

GRAPHIC SCALE: 1"=30ft

647.37 1000.0000 1000.0000 1515.8000 1000.0000

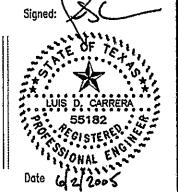
	PLAN I	LEG	END
	= EX. DRAINAGE FLOW	O FH	= EXISTING FIRE HYDRANT
	= NEW DRAINAGE FLOW	● MH	= EX. WASTEWATER MANHOLE
		→ FH	= NEW FIRE HYDRANT
	625 = NEW GRADING CONTOUR	OMH	= NEW WW MANHOLE
	= NEW PAVING CONTOUR		= NEW WASTEWATER MAIN
$\ \ $	620.0 + = EX. SPOT ELEVATION		- = NEW WATER MAIN
	PV 620.0 • NEW SPOT ELEVATION	₩	= EXISTING WATER VALVE
	* * * * = EXISTING FENCE	T	= NEW WATER VALVE
	= DRAINAGE DIVIDE		= NEW STORM SEWER PIPE
	== EROSION CONTROL BARRIER		= NEW STORM SEWER MH
	= EXISTING TREE(s)		= EX. CURB INLET
	- EVISITIAO ILITERIA)		= NEW STORM DRAIN INLE
<u> </u>	HP = HIGH POINT $TC = TOP OF CURB (EL)$ I $LP = LOW POINT$ $TW = TOP OF WALL (EL)$ T	CM = CONTROL) RF = IRON ROD RS = IRON ROD BM = TEMP. BEN CSP = CORRUGATE	FOUND FH = FIRE HYDRANT SET LS = LIGHT STANDARD ICHMARK PP = POWER POLE

3. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY AND MARK THE LOCATION OF ALL UNDERGROUND

BASIC HORIZONTAL AND VERTICAL CONTROL POINTS, ESTABLISHED BY THE ENGINEER ARE SHOWN ON ADDITIONAL SURVEY, LAYOUT, OR MEASUREMENT WORK SHALL BE PERFORMED BY THE CONTRACTOR AS

Dallas, Texas 75211

Tel: (214) 330–4771 Fax: (214) 330–2167



EXPIRATION DATE:

AFFIXATION DATE:

Group,

Job No.

00018

Plan No.

31 JAN 2005

Drawn By

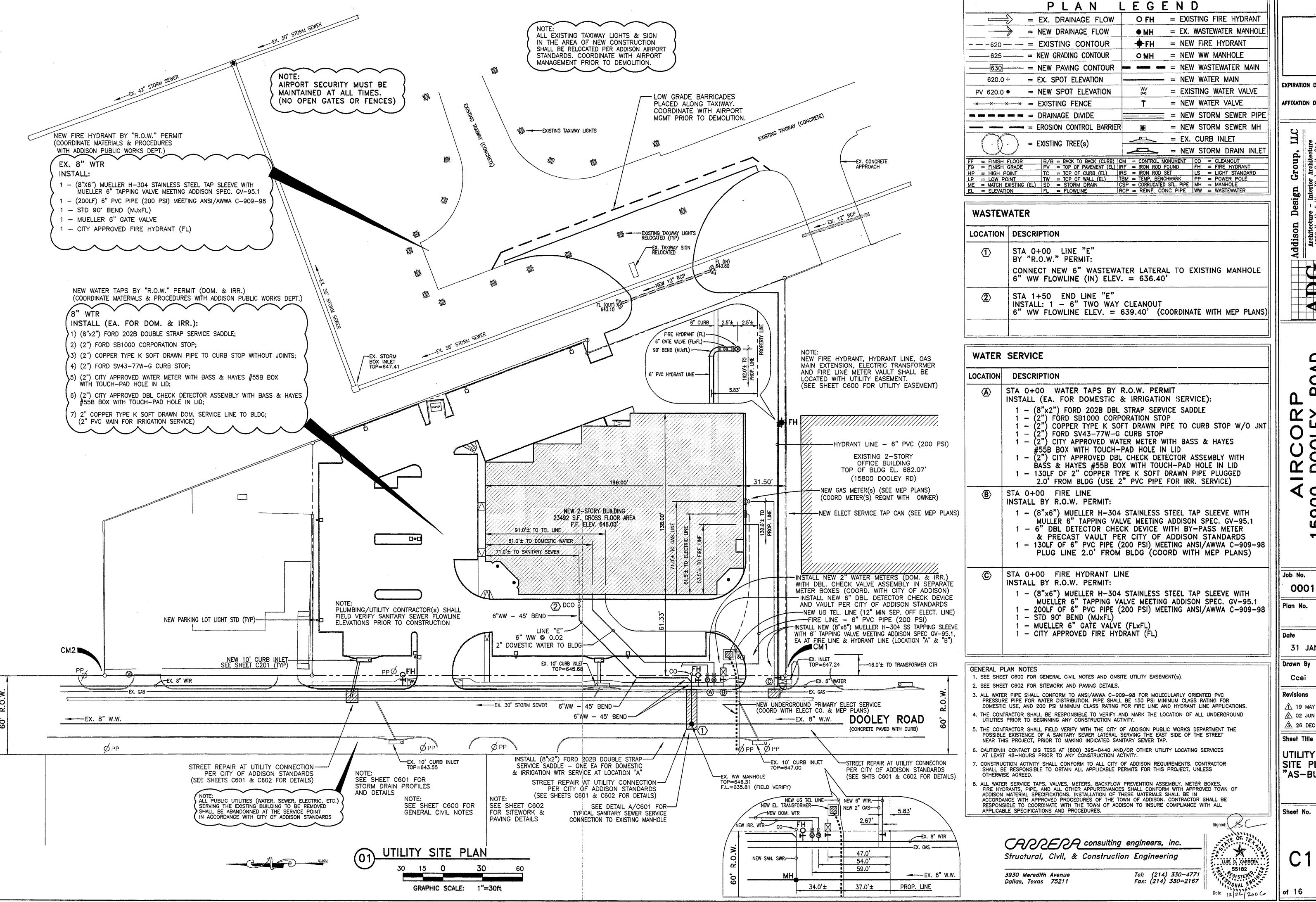
Revisions 19 MAY 2005

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Sheet Title

PROPOSED SITE PLAN

Sheet No.



EXPIRATION DATE: AFFIXATION DATE:

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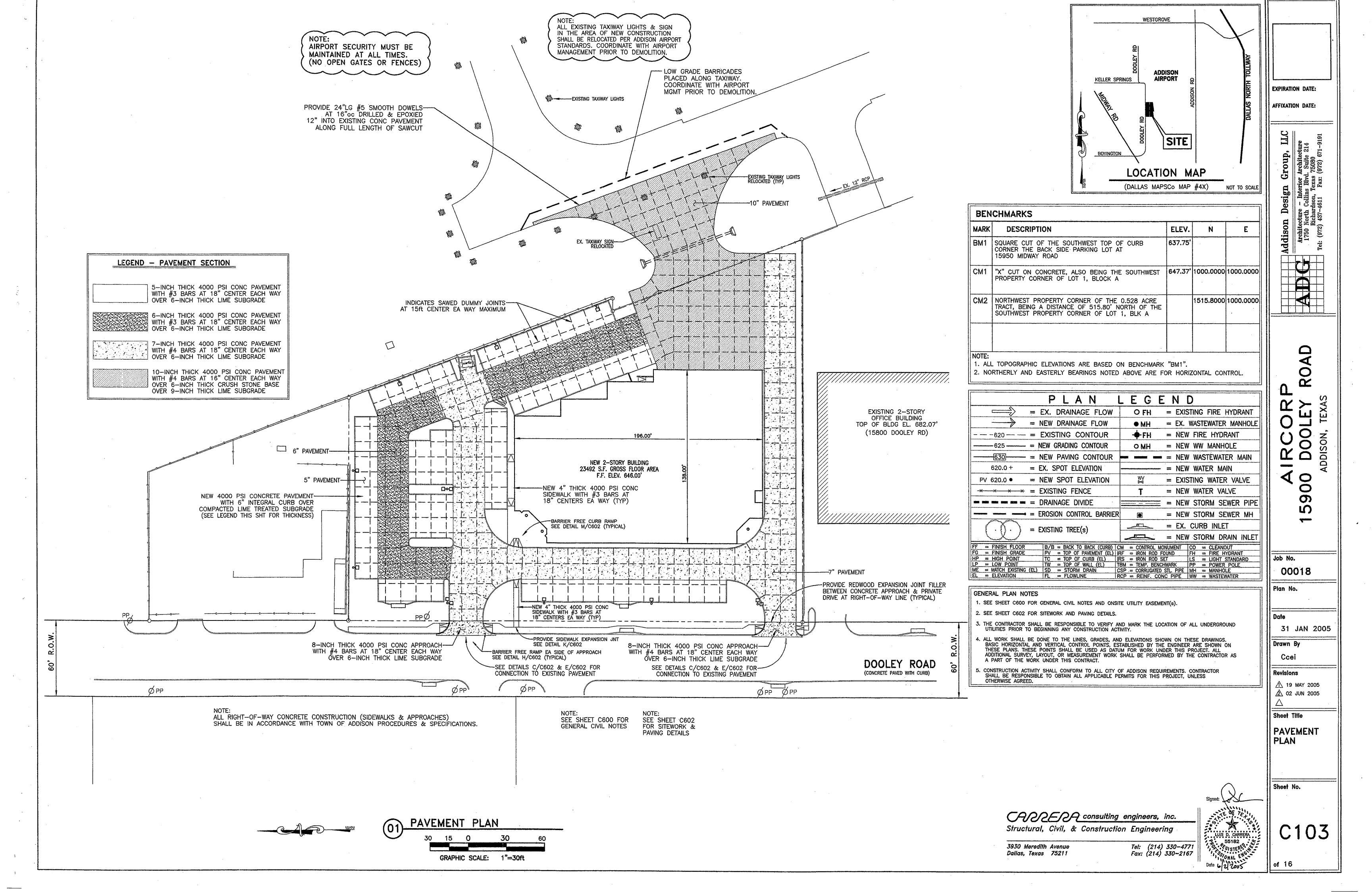
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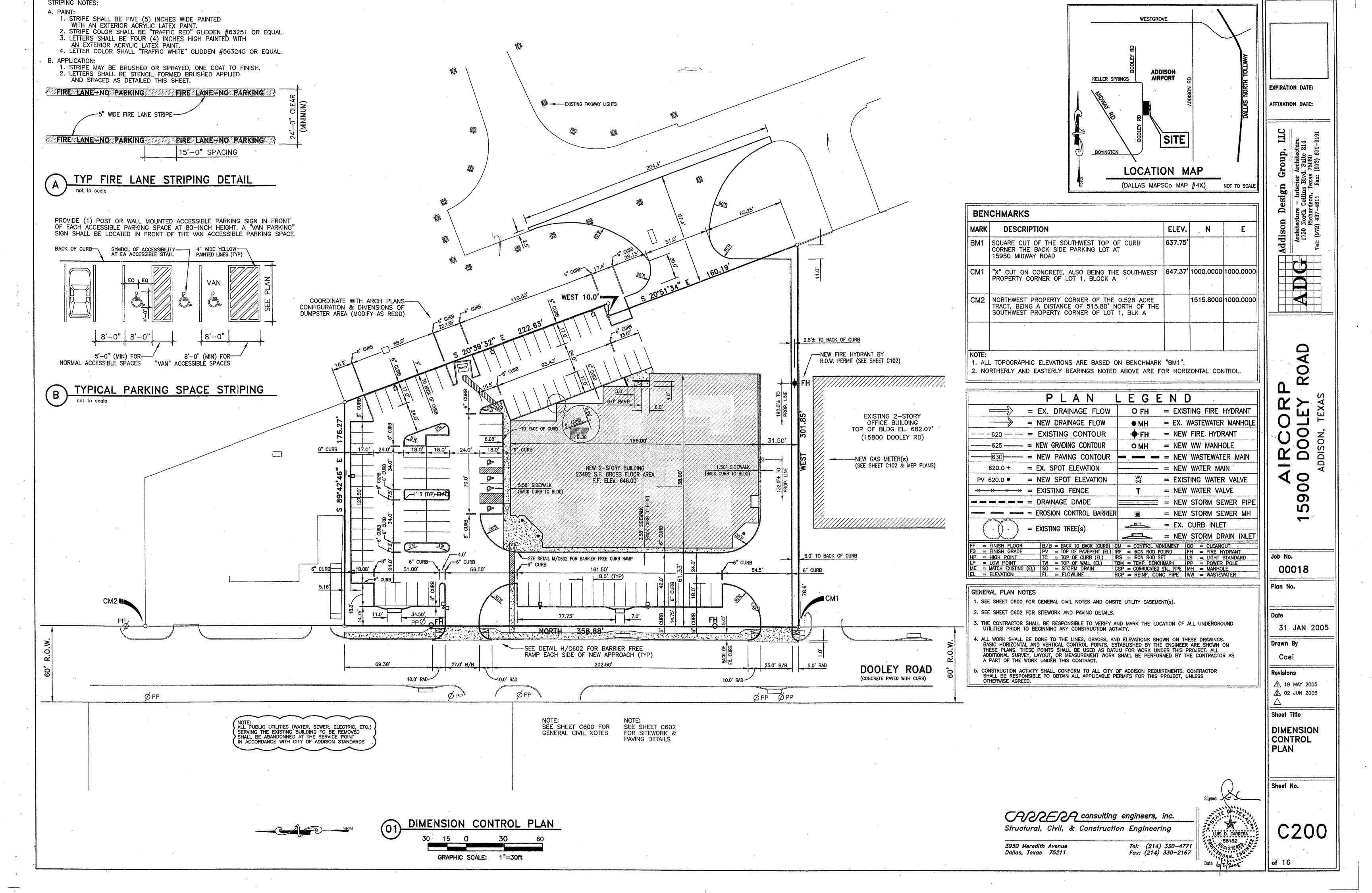
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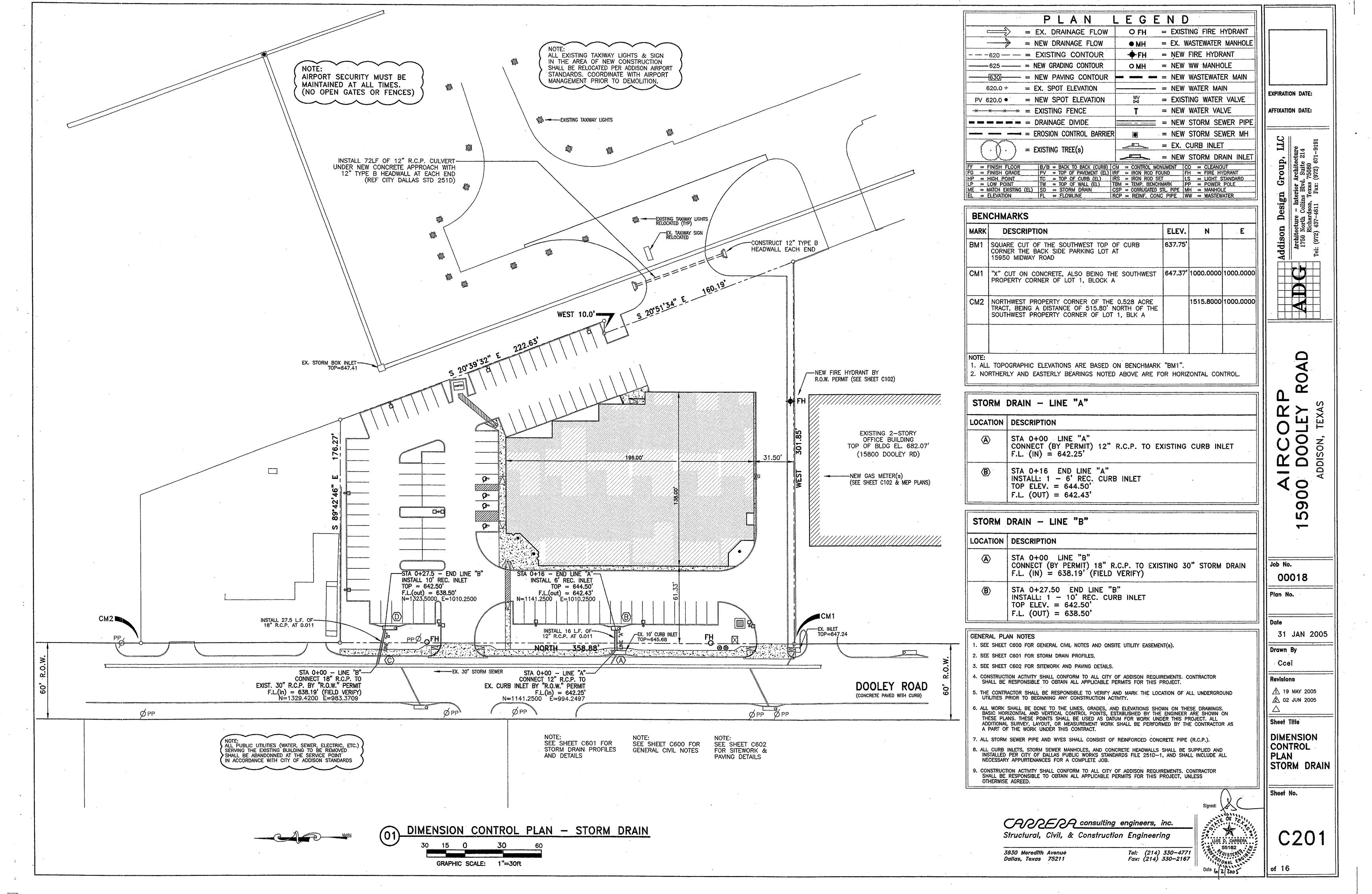
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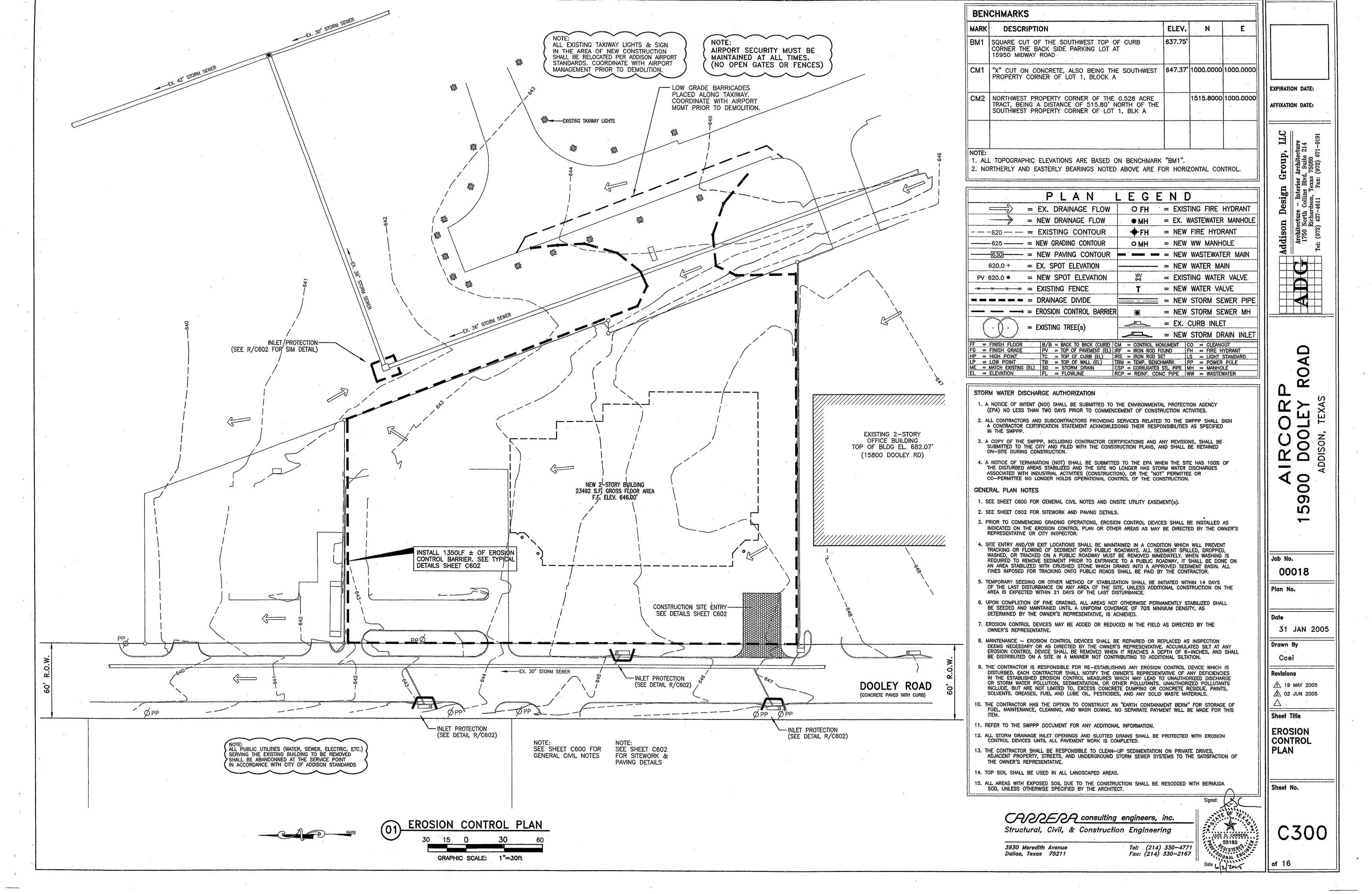
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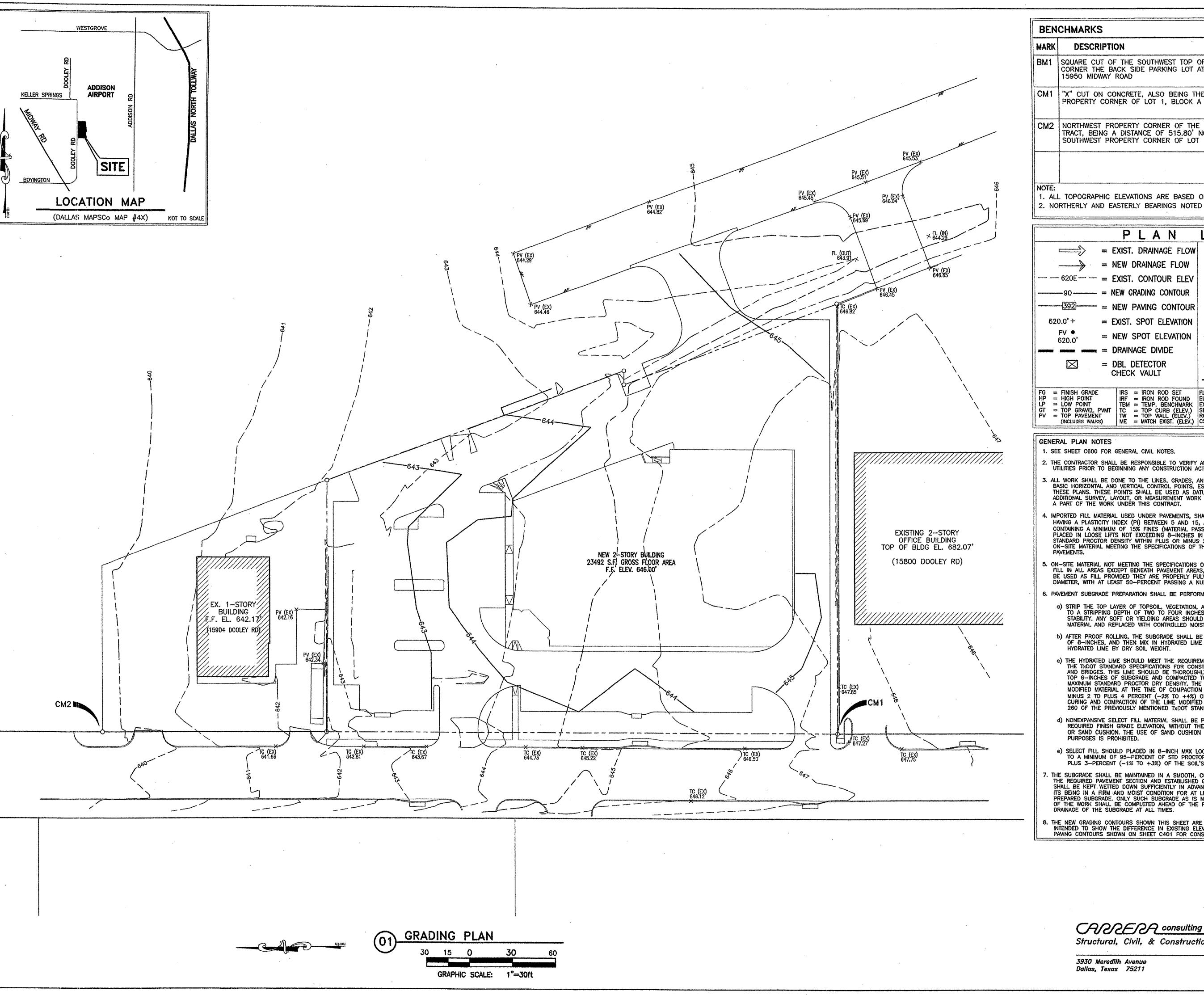
SITE PLAN "AS-BUILT"

