of Design; the North Central Texas Council of Governments Public Works Construction Standards, 5th Edition; Construction Standards, Specifications and Regulations of Blackland Water Supply and Standard Construction Details and all TCEQ Regulations.

3. All barricades, warning signs, lights, devices, etc., for the guidance and protection of traffic and pedestrians must conform to the installation shown in the 1980 Texas Manual of Uniform Traffic Control Devices as currently amended, Texas Department of Transportation. Contractor shall take special precautions to barricade all hazardous areas at the end of each day.

4. The Contractor is responsible for keeping streets and sidewalks adjacent to project free of mud and debris from the construction.

5. All natural ground or cut areas which are to receive fill shall be scarified, the water content adjusted to at least 2% wet of optimum, and the top 6 inches of surface shall be compacted to at least 95% Standard Proctor density (ASTM-D-698) -1 to +2% above the optimum moisture content. All to be compacted using a sheeps foot roller.

6. All pavement concrete shall have minimum compressive strength of 3600 P.S.I. at 28 days. (Minimum 6.0 sacks for machine place and min. 6.5 sacks for hand place) All aggregate shall be minimum 3/4" maximum aggregate 1-1/2". All reinforcing steel shall be No. 3 Bars on 24" center, each way, placed at mid-depth & supported by bars chairs.

7. Transverse contraction joints will not be built with pavement on this project. Sawed dummy joint will be 1" deep, spaced 15' on centers, and filled with approved joint sealer.

8. All concrete finish shall be in accordance with the Texas Department of Transportation Standard Specifications, Item 360.10. Spreading and Finishing. Finish shall be uniform brush finish (carpet drag).

9. The Contractor shall be responsible for TEMPORARY EROSION, SEDIMENT, and WATER POLLUTION CONTROL, Per N.C.T.C.O.G. Specifications Division 200 item no. 201. thru 203.8.

10. Access to the abutting properties during the construction of this project must be maintained for emergency and local traffic with approved all-weather surface.

11. The Contractor shall be responsible to protect existing water and sanitary sewer services to adjacent properties. If replacement of existing services is necessary due to grade and/or utility conflicts, new material shall installed from the main to the service replacement near the property line.

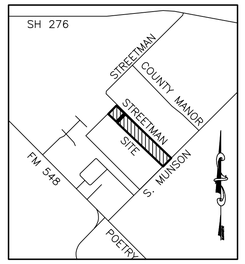
12. All installed and existing valves shall be operated by Cash SUD representative only.

13. Notification to the public when the water will be cut off during construction shall be the responsibility of the Contractor and shall be done 24 hours prior to the cut off. A written notice shall be left on every door 24 hours prior to the cut off.

14. Water service to residents shall not be cut off for more than eight (8) hours on any given day without prior written approval of the Cash SUD.

15. Existing paving, utilities, fences, etc. damaged by the construction of the proposed improvements, shall be replaced to a condition equal to or better that its originals condition, Contractor shall make these repairs at his own expense.

16. Contractor shall be required to furnish to the City of Rockwall appropriate insurance, payment and performance bonds prior to commencing work. The test reports for subgrade stabilization and density testing shall be provided to the City Engineer for approval prior to construction of the concrete streets. At the completion of work, a lien release, test reports, As-builts and a (two year @ 10% maintenance bond per developer's agreement) covering the date of final acceptance of work shall be provided to the City. Any defects in workmanship shall be corrected at no cost to the City.



LOCATION MAP
(N.T.S.)

PAVING AND GRADING GENERAL NOTES

1. All construction shall conform to the North Central Texas Council of Governments Public Works Construction Standards, 5th Edition and City of Rockwall Standards of Design. In the event that an item is not covered, the contractor shall bring the problem to the attention of the engineer for approval or modification.

2. Excavation of fill operations shall not interfere with or obstruct pre-construction drainage patterns until such time as on-site drainage improvements are constructed.

3. All spot elevations shown to top of pavement or finished grade unless otherwise noted. The intention of this grading plan is preclude ponding water on paving or grassed areas. If the contractor finds any location that will result in ponding water, the Engineer shall be notified for clarification prior to pavement placement.

4. All subgrade beneath proposed pavement shall be scarified 6" deep and compacted to at least 95% Standard Proctor density (ASTM-D-698) -1 to +2% above the optimum moisture content.

5. Sawed transverse dummy joints shall be installed in concrete pavement on 15' centers. Sawed longitudinal dummy joints shall be installed along centerline of road and outsides where applicable. All joints shall be filled with an approved sealer.

6. Transverse expansion joints shall be installed at all drive returns and a maximum of 400' on centers along the roadway. Expansion joints shall be placed along all fixed objects such as light poles and foundations.

7. Contractor shall adjust all manholes and water valves to match finished grades as shown on drawings.

8. Street lights (if installed) shall be installed 3 1/2 to 4' behind back of curbs as required but shall not encroach on any sidewalks.

9. Contractor shall construct barrier free ramps at all intersections per City of Rockwall Details. All handicap ramps, stalls, walks and access to the building(s) shall meet ADA, TASS and all applicable standards.

10. Contractor shall be responsible for traffic control warning and safety devices until all work has been accepted by the City of Rockwall and the owner.

11. The location of existing utilities shown on these plans are approximate. All utilities may not be shown. It is the responsibility of the contractor to contact the City of Rockwall and all area utilities that may conflict with construction prior to beginning work.

12. Erosion control shall conform to the North Central Texas Council of Governments Public Works Construction Standards, 5th Edition and City of Rockwall Standards of Design. Lot erosion control to be installed per City specifications after subdivision is substantial completed.

13. Construction joints shall be built at the end of each concrete pour if another pour is to be placed adjacent more than 1 hour later.

14. Paving contractor will provide to the City of Rockwall Engineer for approval the proposed concrete mix design prior to paving. Mix design will show at minimum percentage of air entrapment, aggregate size, additives, maximum slump and water content, etc.

15. Weight tickets for the lime need to be provided to the City Engineer so that they can verify the percentage of lime used.

16. All detention systems to be installed and functioning per plan prior to any paving installation. The sides and bottoms of all detention to either be sodded or have anchored seeded curlex installed prior to paving.

THE LANDON
PHASE ONE
ROCKWALL COUNTY, TEXAS

RECORD DRAWING

OWNER/DEVELOPER:
ROBERT JOHN CROWELL
PO BOX 466
ROYSE CITY, TEXAS 75189
PHONE: (214) 460-4444

ENGINEER:
HENRY G. NIBLO, P.E.
5231 KIWANIS ROAD
DALLAS, TEXAS 75236
(214) 770-6947

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166
PHONE: (972) 742-4411
TBPELS REGISTRATION NO.: F-21608
TEXAS FIRM REGISTRATION NO.: 10007200

THESE DRAWINGS WERE ORIGINALLY SIGNED AND SEALED FOR CONSTRUCTION BY HENRY G. NIBLO, PE ON 7/28/2021. THE INFORMATION ON THESE RECORD DRAWINGS WAS PROVIDED BY THE CONTRACTOR AND SURVEYOR. THE ENGINEER IS NOT RESPONSIBLE FOR ANY ERRORS AND OMISSIONS IN THESE DRAWINGS.

Henry G. Niblo 11/08/2021
HENRY G. NIBLO, PE DATE

STATE OF TEXAS
HENRY GRADY NIBLO
68739
REGISTERED
PROFESSIONAL ENGINEER

Henry G. Niblo 11/8/2021

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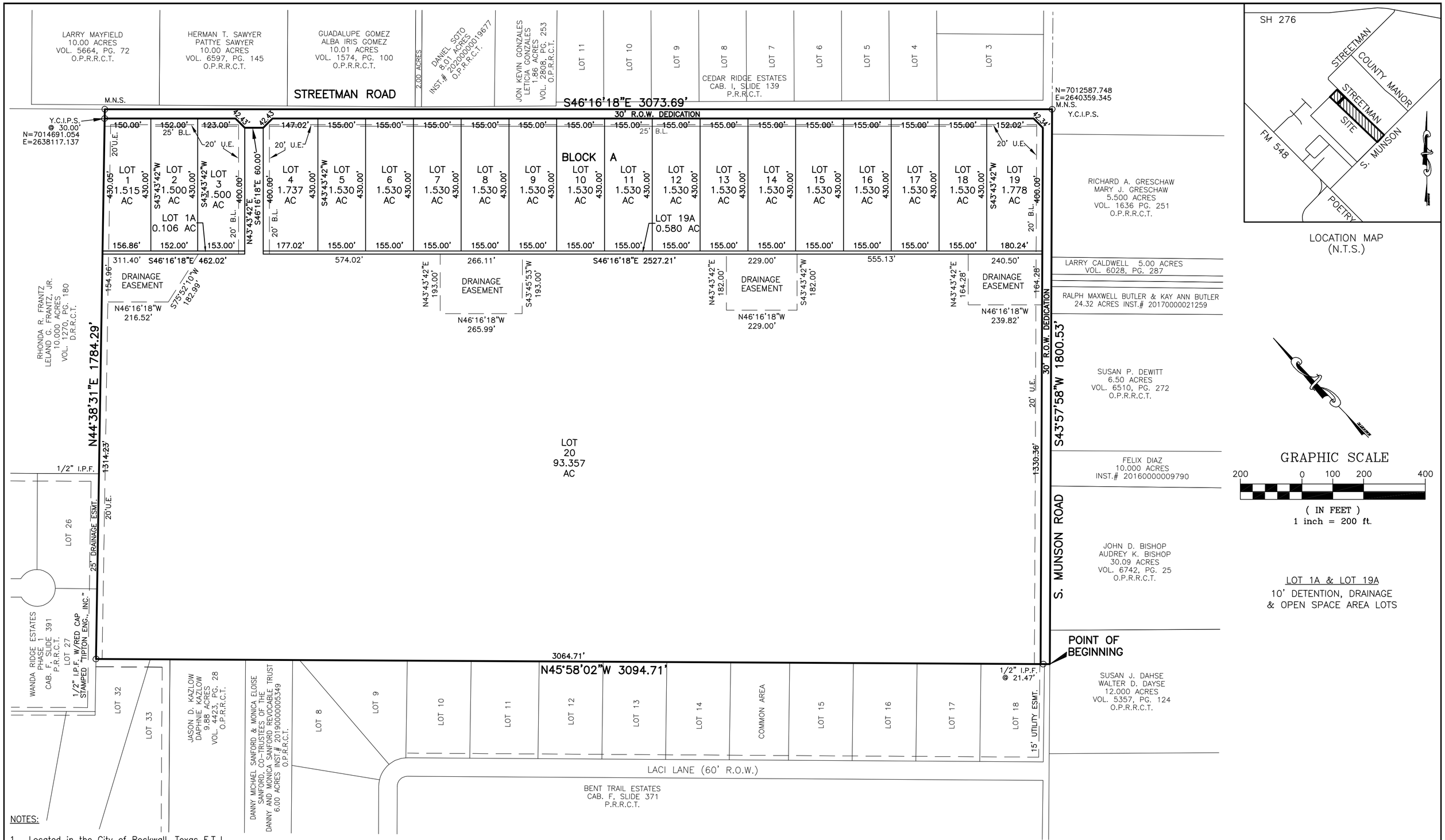
2 - GRADING & DRAINAGE PLAN
3 - DRAINAGE AREA MAPS
4-5 - DETENTION POND CALCULATIONS
6 - EROSION CONTROL PLAN
- GENERAL CONSTRUCTION NOTES



NOTES:

1. Located in the City of Rockwall, Texas E.T.J.
2. Water supplied by Cash SUD.
3. State Plain Coordinates ties to City of Rockwall Geodetic Control Monument Station COR-20.
4. All drainage and detention easements shall be maintained, repaired, and replaced by the property owner.
5. All lots to use on-site sewage facilities. Rockwall County to review and approve the sewage disposal method. OSSF permits are required prior to construction.

NOTICE: Selling a portion of this addition by metes and bounds is a violation of City ordinance and State law, and is subject to fines and withholding of utilities and building permits.

Bearings based on the Texas State Plane Coordinate System NAD 83, North Central Zone (4202), North American Datum of 1983.

LEGEND

I.P.F.	–	IRON PIN FOUND
D.R.R.C.T.	–	DEED RECORDS, ROCKWALL COUNTY, TEXAS
O.P.R.R.C.T.	–	OFFICIAL PUBLIC RECORDS, ROCKWALL COUNTY, TEXAS
Y.C.I.P.S.	–	YELLOW CAPPED IRON PIN SET STAMPED "CCG INC RPLS 5129"

FLOOD NOTE:

ACCORDING TO MY INTERPRETATIONS OF COMMUNITY PANEL NO. 48397C0065L, DATED SEPTEMBER 26, 2008, OF THE NATIONAL FLOOD INSURANCE RATE MAPS FOR ROCKWALL COUNTY, TEXAS, THE SUBJECT PROPERTY LIES WITHIN ZONE "X" AND IS NOT SHOWN TO BE WITHIN A SPECIAL FLOOD HAZARD AREA. THIS STATEMENT DOES NOT IMPLY THAT THE PROPERTY AND/OR STRUCTURES THEREON WILL BE FREE FROM FLOODING OR FLOOD DAMAGE. ON RARE OCCASIONS, GREATER FLOODS CAN AND WILL OCCUR AND FLOOD HEIGHTS MAY BE INCREASED BY MAN-MADE OR NATURAL CAUSES. THIS FLOOD STATEMENT SHALL NOT CREATE LIABILITY ON THE PART OF THE SURVEYOR.