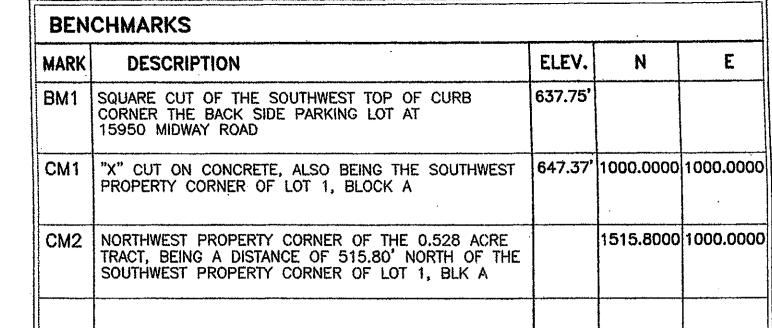












- 1. ALL TOPOGRAPHIC ELEVATIONS ARE BASED ON BENCHMARK "BM1".
- 2. NORTHERLY AND EASTERLY BEARINGS NOTED ABOVE ARE FOR HORIZONTAL CONTROL.

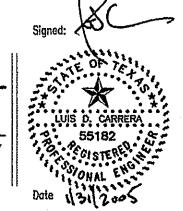
LEGEND

= EXIST. DRAINAGE FLOW	O FH = EXISTING FIRE HYDRANT
= NEW DRAINAGE FLOW	OMH = EX. WASTEWATER MANHOLE
620E = EXIST. CONTOUR ELEV	+FH = NEW FIRE HYDRANT
90 = NEW GRADING CONTOUR	● MH = NEW WW MANHOLE
= NEW PAVING CONTOUR	= NEW STORM DRAIN MH
620.0'+ = EXIST. SPOT ELEVATION	
PV • = NEW SPOT ELEVATION	DCO = TWO-WAY WW CLEANOUT
= DRAINAGE DIVIDE	₩ = WATER MAIN VALVE
	= TEE CONNECTION
CHECK VAULT	= STORM DRAIN INLET
HP = HIGH POINT IRF = IRON ROD FOUND IRF = TEMP. BENCHMARK	FL = FLOWLINE LS = LIGHT STANDARD EL = ELEVATION PP = POWER POLE EX = EXISTING CO = CLEANOUT SD = STORM DRAIN FH = FIRE HYDRANT
PV = TOP PAVEMENT TW = TOP WALL (ELEV.)	RCP = REINF. CONC PIPE MH = MANHOLE CSP = CORPLICATED STI PIPE WW = WASTEWATER

- 1. SEE SHEET C600 FOR GENERAL CIVIL NOTES.
- 2. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY AND MARK THE LOCATION OF ALL UNDERGROUND
- 3. ALL WORK SHALL BE DONE TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THESE DRAWINGS.
 BASIC HORIZONTAL AND VERTICAL CONTROL POINTS, ESTABLISHED BY THE ENGINEER ARE SHOWN ON THESE PLANS. THESE POINTS SHALL BE USED AS DATUM FOR WORK UNDER THIS PROJECT. ALL ADDITIONAL SURVEY, LAYOUT, OR MEASUREMENT WORK SHALL BE PERFORMED BY THE CONTRACTOR AS A PART OF THE WORK UNDER THIS CONTRACT.
- 4. IMPORTED FILL MATERIAL USED UNDER PAVEMENTS, SHALL CONSIST OF LOW PLASTICITY MATERIAL HAVING A PLASTICITY INDEX (PI) BETWEEN 5 AND 15, A LIQUID LIMIT LESS THAN 40, AND CONTAINING A MINIMUM OF 15% FINES (MATERIAL PASSING THE 200 SIEVE). ALL FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8-INCHES IN THICKNESS AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY WITHIN PLUS OR MINUS 2% OF OPTIMUM MOISTURE CONTENT. THE ON-SITE MATERIAL MEETING THE SPECIFICATIONS OF THIS GENERAL NOTE, MAY BE USED UNDER
- 5. ON-SITE MATERIAL NOT MEETING THE SPECIFICATIONS OF EARTHWORK NOTE 1, MAY BE USED AS FILL IN ALL AREAS EXCEPT BENEATH PAVEMENT AREAS, EXCLUDING SIDEWALKS. LIMESTONES MAY BE USED AS FILL PROVIDED THEY ARE PROPERLY PULVERIZED TO A MAXIMUM SIZE OF 4-INCHES IN DIAMETER, WITH AT LEAST 50-PERCENT PASSING A NUMBER 4 SIEVE.
- 6. PAVEMENT SUBGRADE PREPARATION SHALL BE PERFORMED AS FOLLOWS:
- o) STRIP THE TOP LAYER OF TOPSOIL, VEGETATION, AND HEAVY ROOT MATERIAL TO A STRIPPING DEPTH OF TWO TO FOUR INCHES AND THEN PROOF ROLL TO VERIFY STABILITY. ANY SOFT OR YIELDING AREAS SHOULD BE UNDERCUT TO FIRM MATERIAL AND REPLACED WITH CONTROLLED MOISTURE CONTENT AND DENSITY.
- b) AFTER PROOF ROLLING, THE SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 8-INCHES, AND THEN MIX IN HYDRATED LIME AT AN APPLICATION RATE OF 8% HYDRATED LIME BY DRY SOIL WEIGHT.
- c) THE HYDRATED LIME SHOULD MEET THE REQUIREMENTS OF ITEM 264 (TYPE A) IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS, STREETS AND BRIDGES. THIS LIME SHOULD BE THOROUGHLY MIXED AND BLENDED WITH THE TOP 6-INCHES OF SUBGRADE AND COMPACTED TO AT LEAST 95-PERCENT OF ITS MAXIMUM STANDARD PROCTOR DRY DENSITY. THE MOISTURE CONTENT OF THE LIME MODIFIED MATERIAL AT THE TIME OF COMPACTION SHOULD BE WITHIN A RANGE OF MINUS 2 TO PLUS 4 PERCENT (-2% TO +4%) OF ITS OPTIMUM VALUE. MIXING, CURING AND COMPACTION OF THE LIME MODIFIED LAYER IS DESCRIBED IN ITEM 260 OF THE PREVIOUSLY MENTIONED TXDOT STANDARD SPECIFICATIONS.
- d) NONEXPANSIVE SELECT FILL MATERIAL SHALL BE PROVIDED TO OBTAIN THE REQUIRED FINISH GRADE ELEVATION, WITHOUT THE USE OF LEVELING SAND OR SAND CUSHION. THE USE OF SAND CUSHION FOR SUBGRADE LEVELING PURPOSES IS PROHIBITED.
- e) SELECT FILL SHOULD PLACED IN 8-INCH MAX LOOSE LIFTS AND UNIFORMLY COMPACTED TO A MINIMUM OF 95-PERCENT OF STD PROCTOR DENSITY WITHIN MINUS 1 TO PLUS 3-PERCENT (-1% TO +3%) OF THE SOIL'S OPTIMUM MOISTURE CONTENT.
- 7. THE SUBGRADE SHALL BE MAINTAINED IN A SMOOTH, COMPACTED CONDITION, IN CONFORMITY WITH THE REQUIRED PAVEMENT SECTION AND ESTABLISHED GRADE, UNTIL THE PAVEMENT IS PLACED, & SHALL BE KEPT WETTED DOWN SUFFICIENTLY IN ADVANCE OF PLACING ANY PAVEMENT TO ENSURE ITS BEING IN A FIRM AND MOIST CONDITION FOR AT LEAST TWO INCHES BELOW SURFACE OF THE PREPARED SUBGRADE. ONLY SUCH SUBGRADE AS IS NECESSARY FOR THE SATISFACTORY PROSECUTION OF THE WORK SHALL BE COMPLETED AHEAD OF THE PLACEMENT OF PAVEMENT. PROVIDE COMPLETE DRAINAGE OF THE SUBGRADE AT ALL TIMES,
- THE NEW GRADING CONTOURS SHOWN THIS SHEET ARE "APPROXIMATE" TOP OF SUBGRADE AND ARE INTENDED TO SHOW THE DIFFERENCE IN EXISTING ELEVATIONS TO THE NEW ELEVATIONS. USE THE PAVING CONTOURS SHOWN ON SHEET C401 FOR CONSTRUCTION STAKING AND TO FINISH GRADE.

CASSESA consulting engineers, inc. Structural, Civil, & Construction Engineering

3930 Meredith Avenue Dallas, Texas 75211 Tel: (214) 330-4771 Fax: (214) 330-2167



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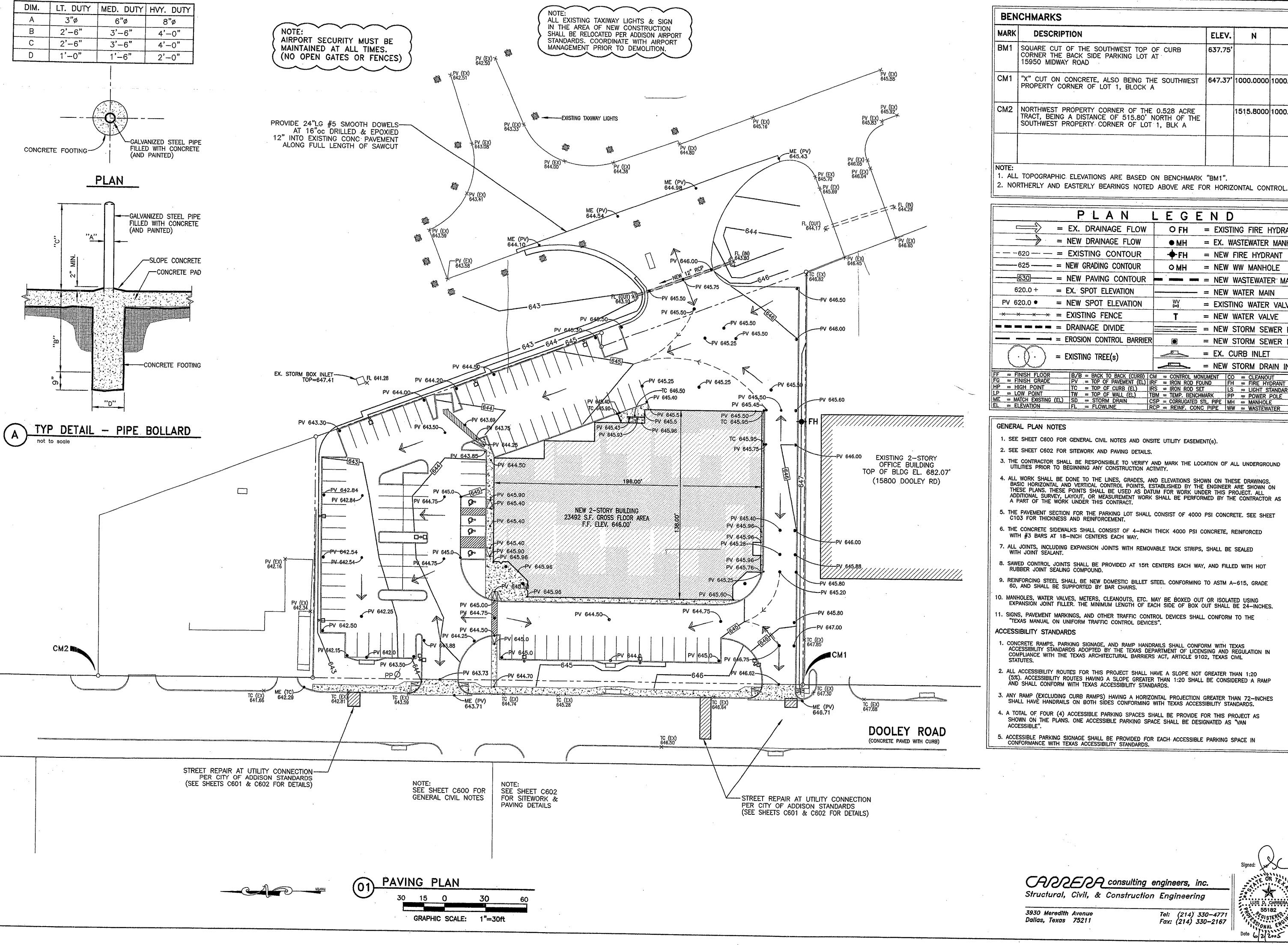
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Revisions

Sheet Title

GRADING PLAN

Sheet No.



DESCRIPTION	ELEV.	N	E
SQUARE CUT OF THE SOUTHWEST TOP OF CURB CORNER THE BACK SIDE PARKING LOT AT 15950 MIDWAY ROAD	637.75		
"X" CUT ON CONCRETE, ALSO BEING THE SOUTHWEST PROPERTY CORNER OF LOT 1, BLOCK A	647.37'	1000.0000	1000.0000
NORTHWEST PROPERTY CORNER OF THE 0.528 ACRE TRACT, BEING A DISTANCE OF 515.80' NORTH OF THE SOUTHWEST PROPERTY CORNER OF LOT 1, BLK A		1515.8000	1000.0000
	•		
	SQUARE CUT OF THE SOUTHWEST TOP OF CURB CORNER THE BACK SIDE PARKING LOT AT 15950 MIDWAY ROAD "X" CUT ON CONCRETE, ALSO BEING THE SOUTHWEST PROPERTY CORNER OF LOT 1, BLOCK A NORTHWEST PROPERTY CORNER OF THE 0.528 ACRE TRACT, BEING A DISTANCE OF 515.80' NORTH OF THE	SQUARE CUT OF THE SOUTHWEST TOP OF CURB CORNER THE BACK SIDE PARKING LOT AT 15950 MIDWAY ROAD "X" CUT ON CONCRETE, ALSO BEING THE SOUTHWEST PROPERTY CORNER OF LOT 1, BLOCK A NORTHWEST PROPERTY CORNER OF THE 0.528 ACRE TRACT, BEING A DISTANCE OF 515.80' NORTH OF THE	SQUARE CUT OF THE SOUTHWEST TOP OF CURB CORNER THE BACK SIDE PARKING LOT AT 15950 MIDWAY ROAD "X" CUT ON CONCRETE, ALSO BEING THE SOUTHWEST PROPERTY CORNER OF LOT 1, BLOCK A NORTHWEST PROPERTY CORNER OF THE 0.528 ACRE TRACT, BEING A DISTANCE OF 515.80' NORTH OF THE

PLAN LEGEND = EX. DRAINAGE FLOW OFH = EXISTING FIRE HYDRANT = NEW DRAINAGE FLOW ● MH = EX. WASTEWATER MANHOLE -620 - = EXISTING CONTOUR→FH = NEW FIRE HYDRANT -625 ---- = NEW GRADING CONTOUR = NEW WW MANHOLE -630 = NEW PAVING CONTOUR = NEW WASTEWATER MAIN = EX. SPOT ELEVATION - = NEW WATER MAIN = NEW SPOT ELEVATION = EXISTING WATER VALVE * * * * EXISTING FENCE = NEW WATER VALVE = = DRAINAGE DIVIDE == = NEW STORM SEWER PIPE = EROSION CONTROL BARRIER = NEW STORM SEWER MH = EX. CURB INLET = EXISTING TREE(s) = NEW STORM DRAIN INLET

- 1. SEE SHEET C600 FOR GENERAL CIVIL NOTES AND ONSITE UTILITY EASEMENT(s).
- 2. SEE SHEET C602 FOR SITEWORK AND PAVING DETAILS.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY AND MARK THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY.
- 4. ALL WORK SHALL BE DONE TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THESE DRAWINGS. BASIC HORIZONTAL AND VERTICAL CONTROL POINTS, ESTABLISHED BY THE ENGINEER ARE SHOWN ON THESE PLANS. THESE POINTS SHALL BE USED AS DATUM FOR WORK UNDER THIS PROJECT. ALL ADDITIONAL SURVEY, LAYOUT, OR MEASUREMENT WORK SHALL BE PERFORMED BY THE CONTRACTOR AS A PART OF THE WORK UNDER THIS CONTRACT.
- 5. THE PAVEMENT SECTION FOR THE PARKING LOT SHALL CONSIST OF 4000 PSI CONCRETE. SEE SHEET C103 FOR THICKNESS AND REINFORCEMENT.
- 6. THE CONCRETE SIDEWALKS SHALL CONSIST OF 4-INCH THICK 4000 PSI CONCRETE, REINFORCED WITH #3 BARS AT 18-INCH CENTERS EACH WAY.
- 7. ALL JOINTS, INCLUDING EXPANSION JOINTS WITH REMOVABLE TACK STRIPS, SHALL BE SEALED WITH JOINT SEALANT.
- 8. SAWED CONTROL JOINTS SHALL BE PROVIDED AT 15ft CENTERS EACH WAY, AND FILLED WITH HOT RUBBER JOINT SEALING COMPOUND.
- 9. REINFORCING STEEL SHALL BE NEW DOMESTIC BILLET STEEL CONFORMING TO ASTM A-615, GRADE 60, AND SHALL BE SUPPORTED BY BAR CHAIRS.
- 10. MANHOLES, WATER VALVES, METERS, CLEANOUTS, ETC. MAY BE BOXED OUT OR ISOLATED USING EXPANSION JOINT FILLER. THE MINIMUM LENGTH OF EACH SIDE OF BOX OUT SHALL BE 24-INCHES.
- 11. SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE
- "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".
- 1. CONCRETE RAMPS, PARKING SIGNAGE, AND RAMP HANDRAILS SHALL CONFORM WITH TEXAS ACCESSIBILITY STANDARDS ADOPTED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION IN COMPLIANCE WITH THE TEXAS ARCHITECTURAL BARRIERS ACT, ARTICLE 9102, TEXAS CIVIL
- 2. ALL ACCESSIBILITY ROUTES FOR THIS PROJECT SHALL HAVE A SLOPE NOT GREATER THAN 1:20 (5%). ACCESSIBILITY ROUTES HAVING A SLOPE GREATER THAN 1:20 SHALL BE CONSIDERED A RAMP AND SHALL CONFORM WITH TEXAS ACCESSIBILITY STANDARDS.
- 3. ANY RAMP (EXCLUDING CURB RAMPS) HAVING A HORIZONTAL PROJECTION GREATER THAN 72-INCHES SHALL HAVE HANDRAILS ON BOTH SIDES CONFORMING WITH TEXAS ACCESSIBILITY STANDARDS.
- 4. A TOTAL OF FOUR (4) ACCESSIBLE PARKING SPACES SHALL BE PROVIDE FOR THIS PROJECT AS SHOWN ON THE PLANS. ONE ACCESSIBLE PARKING SPACE SHALL BE DESIGNATED AS "VAN
- 5. ACCESSIBLE PARKING SIGNAGE SHALL BE PROVIDED FOR EACH ACCESSIBLE PARKING SPACE IN CONFORMANCE WITH TEXAS ACCESSIBILITY STANDARDS.

EXPIRATION DATE: AFFIXATION DATE:

Group,

Job No. 00018

Plan No.

31 JAN 2005

Drawn By

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19 MAY 2005 **2** 02 JUN 2005

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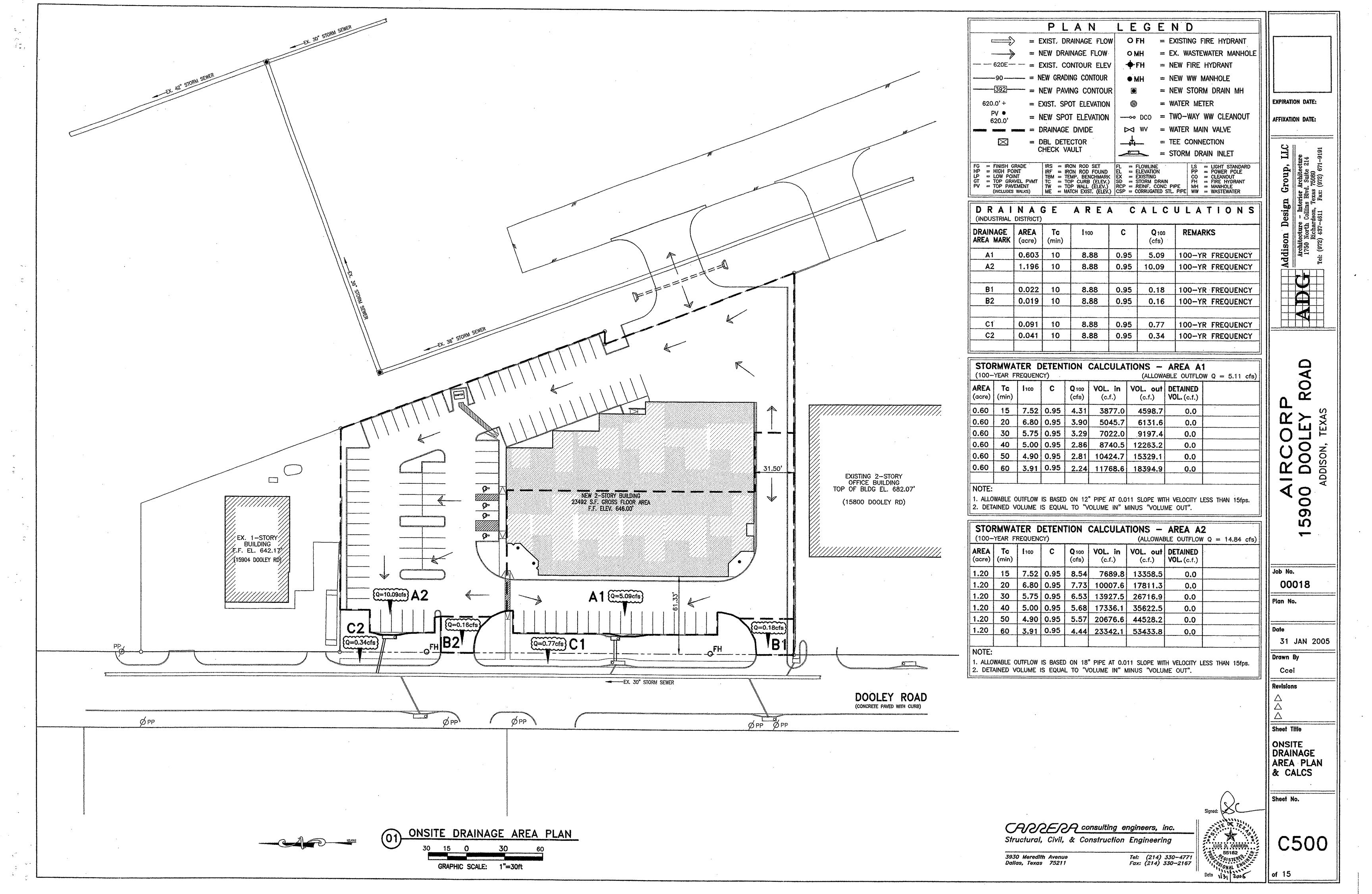
Sheet No.

PLAN

of 16

Tel: (214) 330-4771 Fax: (214) 330-2167

LUIS D. CARRERA 55182 GISTERES



GENERAL CIVIL NOTES

GENERAL NOTES

- 1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SUPPLY AND INSTALL ALL MATERIALS SO AS TO MEET OR EXCEED PROJECT SPECIFICATIONS AND CITY OF ADDISON CODES AND ORDINANCES. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN ALL APPLICABLE PERMITS FOR THIS PROJECT, UNLESS OTHERWISE AGREED.
- . EXISTING UTILITIES SHOWN ARE ASSUMED FROM INFORMATION AVAILABLE AND ARE NOT GUARANTEED TO BE COMPLETE AND ACCURATE. THE CONTRACTOR SHALL CALL FOR LOCATES AND MAKE THE NECESSARY ARRANGEMENTS AND COMPLY WITH REQUIREMENTS AND SPECIFICATIONS OF THE RESPECTIVE UTILITIES TO BE CUT, MOVED, RELOCATED AND/OR RECONNECTED TO AN EXISTING FACILITY.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY AND MARK THE LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING ANY CONSTRUCTION ACTIVITY.
- . ALL WORK SHALL BE DONE TO THE LINES, GRADES, AND ELEVATIONS SHOWN ON THESE DRAWINGS. BASIC HORIZONTAL AND VERTICAL CONTROL POINTS, ESTABLISHED BY THE ENGINEER ARE SHOWN ON THESE PLANS, THESE POINTS SHALL BE USED AS DATUM FOR WORK UNDER THIS PROJECT, ALL ADDITIONAL SURVEY, LAYOUT, OR MEASUREMENT WORK SHALL BE PERFORMED BY THE CONTRACTOR AS A PART OF THE WORK UNDER THIS CONTRACT.
- 5. THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITY LINES, PAVING, DRIVEWAYS, CURBS, WALKS, STEPS, RETAINING WALLS, FENCES, IRRIGATION SYSTEMS, AND OTHER SURFACE AND SUBSURFACE STRUCTURES, TOGETHER WITH ALL SOD AND SHRUBS AFFECTED BY HIS CONSTRUCTION OPERATIONS. RESTORATION OF ALL DAMAGED PROPERTY TO ITS ORIGINAL CONDITION SHALL BE PERFORMED BY AND AT THE EXPENSE OF THE CONTRACTOR.
- 6. CONTRACTOR(s) SHALL BE RESPONSIBLE FOR DAMAGE TO EXISTING SURVEY MONUMENTS, INCLUDING ANY STAKE USED GRADING WORK AND/OR SITE LAYOUT WORK, RESTORATION OF DAMAGED SURVEY MONUMENTS, INCLUDING RESTAKING, SHALL BE AT THE EXPENSE OF THE RESPONSIBLE CONTRACTOR(s).
- THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AT THE JOB SITE AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY OMISSIONS, DISCREPANCIES, OR DIMENSIONAL ERRORS PRIOR TO BEGINNING OR FABRICATING ANY WORK. OTHERWISE THE CORRECTIONS & ASSOCIATED COSTS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 8. ALL DEMOLITION AND EXCAVATED MATERIALS SHALL BE LEGALLY DISPOSED OFF THE SITE BY THE GENERAL CONTRACTOR.
- 9. IN THE EVENT THAT UNCHARTED UTILITIES OR OTHER UNFORESEEN FIELD CONDITIONS REQUIRE MODIFICATIONS OF THE DRAWINGS, THE CONTRACTOR SHALL OBTAIN THE APPROVAL OF THE OWNER'S REPRESENTATIVE BEFORE PROCEEDING WITH THE WORK.
- O. ALL CONCRETE PAVEMENT AND SIDEWALKS SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH AS SPECIFIED IN THESE PLANS. ACCESSIBILITY STANDARDS
- CONCRETE RAMPS, PARKING SIGNAGE, AND RAMP HANDRAILS SHALI CONFORM WITH TEXAS ACCESSIBILITY STANDARDS ADOPTED BY THE TEXAS DEPARTMENT OF LICENSING AND REGULATION IN COMPLIANCE WITH THE TEXAS ARCHITECTURAL BARRIERS ACT, ARTICLE 9102, TEXAS CIVIL STATUTES.
- 2. ALL ACCESSIBILITY ROUTES FOR THIS PROJECT SHALL HAVE A SLOPE NOT GREATER THAN 1:20 (5%). ACCESSIBILITY ROUTES HAVING A SLOPE GREATER THAN 1:20 SHALL BE CONSIDERED A RAMP AND SHALL CONFORM WITH TEXAS ACCESSIBILITY STANDARDS.
- . ANY RAMP (EXCLUDING CURB RAMPS) HAVING A HORIZONTAL PROJECTION GREATER THAN 72-INCHES SHALL HAVE HANDRAILS ON BOTH SIDES CONFORMING WITH TEXAS ACCESSIBILITY STANDARDS.
- . FOUR (4) TOTAL ACCESSIBLE PARKING SPACES SHALL BE PROVIDED FOR THIS PROJECT AS SHOWN ON THE PLANS. ONE ACCESSIBLE PARKING SPACE SHALL BE DESIGNATED AS "VAN ACCESSIBLE".
- . ACCESSIBLE PARKING SIGNAGE SHALL BE PROVIDED FOR EACH ACCESSIBLE PARKING SPACE IN CONFORMANCE WITH TEXAS ACCESSIBILITY STANDARDS.