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11
LAVON, TEXAS 75166
972-742-4411
TEXAS FIRM REGISTRATION NO.: 10007200
TBPELS REGISTRATION NO.: F-21608

JOB No.	SCALE:	DATE PREPARED:	DRAWN BY:
2759-20	1"=200'	JULY 28, 2021	CP

OWNER:
ROBERT JOHN CROWELL
PO BOX 466
ROYSE CITY, TEXAS 75189
PHONE: (214) 460-4444

FINAL PLAT

THE LANDON

LOTS 1-19, LOT 1A, LOT 19A & LOT 20, BLOCK A
19 Residential Lots
Being 126.903 – Acres of Land

Samuel McFadgin Survey, Abstract No. 142
Situated within the
Extraterritorial Jurisdiction (ETJ)
of the City of Rockwall
Rockwall County, Texas
Case No.: P2021-013

LEGAL DESCRIPTION

STATE OF TEXAS
COUNTY OF ROCKWALL

Whereas Robert J. Crowell and Bobby J. Crowell are the owners of a tract of land situated in the Samuel McFadgin Survey, Abstract No. 142, Rockwall County, Texas, and being the same 126.903 acre tract land as conveyed to Robert J. Crowell and Bobby J. Crowell by deed recorded in Instrument Number 20210000019392, Official Public Records, Rockwall County, Texas, and being more particularly described as follows:

Beginning at a point for the south corner of said 126.903 acre tract and being in the center of S. Munson Road;

Thence, North 45°58'02" West, along the southwest line of said 126.903 acre tract, the northeast line of Bent Trail Estates, an addition to Rockwall County, Texas, according to the plat thereof recorded in Cabinet F, Slide 371, Plat Records, Rockwall County, Texas, the northeast line of a 6.00 acre tract of land conveyed to Danny Michael Sanford and Monica Eloise Sanford, Co-Trustees of the Danny and Monica Sanford Revocable Trust by deed recorded in Instrument No. 20190000005349, Official Public Records, Rockwall County, Texas, the northeast line of a 9.88 acre tract of land conveyed to Jason D. Kazlow and Daphnie Kazlow by deed recorded in Volume 4423, Page 28, Official Public Records, Rockwall County, Texas and an east line of Wanda Ridge Estates Phase 1, an addition to Rockwall County, Texas, according to the plat thereof recorded in Cabinet F, Slide 391, Plat Records, Rockwall County, Texas, passing at a distance of 21.47 feet a 1/2" iron pin found and for a total distance of 3094.71 feet to a 1/2" iron pin found with red cap stamped "TIPTON ENG. INC." for the west corner of said 126.903 acre tract and a re-entrant corner of said Wanda Ridge Estates Phase 1;

Thence, North 44°38'31" East, along the northwest line of said 126.903 acre tract, a southeast line of said Wanda Ridge Estates Phase 1 and the southeast line of a 10.000 acre tract of land conveyed to Rhonda R. Frantz and Leland G. Frantz, Jr. by deed recorded in Volume 1270, Page 180, Deed Records, Rockwall County, Texas, passing at a distance of 601.81 feet a 1/2" iron pin found and passing at a distance of 1766.27 and for a total distance of 1784.29 feet to a point in the center of Streetman Road for the north corner of said 126.903 acre tract and the east corner of said Frantz tract;

Thence, South 46°16'18" East, along Streetman Road and the northeast line of said 126.903 acre tract, a distance of 3073.69 feet to a point for the east corner of said 126.903 acre tract and being the centerline intersection of Streetman Road and S. Munson Road;

Thence, South 43°57'58" West, along the southeast line of said 126.903 acre tract and the center of S. Munson Road, a distance of 1800.53 feet to the Point of Beginning and containing 5,527,877 square feet or 126.903 acres of land.

_____
Planning & Zoning Commission, Chairman

_____
Date

APPROVED:
I hereby certify that the above and foregoing plat of an addition to Rockwall County, Texas, was approved by the City Council of the City of Rockwall on the ____ day of _____, 20___ in accordance with the requirements of the Interlocal Cooperation Agreement for Subdivision Regulations in the Extraterritorial Jurisdiction (ETJ) of the City entered into by the City of Rockwall and Rockwall County.

This approval shall be invalid unless the approved plat for such addition is recorded in the office of the County Clerk of Rockwall, County, Texas, within one hundred eighty (180) days from said date of final approval.

WITNESS OUR HANDS, this ___ day of _____, 20___.

_____
Mayor, City of Rockwall

_____
City Secretary

_____
City Engineer

_____ _____
Rockwall County Judge Date

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS:

STATE OF TEXAS
COUNTY OF ROCKWALL

I, the undersigned owner of the land shown on this plat, and designated herein as THE LANDON subdivision to the County of Rockwall, Texas, and whose name is subscribed hereto, hereby dedicate to the use of the public forever all streets, alleys, parks, water courses, drains, easements and public places thereon shown on the purpose and consideration therein expressed. I further certify that all other parties who have a mortgage or lien interest in the The Landon subdivision have been notified and signed this plat. I understand and do hereby reserve the easement strips shown on this plat for the purposes stated and for the mutual use and accommodation of all utilities desiring to use or using same. I also understand the following;

(1) No buildings shall be constructed or placed upon, over, or across the utility easements as described herein.

(2) Any public utility shall have the right to remove and keep removed all or part of any buildings, fences, trees, shrubs, or other growths or improvements which in any way endanger or interfere with construction, maintenance or efficiency of their respective system on any of these easement strips; and any public utility shall at all times have the right of ingress or egress to, from and upon the said easement strips for purpose of construction, reconstruction, inspecting, patrolling, maintaining, and either adding to or removing all or part of their respective system without the necessity of, at any time, procuring the permission of anyone.
(3) The City and County of Rockwall will not be responsible for any claims of any nature resulting from or occasioned by the establishment of grade of streets in the subdivision.

(4) The developer and subdivision engineer shall bear total responsibility for storm drain improvements.

(5) The developer shall be responsible for the necessary facilities to provide drainage patterns and drainage controls such that properties within the drainage area are not adversely affected by storm drainage from the development.

(6) No house dwelling unit, or other structure shall be constructed on any lot in this addition by the owner or any other person until the developer and/or owner has complied with all requirements of the Subdivision Rules and Regulations of the City of Rockwall regarding improvements with respect to the entire block on the street or streets on which property abuts, including the actual installation of streets with the required base and paving, curb and gutter, water and sewer, drainage structures, storm structures, storm sewers, and alleys, all according to the specifications required by the Interlocal Cooperation Agreement for Subdivision Regulation in the Extraterritorial Jurisdiction of a Municipality entered into by the City and County of Rockwall; or

(7) Property Owner shall be responsible for maintaining, repairing, and replacing all systems within the drainage and detention easements.

Until an escrow deposit, sufficient to pay for the cost of such improvements, as determined by the County's chosen engineer and/or County Administrator, computed on a private commercial rate basis, has been made with the County, accompanied by an agreement signed by the developer and/or owner, authoring the City and County to make such improvements at prevailing private commercial rates, or have the same made by a contractor and pay for the same out of the escrow deposit, should the developer and/or owner fail or refuse to install the required improvements with the time stated in such written agreement, but in no case shall the City of County by obligated to make such improvements itself. Such deposit may be used by the owner and/or developer as progress payments as the work progresses in making such improvements by making certified requisitions to the City and County, supported by evidence of work done; or

Until the developer and/or owner files a corporate surety bond with the County in a sum equal to the cost of such improvements for the designated area, guaranteeing the installation thereof within the time stated in the bond, which time shall be fixed by the Commissioner's Court of Rockwall County.

I further acknowledge that the dedications and/or exaction's made herein are proportional to the impact of the Subdivision upon the public services required in order that the development will comport with the present and future growth needs of the County; I, my successors and assigns hereby waive any claim, damage, or cause of action that I may have as a result of the dedication of exactions made herein.

WITNESS, my hand, this the ___ day of _____, 2021.

_____ _____
Robert J. Crowell, Owner Bobby J. Crowell, Owner

STATE OF TEXAS
COUNTY OF COLLIN

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas on this date personally appeared Robert J. Crowell, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for purpose and considerations therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS ____ DAY OF _____, 2021.

_____
Notary Public for the State of Texas
My Commission expires _____

STATE OF TEXAS
COUNTY OF COLLIN

BEFORE ME, the undersigned authority, a Notary Public in and for the State of Texas on this date personally appeared Bobby J. Crowell, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he executed the same for purpose and considerations therein stated.

GIVEN UNDER MY HAND AND SEAL OF OFFICE, THIS ____ DAY OF _____, 2021.

_____
Notary Public for the State of Texas
My Commission expires _____

SURVEYOR CERTIFICATE

KNOW ALL MEN BY THESE PRESENTS:

That I, James Bart Carroll, do hereby certify that I prepared this plat from an actual and accurate survey of the land, and that the corner monuments shown thereon as set were properly placed under my personal supervision.

Preliminary, this document shall not be recorded for any purpose and shall not be used or viewed or relied upon as a final survey document.

_____
James Bart Carroll
Texas Registered Professional Land Surveyor No. 5129

NOTARY CERTIFICATE

STATE OF TEXAS
COUNTY OF COLLIN

Before me, the undersigned authority, a Notary Public in and for the State of Texas, on this day personally appeared James Bart Carroll, known to me to be the person whose name is subscribed to the foregoing instrument and acknowledged to me that he/she executed the same in the capacity therein stated.

Given under my hand and seal of office, this ___ day of _____, 2021.

_____
Notary Public in and for the State of Texas.
My commission expires: _____

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11
LAVON, TEXAS 75166
972-742-4411
TEXAS FIRM REGISTRATION NO.: 10007200
TBPELS REGISTRATION NO.: F-21608

JOB No.	SCALE:	DATE PREPARED:	DRAWN BY:
2759-20	1"=200'	JULY 28, 2021	CP

FINAL PLAT

THE LANDON

LOTS 1-19, LOT 1A, LOT 19A & LOT 20, BLOCK A
19 Residential Lots
Being 126.903 - Acres of Land
Samuel McFadgin Survey, Abstract No. 142
Situated within the
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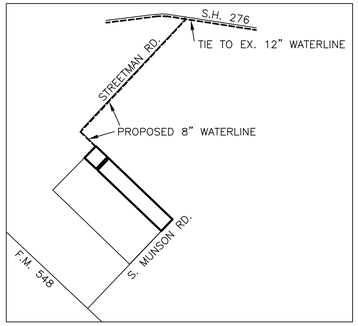


PROPOSED 8" WATERLINE TO EXTEND NORTHWESTERLY ALONG STREETMAN ROAD THEN NORTHEAST ALONG STREETMAN ROAD AND TIE TO AN EXISTING 12" WATERLINE LOCATED ALONG S.H. 276.

OFFSITE WATER PLANS WILL BE PROVIDED BY CASH SUD AND PREPARED BY VELVIN & WEEKS CONSULTING ENGINEERS, INC.

PROPOSED 8" WATERLINE

END WATERLINE WITH FIRE HYRANT AND FLUSH VALVE

STREETMAN ROAD

FH

20' U.E.

25' B.L.

PROPOSED WATER METER 1" POLY SERVICE LINES

BLOCK A

LOT 1 1.515 AC	LOT 2 1.500 AC	LOT 3 1.500 AC	LOT 4 1.737 AC	LOT 5 1.530 AC	LOT 6 1.530 AC	LOT 7 1.530 AC	LOT 8 1.530 AC	LOT 9 1.530 AC	LOT 10 1.530 AC	LOT 11 1.530 AC	LOT 12 1.530 AC	LOT 13 1.530 AC	LOT 14 1.530 AC	LOT 15 1.530 AC	LOT 16 1.530 AC	LOT 17 1.530 AC	LOT 18 1.530 AC	LOT 19 1.778 AC

LOT 1A 0.106 AC

LOT 19A 0.580 AC

S. MUNSON ROAD

DRAINAGE EASEMENT

LOT 20

THESE DRAWINGS WERE ORIGINALLY SIGNED AND SEALED FOR CONSTRUCTION BY HENRY G. NIBLO, PE ON 7/28/2021. THE INFORMATION ON THESE RECORD DRAWINGS WAS PROVIDED BY THE CONTRACTOR AND SURVEYOR. THE ENGINEER IS NOT RESPONSIBLE FOR ANY ERRORS AND OMISSIONS IN THESE DRAWINGS.

HENRY G. NIBLO, PE — 11/08/2021 DATE

RECORD DRAWING

STATE OF TEXAS · HENRY GRADY NIBLO · 68739 · REGISTERED PROFESSIONAL ENGINEER

11/8/2021

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

ALL INITIAL DEADEND WATER LINES NEED TO HAVE A FIRE HYDRANT WITH AUTOMATIC FLUSHING MECHANISM INSTALLED AT END.

ANY WATER VALVES DEEPER THAN 6 FEET NEED TO HAVE VALVE EXTENTIONS.

UTILITY CONTRACTORS TO PROVIDE AND INSTALL DUAL CHECK VALVES AT METER SERVICES.

ALL FIRE HYDRANTS SHALL BE MUELLER SUPER CENTURION 250/HS (HIGH SECURITY)

ALL WATER FITTINGS SHALL BE AWWA C-153 COMPACT DUCTILE IRON.

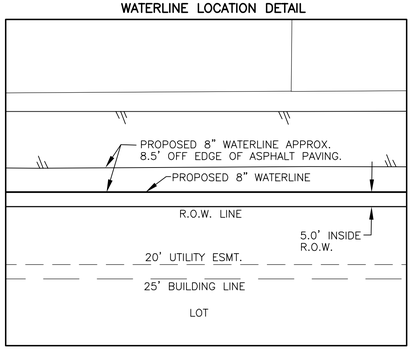
PROPOSED FIRE HYDRANT DETAIL

STD. F.H. W/6" LEAD:
1-8"x6" TEE
1-6" GATE VALVE
1-8" GATE VALVE
1-FIRE HYDRANT

STD. F.H. DETAIL

Ⓦ – PROPOSED WATER METER 1" POLY SERVICE LINES

WATERLINE LOCATION DETAIL



1

WATER PLAN

THE LANDON PHASE ONE

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 PHONE: (972) 742-4411
LAVON, TEXAS 75166
TBPELS REG NO. F-21608
TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON-1	JULY 28, 2021	1"=100'	CP

STREETMAN ROAD

"A" "B" "C" "D"

EX. 18" C.M.P.

FL=549.1

FL=550.1

550.4 AC

25' B.L.

BLOCK A

FP= 556.0 | FP= 556.0 | FP= 555.0 | FP= 553.5 | FP= 553.0 | FP= 553.0 | FP= 553.0 | FP= 553.0 | FP= 553.5 | FP= 553.5 | FP= 553.5 | FP= 554.0 | FP= 554.5 | FP= 555.0 | FP= 556.0 | FP= 558.0 | FP= 556.5 | FP= 553.2 | FP= 550.0

LOT 1 1.515 AC | LOT 2 1.500 AC | LOT 3 1.500 AC | LOT 4 1.737 AC | LOT 5 1.530 AC | LOT 6 1.530 AC | LOT 7 1.530 AC | LOT 8 1.530 AC | LOT 9 1.530 AC | LOT 10 1.530 AC | LOT 11 1.530 AC | LOT 12 1.530 AC | LOT 13 1.530 AC | LOT 14 1.530 AC | LOT 15 1.530 AC | LOT 16 1.530 AC | LOT 17 1.530 AC | LOT 18 1.530 AC | LOT 19 1.778 AC

LOT 1A 0.106 AC

LOT 19A 0.580 AC

SWALE-1 | SWALE-2 | SWALE-3 | SWALE-4

4:1 MAX SLOPE

FL=553.0

FL=547.80

FL=543.0

FL=539.0

DETENTION POND - 1

DETENTION POND - 2

DETENTION POND - 3

DETENTION POND - 4

GRADE FL TO EX. GRADE

LOT 20 93.357 AC

EXISTING 2-48" C.M.P.'S

SWALE - 1	SWALE - 2	SWALE - 3	SWALE - 4
MAX D =1.50'	MAX D =1.50'	MAX D =1.50'	MAX D =1.50'
Q 100 = 10.14 CFS	Q 100 = 33.17 CFS	Q 100 = 32.34 CFS	Q 100 = 23.32 CFS
V = 3.51 FPS	V = 4.76 FPS	V = 4.71 FPS	V = 4.33 FPS
H 100 = 0.85 FT	H 100 = 1.32 FT	H 100 = 1.31 FT	H 100 = 1.16 FT
W = 6.80 FT	W = 10.56 FT	W = 10.48 FT	W = 9.280 FT
S = 0.0100 FT/FT	S = 0.0100 FT/FT	S = 0.0100 FT/FT	S = 0.0100 FT/FT

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)

1 inch = 100 ft.