- . A NOTICE OF INTENT (NOI) SHALL BE SUBMITTED TO THE ENVIRONMENTAL PROTECTION AGENCY (EPA) NO LESS THAN TWO DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
- 2. ALL CONTRACTORS AND SUBCONTRACTORS PROVIDING SERVICES RELATED TO THE SWPPP SHALL SIGN A CONTRACTOR CERTIFICATION STATEMENT ACKNOWLEDGING THEIR RESPONSIBILITIES AS SPECIFIED IN THE
- 3. A COPY OF THE SWPPP, INCLUDING CONTRACTOR CERTIFICATIONS AND ANY REVISIONS. SHALL BE SUBMITTED TO THE CITY AND FILED WITH THE CONSTRUCTION PLANS, AND SHALL BE RETAINED ON-SITE DURING
- . A NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO THE EPA WHEN THE SITE HAS 100% OF THE DISTURBED AREAS STABILIZED AND THE SITE NO LONGER HAS STORM WATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITIES (CONSTRUCTION), OR THE "NOT" PERMITTEE OR CO-PERMITTEE NO LONGER HOLDS OPERATIONAL CONTROL OF THE CONSTRUCTION.

EROSION CONTROL

- PRIOR TO COMMENCING GRADING OPERATIONS, EROSION CONTROL DEVICES SHALL BE INSTALLED AS INDICATED ON THE EROSION CONTROL PLAN OR OTHER AREAS AS MAY BE DIRECTED BY THE OWNER'S REPRESENTATIVE OR CITY INSPECTOR.
- 2. SITE ENTRY AND/OR EXIT LOCATIONS SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAYS. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ON A PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY WHEN WASHING IS REQUIRED TO REMOVE SEDIMENT PRIOR TO ENTRANCE TO A PUBLIC ROADWAY, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO A APPROVED SEDIMENT BASIN. ALL FINES IMPOSED FOR TRACKING ONTO PUBLIC ROADS SHALL BE PAID BY THE CONTRACTOR.
- . TEMPORARY SEEDING OR OTHER METHOD OF STABILIZATION SHALL BE INITIATED WITHIN 14 DAYS OF THE LAST DISTURBANCE ON ANY AREA OF THE SITE, UNLESS ADDITIONAL CONSTRUCTION ON THE AREA IS EXPECTED WITHIN 21 DAYS OF THE LAST DISTURBANCE.
- 4. UPON COMPLETION OF FINE GRADING, ALL AREAS NOT OTHERWISE PERMANENTLY STABILIZED SHALL BE SEEDED AND MAINTAINED UNTIL A UNIFORM COVERAGE OF 70% MINIMUM DENSITY, AS DETERMINED BY THE OWNER'S REPRESENTATIVE, IS ACHIEVED.
- 5. EROSION CONTROL DEVICES MAY BE ADDED OR REDUCED IN THE FIELD AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
- MAINTENANCE EROSION CONTROL DEVICES SHALL BE REPAIRED OR REPLACED AS INSPECTION DEEMS NECESSARY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. ACCUMULATED SILT AT ANY EROSION CONTROL DEVICE SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 6-INCHES, AND SHALL BE DISTRIBUTED ON A SITE IN A MANNER NOT CONTRIBUTING TO ADDITIONAL SILTATION.
- THE CONTRACTOR IS RESPONSIBLE FOR RE-ESTABLISHING ANY EROSION CONTROL DEVICE WHICH IS DISTURBED. EACH CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DEFICIENCIES IN THE ESTABLISHED EROSION CONTROL MEASURES WHICH MAY LEAD TO UNAUTHORIZED DISCHARGE OR STORM WATER POLLUTION, SEDIMENTATION, OR OTHER POLLUTANTS. UNAUTHORIZED POLLUTANTS INCLUDE, BUT AR NOT LIMITED TO, EXCESS CONCRETE DUMPING OR CONCRETE RESIDUE, PAINTS, SOLVENTS, GREASES, FUEL AND LUBE OIL, PESTICIDES, AND ANY SOLID WASTE MATERIALS.
- THE CONTRACTOR HAS THE OPTION TO CONSTRUCT AN "EARTH CONTAINMENT BERM" FOR STORAGE OF FUEL, MAINTENANCE, CLEANING & WASH DOWNS. NO SEPARATE PAYMENT WILL BE MADE FOR THIS ITEM.

- 9. REFER TO THE SWPPP DOCUMENT (IF APPLICABLE) FOR ANY ADDITIONAL INFORMATION.
- 10. ALL STORM DRAINAGE INLET OPENINGS AND SLOTTED DRAINS SHALL BE PROTECTED WITH EROSION CONTROL DEVICES UNTIL ALL PAVEMENT WORK IS COMPLETED.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO CLEAN-UP SEDIMENTATION ON PRIVATE DRIVES, ADJACENT PROPERTY, STREETS, AND UNDERGROUND STORM SEWER SYSTEMS TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
- 12. TOP SOIL SHALL BE USED IN ALL LANDSCAPED AREAS.
- 13. ALL AREAS WITH EXPOSED SOIL DUE TO THE CONSTRUCTION SHALL BE RESODDED WITH BERMUDA SOD, UNLESS OTHERWISE SPECIFIED BY THE

EARTHWORK

- IMPORTED FILL MATERIAL USED UNDER CONCRETE PAVEMENTS. SHALL CONSIST OF LOW PLASTICITY MATERIAL HAVING A PLASTICITY INDEX (PI) BETWEEN 5 AND 15, A LIQUID LIMIT LESS THAN 40, AND CONTAINING A MINIMUM OF 15% FINES (MATERIAL PASSING THE 200 SIEVE). ALL FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 8-INCHES IN THICKNESS AND COMPACTED TO 95% OF STANDARD PROCTOR DENSITY WITHIN PLUS 3% OF THE OPTIMUM MOISTURE CONTENT. THE ON-SITE MATERIAL MEETING THE SPECIFICATIONS OF THIS GENERAL NOTE, MAY BE USED UNDER PAVEMENTS.
- 2. ON-SITE MATERIAL NOT MEETING THE SPECIFICATIONS OF EARTHWORK NOTE 1. MAY BE USED AS FILL IN ALL AREAS EXCEPT BENEATH PAVEMENT AREAS, EXCLUDING SIDEWALKS. LIMESTONES MAY BE USED AS FILL PROVIDED THEY ARE PROPERLY PULVERIZED TO A MAXIMUM SIZE OF 4-INCHES IN DIAMETER, WITH AT LEAST 50-PERCENT PASSING A NUMBER 4 SIEVE.
- 3. FLEX BASE MATERIAL USED UNDER ASPHALTIC CONCRETE PAVEMENTS. SHALL CONSIST OF TYPE "A" CRUSHED OR BROKEN AGGREGATE HAVING A GRADATION OF GRADE ONE. THE MATERIAL SHALL CONTAIN A BINDER WITH A PLASTICITY INDEX (PI) BETWEEN 4 AND 12, A LIQUID LIMIT LESS THAN 40 IN ACCORDANCE WITH ASTM D-4318, MATERIAL RETAINED ON THE No. 4 SIEVE SHALL HAVE A PERCENT WEAR OF NOT MORE THAN 45 ACCORDING TO ASTM C-131. THE MATERIAL WHEN TESTED UNDER THE WET BALL FOR DETERMINING THE DISINTEGRATION OF FLEXIBLE BASE MATERIALS, TEX-116-E SHALL NOT DEVELOP MORE THAN 50% SOIL BINDER. THE MATERIAL SHALL MEET THE REQUIRED GRADATION SPECIFICATIONS IN ACCORDANCE WITH TEX-110-E. THE FLEX BASE MATERIAL SHALL BE PLACED AND COMPACTED IN ACCORDANCE WITH SPECIFICATION SECTION 2230 - AGGREGATE BASE
- 4. CONCRETE PAVEMENT SUBGRADE PREPARATION SHALL BE PERFORMED AS FOLLOWS:
- a) STRIP THE TOP LAYER OF TOPSOIL, VEGETATION, & HEAVY ROOT MATERIAL.
- b) REMOVE AND DISPOSE OFFSITE ALL DEBRIS INCLUDING ALL EXISTING CONCRETE AND ASPHALT PAVEMENTS.
- c) ROUGH GRADE THE SITE TO THE REQUIRED ELEVATIONS AND THEN PROOF ROLL THE ENTIRE AREA TO VERIFY STABILITY, ANY SOFT OR YIELDING AREAS SHOULD BE UNDERCUT TO FIRM MATERIAL AND REPLACED WITH CONTROLLED MOISTURE CONTENT AND DENSITY
- d) AFTER PROOF ROLLING, THE SUBGRADE SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 8-INCHES, AND THEN MIX IN HYDRATED LIME AT AN APPLICATION RATE OF 8% HYDRATED LIME BY DRY SOIL WEIGHT.
- e) THE HYDRATED LIME SHOULD MEET THE REQUIREMENTS OF ITEM 264 (TYPE A) IN THE TXDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION OF HIGHWAYS. STREETS AND BRIDGES. THIS LIME SHOULD BE THOROUGHLY MIXED AND BLENDED WITH THE TOP 6-INCHES OF SUBGRADE AND COMPACTED TO AT LEAST 95-PERCENT OF ITS MAXIMUM STANDARD PROCTOR DRY DENSITY, THE MOISTURE CONTENT OF THE LIME MODIFIED MATERIAL AT THE TIME OF COMPACTION SHOULD BE WITHIN A RANGE OF MINUS 2 TO PLUS 4 PERCENT (-2% TO +4%) OF ITS OPTIMUM VALUE, MIXING, CURING AND COMPACTION OF THE LIME MODIFIED LAYER IS DESCRIBED IN ITEM 260 OF THE PREVIOUSLY MENTIONED TXDOT STANDARD SPECIFICATIONS.
- NONEXPANSIVE SELECT FILL MATERIAL SHALL BE PROVIDED TO OBTAIN THE REQUIRED FINISH GRADE ELEVATION, WITHOUT THE USE OF LEVELING SAND OR SAND CUSHION. THE USE OF SAND CUSHION FOR SUBGRADE LEVELING PURPOSES IS PROHIBITED.
- g) SELECT FILL SHOULD PLACED IN 8-INCH MAX LOOSE LIFTS AND UNIFORMLY COMPACTED TO A MINIMUM OF 95-PERCENT OF STD PROCTOR DENSITY WITHIN MINUS 1 TO PLUS 3-PERCENT (-1% TO +3%) OF THE SOIL'S OPTIMUM MOISTURE CONTENT.
- 6. THE SUBGRADE SHALL BE MAINTAINED IN A SMOOTH, COMPACTED CONDITION, IN CONFORMITY WITH THE REQUIRED PAVEMENT SECTION AND ESTABLISHED GRADE, UNTIL THE PAVEMENT IS PLACED. & SHALL BE KEPT WETTED DOWN SUFFICIENTLY IN ADVANCE OF PLACING ANY PAVEMENT TO ENSURE ITS BEING IN A FIRM AND MOIST CONDITION FOR AT LEAST TWO INCHES BELOW SURFACE OF THE PREPARED SUBGRADE, ONLY SUCH SUBGRADE AS IS NECESSARY FOR THE SATISFACTORY PROSECUTION OF THE WORK SHALL BE COMPLETED AHEAD OF THE PLACEMENT OF PAVEMENT. PROVIDE COMPLETE DRAINAGE OF THE SUBGRADE AT ALL TIMES.

- 1. THE PAVEMENT SECTION FOR THE PARKING LOT SHALL CONSIST OF 4000 PSI CONCRETE OVER COMPACTED LIME TREATED SUBGRADE. SEE CIVIL SHEET C103 FOR THE SPECIFIED PAVEMENT THICKNESS AND REINFORCEMENT. A 6-INCH INTEGRAL CURB SHALL BE PLACED WITH THE PAVEMENT. SEE CIVIL SHEET C602 FOR PAVING DETAILS.
- 2. THE CONCRETE SIDEWALKS SHALL CONSIST OF 4-INCH THICK 4000 PSI CONCRETE, REINFORCED WITH #3 BARS AT 18-INCH CENTERS EA WAY.
- 3. ALL JOINTS, INCLUDING EXPANSION JOINTS WITH REMOVABLE TACK STRIPS, SHALL BE SEALED WITH JOINT SEALANT.
- 4. SAWED CONTROL JOINTS SHALL BE PROVIDED AT 15ft CENTERS EACH WAY, AND FILLED WITH HOT RUBBER JOINT SEALING COMPOUND.
- 5. REINFORCING STEEL SHALL BE NEW DOMESTIC BILLET STEEL CONFORMING TO ASTM A-615, GRADE 60, AND SHALL BE SUPPORTED BY
- 6. MANHOLES, WATER VALVES, METERS, CLEANOUTS, ETC. MAY BE BOXED OUT OR ISOLATED USING EXPANSION JOINT FILLER, THE MINIMUM LENGTH OF EACH SIDE OF BOX OUT SHALL BE 24-INCHES.
- 7. SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL

CAST-IN-PLACE CONCRETE

- 1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI-318.
- 2. THE MATERIALS AND PROPERTIES OF CONCRETE SHALL MEET THE APPLICABLE REQUIREMENTS IN THE ACI MANUAL OF CONCRETE PRACTICE. THE CONCRETE SHALL HAVE A MINIMUM MODULUS OF RUPTURE OF 600 PSI AT 28 DAYS AS DETERMINED BY THE STANDARD TEST METHOD FOR STRENGTH OF CONCRETE (USING SIMPLE BEAM WITH THIRD POINT FLEXURAL LOADING) ASTM C78-84.
- 3. CONCRETE REINFORCING BARS SHALL BE NEW DOMESTIC DEFORMED BILLET STEEL CONFORMING TO ASTM A615 GRADE 60, EXCEPT STIRRUPS WHICH MAY BE NEW DOMESTIC STEEL CONFORMING TO ASTM A615, GRADE 40.
- 4. CONCRETE IN THE FOLLOWING AREAS SHALL HAVE SAND AND GRAVEL OR CRUSHED STONE AGGREGATES, TYPE I OR TYPE III PORTLAND CEMENT, AND THE DESIGNATED COMPRESSIVE STRENGTH IN 28 DAYS. NORMAL WEIGHT AGGREGATES SHALL CONFORM TO ASTM C33-74. THE CONCRETE SHALL WEIGH NOT LESS THAN 145 PCF, NOR MORE THAN 150 PCF:
 - a) PAVEMENT...... 4000 PSI b) SIDEWALKS...... 4000 PSI

- 5. ALL CONCRETE SHALL CONTAIN A 1-INCH MAXIMUM NOMINAL COURSE
- 6. CONCRETE SLUMP SHALL BE IN THE RANGE OF 5-INCH MAX & 2-INCH
- 7. CONTRACTOR SHALL SUBMIT CONCRETE MIX DESIGNS FOR REVIEW WELL IN ADVANCE OF CONCRETE PLACEMENT, CONCRETE MIX DESIGN SHALL INCLUDE ALL STRENGTH DATA NECESSARY TO SHOW COMPLIANCE WITH THE PROJECT SPECIFICATIONS FOR EITHER THE TRIAL BATCH OR FIELD EXPERIENCE METHOD AND SHALL BE CERTIFIED BY A TEXAS
- 8. MINIMUM CONCRETE COVER, UNLESS NOTED OTHERWISE:
- a) UNIFORM SURFACE IN CONTACT WITH THE GROUND...... 3"
- 9. LAP CONTINUOUS REINFORCING BARS 36-BAR DIAMETERS. ALL LAPS SHALL BE TIED IN TWO PLACES MINIMUM.
- 10. TACK WELDING ON REBAR WILL NOT BE PERMITTED. HEAT SHALL NOT BE USED IN THE FABRICATION OR INSTALLATION OF REINFORCEMENT.
- 11. CONCRETE WORK SHALL BE SUBJECT TO QUALITY ASSURANCE TESTING AND INSPECTIONS.
- 12. CLEAR CONCRETE CURING/SEALER SHALL BE USED OVER THE CONCRETE

INSPECTIONS AND UNDERGROUND UTILITIES

- 1. CAUTION!!! CONTACT DIG TESS AT (800) 395-0440 AND/OR OTHER UTILITY LOCATING SERVICES AT LEAST 48-HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY.
- 2. CONTACT CITY OF ADDISON FOR INSPECTIONS PRIOR TO CONCRETE PLACEMENT.

- 1. THE CONTRACTOR AS PART OF THE SCOPE OF HIS WORK SHALL CONTRACT THE SERVICES OF AN INDEPENDENT TESTING LABORATORY. DESIGNATED BY THE OWNER TO PROVIDE TESTING SERVICES FOR THIS PROJECT AS FURTHER DESCRIBED BELOW, THE COST FOR THESE TESTING SERVICES SHALL BE INCLUDED IN THE BASE BID.
- a) PROVIDE ADEQUATE SAMPLES FOR DETERMINATION OF MOISTURE DENSITY RELATIONSHIPS AND PLASTICITY INDEX (PI) AT ON-SITE MATERIALS, IMPORTED FILL MATERIAL AND DRAINAGE AGGREGATE.
- c) ESTABLISH MOISTURE DENSITY RELATIONSHIP OF IN-PLACE SUBGRADE IN ACCORDANCE WITH ASTM D-698.

b) SUBMIT COMPLETE LABORATORY ANALYSIS OF SOIL MATERIAL

PROPOSED FOR FILL MATERIAL.