LEGEND

———— – PROPOSED CONTOUR

– – – – – EXISTING CONTOUR

601 – PROPOSED CONTOUR

601 – EXISTING CONTOUR

FP – FINISH PAD

STREET R.O.W.

20' U.E.

25' PAD 75' B.L.

75'

TYPICAL LOT

SECTION "A"

SECTION "B"

SECTION "C"

SECTION "D"

PR. GRADE

EX. GRADE

EDGE PAVING

RECORD DRAWING

STATE OF TEXAS
HENRY GRADY NIBLO
68739
REGISTERED PROFESSIONAL ENGINEER

Henry G. Niblo 11/8/2021

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Henry G. Niblo — HENRY G. NIBLO, PE — 11/08/2021 — DATE

2

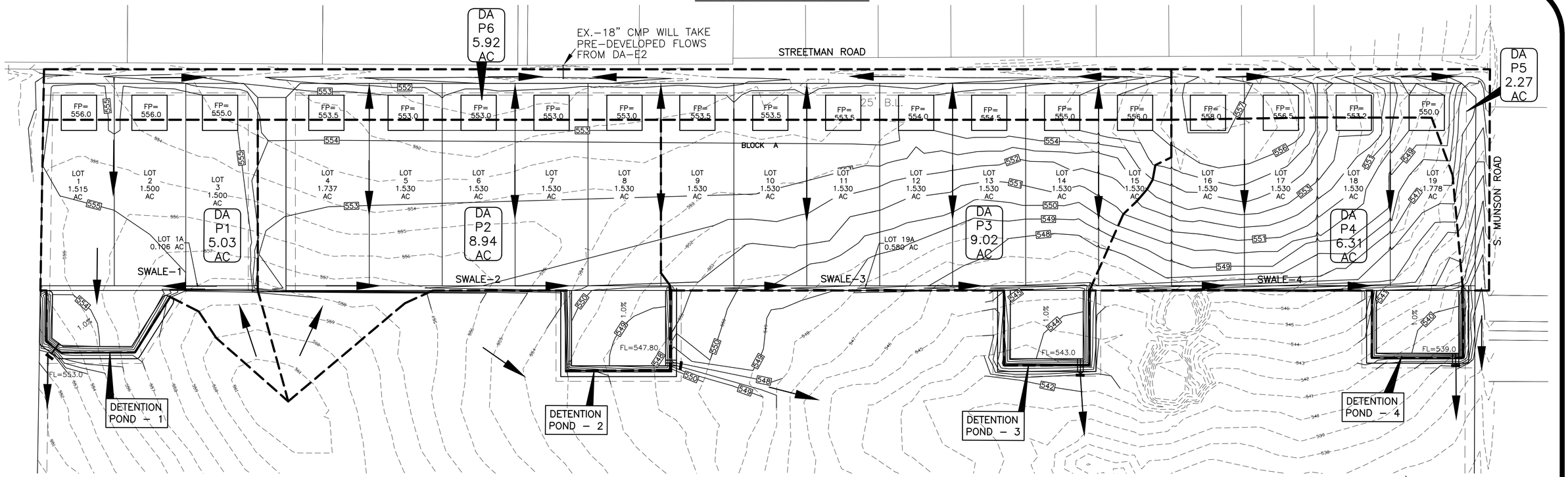
GRADING & DRAINAGE PLAN

THE LANDON PHASE ONE

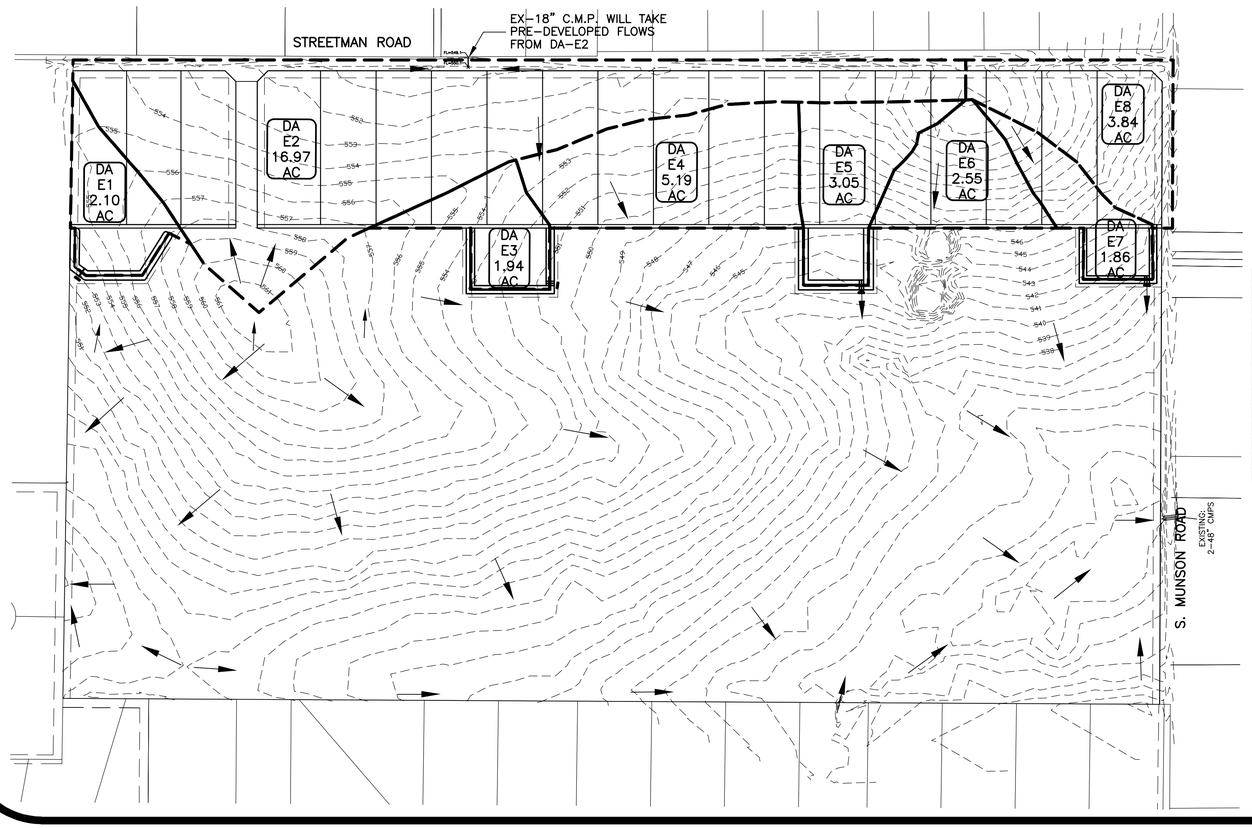
CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 PHONE: (972) 742-4411 TBPELS REG NO. F-21608
LAVON, TEXAS 75166 TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON-1	JULY 28, 2021	1"=100'	CP

PROPOSED DRAINAGE AREA MAP



EXISTING DRAINAGE AREA MAP



PROPOSED DRAINAGE AREAS					
Tc = 10 min.					
DA	ACRES	C	I100	Q cfs	NOTES
DA-P1	5.03	0.500	9.80	24.65	DETENTION POND - 1
DA-P2	8.94	0.500	9.80	43.81	DETENTION POND - 2
DA-P3	9.02	0.500	9.80	44.20	DETENTION POND - 3
DA-P4	6.31	0.500	9.80	30.92	DETENTION POND - 4
DA-P5	2.27	0.500	9.80	11.12	STREETMAN & MUNSON R.O.W. TO EX 2-48" C.M.P.'S
DA-P6	5.92	0.500	9.80	29.01	STREETMAN R.O.W. TO EX 18"C.M.P.
TOTALS	37.49			183.70	

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

EXISTING DRAINAGE AREAS					
Tc = 20 min.					
DA	ACRES	C	I100	Q cfs	NOTES
DA-E1	2.10	0.350	8.30	6.10	DETENTION POND - 1
DA-E2	16.97	0.350	8.30	49.30	STREETMAN R.O.W. TO EX 18"C.M.P.
DA-E3	1.94	0.350	8.30	5.64	DETENTION POND - 2
DA-E4	5.19	0.350	8.30	15.08	SHEET FLOW TO REMAINDER TRACT - DETENTION POND-3 BYPASS
DA-E5	3.05	0.350	8.30	8.86	DETENTION POND - 3
DA-E6	2.55	0.350	8.30	7.41	SHEET FLOW TO REMAINDER TRACT - DETENTION POND-4 BYPASS
DA-E7	1.86	0.350	8.30	5.40	DETENTION POND - 4
DA-E8	3.84	0.350	8.30	11.16	STREETMAN & MUNSON R.O.W. TO EX 2-48" C.M.P.'S
TOTALS	37.50			108.94	

GRAPHIC SCALE

200 0 100 200 400

(IN FEET)
1 inch = 200 ft.

DRIVEWAY CULVERT CALCULATIONS									
Lot	Street	Size (in)	No.	L (ft)	Flow (cfs)	Velocity (ft/s)	HW in (ft)	Invert S (ft/ft)	HGL (ft/ft)	Control
1	STREETMAN	18"	1	22	1.21	1.02	0.37	0.0056	0.53	Inlet
2	STREETMAN	18"	1	22	3.02	2.22	0.62	0.0056	0.78	Inlet
3	STREETMAN	18"	1	22	4.83	3.26	0.84	0.0056	0.96	Inlet
4	STREETMAN	18"	1	22	7.29	4.56	1.12	0.0056	1.16	Inlet
5	STREETMAN	18"	1	22	9.31	5.59	1.40	0.0056	1.30	Inlet
6	STREETMAN	21"	1	22	11.33	5.16	1.17	0.0056	1.37	Inlet
7	STREETMAN	21"	1	22	13.35	5.91	1.37	0.0056	1.48	Inlet
8	STREETMAN	27"	1	22	14.82	4.36	0.90	0.0036	1.42	Inlet
9	STREETMAN	24"	1	22	12.93	4.67	1.01	0.0036	1.37	Inlet
10	STREETMAN	24"	1	22	11.04	4.11	0.90	0.0036	1.27	Inlet
11	STREETMAN	18"	1	22	9.15	5.51	1.38	0.0036	1.25	Inlet
12	STREETMAN	18"	1	22	7.26	4.55	1.12	0.0036	1.12	Inlet
13	STREETMAN	18"	1	22	5.37	3.55	0.90	0.0036	0.97	Inlet
14	STREETMAN	18"	1	22	3.48	2.49	0.68	0.0036	0.79	Inlet
15	STREETMAN	18"	1	22	1.59	1.29	0.43	0.0140	0.78	Inlet
16	STREETMAN	18"	1	22	0.26	0.25	0.15	0.0271	0.81	Inlet
17	STREETMAN	18"	1	22	0.79	0.70	0.29	0.0271	0.92	Inlet
18	STREETMAN	18"	1	22	1.32	1.10	0.38	0.0271	0.97	Inlet
19	STREETMAN	18"	1	22	1.85	1.47	0.46	0.0271	1.01	Inlet

RECORD DRAWING

THESE DRAWINGS WERE ORIGINALLY SIGNED AND SEALED FOR CONSTRUCTION BY HENRY G. NIBLO, PE ON 7/28/2021. THE INFORMATION ON THESE RECORD DRAWINGS WAS PROVIDED BY THE CONTRACTOR AND SURVEYOR. THE ENGINEER IS NOT RESPONSIBLE FOR ANY ERRORS AND OMISSIONS IN THESE DRAWINGS.

HENRY G. NIBLO, PE — 11/08/2021 DATE

STATE OF TEXAS
HENRY GRADY NIBLO
68739
REGISTERED
PROFESSIONAL ENGINEER

Henry G. Niblo 11/8/2021

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DRAINAGE AREA MAPS

THE LANDON PHASE ONE

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 PHONE: (972) 742–4411 TBPELS REG NO. F–21608
LAVON, TEXAS 75166 TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON–1	JULY 28, 2021	1"=100' 1"=300'	CP

DETENTION POND 1

100 YR Detention Calculations - Pond 1

Existing Conditions

	OS1	ROW	E1	Total	
A=	0.00	0	2.10	2.10	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(100)=	8.30	8.30	8.3	8.30	in/hr
Q(100)=	0.00	0.00	6.10	6.10	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P1	Total	
A=	0.00	0	5.03	5.03	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(100)=	9.80	9.8	9.8	9.80	in/hr
Q(100)=	0.00	0.00	24.65	24.65	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20	min
I(100)=	8.30	8.3		8.30	in/hr
Q(100)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 6.1005 cfs
Bypass = 0 cfs @ 100 min
Total Outlet Flow = 6.1005 -0 = 6.10 cfs

Proposed Rainfall Intensities and Storage Calculations (100 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	9.80	24.65	14788	3660	11128
15	9.00	22.64	20372	4575	15796
20	8.30	20.87	25049	5490	19559
30	6.90	17.35	31236	7321	23916
40	5.80	14.59	35009	9151	25858
50	5.00	12.58	37725	10981	26744
60	4.50	11.32	40743	12811	27932
70	4.00	10.06	42252	14641	27611
80	3.70	9.31	44666	16471	28195
90	3.50	8.80	47534	18302	29232
100	3.40	8.55	51306	20132	31174
110	3.20	8.05	53117	21962	31155

Q=C*I*A
Where C=0.5 & A= 5.03 ac
Peak Storage Required, 31174.35 cf at 100 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

25 YR Detention Calculations - Pond 1

Existing Conditions

	OS1	ROW	E1	Total	
A=	0.00	0	2.1	2.10	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(25)=	6.60	6.60	6.6	6.60	in/hr
Q(25)=	0.00	0.00	4.85	4.85	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P1	Total	
A=	0.00	0	5.03	5.03	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(25)=	8.30	8.30	8.3	8.30	in/hr
Q(25)=	0.00	0.00	20.87	20.87	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0		0.00	ac
k*C=	0.40	0.5		0.000	Defined C
Tc=	20.00	20		20.00	min
I(25)=	6.60	6.60		6.60	in/hr
Q(25)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 4.851 cfs
Bypass = 0 cfs @ 90 min
Total Outlet Flow = 4.851 -0 = 4.85 cfs

Proposed Rainfall Intensities and Storage Calculations (25 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	8.30	20.87	12525	2911	9614
15	7.50	18.86	16976	3638	13338
20	6.60	16.60	19919	4366	15553
30	5.50	13.83	24899	5821	19077
40	4.60	11.57	27766	7277	20489
50	4.00	10.06	30180	8732	21448
60	3.50	8.80	31689	10187	21502
70	3.30	8.30	34858	11642	23216
80	3.10	7.80	37423	13098	24326
90	2.90	7.29	39385	14553	24832
100	2.70	6.79	40743	16008	24735
110	2.50	6.29	41498	17464	24034