- d) ESTABLISH MOISTURE DENSITY RELATIONSHIP OF PROPOSED SELECT FILL IN ACCORDANCE WITH ASTM D-698.
- e) PERFORM PI TEST ON PROPOSED SELECT FILL MATERIAL TO CONFIRM CONFORMANCE WITH THE PROJECT SPECS IN ACCORDANCE WITH ASTM D-4318.
- f) GRADATION OF DRAINAGE AGGREGATE IN ACCORDANCE WITH ASTM
- g) THE COMPLETED SUBGRADE SHALL BE TESTED FOR COMPACTION AND MOISTURE CONTENT AT THE RATE OF ONE TEST PER 1000 SQUARE FEET BUT IN NO CASE LESS THAN A TOTAL OF FIVE TESTS FOR THE
- h) DURING THE PROGRESS OF THE WORK, CAST TEST CYLINDERS TO MAINTAIN A CHECK ON THE COMPRESSIVE STRENGTHS OF THE CONCRETE BEING PLACED. i) FOUR TEST CYLINDERS SHALL BE TAKEN FROM A REPRESENTATIVE PORTION OF THE CONCRETE BEING PLACED FOR EVERY 150 CUBIC
- YARDS OF CONCRETE PAVEMENT PLACED, BUT IN NO CASE SHALL LESS THAN TWO SETS OF CYLINDERS BE TAKEN FROM ANY DAY'S PLACEMENT. j) AFTER THE CYLINDERS HAVE BEEN CAST, THEY SHALL REMAIN ON

HE JOB SITE UNDISTURBED FOR 24-HOURS AND THEN TRANSPORTED,

k) TWO OF THE CYLINDERS IN EACH SET SHALL BE TESTED IN SEVEN DAYS AND THEN, IF IN THE OPINION OF THE OWNER'S REPRESENTATIVE THE SEVEN DAY TEST RESULTS ARE LOW ENOUGH, THE OTHER TWO CYLINDERS IN EACH SET MAY BE TESTED IN

MOIST CURED, AND TESTED BY THE TESTING LABORATORY.

I) IF THE 28-DAY TEST RESULTS INDICATE DEFICIENT STRENGTH, THE CONTRACTOR MAY, AT HIS OPTION AND EXPENSE, CORE THE PAVEMENT IN QUESTION AND HAVE THE CORES TESTED BY AN APPROVED LABORATORY TO COMPARE WITH THE RESULTS OF THE CYLINDER TESTS.

m) THE OWNER SHALL MAKE THE FINAL DETERMINATION OF ACCEPTANCE OR NOT IN THE CASE OF DEFICIENT CONCRETE

UTILITIES

1. THE UTILITY SERVICES FOR THIS PROJECT ARE SHOWN ON SHEET C102. COORDINATE THESE PLAN WITH THE PROJECT'S MEP PLANS.

RIGHT-OF-WAY CONCRETE PAVEMENT CONSTRUCTION

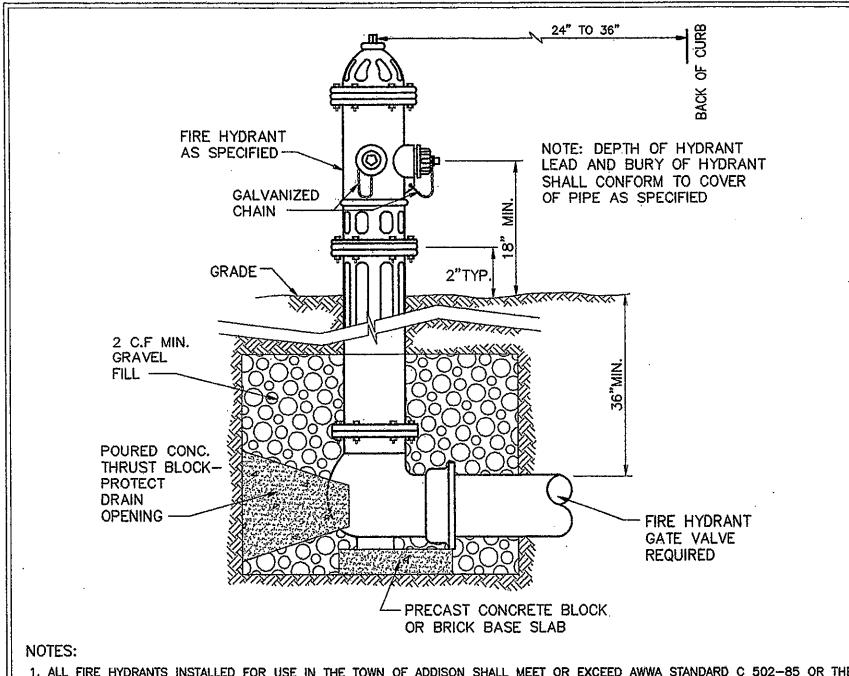
- THE INTENT OF THIS SPECIFICATION IS TO DESCRIBE THE MINIMUM ACCEPTABLE STANDARDS FOR THE CONSTRUCTION OF CONCRETE SIDEWALKS AND DRIVE APPROACHES IN THE TOWN OF ADDISON, TEXAS. THIS SPECIFICATION SUPERSEDES ALL OTHER NOTES AND SPECIFICATIONS IN THESE CIVIL PLANS, IN CASE OF CONFLICT.
- 1.1 THE CONTRACTOR SHALL FURNISH ALL MATERIALS AND LABOR AS REQUIRED FOR THE CONSTRUCTION OF SIDEWALKS, IN ACCORDANCE WITH APPROVED PLANS, SPECIFICATIONS, AND THESE INSTRUCTIONS.
- 1.2 EXCAVATION: ALL EXCAVATION REQUIRED FOR THE CONSTRUCTION OF SIDEWALKS AND DRIVE APPROACHES SHALL BE IN ACCORDANCE WITH THE LINES AND GRADES AS ESTABLISHED BY THE TOWN OF ADDISON SIDEWALK PROCEDURE AND SPECIFICATIONS.
 - WHERE EXCAVATION FOR SIDEWALKS NECESSITATES THE REGRADING OF EXISTING BERMS, THE CONTRACTOR SHALL GRADE BERMS AS DIRECTED BY THE STREET SUPERINTENDENT AND REPLANT AS NEEDED. THIS WORK SHALL ALSO INCLUDE ALL NECESSARY BACK-FILLING AND GRADING BEHIND RETAINING WALLS.
 - THE CONTRACTOR SHALL PERFORM ALL NECESSARY FILLING, LEVELING, AND FINE GRADING AS REQUIRED TO BRING THE SUB-GRADE TO THE EXACT GRADES SPECIFIED; AND COMPACTED TO 95-PERCENT STANDARD
- 1.3 FORMS: FORMS SHALL BE OF WOOD OR METAL, AND OF A SECTIONAL LENGTH SATISFACTORY TO THE STREET SUPERINTENDENT. THEY SHALL BE FREE FROM WARP AND OF A DEPTH EQUAL TO THE THICKNESS OF THE FINISHED WORK. THEY SHALL BE SECURELY STAKED TO LINE AND GRADE, AND MAINTAINED IN A TRUE POSITION DURING THE DEPOSITING OF CONCRETE, FORMS SHALL BE SET TO PROVIDE

POSITIVE DRAINAGE FOR THE FINISHED SIDEWALK.

- 1.4 REINFORCING STEEL: ALL STEEL REINFORCEMENT SHALL BE ACCURATELY PLACED, AND HELD IN PLACE DURING PROGRESS OF CONCRETE PLACEMENT BY SUCH EFFECTIVE MEANS (CHAIRS, TIES, ETC.) THAT IT SHALL NOT BE MOVED OUT OF TRUE POSITION. ALL REINFORCEMENT NECESSARY FOR A SECTION OF CONCRETE SHALL BE PLACED AND APPROVED BY THE STREET SUPERINTENDENT BEFORE ANY CONCRETE IS DEPOSITED IN THE SECTION. ALL STEEL MUST BE FREE FROM PAINT AND OIL; ALL LOOSE SCALE, RUST, DIRT, AND OTHER FOREIGN SUBSTANCES SHALL BE COMPLETELY REMOVED BEFORE USING. WHERE NEW CONCRETE SIDEWALKS ABUT EXISTING SIDEWALK, 3/8" STEEL REINFORCING BARS SHALL BE DOWELED INTO EXISTING SIDEWALK, A MINIMUM OF 6" AND SECURED WITH EPOXY.
- 1.5 PLACING: CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40-DEGREES FAHRENHEIT, AND FALLING: BUT IT MAY BE PLACED WHEN THE TEMPERATURE IS ABOVE 35-DEGREES FAHRENHEIT AND RISING. THE TEMPERATURE BEING TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT. WHEN CONCRETE IS BEING PLACED IN COLD WEATHER. THE CONTRACTOR SHALL HAVE AVAILABLE FOR IMMEDIATE USE A SUFFICIENT SUPPLY OF AN APPROVED COVERING MATERIAL, TO IMMEDIATELY PROTECT THE CONCRETE WHEN THE AIR TEMPERATURE FALLS TO 32—DEGREES FAHRENHEIT BEFORE THE CONCRETE HAS BEEN PLACED FOUR (4) HOURS. SUCH PROTECTION SHALL REMAIN IN PLACE DURING THE PERIOD OF NOT LESS THAN FIVE (5) DAYS. NEITHER SALT NOR CHEMICAL ADMIXTURES SHALL BE ADDED TO THE CONCRETE TO PREVENT FREEZING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE QUALITY AND STRENGTH OF CONCRETE UNDER COLD WEATHER CONDITIONS, AND ALL CONCRETE DAMAGED BY FREEZING SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE.
- 1.6 FINISHING: CONCRÈTE SIDEWALKS SHALL BE FINISHED TO A TRUE, EVEN SURFACE. THEY SHALL BE TROWELED AND FINISHED WITH A LIGHT BROOM TRANSVERSE TO THE DIRECTION OF TRAFFIC, WHERE ADJACENT SIDEWALKS DIFFER FROM THIS STANDARD, NEW SIDEWALKS SHALL CONFORM TO ADJACENT SIDEWALKS, I.E., EXPOSED AGGREGATE. JOINTS AND ALL EDGES SHALL BE FINISHED TO A ONE-QUARTER (1/4) INCH RADIUS WITH SUITABLE EDGING TOOLS.
- 1.7 JOINTS: EXPANSION JOINTS FOR SIDEWALKS SHALL BE FORMED USING EXPANSION JOINT MATERIAL OF AN APPROVED TYPE AND SHAPED TO HE SECTION. EXPANSION JOINTS SHALL BE PLACED IN SIDEWALKS AT 40-FOOT INTERVALS, AND TO MATCH STREET EXPANSION JOINTS WHEN POSSIBLE. EXPANSION JOINTS SHALL ALSO BE PLACED AT ALL DRIVEWAYS, CURBS, FOUNDATIONS, OTHER SIDEWALKS, AND OTHER ADJACENT CONCRETE WORK. SIMILAR MATERIAL SHALL BE PLACED AROUND ALL OBSTRUCTIONS PROTRUDING INTO OR THROUGH SIDEWALKS. ALL EXPANSION JOINTS SHALL BE 1/2-INCH IN THICKNESS. SIDEWALKS SHALL BE JOINTED WITH A 1/4-INCH RADIUS TROWEL AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK, ANY EXPANSION MATERIAL EXTENDING ABOVE THE FINISHED WORK SHALL BE NEATLY RIMMED TO THE SURFACE OF THE FINISHED WORK, ALL GAPS BETWEEN EXPANSION MATERIAL AND CURB, WALKS, OR OBJECTS PROTRUDING THROUGH SIDEWALK, SHALL BE SEALED WITH A SEALER APPROVED BY THE STREET SUPERINTENDENT.
- 1.8 CURING: AFTER FINISHING OPERATIONS ARE COMPLETE, THE CONCRETE SURFACES SHALL BE SPRAYED WITH CURING COMPOUND. THE SURFACE OF THE CONCRETE SHALL BE KEPT THOROUGHLY DAMP BETWEEN THE COMPLETION OF THE FINISHING OPERATIONS, AND THE APPLICATION OF THE CURING COMPOUND. THE CURING COMPOUND SHALL BE APPLIED UNDER PRESSURE, BY MEANS OF A SPRAY NOZZLE, AT A RATE NOT TO EXCEED 200 SQUARE FEET PER GALLON, A MINIMUM OF 72-HOURS CURING TIME SHALL BE REQUIRED. SHOULD THE CONTRACTOR ELECT TO REMOVE THE FORMS BEFORE THE MINIMUM CURING TIME HAS ELAPSED, HE SHALL APPLY CURING COMPOUND TO THE NEWLY EXPOSED VERTICAL SURFACES. FORMS SHALL REMAIN IN PLACE AT LEAST 24-HOURS AFTER COMPLETION OF THE CONCRETE PLACEMENT.
- 1.9 TESTING: STANDARD 6"x12" TEST CYLINDERS SHALL BE USED. THREE CYLINDERS WILL BE MADE AS PER APPLICABLE A.S.T.M. SPECIFICATIONS FOR EACH 24 CUBIC YARDS POURED. ONE (1) WILL BE BROKEN IN 7-DAYS AND THE OTHER TWO IN 28-DAYS. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR MATERIALS AND LABOR INVOLVED IN FULFILLING THESE REQUIREMENTS. A CITY APPROVED TESTING LABORATORY SHALL CONDUCT ALL TESTING.

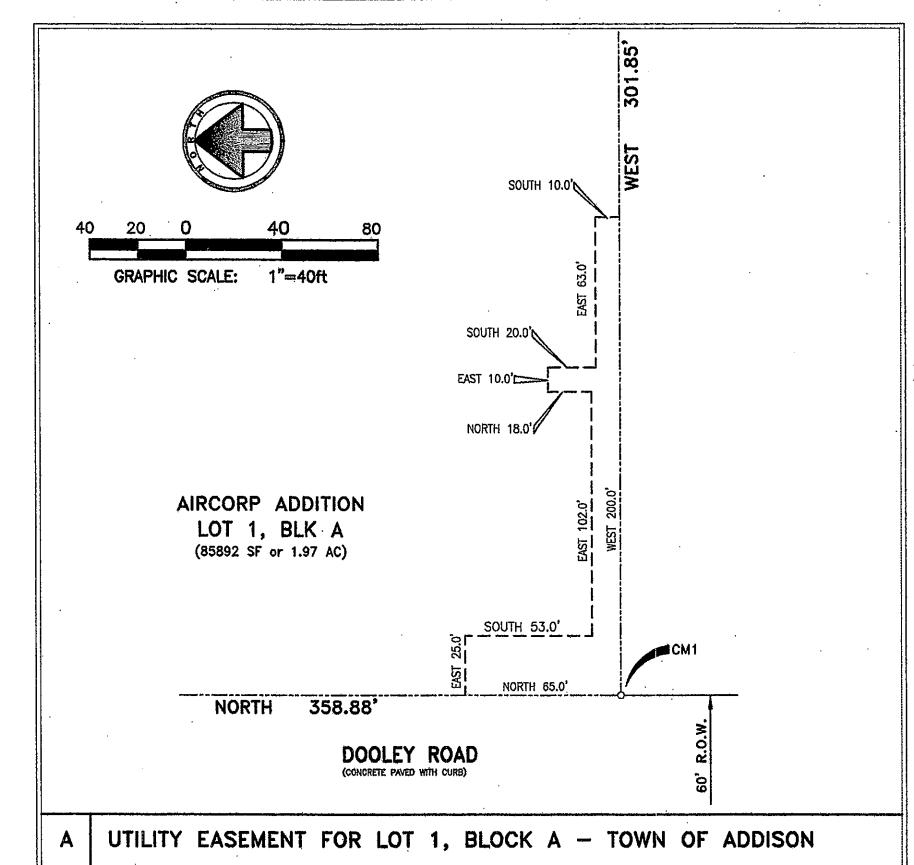
TOWN OF ADDISON WATER SERVICE

- THE FOLLOWING ARE GENERAL REQUIREMENTS FOR WATER SERVICE IN THE TOWN OF ADDISON. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE TOWN OF ADDISON PUBLIC WORKS DEPARTMENT TO INSURE COMPLIANCE WITH ALL SPECIFICATIONS AND PROCEDURES AS SET FORTH BY THE TOWN OF ADDISON.
- 1. ALL NEW METERS INSTALLED IN THE TOWN OF ADDISON SHALL BE EQUIPPED WITH ELECTRONIC ENCODER REGISTERS, PROGRAMMED TO READ IN THOUSAND GALLON INCREMENTS, AND EQUIPPED WITH TOUCH-PAD
- 2. ALL COMMERCIAL UNIT APPLICATIONS FOR DOMESTIC USE HAVING FLOW DEMANDS GREATER THAN 160 G.P.M. SHALL EMPLOY EITHER A COMPOUND TYPE METER, OR A SINGLE-JET METER GREATER THAN OR EQUAL TO 2-INCH, AND CONFORMING TO TOWN OF ADDISON SPECIFICATIONS. COORDINATE WITH THE CITY FOR ACCEPTABLE MODELS.
- 3. ALL IRRIGATION SERVICES GREATER THAN OR EQUAL TO 1-1/2 INCH SHALL EMPLOY A TURBINE, OR SINGLE-JET TYPE METER CONFORMING TO THE ABOVE GUIDELINES (ITEM #2).
- 4. FIRE SERVICE GREATER THAN 2-INCH SHALL USE A DOUBLE CHECK DETECTOR ASSEMBLY, APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS CONNECTION CONTROL AND HYDRAULIC RESEARCH (USC-FCCCHR), AND INSTALLED IN USC APPROVED ORIENTATIONS AND CLEARANCES.
- 5. ALL WATER PIPE SHALL CONFORM TO ANSI/AWWA C-909-98 FOR MOLECULARLY ORIENTED PVC PRESSURE PIPE FOR WATER DISTRIBUTION. PIPE SHALL BE 150 PSI MINIMUM CLASS RATING FOR DOMESTIC USE. AND 200 PSI MINIMUM CLASS RATING FOR FIRE LINE AND HYDRANT LINE APPLICATIONS.
- 6. ALL FIRE HYDRANTS INSTALLED FOR USE IN THE TOWN OF ADDISON SHALL MEET OR EXCEED AWWA STANDARD C 502-85 OR THE LATEST REVISION THEREOF. REFERENCE TOWN OF ADDISON SPECIFICATION



- 1. ALL FIRE HYDRANTS INSTALLED FOR USE IN THE TOWN OF ADDISON SHALL MEET OR EXCEED AWWA STANDARD C 502-85 OR THE LATEST REVISION THEREOF, REFERENCE TOWN OF ADDISON SPECIFICATION No. FH-95-1
- 2. CONCRETE SHALL BE PLACED OR POURED AGAINST UNDISTURBED SOIL.
- 3. ALL FIRE HYDRANT GATE VALVES SHALL BE ANCHORED TO THE MAIN AS DIRECTED BY THE CITY REPRESENTATIVE. 4. NO SEPARATE PAY FOR EXTENSION TO FINISHED GRADE.
- 5. ALL PORTIONS (EXCLUDING CHAINS) OF THE FIRE HYDRANT ABOVE GRADE SHALL BE PAINTED AS NOTED IN SPECIFICATION NO. FH-95-1.