Q=C*I*A
Where C=0.5 & A= 5.03 ac
Peak Storage Required, 24831.9 cf at 90 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

10 YR Detention Calculations - Pond 1

Existing Conditions

	OS1	ROW	E1	Total	
A=	0.00	0	2.1	2.10	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(10)=	5.90	5.90	5.9	5.90	in/hr
Q(10)=	0.00	0.00	4.34	4.34	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P1	Total	
A=	0.00	0	5.03	5.03	ac
k*C=	0.50	0.5	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(10)=	7.10	7.1	7.1	7.10	in/hr
Q(10)=	0.00	0.00	17.86	17.86	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(10)=	5.90	5.9		5.90	in/hr
Q(10)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 4.3365 cfs
Bypass = 0 cfs @ 110 min
Total Outlet Flow = 4.3365 -0 = 4.34 cfs

Proposed Rainfall Intensities and Storage Calculations (10 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	7.10	17.86	10714	2602	8112
15	6.50	16.35	14713	3252	11460
20	5.90	14.84	17806	3903	13903
30	4.80	12.07	21730	5204	16526
40	4.00	10.06	24144	6505	17639
50	3.50	8.80	26408	7806	18602
60	3.00	7.55	27162	9107	18055
70	2.80	7.04	29576	10408	19169
80	2.60	6.54	31387	11709	19679
90	2.50	6.29	33953	13010	20943
100	2.40	6.04	36216	14310	21906
110	2.30	5.78	38178	15611	22566

Q=C*I*A
Where C=0.5 & A= 5.03 ac
Peak Storage Required, 22566.3 cf at 110 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

5 YR Detention Calculations - Pond 1

Existing Conditions

	OS1	ROW	E1	Total	
A=	0.00	0	2.1	2.10	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(5)=	4.90	4.90	4.9	4.90	in/hr
Q(5)=	0.00	0.00	3.60	3.60	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P1	Total	
A=	0.00	0	5.03	5.03	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(5)=	6.10	6.10	6.1	6.10	in/hr
Q(5)=	0.00	0.00	15.34	15.34	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(5)=	4.90	4.9		4.90	in/hr
Q(5)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 3.6015 cfs
Bypass = 0 cfs @ 80 min
Total Outlet Flow = 3.6015 -0 = 3.60 cfs

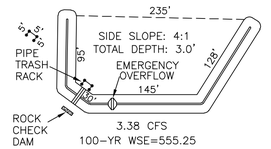
Proposed Rainfall Intensities and Storage Calculations (5 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	6.10	15.34	9205	2161	7044
15	5.50	13.83	12449	2701	9748
20	4.90	12.32	14788	3241	11547
30	4.10	10.31	18561	4322	14239
40	3.40	8.55	20522	5402	15120
50	2.80	7.04	21126	6483	14643
60	2.60	6.54	23540	7563	15977
70	2.40	6.04	25351	8644	16708
80	2.30	5.78	27766	9724	18042
90	2.10	5.28	28520	10805	17716
100	1.90	4.78	28671	11885	16786
110	1.80	4.53	29878	12965	16913

Q=C*I*A
Where C=0.5 & A= 5.03 ac
Peak Storage Required, 18041.55 cf at 80 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

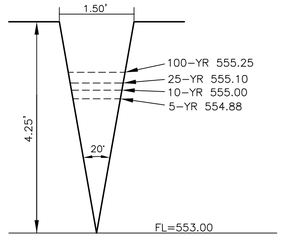
DETENTION POND 1



DETENTION POND 1				
PRE-DEVELOPMENT vs POST-DEVELOPMENT				
DA	ACRES	C	i100	Q CFS
PRE	2.10	0.35	8.30	6.10
POST	5.03	0.50	9.80	24.65
INCREASE IN 100-YEAR RUNOFF				18.55

DISCHARGE FROM POND 1		
STORM EVENT	ALLOWABLE DISCHARGE FROM POND (CFS)	ACTUAL DISCHARGE FROM POND (CFS)
5 YEAR	3.60	2.18
10 YEAR	4.34	2.55
25 YEAR	4.85	2.85
100 YEAR	6.10	3.38

WEIR POND 1



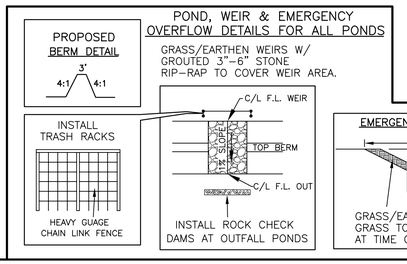
V-NOTCHED WEIR CALCULATIONS POND 1					
STORM EVENT	W.S.E.	FLOW LINE	C	ANGLE	CFS
5 YEAR	554.88	553.00	0.45	20.00	2.18
10 YEAR	555.00	553.00	0.45	20.00	2.55
25 YEAR	555.10	553.00	0.45	20.00	2.85
100 YEAR	555.25	553.00	0.45	20.00	3.38

$$Q=4.28\ C\ \tan\left(\frac{\theta}{2}\right)(h+k)^{5/2}$$

where Q = Discharge (cfs)
C = Discharge Coefficient
θ = Notch Angle
h = Head (ft)
k = Head Correction Factor (ft)

TRIANGULAR V-NOTCH WEIR EQUATIONS

$C = 0.607165052 - 0.000874466963\ \theta + 6.10393334\times10^{-6}\ \theta^2$
$k\ (ft.) = 0.0144902648 - 0.00033955535\ \theta + 3.29819003\times10^{-6}\theta^2 - 1.06215442\times10^{-8}\ \theta^3$
where θ is the notch angle in degrees



DETENTION POND 2

100 YR Detention Calculations - Pond 2

Existing Conditions

	OS1	ROW	E3	Total	
A=	0.00	0	1.94	1.94	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(100)=	8.30	8.30	8.3	8.30	in/hr
Q(100)=	0.00	0.00	5.64	5.64	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P2	Total	
A=	0.00	0	8.94	8.94	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(100)=	9.80	9.8	9.8	9.80	in/hr
Q(100)=	0.00	0.00	43.81	43.81	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20	min
I(100)=	8.30	8.3		8.30	in/hr
Q(100)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 5.6357 cfs
Bypass = 0 cfs @ 110 min
Total Outlet Flow = 5.6357 -0 = 5.64 cfs

Proposed Rainfall Intensities and Storage Calculations (100 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	9.80	43.81	26284	3381	22902
15	9.00	40.23	36207	4227	31980
20	8.30	37.10	44521	5072	39449
30	6.90	30.84	55517	6763	48755
40	5.80	25.93	62222	8454	53769
50	5.00	22.35	67050	10144	56906
60	4.50	20.12	72414	11835	60579
70	4.00	17.88	75096	13526	61570
80	3.70	16.54	79387	15216	64171
90	3.50	15.65	84483	16907	67576
100	3.40	15.20	91188	18598	72590
110	3.20	14.30	94406	20289	74118

Q=C*I*A
Where C=0.5 & A= 8.94 ac
Peak Storage Required, 74117.88 cf at 110 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

25 YR Detention Calculations - Pond 2

Existing Conditions

	OS1	ROW	E3	Total	
A=	0.00	0	1.94	1.94	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I25)=	6.60	6.60	6.6	6.60	in/hr
Q(25)=	0.00	0.00	4.48	4.48	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P2	Total	
A=	0.00	0	8.94	8.94	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(25)=	8.30	8.30	8.3	8.30	in/hr
Q(25)=	0.00	0.00	37.10	37.10	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0		0.00	ac
k*C=	0.40	0.5		0.000	Defined C
Tc=	20.00	20		20.00	min
I(25)=	6.60	6.60		6.60	in/hr
Q(25)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 4.4814 cfs
Bypass = 0 cfs @ 100 min
Total Outlet Flow = 4.4814 -0 = 4.48 cfs

Proposed Rainfall Intensities and Storage Calculations (25 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	8.30	37.10	22261	2689	19572
15	7.50	33.53	30173	3361	26811
20	6.60	29.50	35402	4033	31369
30	5.50	24.59	44253	5378	38875
40	4.60	20.56	49349	6722	42627
50	4.00	17.88	53640	8067	45573
60	3.50	15.65	56322	9411	46911
70	3.30	14.75	61954	10755	51199
80	3.10	13.86	66514	12100	54414
90	2.90	12.96	70000	13444	56556
100	2.70	12.07	72414	14789	57625
110	2.50	11.18	73755	16133	57622

Q=C*I*A
Where C=0.5 & A= 8.94 ac
Peak Storage Required, 57625 cf at 100 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

10 YR Detention Calculations - Pond 2

Existing Conditions

	OS1	ROW	E3	Total	
A=	0.00	0	1.94	1.94	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(10)=	5.90	5.90	5.9	5.90	in/hr
Q(10)=	0.00	0.00	4.01	4.01	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P2	Total	
A=	0.00	0	8.94	8.94	ac
k*C=	0.50	0.5	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(10)=	7.10	7.1	7.1	7.10	in/hr
Q(10)=	0.00	0.00	31.74	31.74	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(10)=	5.90	5.9		5.90	in/hr
Q(10)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 4.0061 cfs
Bypass = 0 cfs @ 110 min
Total Outlet Flow = 4.0061 -0 = 4.01 cfs

Proposed Rainfall Intensities and Storage Calculations (10 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	7.10	31.74	19042	2404	16639
15	6.50	29.06	26150	3005	23145
20	5.90	26.37	31648	3605	28042
30	4.80	21.46	38621	4807	33813
40	4.00	17.88	42912	6009	36903
50	3.50	15.65	46935	7211	39724
60	3.00	13.41	48276	8413	39863
70	2.80	12.52	52567	9615	42953
80	2.60	11.62	55786	10816	44969
90	2.50	11.18	60345	12018	48327
100	2.40	10.73	64368	13220	51148
110	2.30	10.28	67855	14422	53433

Q=C*I*A
Where C=0.5 & A= 8.94 ac
Peak Storage Required, 53432.64 cf at 110 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

5 YR Detention Calculations - Pond 2

Existing Conditions

	OS1	ROW	E3	Total	
A=	0.00	0	1.94	1.94	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(5)=	4.90	4.90	4.9	4.90	in/hr
Q(5)=	0.00	0.00	3.33	3.33	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P2	Total	
A=	0.00	0	8.94	8.94	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(5)=	6.10	6.10	6.1	6.10	in/hr
Q(5)=	0.00	0.00	27.27	27.27	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(5)=	4.90	4.9		4.90	in/hr
Q(5)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 3.3271 cfs
Bypass = 0 cfs @ 110 min
Total Outlet Flow = 3.3271 -0 = 3.33 cfs

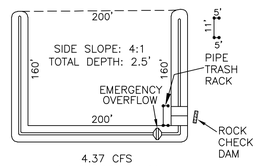
Proposed Rainfall Intensities and Storage Calculations (5 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	6.10	27.27	16360	1996	14364
15	5.50	24.59	22127	2495	19631
20	4.90	21.90	26284	2994	23289
30	4.10	18.33	32989	3993	28996
40	3.40	15.20	36475	4991	31485
50	2.80	12.52	37548	5989	31559
60	2.60	11.62	41839	6987	34852
70	2.40	10.73	45058	7985	37073
80	2.30	10.28	49349	8983	40366
90	2.10	9.39	50690	9981	40709
100	1.90	8.49	50958	10979	39979
110	1.80	8.05	53104	11978	41126

Q=C*I*A
Where C=0.5 & A= 8.94 ac
Peak Storage Required, 41126.04 cf at 110 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

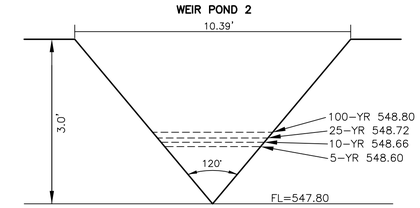
DETENTION POND 2



DETENTION POND 2				
PRE-DEVELOPMENT vs POST-DEVELOPMENT				
DA	ACRES	C	i100	Q CFS
PRE	1.94	0.35	8.30	5.64
POST	8.94	0.50	9.80	43.81
INCREASE IN 100-YEAR RUNOFF				38.17

DISCHARGE FROM POND 2		
STORM EVENT	ALLOWABLE DISCHARGE FROM POND (CFS)	ACTUAL DISCHARGE FROM POND (CFS)
5 YEAR	3.33	2.49
10 YEAR	4.01	2.99
25 YEAR	4.48	3.58
100 YEAR	5.64	4.37

WEIR POND 2



V-NOTCHED WEIR CALCULATIONS POND 2					
STORM EVENT	W.S.E.	FLOW LINE	C	ANGLE	CFS
5 YEAR	548.60	547.80	4.40	120.00	2.49
10 YEAR	548.66	547.80	4.40	120.00	2.99
25 YEAR	548.72	547.80	4.40	120.00	3.58
100 YEAR	548.80	547.80	4.40	120.00	4.37

$$Q=4.28\ C\ \tan\left(\frac{\theta}{2}\right)(h+k)^{5/2}$$

where Q = Discharge (cfs)
C = Discharge Coefficient
θ = Notch Angle
h = Head (ft)
k = Head Correction Factor (ft)

TRIANGULAR V-NOTCH WEIR EQUATIONS

$C = 0.607165052 - 0.000874466963\ \theta + 6.10393334\times10^{-6}\ \theta^2$
$k\ (ft.) = 0.0144902648 - 0.00033955535\ \theta + 3.29819003\times10^{-6}\theta^2 - 1.06215442\times10^{-8}\ \theta^3$
where θ is the notch angle in degrees

RECORD DRAWING

THESE DRAWINGS WERE ORIGINALLY SIGNED AND SEALED FOR CONSTRUCTION BY HENRY G. NIBLO, PE ON 7/28/2021. THE INFORMATION ON THESE RECORD DRAWINGS WAS PROVIDED BY THE CONTRACTOR AND SURVEYOR. THE ENGINEER IS NOT RESPONSIBLE FOR ANY ERRORS AND OMISSIONS IN THESE DRAWINGS.