FIRE HYDRANT DETAIL - TOWN OF ADDISON



CANCERA consulting engineers, inc. Structural, Civil, & Construction Engineering

3930 Meredith Avenue

Dallas, Texas 75211

Tel: (214) 330-4771 Fax: (214) 330-2167

EXPIRATION DATE:

AFFIXATION DATE:

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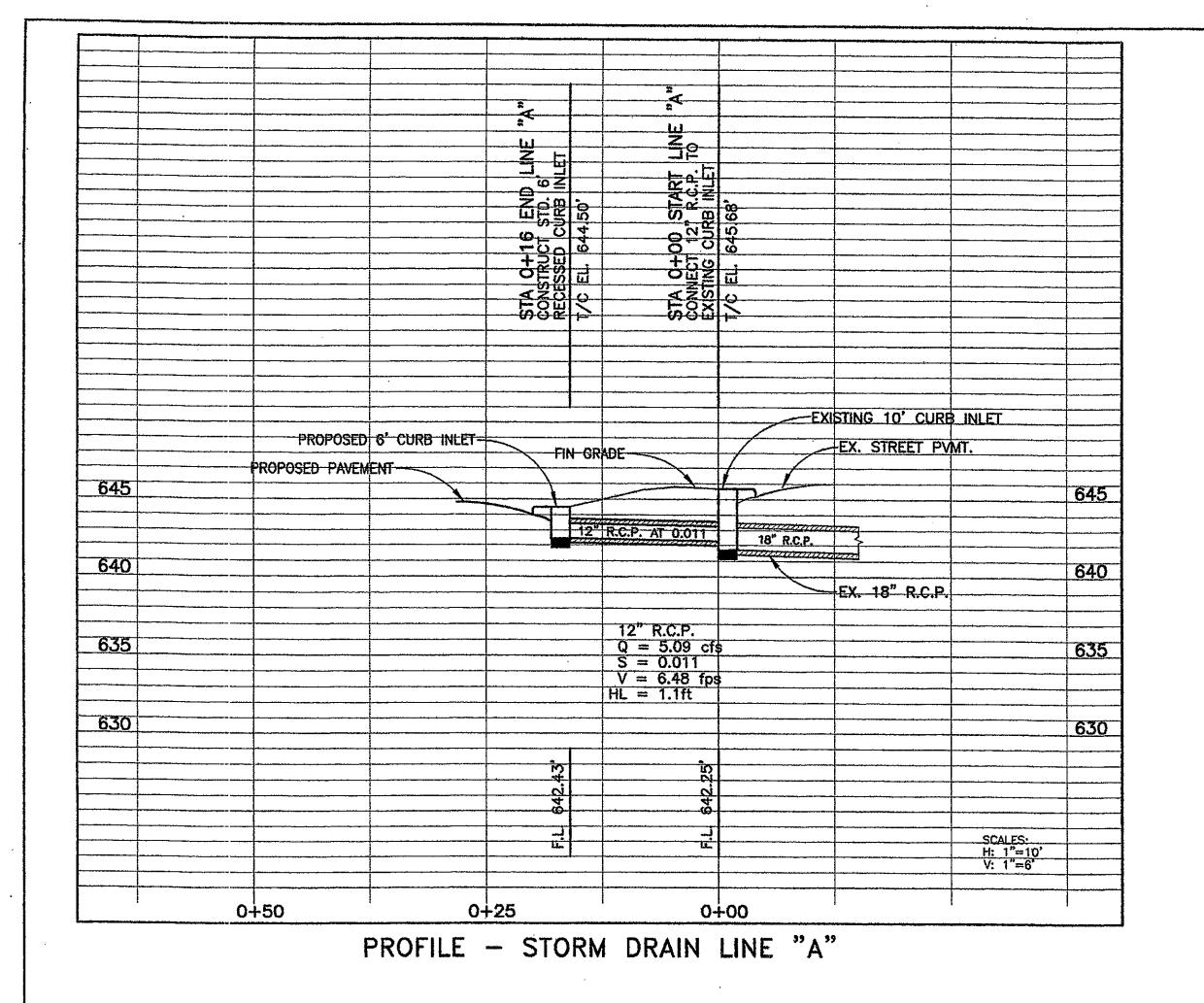
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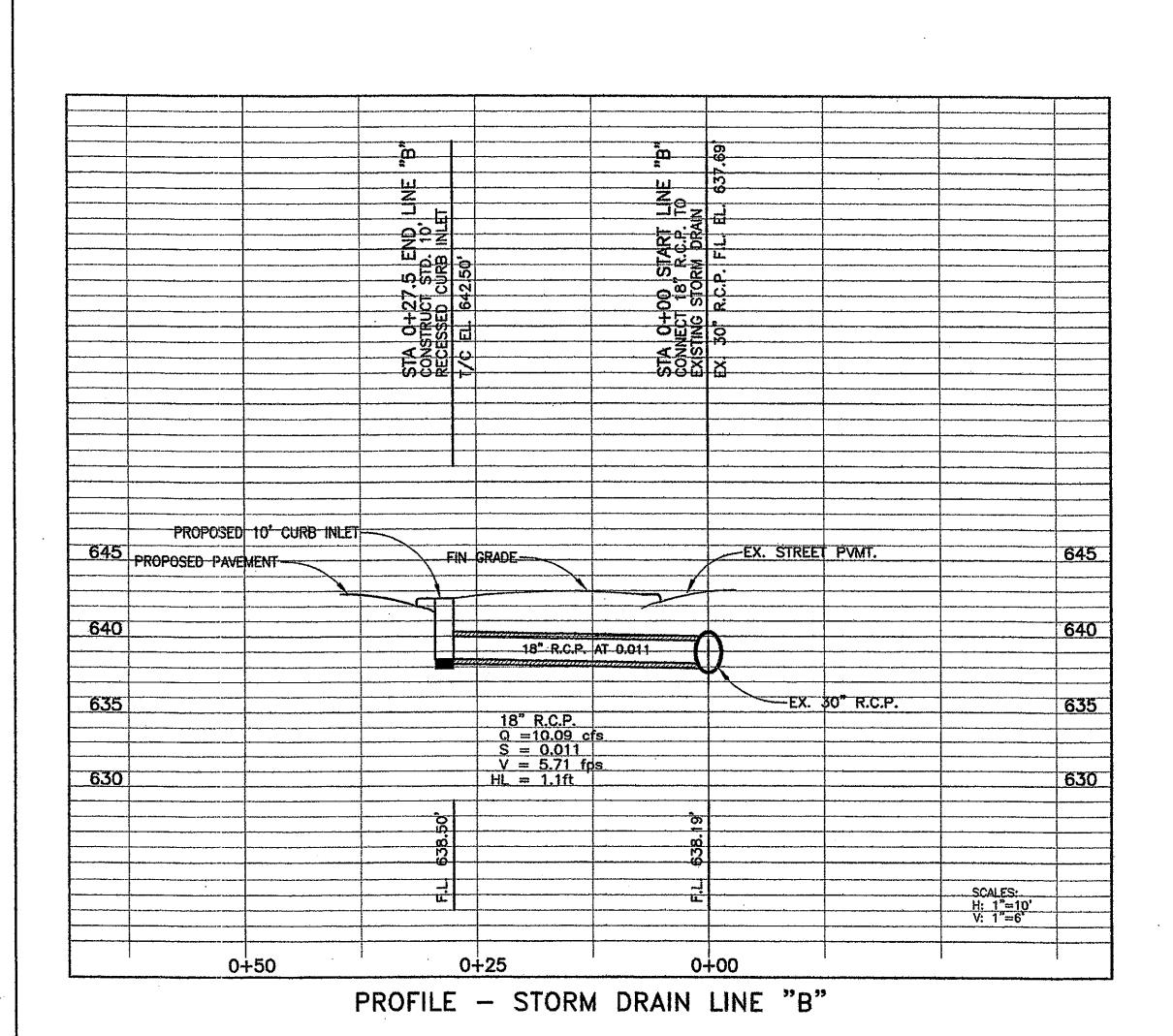
UTILITY ESMT & FH DETAIL

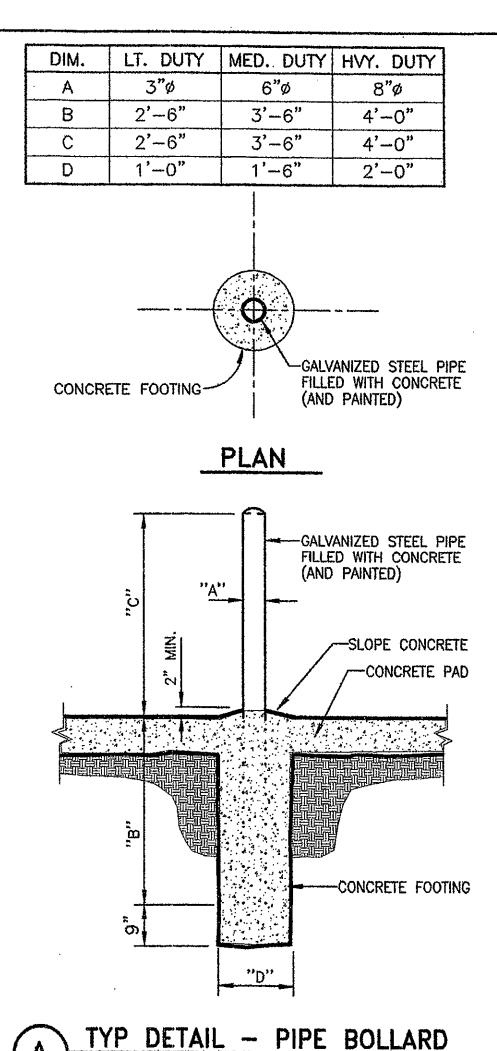
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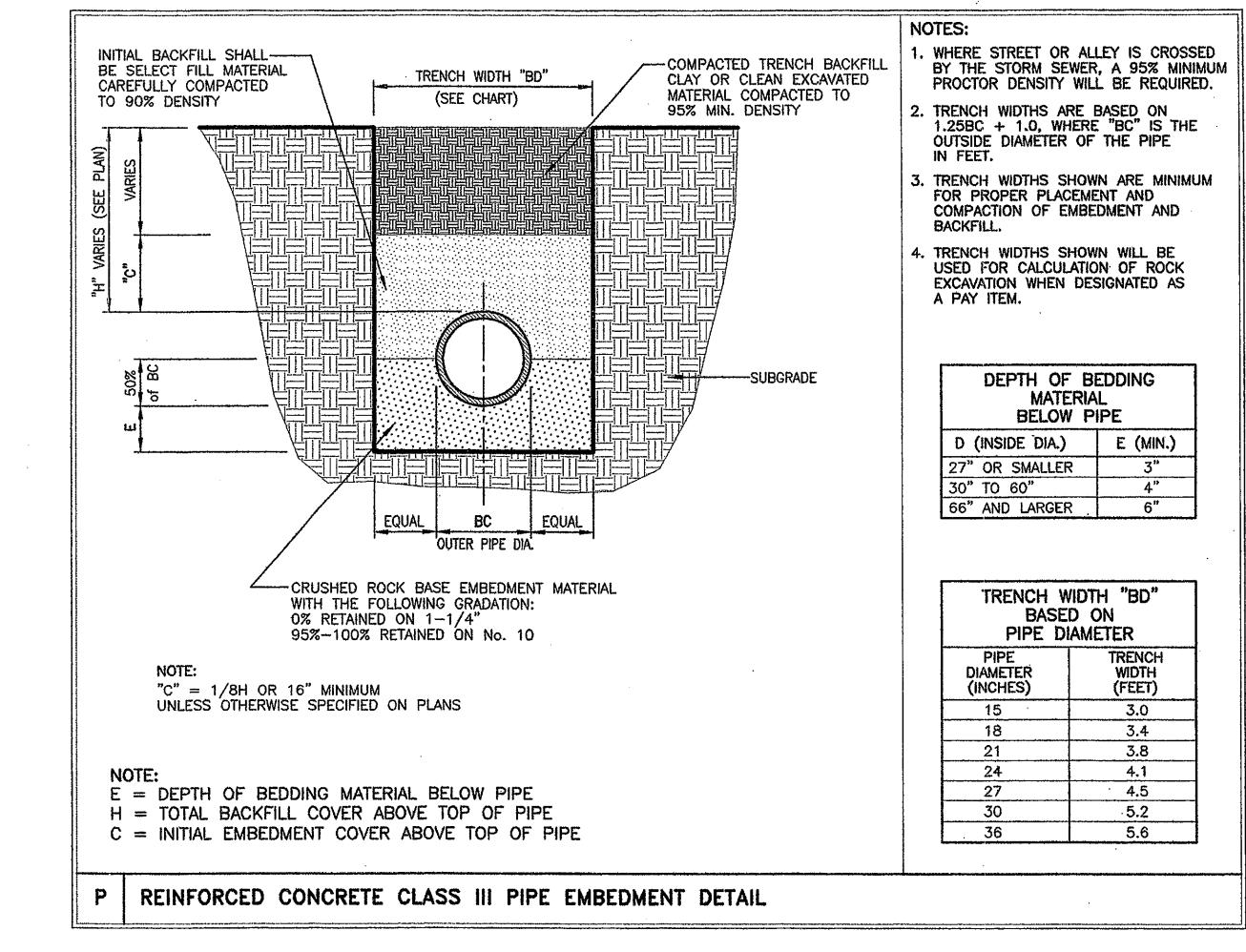