Henry G. Niblo — 11/08/2021
HENRY G. NIBLO, PE — DATE

STATE OF TEXAS · HENRY GRADY NIBLO · 68739 · REGISTERED PROFESSIONAL ENGINEER

Henry G. Niblo 11/8/2021

4

DETENTION POND CALCULATIONS

DETENTION PONDS 1 & 2

THE LANDON PHASE ONE

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 PHONE: (972) 742-4411 TBPELS REG NO. F-21608
LAVON, TEXAS 75166 TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON-1	JULY 28, 2021	1"=100'	CP

DETENTION POND 3

100 YR Detention Calculations - Pond 3

Existing Conditions

	OS1	ROW	E4&5	Total	
A=	0.00	0	8.24	8.24	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(100)=	8.30	8.30	8.3	8.30	in/hr
Q(100)=	0.00	0.00	23.94	23.94	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P3	Total	
A=	0.00	0	9.02	9.02	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(100)=	9.80	9.8	9.8	9.80	in/hr
Q(100)=	0.00	0.00	44.20	44.20	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20	min
I(100)=	8.30	8.3		8.30	in/hr
Q(100)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 23.9372 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 23.9372 -0 = 23.94 cfs

Proposed Rainfall Intensities and Storage Calculations (100 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	9.80	44.20	26519	14362	12156
15	9.00	40.59	36531	17953	18578
20	8.30	37.43	44920	21543	23376
30	6.90	31.12	56014	28725	27290
40	5.80	26.16	62779	35906	26873
50	5.00	22.55	67650	43087	24563
60	4.50	20.30	73062	50268	22794
70	4.00	18.04	75768	57449	18319
80	3.70	16.69	80098	64630	15467
90	3.50	15.79	85239	71812	13427
100	3.40	15.33	92004	78993	13011
110	3.20	14.43	95251	86174	9077

Q=C*I*A
Where C=0.5 & A= 9.02 ac
Peak Storage Required, 27289.56 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

25 YR Detention Calculations - Pond 3

Existing Conditions

	OS1	ROW	E4&5	Total	
A=	0.00	0	8.24	8.24	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I25)=	6.60	6.60	6.6	6.60	in/hr
Q(25)=	0.00	0.00	19.03	19.03	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P3	Total	
A=	0.00	0	9.02	9.02	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(25)=	8.30	8.30	8.3	8.30	in/hr
Q(25)=	0.00	0.00	37.43	37.43	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0		0.00	ac
k*C=	0.40	0.5		0.000	Defined C
Tc=	20.00	20		20.00	min
I(25)=	6.60	6.60		6.60	in/hr
Q(25)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 19.0344 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 19.0344 -0 = 19.03 cfs

Proposed Rainfall Intensities and Storage Calculations 25 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	8.30	37.43	22460	11421	11039
15	7.50	33.83	30443	14276	16167
20	6.60	29.77	35719	17131	18588
30	5.50	24.81	44649	22841	21808
40	4.60	20.75	49790	28552	21239
50	4.00	18.04	54120	34262	19858
60	3.50	15.79	56826	39972	16854
70	3.30	14.88	62509	45683	16826
80	3.10	13.98	67109	51393	15716
90	2.90	13.08	70627	57103	13523
100	2.70	12.18	73062	62814	10248
110	2.50	11.28	74415	68524	5891

Q=C*I*A
Where C=0.5 & A= 9.02 ac
Peak Storage Required, 21807.72 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

10 YR Detention Calculations - Pond 3

Existing Conditions

	OS1	ROW	E4&5	Total	
A=	0.00	0	8.24	8.24	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(10)=	5.90	5.90	5.9	5.90	in/hr
Q(10)=	0.00	0.00	17.02	17.02	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P3	Total	
A=	0.00	0	9.02	9.02	ac
k*C=	0.50	0.5	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(10)=	7.10	7.1	7.1	7.10	in/hr
Q(10)=	0.00	0.00	32.02	32.02	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(10)=	5.90	5.9		5.90	in/hr
Q(10)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 17.0156 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 17.0156 -0 = 17.02 cfs

Proposed Rainfall Intensities and Storage Calculations (10 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	7.10	32.02	19213	10209	9003
15	6.50	29.32	26384	12762	13622
20	5.90	26.61	31931	15314	16617
30	4.80	21.65	38966	20419	18548
40	4.00	18.04	43296	25523	17773
50	3.50	15.79	47355	30628	16727
60	3.00	13.53	48708	35733	12975
70	2.80	12.63	53038	40837	12200
80	2.60	11.73	56285	45942	10343
90	2.50	11.28	60885	51047	9838
100	2.40	10.82	64944	56151	8793
110	2.30	10.37	68462	61256	7206

Q=C*I*A
Where C=0.5 & A= 9.02 ac
Peak Storage Required, 18547.68 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

5 YR Detention Calculations - Pond 3

Existing Conditions

	OS1	ROW	E4&5	Total	
A=	0.00	0	8.24	8.24	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(5)=	4.90	4.90	4.9	4.90	in/hr
Q(5)=	0.00	0.00	14.13	14.13	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P3	Total	
A=	0.00	0	9.02	9.02	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(5)=	6.10	6.10	6.1	6.10	in/hr
Q(5)=	0.00	0.00	27.51	27.51	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(5)=	4.90	4.9		4.90	in/hr
Q(5)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 14.1316 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 14.1316 -0 = 14.13 cfs

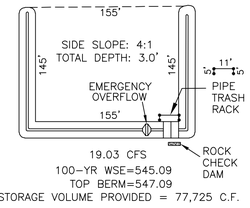
Proposed Rainfall Intensities and Storage Calculations (5 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	6.10	27.51	16507	8479	8028
15	5.50	24.81	22325	10599	11726
20	4.90	22.10	26519	12718	13800
30	4.10	18.49	33284	16958	16326
40	3.40	15.33	36802	21197	15604
50	2.80	12.63	37884	25437	12447
60	2.60	11.73	42214	29676	12537
70	2.40	10.82	45461	33916	11545
80	2.30	10.37	49790	38155	11635
90	2.10	9.47	51143	42395	8749
100	1.90	8.57	51414	46634	4780
110	1.80	8.12	53579	50874	2705

Q=C*I*A
Where C=0.5 & A= 9.02 ac
Peak Storage Required, 16325.88 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

DETENTION POND 3

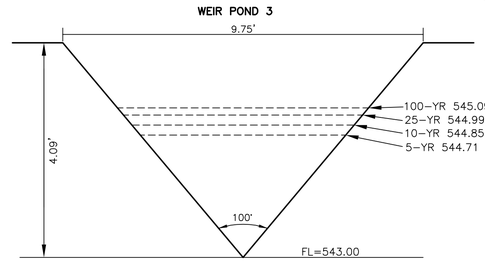


19.03 CFS
100-YR WSE=545.09
TOP BERM=547.09
STORAGE VOLUME PROVIDED = 77,725 C.F.

DETENTION POND 3				
PRE-DEVELOPMENT vs POST-DEVELOPMENT				
DA	ACRES	C	i100	Q CFS
PRE	8.24	0.35	8.30	23.94
POST	9.02	0.50	9.80	44.20
INCREASE IN 100-YEAR RUNOFF				20.26

DISCHARGE FROM POND 3		
STORM EVENT	ALLOWABLE DISCHARGE FROM POND (CFS)	ACTUAL DISCHARGE FROM POND (CFS)
5 YEAR	14.13	11.57
10 YEAR	17.02	14.10
25 YEAR	19.03	16.93
100 YEAR	23.94	19.03

WEIR POND 3



V-NOTCHED WEIR CALCULATIONS POND 3					
STORM EVENT	W.S.E.	FLOW LINE	C	ANGLE	CFS
5 YEAR	544.71	543.00	3.03	100.00	11.57
10 YEAR	544.85	543.00	3.03	100.00	14.10
25 YEAR	544.99	543.00	3.03	100.00	16.93
100 YEAR	545.09	543.00	3.03	100.00	19.03

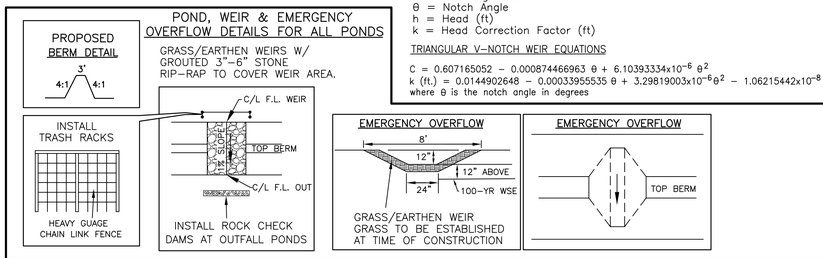
$Q=4.28\ C\ \tan\left(\frac{\theta}{2}\right)(h+k)^{5/2}$

where Q = Discharge (cfs)
C = Discharge Coefficient
θ = Notch Angle
h = Head (ft)
k = Head Correction Factor (ft)

TRIANGULAR V-NOTCH WEIR EQUATIONS

$C = 0.607165052 - 0.000874466963\ \theta + 6.10393334\times10^{-6}\ \theta^2$
$k\ (ft.) = 0.0144902648 - 0.00033955535\ \theta + 3.29819003\times10^{-6}\theta^2 - 1.06215442\times10^{-8}\ \theta^3$
where θ is the notch angle in degrees

POND, WEIR & EMERGENCY OVERFLOW DETAILS FOR ALL PONDS



DETENTION POND 4

100 YR Detention Calculations - Pond 4

Existing Conditions

	OS1	ROW	E6,7,8	Total	
A=	0.00	0	8.25	8.25	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(100)=	8.30	8.30	8.3	8.30	in/hr
Q(100)=	0.00	0.00	23.97	23.97	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P4	Total	
A=	0.00	0	6.31	6.31	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(100)=	9.80	9.8	9.8	9.80	in/hr
Q(100)=	0.00	0.00	30.92	30.92	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20	min
I(100)=	8.30	8.3		8.30	in/hr
Q(100)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 23.96625 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 23.96625 -0 = 23.97 cfs

Proposed Rainfall Intensities and Storage Calculations (100 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	9.80	30.92	18551	14380	4172
15	9.00	28.40	25556	17975	7581
20	8.30	26.19	31424	21570	9854
30	6.90	21.77	39185	28760	10426
40	5.80	18.30	43918	35949	7968
50	5.00	15.78	47325	43139	4186
60	4.50	14.20	51111	50329	782
70	4.00	12.62	53004	57519	-4515
80	3.70	11.67	56033	64709	-8676
90	3.50	11.04	59630	71899	-12269
100	3.40	10.73	64362	79089	-14727
110	3.20	10.10	66634	86279	-19645

Q=C*I*A
Where C=0.5 & A= 6.31 ac
Peak Storage Required, 10425.6 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

25 YR Detention Calculations - Pond 4

Existing Conditions

	OS1	ROW	E6,7,8	Total	
A=	0.00	0	8.25	8.25	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I25)=	6.60	6.60	6.6	6.60	in/hr
Q(25)=	0.00	0.00	19.06	19.06	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P4	Total	
A=	0.00	0	6.31	6.31	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(25)=	8.30	8.30	8.3	8.30	in/hr
Q(25)=	0.00	0.00	26.19	26.19	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0		0.00	ac
k*C=	0.40	0.5		0.000	Defined C
Tc=	20.00	20		20.00	min
I(25)=	6.60	6.60		6.60	in/hr
Q(25)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 19.0575 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 19.0575 -0 = 19.06 cfs

Proposed Rainfall Intensities and Storage Calculations 25 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	8.30	26.19	15712	11435	4277
15	7.50	23.66	21296	14293	7003
20	6.60	20.82	24988	17152	7836
30	5.50	17.35	31235	22869	8366
40	4.60	14.51	34831	28586	6245
50	4.00	12.62	37860	34304	3557
60	3.50	11.04	39753	40021	-268
70	3.30	10.41	43728	45738	-2010
80	3.10	9.78	46946	51455	-4509
90	2.90	9.15	49407	57173	-7765
100	2.70	8.52	51111	62890	-11779
110	2.50	7.89	52058	68607	-16550

Q=C*I*A
Where C=0.5 & A= 6.31 ac
Peak Storage Required, 8365.5 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

10 YR Detention Calculations - Pond 4

Existing Conditions

	OS1	ROW	E6,7,8	Total	
A=	0.00	0	8.25	8.25	ac
k*C=	0.35	0.35	0.35	3.500	Defined C
Tc=	20	20	20	20	min
I(10)=	5.90	5.90	5.9	5.90	in/hr
Q(10)=	0.00	0.00	17.04	17.04	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P4	Total	
A=	0.00	0	6.31	6.31	ac
k*C=	0.50	0.5	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(10)=	7.10	7.1	7.1	7.10	in/hr
Q(10)=	0.00	0.00	22.40	22.40	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(10)=	5.90	5.9		5.90	in/hr
Q(10)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 17.03625 cfs
Bypass = 0 cfs @ 20 min
Total Outlet Flow = 17.03625 -0 = 17.04 cfs

Proposed Rainfall Intensities and Storage Calculations (10 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	7.10	22.40	13440	10222	3219
15	6.50	20.51	18457	12777	5680
20	5.90	18.61	22337	15333	7005
30	4.80	15.14	27259	20444	6816
40	4.00	12.62	30288	25554	4734
50	3.50	11.04	33128	30665	2462
60	3.00	9.47	34074	35776	-1702
70	2.80	8.83	37103	40887	-3784
80	2.60	8.20	39374	45998	-6623
90	2.50	7.89	42593	51109	-8516
100	2.40	7.57	45432	56220	-10788
110	2.30	7.26	47893	61331	-13438

Q=C*I*A
Where C=0.5 & A= 6.31 ac
Peak Storage Required, 7004.775 cf at 20 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

5 YR Detention Calculations - Pond 4

Existing Conditions

	OS1	ROW	E6,7,8	Total	
A=	0.00	0	8.25	8.25	ac
k*C=	0.35	0.35	0.35	0.350	Defined C
Tc=	20	20	20	20	min
I(5)=	4.90	4.90	4.9	4.90	in/hr
Q(5)=	0.00	0.00	14.15	14.15	cfs

Developed Conditions (Detained + Bypass)

	OS1	ROW	P4	Total	
A=	0.00	0	6.31	6.31	ac
k*C=	0.35	0.35	0.5	0.500	Defined C
Tc=	10	10	10	10	min
I(5)=	6.10	6.10	6.1	6.10	in/hr
Q(5)=	0.00	0.00	19.25	19.25	cfs

Developed Conditions (Bypass Only)

	B1	B2		Total	
A=	0.00	0.00		0.00	ac
k*C=	0.00	0.00		0.000	Defined C
Tc=	20	20		20.00	min
I(5)=	4.90	4.9		4.90	in/hr
Q(5)=	0.00	0.00		0.00	cfs

Discharge Conditions
Total Maximum Release Rate: Q = 14.14875 cfs
Bypass = 0 cfs @ 30 min
Total Outlet Flow = 14.14875 -0 = 14.15 cfs

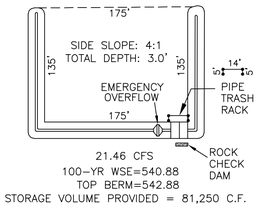
Proposed Rainfall Intensities and Storage Calculations (5 year Frequency)

Storm Duration T (Min)	Rainfall Intensity I (In/Hr)	Flowrate Q (cfs)	Inflow (cf)	Outflow (cf)	Storage (cf)
10	6.10	19.25	11547	8489	3058
15	5.50	17.35	15617	10612	5006
20	4.90	15.46	18551	12734	5818
30	4.10	12.94	23284	16979	6305
40	3.40	10.73	25745	21223	4522
50	2.80	8.83	26502	25468	1034
60	2.60	8.20	29531	29712	-182
70	2.40	7.57	31802	33957	-2155
80	2.30	7.26	34831	38202	-3370
90	2.10	6.63	35778	42446	-6669
100	1.90	5.99	35967	46691	-10724
110	1.80	5.68	37481	50936	-13454