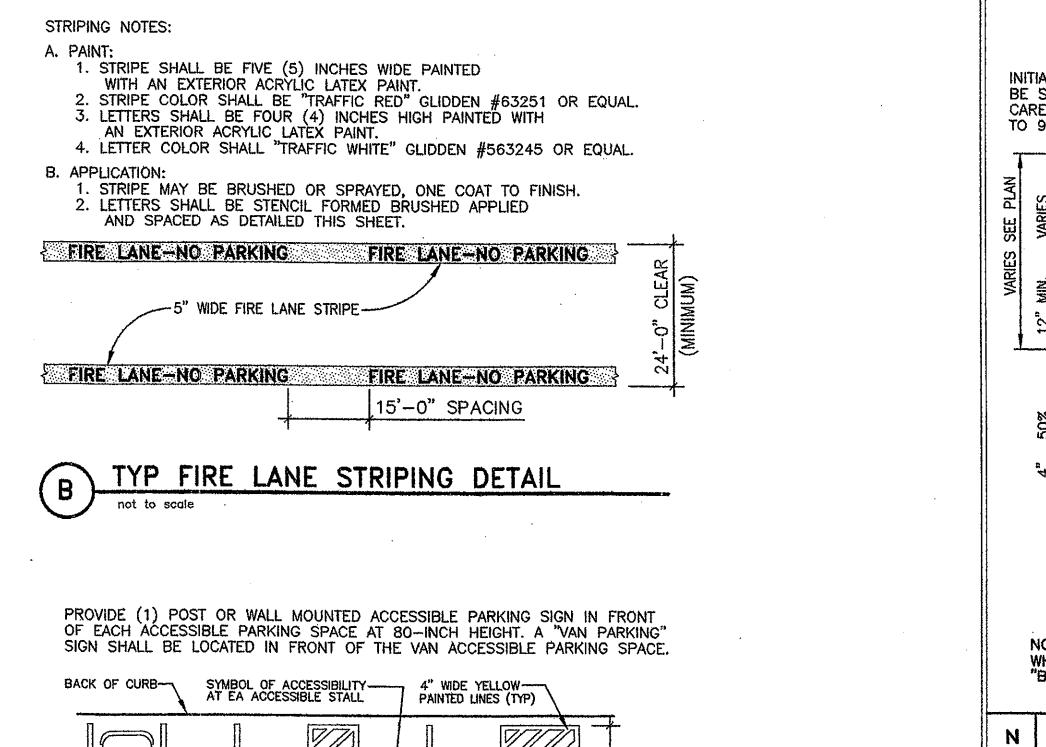




5'-0" (MIN) FOR---

NORMAL ACCESSIBLE SPACES

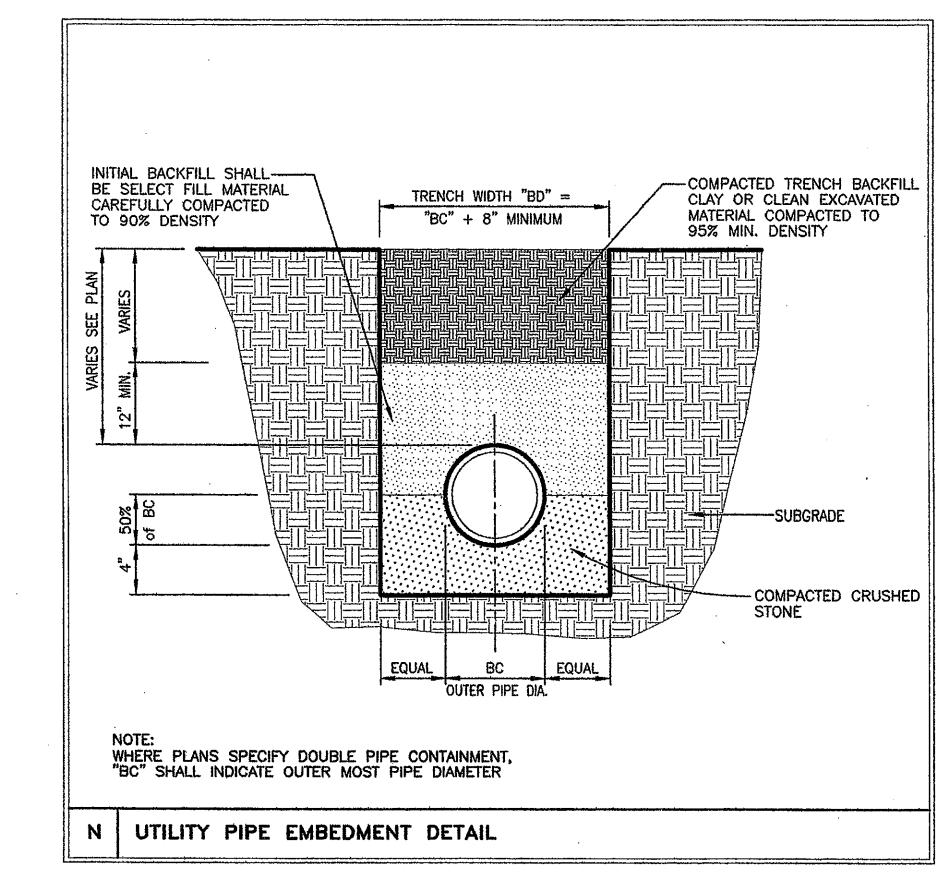


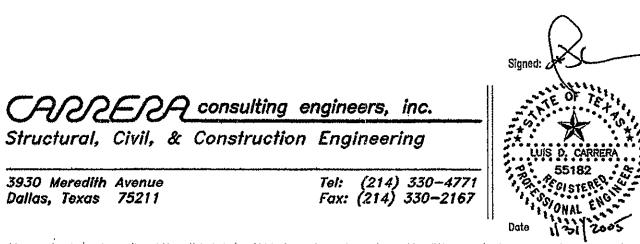


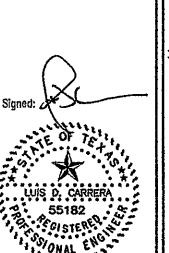
8'-0" (MIN) FOR-

"VAN" ACCESSIBLE SPACES

TYPICAL PARKING SPACE STRIPING







3930 Meredith Avenue Dallas, Texas 75211

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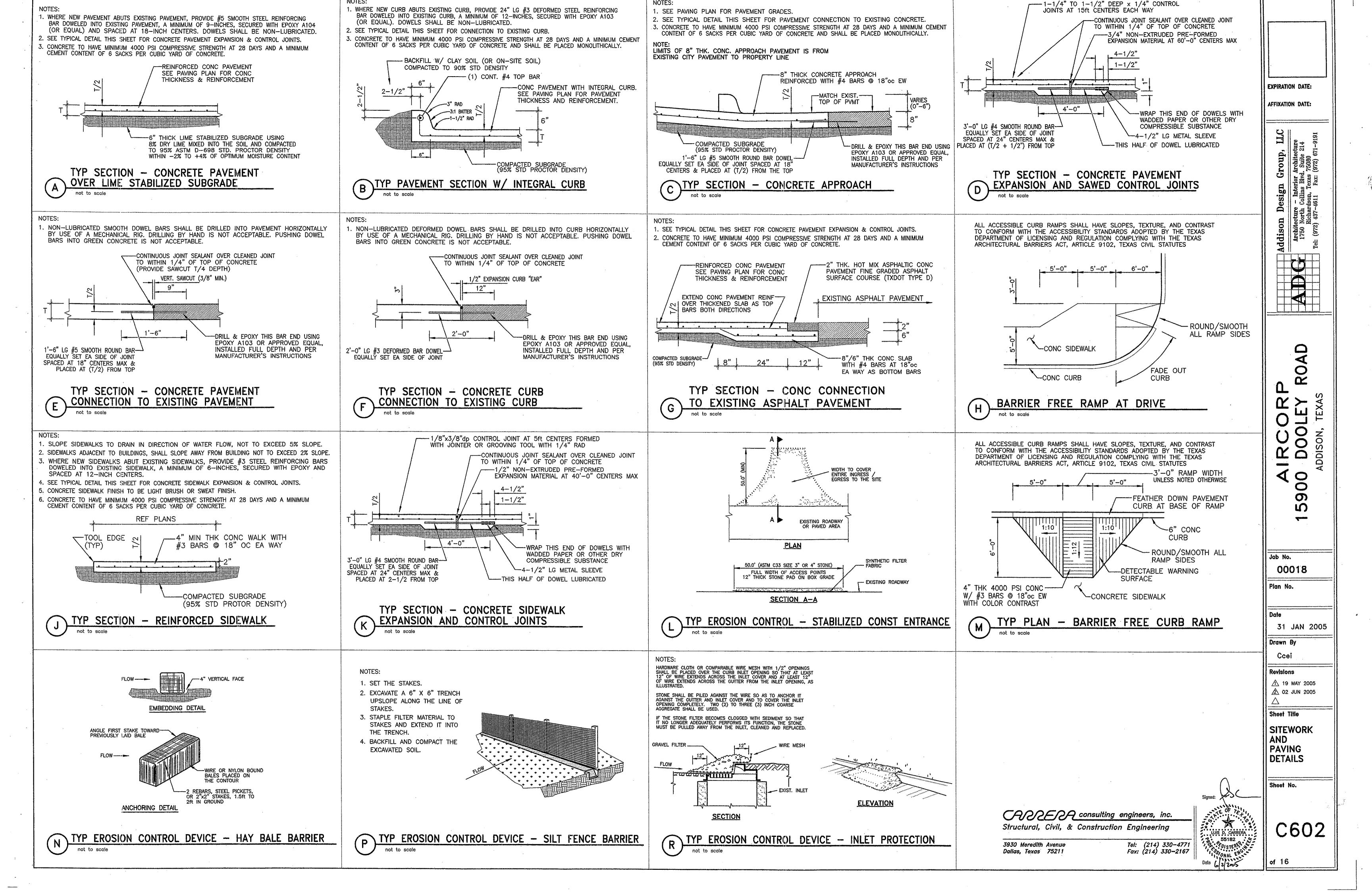
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STORM DRAIN

PROFILES

& DETAILS

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1.01 SCOPE

PART 1: GENERAL

A. Perform all work required for Testing Laboratory Services as indicated on the drawings and specified

B. Related information or work specified elsewhere in the Project Manual includes, but is not limited to, the

1. General and Supplementary Conditions of the Civil Drawings and Specifications
 Section 02200 - Earthwork

4. Section 02510 - Asphaltic Concrete Pavement 5. Section 02511 - Portland Cement Concrete Pymt. 6. Section 02525 - Concrete Curbs

1.02 REQUIREMENTS AND CODES

A. The following specifications are minimum requirements and shall govern except all local, state and/or federal codes and ordinances shall govern when their requiring are in excess of those specified

B. Comply with provisions of standards referenced in this section or other sections of the Project Manual. 1.03 LABORATORY SELECTION

An independent testing laboratory and related Engineers shall be retained by the Owner to inspect and test the materials and methods of construction as hereinafter specified or otherwise directed by the Engineers or Owner for compliance with the requirements of the Contract Documents and to perform such other specialized technical services as may be required by the Engineers or Owner.

1.04 QUALITY ASSURANCE

A. The testing laboratory shall meet the basic requirements of ATSM E-329 "Standard of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".

> 1. The testing laboratory is only required to have testing facilities for work included in this

2. Testing machines shall have been calibrated a intervals not exceeding 12 months by devices of accuracy traceable to the National Bureau of

B. Failure of any tested area to meet specifications requirements shall be cause for rejection. All deficiencies shall be corrected and retested for

1.05 SUBMITTALS

One (1) copy of all laboratory and field test reports. inspections and/or certifications shall be issued directly from the laboratory to the each the Contractor, Engineer and Owner.

1.06 JOB CONDITIONS

A The testing laboratory and/or Engineers are not authorized to revoke, after, relax, enlarge, or release any requirement of the Contract Documents or Subsurface Investigation Report nor to approve or accept any portion of the work.

B. When it appears that the material furnished or work performed by the Contractor fails to fulfill Contract Document requirements, the laboratory and/or Engineer shall promptly direct the attention of the Owner and Contractor to such deficiencies.

1.07 CONTRACTOR'S RESPONSIBILITIE

A. The use of laboratory services shall in no way relieve the Contractor of his responsibility to furnish materials and construction in full compliance with the

B. To facilitate testing services, the Contractor shall coordinate all testing and inspection activities with the laboratory and:

1. Advise the laboratory, Engineers and inspectors, sufficiently in advance of the operations to allow for completion of tests and for the assignment of

2. Provide and maintain for the sole use of the laboratory an area and adequate facilities for safe storage & proper curing of such test specimens which must remain on the project site prior to testing.

3. Furnish copies of mill test reports for such materials as may be required in the Project Manual.

PART 2: REQUIRED TESTING AND INSPECTIONS

2.01 SITE AND BUILDING EXCAVATION AND BACKFILLING A. The Soils Laboratory shall analyze all native or imported fill and backfill material and top soil

and compliance with the Contract Documents.

proposed for use to determine the suitability for use

1. Fill and backfill material shall be examined as to soil classification and tested to determine the Plasticity Index, optimum moisture content and dry

B. The number of tests performed shall be at the discretion of the Soils Engineer, except that the number of field tests performed shall not be less than the minimum described below.

1. Within trench excavations provide one (1) test for every 500 cubic yards of fill or backfill or for every 100 lineal feet of trench.

C. Submit one (1) copy of all soils analyses and test results to Contractor, Engineer and Owner.

2.02 PAVING

A. An independent testing laboratory and Field Engineer

meeting the requirements, sampling and testing and Transportation Officials (AASHTO) and American Society for Testing Materials (ASTM) shall observe the paving installation and test for compliance with the requirements of the Contract Documents.

B. Aggregate base course shall be tested for compliance with specified physical requirements and sieve analysis. Installation shall be observed for compacted thickness, cross section and grade. Field density tests shall be conducted to determine optimum moisture content and percent of compaction.

1. Aggregate shall be tested in accordance with test requirements of ASTM D-1241.

2. Field density tests, as per ASTM D-698, shall be performed at the discretion of the Engineer, except that a minimum of one (1) test per 40,000 square feet shall be performed.

C. Asphaltic concrete mix shall be tested for asphalt cement content, gradation, Marshall stability, air voids and physical requirements. Engineer shall observe asphaltic concrete placement for number of lifts. procedure employed and compliance with indicated cross section and grade. Field density and extraction tests shall be conducted to determine percent of compaction,

1. Asphaltic mixture shall be tested in accordance with ASTM D-2172 or AASHTO T-164 & AASHTO T-30.

2. Optimum asphalt cement shall be tested in accordance by the Marshall Method (or other AASHTO approved methods)

D. Testing laboratory and Engineer shall certify in writing that the aggregate base and asphaltic surface course have been installed in conformance with the Contract Documents.

1. Certification shall be accompanied by copies of aggregate and asphaltic concrete tests and analysis

E. Portland Cement Concrete pavement shall be tested and inspected in accordance to Section 01410, 2.03

F. Obtain a minimum of two (2) cores from the complete pavement section (either asphaltic concrete or Portland Cement Concrete), including aggregate base course, for laboratory verification of the completed pavement construction. Core test report shall indicate depth of aggregate base course, Portland Cement Concrete, asphaltic concrete surface course, density of the aggregate base course, asphaltic concrete surface course, and asphaltic concrete extraction tests and Portland Cement Concrete strength tests. Location of pavement cores shall be selected by the Engineer and the independent testing laboratory

G. Submit one (1) copy of certification and test results to each the Contractor, Engineer and Owner.

2.03 CONCRETE

A. An independent testing laboratory meeting the requirements of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as used in Construction ASTM E-329 shall determine the quality of all aggregate and concrete for compliance with the

B. The testing laboratory shall test all Portland Cement Concrete payement. The laboratory personnel shall take the samples and adequately protect all samples during storage and transporting

1. The testing laboratory shall perform the following:

a. Secure production samples of materials at plants or stockpiles during the course of the work & test for compliance with the Contract Documents.

b. Check batching and mixing operation for compliance with the Contract Documents.

c. Review the manufacturer's certificate or mill test for each shipment of cement and reinforcing steel and/or conduct laboratory tests or spot checks of these materials as received.

d. Mold and test concrete field cylinders as

C. Concrete materials shall be tested as follows: 1. Aggregate shall be tested in accordance with test

requirements ASTM C-33. 2. Cement shall be tested in accordance with ASTM C-150. All cement used on the job shall be accompanied by a certificate, by testing agency,

indicating compliance of cement to all tests. D. Concrete shall be tested for slump and strength as

1. Secure composite samples in accordance with ASTM

2. Samples shall be taken from each mix design placed in any one (1) day or from each 50 cubic vards or fraction thereof of concrete placed in

continuous pours, whichever is the lesser.

3. Cast three (3) cylinder specimens from each sample. Cure two (2) cylinders in the laboratory and one (1) cylinder in the field. The field cured cylinder shall be tested for 7-day strength and the two (2) laboratory cured cylinders shall be tested for 28-day strength. Make and cure cylinders in accordance with ASTM C-31; test in accordance with ASTM C-39. Test reports shall include temperature of air and concrete at site, mix proportions and other data as necessary to determine compliance with

4. Determine slump of the concrete for each sample and whenever consistency of concrete appears to vary, test in accordance with ASTM C-143. Visually monitor concrete during pour and recheck slump when variation is observed.

5. A portion of the air-entrained concrete samples taken, shall be tested to determine the amount of entrained air. Determination shall be made in accordance with either ASTM C-231 or ASTM C-173

a. Should these tests indicate at any time that the concrete being produced does not have an air content within the specified limits, the Contractor shall modify the materials as may be necessary for compliance.

E. If the average strength of the test cylinders for any portion of the structures constitutes a failure as defined in ACI 318, or if the slump is beyond tolerances the Engineer or Owner may, at the Contractor's expense, require changes in the concrete mix proportions; require additional tests in accordance with ASTM C-42; or may declare all concrete work, or which the above mentioned cylinders are representative samples, in violation of the Contract Documents.

F. Should the work be in violation of the Contract Documents or should there be a likelihood of the concrete having been frozen, the Contractor, if so directed by the Engineer or Owner shall, at his own expense, make loading tests. If the unit area or member under consideration fails to pass the loading test or shows signs of failure; it shall either be removed and rebuilt by the Contractor, or additional construction as directed by the Engineer or Owner as necessary to make the structure sound, shall be performed by the Contractor.

1. Conduct loading tests in the presence of representatives of the Engineer and Owner in accordance with Chapter 20 of ACI 318.

G. Submit one (1) copy of all reports, certificates and test results to the Engineer, Owner and Contractor. 1. Concrete Test Reports must include the following minimum information:

a. Store name and Number and Location b. Specified Mix Design and Strength in PSI

d. Name of Concrete Supplier

c. Location of Concrete Supplier

e. Air Temperature at time of Placement

f. Concrete Temperature at time of Placement

g. Who cast cylinders, conducted Slump Test, etc. (such as testing agency employee)

h. Date Cylinders cast

i. Size of Cylinder (such as 6" x 12") i. Cylinder area (such as 28.26 sq. in.)

k. Slump in inches I. Water added on-site in gallon

m. Percent of Air-Entrainment n. Age of Test Cylinder (7-day, 28-day, etc.)

o. Total Load at Failure

p. Strength in PSI q. Type of Failure (kind of Cylinder break: shear, split, etc.)

2.04 MORTAR TEST (if applicable)

A. An independent testing laboratory meeting the requirements of ASTM C-91 Compressive Strength and Water Retention of Mortars shall determine the quality of materials and strength of all mortar.

B. Three (3) mortar cylinders shall be taken for each 2.000 square feet of concrete unit masonry walls. One (1) cylinder shall be tested at seven (7) days and two (2) cylinders shall be tested at twenty-eight (28) days meeting the specified strength.

C. Three (3) grout cubes shall be taken for each 50 cubit yards of grout, or part thereof. One (1) cube shall be tested at seven (7) days and two (2) cubes shall be tested at eight (8) days with an average strength of the two meeting the specified strength.