Q=C*I*A
Where C=0.5 & A= 6.31 ac
Peak Storage Required, 6305.4 cf at 30 minutes

Detention Volume Formula
Inflow = Time x C(C-Factor) x I(in/hr) x A(Area) x 60(sec/min)
Outflow = 0.5 x Q(allowable discharge, (freq)) x (Time + TC) x 60 (sec/min)

DETENTION POND 4

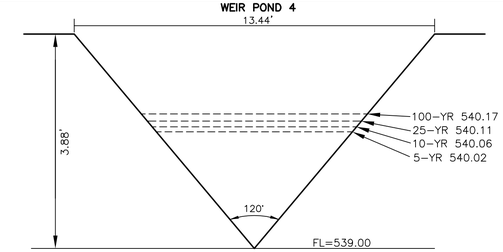


21.46 CFS
100-YR WSE=540.88
TOP BERM=542.88
STORAGE VOLUME PROVIDED = 81,250 C.F.

DETENTION POND 4				
PRE-DEVELOPMENT vs POST-DEVELOPMENT				
DA	ACRES	C	i100	Q CFS
PRE	8.25	0.35	8.30	23.97
POST	6.31	0.50	9.80	30.92
INCREASE IN 100-YEAR RUNOFF				6.95

DISCHARGE FROM POND 4		
STORM EVENT	ALLOWABLE DISCHARGE FROM POND (CFS)	ACTUAL DISCHARGE FROM POND (CFS)
5 YEAR	14.15	15.02
10 YEAR	17.04	16.70
25 YEAR	19.06	18.72
100 YEAR	23.97	21.46

WEIR POND 4



V-NOTCHED WEIR CALCULATIONS POND 4					
STORM EVENT	W.S.E.	FLOW LINE	C	ANGLE	CFS
5 YEAR	540.63	539.00	4.40	120.00	15.02
10 YEAR	540.70	539.00	4.40	120.00	16.70
25 YEAR	540.78	539.00	4.40	120.00	18.72
100 YEAR	540.88	539.00	4.40	120.00	21.46

$Q=4.28\ C\ \tan\left(\frac{\theta}{2}\right)(h+k)^{5/2}$

where Q = Discharge (cfs)
C = Discharge Coefficient
θ = Notch Angle
h = Head (ft)
k = Head Correction Factor (ft)

TRIANGULAR V-NOTCH WEIR EQUATIONS

$C = 0.607165052 - 0.000874466963\ \theta + 6.10393334\times10^{-6}\ \theta^2$
$k\ (ft.) = 0.0144902648 - 0.00033955535\ \theta + 3.29819003\times10^{-6}\theta^2 - 1.06215442\times10^{-8}\ \theta^3$
where θ is the notch angle in degrees

RECORD DRAWING

THESE DRAWINGS WERE ORIGINALLY SIGNED AND SEALED FOR CONSTRUCTION. BY HENRY G. NIBLO, PE ON 7/28/2021. THE INFORMATION ON THESE RECORD DRAWINGS WAS PROVIDED BY THE CONTRACTOR AND SURVEYOR. THE ENGINEER IS NOT RESPONSIBLE FOR ANY ERRORS AND OMISSIONS IN THESE DRAWINGS.

STATE OF TEXAS · HENRY GRADY NIBLO · 68739 · REGISTERED PROFESSIONAL ENGINEER

HENRY G. NIBLO, PE — 11/08/2021 DATE — 11/8/2021

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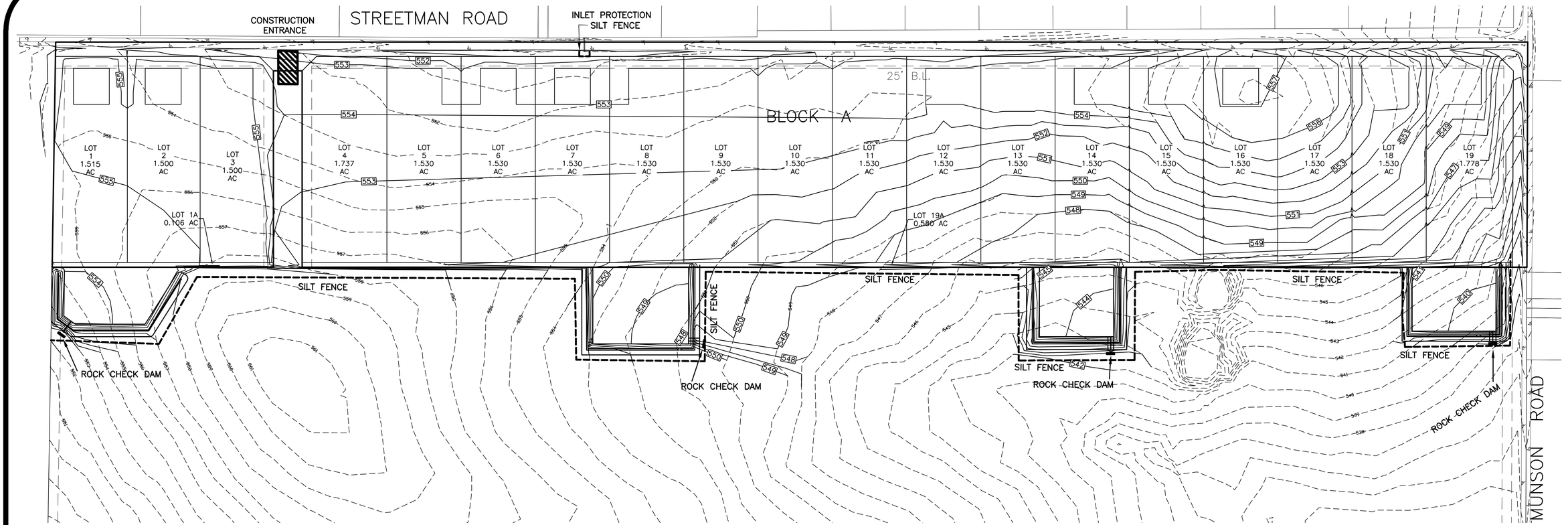
DETENTION POND CALCULATIONS

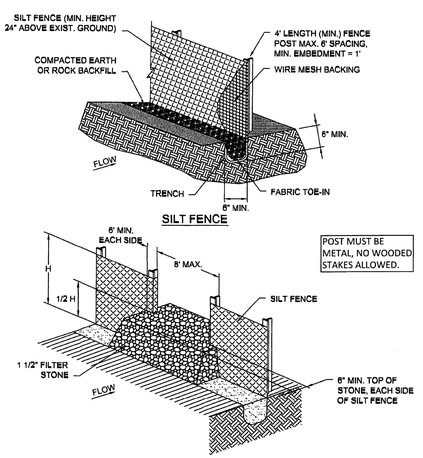
DETENTION PONDS 3 & 4

THE LANDON PHASE ONE

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 PHONE: (972) 742-4411 TBPELS REG NO. F-21608
LAVON, TEXAS 75166 TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON-1	JULY 28, 2021	1"=100'	CP





SILT FENCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.5 *
		DATE Mar. 2018 / STANDARD DRAWING NO. R-1020A

SILT FENCE GENERAL NOTES:

1. POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF ONE FOOT.

2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MECHANICAL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. WHERE FENCE CANNOT BE TRENCHED IN (e.g. PAVEMENT), WEIGHT FABRIC FLAP WITH ROCK ON UPHILL SIDE TO PREVENT FLOW FROM SEEPING UNDER FENCE.

3. THE TRENCH MUST BE A MINIMUM OF 6 INCHES DEEP AND 6 INCHES WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.

4. SILT FENCE SHOULD BE SECURELY FASTENED TO EACH SUPPORT POST OR TO WIRE BACKING, WHICH IN TURN IS ATTACHED TO THE FENCE POST. THERE SHALL BE A 3 FOOT OVERLAP, SECURELY FASTENED WHERE ENDS OF FABRIC MEET.

5. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP. REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.

6. SILT FENCE SHALL BE REMOVED WHEN FINAL STABILIZATION IS ACHIEVED OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED.

7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF HALF THE HEIGHT OF THE FENCE. THE SILT SHALL BE DISPOSED OF AT AN APPROVED SITE AND IN SUCH A MANNER AS TO NOT CONTRIBUTE TO ADDITIONAL SILTATION.

8. FILTER STONE SHALL BE WRAPPED IN FILTER FABRIC AND BURIED SIX (6") INCHES MINIMUM.

SILT FENCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.5 *
		DATE Mar. 2018 / STANDARD DRAWING NO. R-1020B

ROCK CHECK DAM GENERAL NOTES:

1. STONE SHALL BE WELL GRADED WITH SIZE RANGE FROM 1½ TO 3½ INCHES IN DIAMETER DEPENDING ON EXPECTED FLOWS.

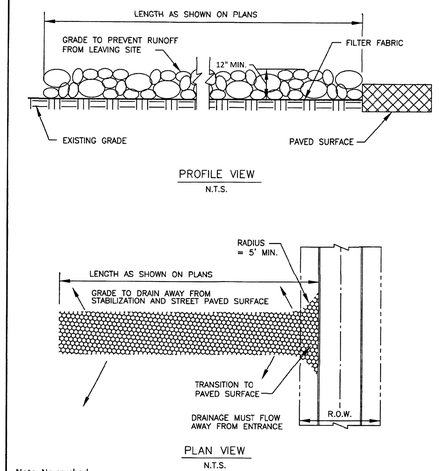
2. THE CHECK DAM SHALL BE INSPECTED AS SPECIFIED IN THE SWPPP AND SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED DUE TO SILT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.

3. WHEN SILT REACHES A DEPTH EQUAL TO ONE-THIRD OF THE HEIGHT OF THE CHECK DAM OR ONE FOOT, WHICHEVER IS LESS, THE SILT SHALL BE REMOVED AND DISPOSED OF PROPERLY.

4. WHEN THE SITE HAS ACHIEVED FINAL STABILIZATION OR ANOTHER EROSION OR SEDIMENT CONTROL DEVICE IS EMPLOYED, THE CHECK DAM AND ACCUMULATED SILT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

5. FILTER STONE SHALL BE WRAPPED IN APPROPRIATE SIZED WIRE MESH TO CONTAIN STONE AND BURIED SIX (6") INCHES MINIMUM.

ROCK CHECK DAM	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.9 *
		DATE Mar. 2018 / STANDARD DRAWING NO. R-1060B



Note: No crushed concrete or recycled concrete allowed.

STABILIZED CONSTRUCTION ENTRANCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.11 *
		DATE Mar. 2018 / STANDARD DRAWING NO. R-1070A

STABILIZED CONSTRUCTION ENTRANCE GENERAL NOTES:

1. STONE SHALL BE 4 TO 6 INCH DIAMETER COARSE AGGREGATE.

2. MINIMUM LENGTH SHALL BE 50 FEET AND WIDITH SHALL BE 20 FEET.

3. THE THICKNESS SHALL NOT BE LESS THAN 12 INCHES.

4. THE WIDTH SHALL BE NO LESS THAN THE FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS.

5. WHEN NECESSARY, VEHICLES SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO A PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WITH DRAINAGE FLOWING AWAY FROM BOTH THE STREET AND THE STABILIZED ENTRANCE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.

6. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PAVED SURFACES. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PAVED SURFACES MUST BE REMOVED IMMEDIATELY.

7. THE ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

8. PREVENT SHORTCUTTING OF THE FULL LENGTH OF THE CONSTRUCTION ENTRANCE BY INSTALLING BARRIERS AS NECESSARY.

9. INSPECTION SHALL BE AS SPECIFIED IN THE SWPPP.

10. NO CRUSHED OR RECYCLED CONCRETE ALLOWED.

STABILIZED CONSTRUCTION ENTRANCE	CITY OF ROCKWALL	STANDARD SPECIFICATION REFERENCE 202.11 *
		DATE Mar. 2018 / STANDARD DRAWING NO. R-1070B

6

GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 inch = 200 ft.

LEGEND
– CONSTRUCTION ENTRANCE
– SILT FENCE

ALL EARTHEN BERMS TO BE SEEDED AND EROSION BLANKETS INSTALLED AT ALL OUTFALLS.

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Henry D Niblo — 11/08/2021
HENRY G. NIBLO, PE — DATE

RECORD DRAWING

STATE OF TEXAS — HENRY GRADY NIBLO — 68739 — REGISTERED PROFESSIONAL ENGINEER

Henry D Niblo 11/8/2021

EROSION CONTROL PLAN

THE LANDON PHASE ONE

CARROLL CONSULTING GROUP, INC.
P.O. BOX 11 LAVON, TEXAS 75166 PHONE: (972) 742-4411
TBPELS REG NO. F-21608
TEXAS FIRM REGISTRATION NO.: 10007200

DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON-1	JULY 28, 2021	1"=200'	CP

GENERAL ITEMS

1. All construction shall conform to the requirements set forth in the City of Rockwall's Engineering Department's "Standards of Design and Construction" and the "Standard Specifications for Public Works Construction" by the North Texas Central Council of Governments, 5th edition amended by the City of Rockwall. The CONTRACTOR shall reference the latest City of Rockwall standard details provided in the Rockwall Engineering Departments "Standards of Design and Construction" manual for details not provided in these plans. The CONTRACTOR shall possess one set of the NCTCOG Standard Specifications and Details and the City of Rockwall's "Standards of Design and Construction" manual on the project site at all times
2. Where any conflicting notes, details or specifications occur in the plans the City of Rockwall General Construction Notes, Standards, Details and Specifications shall govern unless detail or specification is more strict.
3. The City of Rockwall Engineering Departments "Standards of Design and Construction" can be found online at: http://www.rockwall.com/engr.asp
4. All communication between the City and the CONTRACTOR shall be through the Engineering Construction Inspector and City Engineer or designated representative only. It is the responsibility of the CONTRACTOR to contact the appropriate department for inspections that do not fall under this approved engineering plan set.
5. Prior to construction, CONTRACTOR shall have in their possession all necessary permits, plans, licenses, etc.
6. The CONTRACTOR shall have at least one original stamped and signed set of approved engineering plans and specifications on-site and in their possession at all times. A stop work order will be issued if items are not on-site. Copies of the approved plans will not be substituted for the required original "approved plans to be on-site".
7. All material submittals, concrete batch designs and shop drawings required for City review and approval shall be submitted by the CONTRACTOR to the City sufficiently in advance of scheduled construction to allow no less than 10 business days for review and response by the City.
8. All site dimensions are referenced to the face of curb or edge of pavement unless otherwise noted.
9. The City requires ten (10%) percent-two (2) year maintenance bond for paving, paving improvements, water systems, wastewater systems, storm sewer systems including detention systems, and associated fixtures and structures which are located within the right-of-ways or defined easements. The two (2) year maintenance bond is to state "from date of City acceptance" as the starting time.
10. A review of the site shall be conducted at twenty (20) months into the two (2) year maintenance period. The design engineer or their designated representative and the CONTRACTOR shall be present to walk the site with the City of Rockwall Engineering Inspection personnel.

EROSION CONTROL & VEGETATION

1. The CONTRACTOR or developer shall be responsible, as the entity exercising operational control, for all permitting as required by the Environmental Protection Agency (EPA) and the Texas Commission on Environmental Quality (TCEQ). This includes, but is not limited to, preparation of the Storm Water Pollution Prevention Plan (SWPPP), the Construction Site Notice (CSN), the Notice of Intent (NOI), the Notice of Termination (NOT) and any Notice of Change (NOC) and is required to pay all associated fees
2. Erosion control devices as shown on the erosion control plan for the project shall be installed prior to the start of land disturbing activities.
3. All erosion control devices are to be installed in accordance with the approved plans, specifications and Storm Water Pollution Prevention Plan (SWPPP) for the project. Erosion control devices shall be placed and in working order prior to start of construction. Changes are to be reviewed and approved by the design engineer and the City of Rockwall prior to implementation.
4. If the Erosion Control Plans and Storm Water Pollution Prevention Plan (SWPPP) as approved cannot appropriately control erosion and off-site sedimentation from the project, the erosion control plan and/or the SWPPP is required to be revised and any changes reported to the Texas Commission on Environmental Quality (TCEQ), when applicable.
5. All erosion control devices shall be inspected weekly by the CONTRACTOR and after all major rain events, or more frequently as dictated in the project Storm Water Pollution Prevention Plan (SWPPP). CONTRACTOR shall provide copies of inspection's reports to the engineering inspection after each inspection.
6. The CONTRACTOR shall not dispose of waste and any materials into streams, waterways or floodplains. The CONTRACTOR shall secure all excavation at the end of each day and dispose of all excess materials.
7. CONTRACTOR shall take all available precautions to control dust. CONTRACTOR shall control dust by sprinkling water or other means as approved by the City Engineer.
8. CONTRACTOR shall establish grass and maintain the seeded area, including watering, until a "Permanent Stand of Grass" is obtained at which time the project will be accepted by the City. A "Stand of Grass" (not winter rye or weeds) shall consist of 75% to 80% coverage of all disturbed areas and a minimum of one-inch (1") in height as determined by the City. No bare spots will be allowed. Re-seeding will be required in all washed areas and areas that don't grow.
9. All City right-of-ways shall be sodded if disturbed. No artificial grass is allowed in any City right-of-way and/or easements.
10. All adjacent streets/alleys shall be kept clean at all times
11. CONTRACTOR shall keep construction site clean at all times, immediately contain all debris and trash, all debris and trash shall be removed at the end of each work day, and all vegetation on the construction site 10-inches or taller in height must be cut immediately.
12. Suspension of all construction activities for the project will be enforced by the City if any erosion control requirements are not meet. Work may commence after deficiency has been rectified.
13. During construction of the project, all soil stockpiles and borrow areas shall be stabilized or protected with sediment trapping measures. The CONTRACTOR 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.
14. Where construction vehicles access routes intersect paved or public roads/alleys, construction entrances shall be installed to minimize the transport of sediment by vehicular tracking onto paved surfaces. Where sediment is transferred onto paved or public surfaces, the surface shall be immediately cleaned. Sediment shall be removed from the surface by shoveling or sweeping and transported to a sediment disposal area. Pavement washing shall be allowed only after sediment is removed in this manner.
15. All drainage inlets shall be protected from siltation, ineffective or unmaintained protection devices shall be immediately replaced and the inlet and storm system cleaned. Flushing is not an acceptable method of cleaning.
16. During all dewatering operations, water shall be pumped into an approved filtering device prior to discharge into a receiving outlet.

TRAFFIC CONTROL

1. All new Detouring or Traffic Control Plans are required to be submitted to the City for review and approval a minimum of 21 calendar days prior to planned day of implementation.
2. When the normal function of the roadway is suspended through closure of any portion of the right-of-way, temporary construction work zone traffic control devices shall be installed to effectively guide the motoring public through the area. Consideration for road user safety, worker safety, and the efficiency of road user flow is an integral element of every traffic control zone.
3. All traffic control plans shall be prepared and submitted to the Engineering Department in accordance with the standards identified in Part VI of the most recent edition of the TMUTCD. Lane closures will not occur on roadways without an approval from the Rockwall Engineering Department and an approved traffic control plan. Traffic control plans shall be required on all roadways as determined by the City Engineer or the designated representative.
4. All traffic control plans must be prepared, signed, and sealed by an individual that is licensed as a professional engineer in the State of Texas. All traffic control plans and copies of work zone certification must be submitted for review and approval a minimum of three (3) weeks prior to the anticipated temporary traffic control.
5. The CONTRACTOR executing the traffic control plan shall notify all affected property owners two (2) weeks prior to any the closures in writing and verbally.
6. Any deviation from an approved traffic control plan must be reviewed by the City Engineer or the designated representative. If an approved traffic control plan is not adhered to, the CONTRACTOR will first receive a verbal warning and be required to correct the problem immediately. If the deviation is not corrected, all construction work will be suspended, the lane closure will be removed, and the roadway opened to traffic.
7. All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time at the end of the workday, all temporary traffic control devices that are no longer appropriate shall be removed or covered. The first violation of this provision will result in a verbal warning to the construction foreman. Subsequent violations will result in suspension of all work at the job site for a minimum of 48 hours. All contractors working on City funded projects will be charged one working day for each 24 hour closure.
8. Lane closures on any major or minor arterial will not be permitted between the hours of 6:00 am to 9:00 am and 3:30 pm to 7:00 pm. Where lane closures are needed in a school area, they will not be permitted during peak hours of 7:00 am – 9:00 am and 3:00 pm to 5:00 pm. Closures may be adjusted according to the actual start-finish times of the actual school with approval by the City Engineer. The first violation of this provision will result in a verbal warning to the construction foreman. Subsequent violations will result in suspension of all work at the job site for a minimum of 48 hours. All contractors working on City funded projects will be charged one working day for each 24 hour closure of a roadway whether they are working or not.
9. No traffic signs shall be taken down without permission from the City.
10. No street/roadway will be allowed to be fully closed.

UTILITY LINE LOCATES

1. It is the CONTRACTOR's responsibility to notify utility companies to arrange for utility locates at least 48 hours prior to beginning construction. The completeness and accuracy of the utility data shown on the plans is not guaranteed by the design engineer or the City. The CONTRACTOR is responsible for verifying the depth and location of existing underground utilities proper to excavating, trenching, or drilling and shall be required to take any precautionary measures to protect all lines shown and .or any other underground utilities not on record or not shown on the plans.
2. The CONTRACTOR shall be responsible for damages to utilities
3. CONTRACTOR shall adjust all City of Rockwall utilities to the final grades.
4. All utilities shall be placed underground.
5. CONTRACTOR shall be responsible for the protection of all existing main lines and service lines crossed or exposed by construction operations. Where existing mains or service lines are cut, broken or damaged, the CONTRACTOR shall immediately make repairs to or replace the entire service line with same type of original construction or better. The City of Rockwall can and will intervene to restore service if deemed necessary and charge the CONTRACTOR for labor, equipment, material and loss of water if repairs aren't made in a timely manner by the CONTRACTOR.
6. The City of Rockwall (City utilities) is not part of the Dig Tess or Texas one Call – 811 – line locate system. All City of Rockwall utility line locates are to be scheduled with the City of Rockwall Service Center. 972-771-7730. A 48-hour advance notice is required for all non-emergency line locates.
7. 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 opened at one time.
   b. Material used for backfilling trenches shall be properly compacted to 95% standard density in order to minimize erosion, settlement, and promote stabilization that the geotechnical engineer recommends.
   c. Applicable safety regulations shall be complied with.
11. This plan details pipes up to 5 feet from the building. Refer to the building plans for building connections. CONTRACTOR shall supply and install pipe adapters as necessary.
12. All underground lines shall be installed, inspected, and approved prior to backfilling.
13. All concrete encasement shall have a minimum of 28 days compressive strength at 3,000 psi (min. 5.5 sack mix).

WATER LINE NOTES

1. The CONTRACTOR shall maintain existing water service at all times during construction.
2. Proposed water lines shall be AWWA C900-16 PVC Pipe (blue in color) for all sizes, DR 14 (PC 305) for pipeline sizes 12-inch and smaller, and DR 18 (PC 235) for 14-inch and larger water pipelines unless otherwise shown on water plan and profiles sheets. Proposed water lines shall be constructed with minimum cover of 4 feet for 6-inch through 8-inch, 5 feet for 12-inch through 18-inch and 6 feet for 20-inch and larger.
3. Proposed water line embedment shall be NCTCOG Class 'B-3' as amended by the City of Rockwall's engineering standards of design and construction manual.
4. CONTRACTOR shall coordinate the shutting down of all water lines with the City of Rockwall Engineering Inspector and Water Department. The City shall operate all water valves. Allow 5 business days from the date of notice to allow City personnel time to schedule a shut down. Two additional days are required for the CONTRACTOR to notify residents in writing of the shut down after the impacted area has been identified. Water shut downs impacting businesses during their normal operation hours is not allowed. CONTRACTOR is required to coordinate with the Rockwall Fire Department regarding any fire watch requirements as well as any costs incurred when the loss of fire protection to a structure occurs.
5. CONTRACTOR shall furnish and install gaskets on water lines between all dissimilar metals and at valves (both existing and proposed).
6. All fire hydrants and valves removed and salvaged shall be returned to the City of Rockwall Municipal Service Center.
7. Blue EMS pads shall be installed at every change in direction, valve, curb stop and service tap on the proposed water line and every 250'.
8. All water valve hardware and valve extensions, bolts, nuts and washers shall be 316 stainless steel.
9. All fire hydrants bolts, nuts and washers that are buried shall be 316 stainless steel.
10. Abandoned water lines to remain in place shall be cut and plugged and all void spaces within the abandoned line shall be filled with grout, flowable fill or an expandable permanent foam product. Valves to be abandoned in place shall have any extensions and the valve box removed and shall be capped in concrete.
11. All fire hydrants will have a minimum of 5 feet of clearance around the appurtenance including but not limited to parking spaces and landscaping.
12. All joints are to be megalug joints with thrust blocking.
13. Water and sewer mains shall be kept 10 feet apart (parallel) or when crossing 2 feet vertical clearance.
14. CONTRACTOR shall maintain a minimum of 4 feet of cover on all water lines.
15. All domestic and irrigation services are required to have a testable backflow device with a double check valve installed per the City of Rockwall regulations at the property line and shown on plans.

WASTEWATER LINE NOTES

1. The CONTRACTOR shall maintain existing wastewater service at all times during construction.
2. Wastewater line for 4-inch through 15-inch shall be Green PVC – SDR 35 (ASTM D3034) [less 10 ft cover] and SDR 26 (ASTM D3034) [10 ft or more cover]. For 18-inch and lager wastewater line shall be Green PVC – PS 46 (ASTM F679) [less 10 ft cover] and PS 115 (ASTM F679) [10 ft or more cover]. No services will be allowed on a sanitary sewer line deeper than 10 feet.
3. Proposed wastewater line embedment shall be NCTCOG Class 'H' as amended by the City of Rockwall's public works standard design and construction manual.
4. Green EMS pads shall be installed at every 250', manhole, clean out and service lateral on proposed wastewater lines.
5. CONTRACTOR shall CCTV all existing wastewater lines that are to be abandoned to ensure that all laterals are accounted for and transferred to proposed wastewater lines prior to abandonment.
6. All abandoned wastewater and force main lines shall be cut and plugged and all void spaces within the abandoned line shall be filled with grout, flowable fill or an expandable permanent foam product.
7. Existing manholes and cleanouts not specifically called to be relocated shall be adjusted to match final grades.
8. All wastewater pipes and public services shall be inspected by photographic means (television and DVD) prior to final acceptance and after franchise utilities are installed. The CONTRACTOR shall furnish a DVD to the Engineering Construction Inspector for review. Pipes shall be cleaned prior to TV inspection of the pipes. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the CONTRACTOR at the CONTRACTOR's expense. A television survey will be performed as part of the final testing in the twentieth (20^{th}) month of the maintenance period.
9. All manholes (public or private) shall be fitted with inflow prevention. The inflow prevention shall conform to the measures called out in standard detail R-5031.
10. All new or existing manholes being modified shall have corrosion protection being Raven Liner 405 epoxy coating, ConShield, or approved equal.. Consheild must have terracotta color dye mixed in the precast and cast-in-place concrete. Where connections to existing manholes are made the CONTRACTOR shall rehab manhole as necessary and install a 125 mil thick coating of Raven Liner 405 or approved equal.
11. All new or existing manholes that are to be placed in pavement shall be fitted with a sealed (gasketed) rim and cover to prevent inflow.
12. If an existing wastewater main or trunk line is called out to be replaced in place a wastewater bypassing pump plan shall be required and submitted to the Engineering Construction Inspector and City Engineer for approval prior to implementation. Bypass pump shall be fitted with an auto dialer and conform to the City's Noise Ordinance. Plan shall be to the City sufficiently in advance of scheduled construction to allow no less than 10 business days for review and response by the City.
13. CONTRACTOR shall maintain a minimum of 4 feet of cover on all wastewater lines.

GENERAL CONSTRUCTION NOTES
Sheet 1 of 2
October 2020

CITY OF ROCKWALL
ENGINEERING DEPARTMENT

385 S. Goliad
Rockwall, Texas 75087

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DEMOLITION, REMOVAL, DISPOSAL AND EXCAVATION NOTES

1. All pavements to be removed and replaced shall be saw cut to full depth along neat squared lines shown in the plans.
2. Proposed concrete pavement shall be constructed with longitudinal butt construction joints at all connections to existing concrete pavement.
3. All public concrete pavement to be removed and replaced shall be full panel replacement, 1-inch thicker and on top of 6-inch thick compacted flexbase.
4. No excess excavated material shall be deposited in low areas or along natural drainage ways without written permission from the affected property owner and the City of Rockwall. No excess excavation shall be deposited in the City Limits without a permit from the City of Rockwall. If the CONTRACTOR places excess materials in these areas without written permission, the CONTRACTOR will be responsible for all damages resulting from such fill and shall remove the material at their own cost.

PAVING AND GRADING

1. All detention systems are to be installed and verified for design compliance along with the associated storm sewer and outflow structures, prior to the start of any paving operations (including building foundations). Erosion protection shall be placed at the pond outflow structures, silt fence along the perimeter of the pond along with any of the associated erosion BMPs noted on the erosion control plan, and the sides and bottom of the detention system shall have either sod or anchored seeded curlex installed prior to any concrete placement.
2. All paving roadway, driveways, fire lanes, drive-isles, parking, dumpster pads, etc. sections shall have a minimum thickness, strength, reinforcement, joint type, joint spacing and subgrade treatment shall at a minimum conform to the City standards of Design and Construction and table below.

Street/Pavement Type	Minimum Thickness (inches)	Strength 28-Day (psi)	Minimum Cement (sacks / CY)		Steel Reinforcement	
			Machine placed	Hand Placed	Bar #	Spacing (O.C.E.W.)
Arterial	10”	3,600	6.0	6.5	#4 bars	18”
Collector	8”	3,600	6.0	6.5	#4 bars	18”
Residential	6”	3,600	6.0	6.5	#3 bars	24”
Alley	7”-5”-7”	3,600	6.0	6.5	#3 bars	24”
Fire Lane	6”	3,600	6.0	6.5	#3 bars	24”
Driveways	6”	3,600	6.0	6.5	#3 bars	24”
Barrier Free Ramps	6”	3,600	N/A	6.5	#3 bars	24”
Sidewalks	4”	3,000	N/A	5.5	#3 bars	24”
Parking Lot/Drive Aisles	5”	3,000	5.0	5.5	#3 bars	24”
Dumpster Pads	7”	3,600	6.0	6.5	#3 bars	24”

3. Reinforcing steel shall be tied (100%). Reinforcing steel shall be set on plastic chairs. Bar laps shall be minimum 30 diameters. Sawed transverse dummy joints shall be spaced every 15 feet or 1.25 time longitudinal butt joint spacing whichever is less. Sawing shall occur within 5 to 12 hours after the pour, including sealing. Otherwise, the section shall be removed and longitudinal butt joint constructed.
4. No sand shall be allowed under any paving.
5. All concrete mix design shall be submitted to the City for review and approval prior to placement.
6. Fly ash may be used in concrete pavement locations provided that the maximum cement reduction does not exceed 20% by weight per C.Y. of concrete. The fly ash replacement shall be 1.25 lbs. per 1.0 lb. cement reduction.
7. All curb and gutter shall be integral (monolithic) with the pavement.
8. All fill shall be compacted by sheep's foot roller to a minimum 95% standard proctor. Maximum loose lift for compaction shall be 8 inches. All lifts shall be tested for density by an independent laboratory. All laboratory compaction reports shall be submitted to the City Engineering Construction Inspector once results are received. All reports will be required prior to final acceptance.
9. All concrete compression tests and soil compaction/density tests are required to be submitted to the City’s Engineering Inspector immediately upon results.
10. All proposed sidewalks shall include barrier free ramps at intersecting streets, alleys, etc. Barrier free ramps (truncated dome plate in Colonial or brick red color) shall meet current City and ADA requirements and be approved by the Texas Department of Licensing and Regulation (TDLR).
11. All public sidewalks shall be doweled into pavement where it abuts curbs and driveways. Expansion joint material shall be used at these locations.
12. All connection of proposed concrete pavement to existing concrete pavement shall include a longitudinal butt joint as the load transfer device. All longitudinal butt joints shall be clean, straight and smooth (not jagged in appearance)
13. Cracks formed in concrete pavement shall be repaired or removed by the CONTRACTOR at the City's discretion. CONTRACTOR shall replace existing concrete curbs, sidewalk, paving, a gutters as indicated on the plans and as necessary to connect to the existing infrastructure, including any damage caused by the CONTRACTOR.
14. All residential lots will require individual grading plans submitted during the building permit process that correspond with the engineered grading and drainage area plans.
15. Approval of this plan is not an authorization to grade adjacent properties when the plans or field conditions warrant off-site grading. Written permission must be obtained and signed from the affected property owner(s) and temporary construction easements may be required. The written permission shall be provided to the City as verification of approval by the adjacent property owner(s). Violation of this requirement will result in suspension of all work at the job site until issue has been rectified.
16. All cut or fill slopes of non-paved areas shall be a maximum of 4:1 and minimum of 1%.
17. CONTRACTOR agrees to repair any damage to property and the public right-of-way in accordance with the City Standards of Design and Construction.
18. CONTRACTOR shall protect all monuments, iron pins/rods, and property corners during construction.
19. CONTRACTOR shall ensure positive drainage so that runoff will drain by gravity flow to new or existing drainage inlets or sheet flow per these approved plans.

DRAINAGE / STORM SEWER NOTES

1. The CONTRACTOR shall maintain drainage at all times during construction. Ponding of water in streets, drives, trenches, etc. will not be allowed. Existing drainage ways shall not be blocked or removed unless explicitly stated in the plans or written approval is given by the City.
2. All structural concrete shall be 4200 psi compressive strength at 28 days minimum 7.0 sack mix, air entrained, unless noted otherwise. Fly ash shall not be allowed in any structural concrete.
3. Proposed storm sewer embedment shall be NCTCOG Class 'B' as amended by the City of Rockwall's Engineering Department Standards of Design and Construction Manual.
4. All public storm pipe shall be a minimum of 18-inch reinforced concrete pipe (RCP), Class III, unless otherwise noted.
5. All storm pipe entering structures shall be grouted to assure connection at the structure is watertight.
6. All storm structures shall have a smooth uniform poured mortar invert from invert in to invert out.
7. All storm sewer manholes in paved areas shall be flush with the paving grade, and shall have traffic bearing ring and covers.
8. All storm sewer pipes and laterals shall be inspected by photographic means (television and DVD) prior to final acceptance and after franchise utilities are installed. The CONTRACTOR shall furnish a DVD to the Engineering Construction Inspector for review. Pipes shall be cleaned prior to TV inspection of the pipes. Any sags, open joints, cracked pipes, etc. shall be repaired or removed by the CONTRACTOR at the CONTRACTOR’s expense. A television survey will be performed as part of the final testing in the twentieth (20^{th}) month of the maintenance period.

RETAINING WALLS

1. All retaining walls, regardless of height, will be reviewed and approved by the City Engineering Department
2. All retaining walls (including foundation stem walls), regardless of height, will be constructed of rock/stone/brick or rock/stone/brick faced. No smooth concrete walls are allowed. Wall materials shall be the same for all walls on the project.
3. All portions, including footings, tie-backs, and drainage backfill, of the wall shall be on-site and not encroach into any public easements or right-of-way. The entire wall shall be in one lot and shall not be installed along a lot line.
4. All walls 3 feet and taller will be designed and signed/sealed by a registered professional engineer in the State of Texas. The wall design engineer is required to inspect the wall construction and supply a signed/sealed letter of wall construction compliance to the City of Rockwall along with wall as-builts prior to City Engineering acceptance.
5. No walls are allowed in detention easements. A variance to allow retaining walls in a detention easement will require approval by the Planning and Zoning Commission with appeals being heard by the City Council.

FINAL ACCEPTANCE AND RECORD DRWINGS/AS-BUILTS

1. Final Acceptance shall occur when all the items on the Checklist for Final Acceptance have been completed and signed-off by the City. An example of the checklist for final acceptance has been included in the Appendix of the Standards of Design and Construction. Items on the checklist for final acceptance will vary per project and additional items not shown on the check list may be required.
2. After improvements have been constructed, the developer shall be responsible for providing to the City “As Built” or “Record Drawings”. The Design Engineer shall furnish all digital files of the project formatted in Auto Cad 14, or 2000 format or newer and Adobe Acrobat (.pdf) format with a CD-ROM disk or flash drive. The disk or drive shall include a full set of plans along with any landscaping, wall plans, and details sheets.
3. Submit 1-set of printed drawings of the “Record Drawings” containing copies of all sheets to the Engineering Construction Inspector for the project. The printed sheets will be reviewed by the inspector PRIOR to producing the “Record Drawing” digital files on disk or flash drive. This will allow any revisions to be addressed prior to producing the digital files.
4. Record Drawing Disk drawings shall have the Design Engineers seal, signature and must be stamped and dated as “Record Drawings” or “As Built Drawings” on all sheets.
5. The City of Rockwall will not accept any Record Drawing disk drawings which include a disclaimer. A disclaimer shall not directly or indirectly state or indicate that the design engineer or the design engineer’s surveyor/surveyors did not verify grades after construction, or that the Record Drawings were based solely on information provided by the construction contractor/contractors. Any Record Drawings which include like or similar disclaimer verbiage will not be accepted by the City of Rockwall.
6. Example of Acceptable Disclaimer: “To the best of our knowledge ABC Engineering, Inc., hereby states that this plan is As-Built. This information provided is based on surveying at the site and information provided by the contractor.”

GENERAL CONSTRUCTION NOTES
Sheet 2 of 2
October 2020

CITY OF ROCKWALL
ENGINEERING DEPARTMENT

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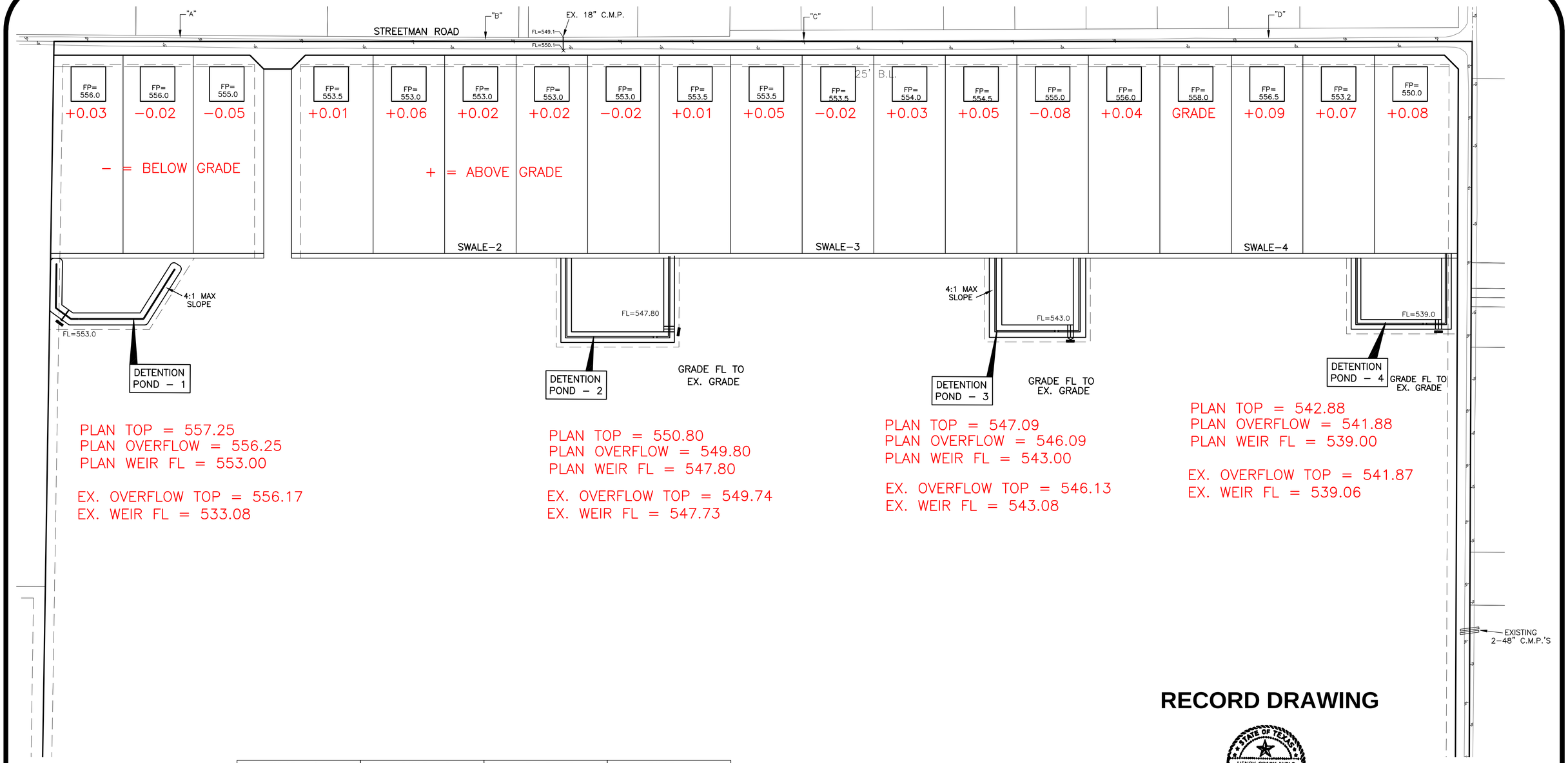

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PLAN WEIR FL = 553.00

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EX. WEIR FL = 533.08

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PLAN TOP = 542.88
PLAN OVERFLOW = 541.88
PLAN WEIR FL = 539.00

EX. OVERFLOW TOP = 541.87
EX. WEIR FL = 539.06

RECORD DRAWING

HENRY GRADY NIBLO 68739 REGISTERED PROFESSIONAL ENGINEER STATE OF TEXAS

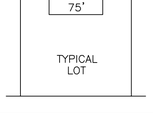
Henry G Niblo 11/8/2021

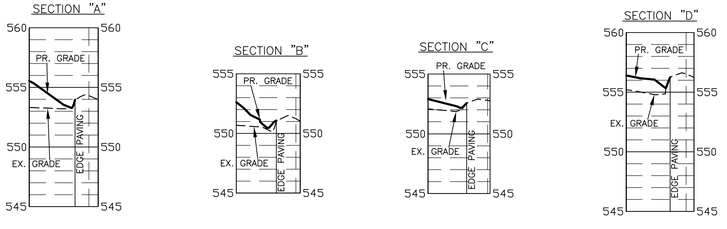
GRADE CHECKS ON LOT PADS AND DETENTION PONDS (2)

SWALE − 1	SWALE − 2	SWALE − 3	SWALE − 4
MAX D =1.50'	MAX D =1.50'	MAX D =1.50'	MAX D =1.50'
W, H, 4:1, 4:1, H 100	W, H, 4:1, 4:1, H 100	W, H, 4:1, 4:1, H 100	W, H, 4:1, 4:1, H 100
Q 100 = 10.14 CFS	Q 100 = 33.17 CFS	Q 100 = 32.34 CFS	Q 100 = 23.32 CFS
V = 3.51 FPS	V = 4.76 FPS	V = 4.71 FPS	V = 4.33 FPS
H 100 = 0.85 FT	H 100 = 1.32 FT	H 100 = 1.31 FT	H 100 = 1.16 FT
W = 6.80 FT	W = 10.56 FT	W = 10.48 FT	W = 9.280 FT
S = 0.0100 FT/FT	S = 0.0100 FT/FT	S = 0.0100 FT/FT	S = 0.0100 FT/FT

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 inch = 100 ft.

LEGEND
— PROPOSED CONTOUR
— EXISTING CONTOUR
601 — PROPOSED CONTOUR
601 — EXISTING CONTOUR
FP — FINISH PAD





GRADING & DRAINAGE PLAN			
THE LANDON PHASE ONE			
CARROLL CONSULTING GROUP, INC. P.O. BOX 11 PHONE: (972) 742−4411 TBPELS REG NO. F−21608 LAVON, TEXAS 75166 TEXAS FIRM REGISTRATION NO.: 10007200			
DWG:	DATE	SCALE:	DRAWN BY:
THE LANDON−1	JULY 28, 2021	1"=100'	CP