D. Submit one (1) copy of the test reports each to the Engineer, Owner and Contractor, END OF SECTION 01410

SECTION 02100 - SITE PREPARATION

PART 1: GENERAL 1.01 SCOPE

A. Perform all work required for the complete and satisfactory execution of all site preparation indicated on the drawings and specified becein.

B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

1. General and Supplementary Conditions of the Contract
2. Division 1 — As applicable 3. Section 01410 - Testing Laboratory Service

4. Section 02200 - Earthwork 1.02 PROTECTION OF EXISTING FEATURES

A. Do not interfere with use of public right-of-way. Maintain free and safe passage to and from.

B. Cease operations immediately and notify Engineer and Owner if safety of adjacent structures appears to be endangered. Take precautions to properly support structures. Do not resume operations until safety is

C. Prevent movement, settlement or collapse of all adjacent services, sidewalks, etc. Assume liability for such movement, settlement, or collapse. Promptly repair damage at no cost to the Owner.

1.03 MAINTAINING ACCESS

A. Do not close or obstruct public or private roadways without permits. Conduct operations with minimum interference to public or private roadways.

PART 2: PRODUCTS

NONE

PART 3: EXECUTION

3.01 CLEARING AND GRUBBING A. The site shall be cleared of all vegetation, trees,

stumps, roots, boulders, grasses, organic matter, debris and deleterious materials not designated by the Owner or indicated on the Plans to be preserved. All cleared and grubbed material shall be disposed of off-site by the Contractor. It is the intent of this specification to provide for the removal and disposal of all obstructions and objectionable materials not specifically provided for elsewhere on the Plans and in

B. Areas where organic fill is exposed due to cleaning and grubbing shall be reported to insure the organic fill is propertly exhumed, if necessary. All exhumed organic fill shall be legally disposed offsite in a manner as required by local and state authorities.

3.02 TOPSOIL

A. Natural surface soil is very limited on this site, however, where existent in grassed areas shall be removed from the limits of the work and stockpiled in an area approved by the Owner and Engineer. The topsoil stockpiles shall be maintained in a confined area and protected from excessive erosion. Upon completion of all utilities and paving, replace topsoil on all unpaved areas within the limits of the work. Fine grade topsoil to final grade within a tolerance of 60.1 foot.

3.03 DISPOSAL OF MATERIALS

END OF SECTION 02100

A. Material resulting from the site preparation work and not scheduled to be salvaged and which is unsuitable for reuse on the project, shall become the property of the Contractor and shall be legally disposed of off-site in an approved disposal facility.

B. Debris, rubbish and other material shall be disposed of promptly and shall not be left until final cleanup

SECTION 02200 - EARTHWORK

PART 1: GENERAL

1.01 SCOPE

Contract

1.03 EXISTING UTILITIES

A. Perform all work required for the complete and

Division 1 — As applicable

Plans and specified elsewhere.

satisfactory execution of all site preparation indicated on the drawings and specified herein. B. Related information or work specified elsewhere in

approved per Paragraphs 3.02 A. through 3.02 E (above), earth fill meeting the requirements of Paragraph 2.02 A. of this section, shall be placed in loose eight (8)-inch horizontal lifts on the prepared subgrade. Each lift must be moisture conditioned and the Project Manuals includes, but is not limited to. compacted per Paragraph 3.02 D. and then tested and approved by the Soils Engineer in accordance with the following: Section 01410. 1. General and Supplementary Conditions of the

Section 01410 - Testing Laboratory Service A. Earth fill under areas to be landscaped or . Section 02100 - Site Preparation seeded/sodded shall be placed on prepared unclassified 5. Section 02510 - Asphaltic Concrete Payement excavation identical to Paragraph 3.03 A; of this

6. Section 02511 - Portland Cement Concrete Pavement section except that loose horizontal lifts placed can be as thick as twelve (12) inches. Each lift must be 1.02 DESCRIPTION OF WORK moisture conditioned & compacted per Paragraph 3.02 D. A. Unclassified Excavation: All required excavation 3.05 MOISTURE CONTROL within the construction limits, including grading, parking areas, and drives; the removal, prope A. If the moisture content is too high, adjust to utilization or disposal of all excavated material and the shaping and finishing of all site earthwork in

within the specified limits by spreading the material and permitting it to dry. Assist the drying process by onformity to the lines and grades as shown in the discing or harrowing if necessary. When the material too dry, sprinkle each layer with water. Work the moisture into the soil by harrowing or other method approved by Soils Engineer. A. The Plans show the approximate location of all known

3.07 MATERIAL DISPOSAL

Services".

END OF SECTION 02200

PART 1: GENERAL

1.01 SCOPE

stockpile areas.

3.03 PLACEMENT OF EARTH FILL UNDER PAVEMENT

A. After unclassified excavation is executed,

inspected, proof-rolled, scarified, compacted, and

3.04 PLACEMENT OF EARTH FILL UNDER LANDSCAPED AREAS

A. Where any portion of the surface becomes eroded or

establish proper condition and grade prior to topsoil

otherwise damaged, repair the affected area to

A. Excess excavated material shall be placed in

B. Dispose of unsuitable material legally without

A. The Contractor will appoint an independent

SECTION 02221 — EXCAVATION, TRENCHING

EMBEDMENT, AND BACKFILLING FOR UTILITIES

backfilling for installation of storm sewers.

2. Division 1 - As applicable

Section 02200 — Earthwork

1.02 REQUIREMENTS AND CODES

1.03 EXISTING CONDITIONS

5. Section 02400 - Storm Drainage

A. Perform all work and furnish all supplementary items

required for the excavation, trenching, embedment, and

B. Related information or work specified elsewhere in

the Project Manuals includes, but is not limited to the

1. General and Supplementary Conditions of the

3. Section 01410 - Testing Laboratory Services

A. All storm sewers shall be trenched, bedded, and

A. The Contractor shall become thoroughly familiar with

B. By submitting a bid, the Contractor affirms that he

observable above ground conditions affecting work under this section. The Contractor shall report any

report to the Owner prior to commencing with work. No

additional compensation will be made for work performed

after a discrepancy has been discovered but prior to

C. The Contractor may, at his own expense, conduct

additional subsurface testing as required for his own

natural phenomena, and existing utilities & structures

information is furnished only for the information and

convenience of the Contractor, and the accuracy or

B. Plans, surveys, measurements, and dimensions under

which the work is to be performed are believed to be

correct, but the Contractor shall have examined them

for himself during the bidding period, as no additional

A. The work shall be executed in such manner as to

property and existing improvements such as, but not limited to: streets, curbs, paving, utility lines and

movement, undermining, washout, and other hazards

B. In case of any damage or injury caused in the

project work shall be repaired or replaced to their

Contractor shall replace, at his own cost, existing

C. Buried structures, utility lines, etc., including

original condition at the completion of operations. The

bench marks, monuments, and other reference points

those which project less than 18 inches above grade.

which are subject to damage from construction equipment

shall be clearly marked to indicate the hazard. Markers

shall indicate limits of danger areas, by means which

other construction equipment, and shall be maintained

will be clearly visible to operators of trucks and

at all times until completion of Project.

satisfaction of, and without cost to the Owner.

performance of the work, the Contractor shall, at his

own expense, make good such damage or injury to the

Existing roads, sidewalks, and curbs damaged during the

private property. Protect existing structures and

prevent any damage to adjacent property and any other

structures, monuments, bench marks and other public and

foundations from damage caused by settlement, lateral

1.05 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

compensation will be made for errors and inaccuracies

completeness of this information is not guarantee

is from the best sources presently available. Such

A. Information on the Drawings and in the

Specifications relating to subsurface conditions

the site, consult records and drawings of adjacent

structures and of existing utilities and their

influence the work of this Section.

1.04 INFORMATION NOT GUARANTEED

that may be found therein.

created by earthwork operations.

which are disturbed or destroyed.

connections, and note all conditions which may

has carefully reviewed the soils report and any

discrepancies found in the field or with the soils

backfilled in accordance with the applicable City of

Dallas and the North Central Texas Council of

Governments Standard Details and Specifications.

commercial testing laboratory to perform tests as

described in Section 01410 - "Testing Laboratory

causing expense or damage to Owner.

designated embankment areas, berms, or designated

notify the Engineer and Owner. 1.04 INFORMATION NOT GUARANTEED

excavation but are not shown on the Plans, immediately

underground utility lines and structures. Where pipes.

ducts and other structures are encountered in the

A. Information on the Drawings and in the Specifications relating to subsurface conditions, natural phenomena, and existing utilities and structures is from the best sources presently available. Such information is furnished only for the information and convenience of the Contractor, and the accuracy or completeness of this information is not augranteed.

B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be current. The Contractor shall report any discrepancies found in the field or with the plans and specifications to the Owner prior to commencing with work. No additional compensation will be made for work performed after a discrepancy has been discovered but prior to its resolution.

1.05 REQUIREMENTS AND CODES

A. The following Specifications are minimum requirements and shall govern except all local, county. state, and/or federal codes and ordinances shall govern when their requirements are in excess of those specified herein.

1.06 SITE CONDITIONS

A. No improvements shall be installed until required testing has been done on all fill or backfill 1.07 TESTING AND INSPECTION

A. The Contractor shall be responsible for coordinating and scheduling all testing activities required by other sections of the Project Drawings and Specifications

1.08 SUBMITTALS A. Submit the following samples to the Testing Laboratory:

> 1. Fill and Backfill for proposed storm sewer improvements.

B. Submit all Testing Lab results to Engineer, Owner,

PART 2: PRODUCTS

2.01 EQUIPMENT

A. Use only equipment that has been approved for this B. Grading Equipment: Furnish, operate and maintain such equipment as is necessary to produce uniform

layers, section and smoothness of grade for compaction and drainage. C. Compaction Equipment: Use sheepfoot type rollers either tractor drawn or self propelled, rubber tired

rollers, or other equipment capable of obtaining the D. Dynamic Compaction: If desired by the Owner, perform Dynamic Compaction in accordance with the procedures and recommendations specified in the Geotechnical

Report (when applicable). E. Sprinkling Equipment: Use tank trucks, pressure distributors, or other equipment designed to apply water uniformly and in controlled quantities to

variable surface widths. F. Miscellaneous Equipment: Scarifiers, disks, spike tooth or spike tooth harrows, earth hauling equipment. and other equipment must be suitable for construction

2.02 MATERIALS

A. Imported fill material used under pavements, shall consist of low plasticity material having a plasticity index (PI) between 5 and 15, a liquid limit less than 40, and containing a minimum of 15% fines (material passing the 200 sieve).

PART 3: EXECUTION

moisture content.

3.02 UNCLASSIFIED EXCAVATION A. After knocking off tops of existing ridges in site to form uniform sections, excavate to lines, grades,

and elevations indicated on the Plans for subsequent construction of slopes or pavement. Notify Engineer i unsatisfactory materials are encountered. B. Inspect the subgrade for soft spots, and proof-roll as necessary to provide firm surface. All areas of cut and uncut areas to receive fill shall be tested by the

C. Adequate grades shall be maintained during construction to allow proper drainage and to prevent interference or delay of the work.

D. All exposed subgrade beneath proposed pavement (not

inches and moisture conditioned and compacted to 95%

existing) shall be scarified to a depth of eight (8)

density per standard proctor at or above optimum

Soils Engineer prior to placing fill or improvements.

E. When wet excavation is encountered, the excavated area shall be de-watered and kept free of water. All saturated material shall be removed, filled with new material and tested before fill or improvements are placed.

1.06 SHORING AND SHEETING

A. Provide shoring, sheeting and/or bracing at excavations, as required, to prevent collapse of earth and/or organic fill material at side of excevations as required by state law.

B. Comply with OSHA Standards, other applicable federal, state and local regulations, or in the absence thereof, with the provisions of the AGC Manual.

C. Remove sheeting and shoring and the like, as backfilling operations progress, taking all necessary precautions to prevent collapse of excavation sides

D. Contractor shall provide trench safety system as required by local, state and/or federal law. 1.07 TESTING AND INSPECTION

A. The Contractor shall be responsible for coordinating

and scheduling all testing and inspection required by

other sections of the Project Manual and governing

regulatory agencies having jurisdiction over certain B. All excavation, embedment, backfill and compaction operations shall be observed and tested by the Soils Engineer per Section 01410.

PART 2: PRODUCTS

2.01 BACKFILL MATERIAL

A. All backfill material shall be a clean material and meet the requirements as stated on the Plans.

B. Native, on-site material can be used if it meets the requirements stated above and in Section 01400. All material must be free of large clods, rocks, roots, organic matter, or other deleterious material.

A. Embedment for storm sewer lines shall be crushed

(a) Retained on 1-1/4 in, sieve: 0%

2.02 PIPE EMBEDMENT MATERIAL

rock or like material. 1. Gradation Requirements

(b) Retained on No. 10 sieve: 95-100% 2. Deleterious Substances. Crushed stone embedment shall contain not more than one (1%) percent by weight of organic matter, clays, loam, or pebbles and shall contain not more than five (5%) percent by weight of any one or combination of slate, shale, schist, or soft particles of sandstone.

PART 3: EXECUTION

3.01 EXCAVATION

A. During excavation, pile material suitable for backfilling in an orderly manner for enough from the bank of the trench to avoid overloading, slides or cave-ins. Remove as indicated or directed all excavated materials not required or suitable for backfill,

B. Grade as necessary to prevent surface water from flowing into trenches or other excavations. Remove any water accumulating in trenches or other excavations, using pumping or other approved means. C. Excavate by open cut with trenching machine or back

hae. Where machines other than ladder or wheel type trenching machines are used, do not use excavated material composed of large chunks or clods for backfill, but dispose of such material and provide other suitable material for backfill without additional D. Dig the trench the proper width for laying pipe, as

shown on the Plans. Cut banks of pipe trench as nearly

vertical as practical. Remove stones as necessary to avoid point-bearing. Overexcovate wet or unstable soil from the trench bottom to permit construction of a more E. Be careful not to overexcavate. Accurately grade the trench bottom to provide uniform bearing and support for each section of the pipe on undisturbed soil at every point along its entire length, except where necessary to excavate for bell holes and for proper

for joints after the trench bottom has been graded, Make bell holes and depressions for joints no deeper, F. Install sheeting and bracing in trenches and other excavations with vertical slides, as necessary to support the sides. Sheeting may be pulled after excavation has been backfilled, but not without

sealing of pipe joints. Dig bell holes and depressions

3.02 EMBEDMENT

A. After trench is cut to the correct dimensions and grades, as shown on the Plans, the trench shall be nspected to verify the trench bottom and walls are free of water.

to the depth shown on the Plans and compact in

accordance with Section 01410, and shaped to receive the pipe to be laid. C. After the pipe is placed, fill the trench to the depth shown on the Plans in maximum six (6)-inch lifts, and compact to minimum 95 percent of medium density per

B. Spread embedment material in the base of the trench

D. Reference Plans for Special Embedment Details in areas where organic fill is existent.

3.03 PIPE INSTALLATION

A Storm - Limit clear space on either side of the pipe as shown on the Plans. The pipe shall be laid accurately in line and grade, with the spigot end downstream, entering the bell to full depth and in sucl manner as not to drag earth into the annular space for the joints. Pipes shall be fitted together and matched so they will form a smooth and uniform invert.

3.04 BACKFILLING

A. All trenches shall have clean material per Paragraph 2.01 A. of this section, placed in loose eight (8)-inch lifts, moisture conditioned and compacted per Section 02220, Paragraph 3.02 D. B. Backfill lifts shall be tested per Section 01410.

3.05 PROTECTION OR REMOVAL OF UTILITY LINES

A. Existing utility lines, shown on Drawings or known to the Contractor prior to excavation and that are to be retained, as well as utility lines constructed during excavation operations, must be carefully protected and satisfactorily repaired if damaged. Any lamage to lines not shown will be reported immediately. When utility lines that are to be removed are encountered, notify the Engineer so that measures can be taken to avoid interruption of service.

END OF SECTION 02221

PART 1: GENERAL 1.01 SCOPE

A. Extent of shoring and bracing work includes, but is not limited to, the following. 1. Design and construction of shoring and bracing

SECTION 02222 - TRENCH SAFETY SYSTEMS

for all trench excavation exceeding five feet deep as necessary to protect persons, other improvements and excavation against loss of ground, caving embankments or structural movement in accordance with current OSHA standards. 2. Submission of a detailed plan of a trench safety

system prepared and sealed by a Professional Engineer registered in the State of Texas and knowledgeable and experienced in this field for inclusion in the Contract. 3. Development and submission of a safety program consistent with current OSHA standards which shall

govern the presence and activities of individuals working in and ground the trench excavation. 4. Provision for daily inspections to ensure that

trench safety requirements are being met.

5. Obtaining of soil borings and soil analysis necessary to design the plan.

7. Protection for permanent burial of sacrificial

6. Maintenance of shoring and bracing

8. Removal of bracing as required B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to the

1. General and Supplementary Condtions of the 2. Division 1 - As applicable 3. Section 01410 - Testing Laboratory Services

5. Section 02221 - Excation, Trenching, Embedment,

and Backfilling for Utilities 1.02 QUALITY ASSURANCE

> A. Supervision. Engage and assign design and supervision of shoring and bracing work to a qualified foundation consultant. Submit name of engaged consultant and qualifying technical experience.

L Section 02200 - Earthwork

B. Regulations. Trench safety systems shall be accomplished in accordance with the detailed specifications set out in the provisions of Excavation Trenching and Shoring, OSHA Standards 29 CFR, Part 1926. Subpart P. as amended, including Proposed Rules published in the Federal Register (Vol. 52, No. 72) on Wednesday, April 15, 1987. The sections that are incorporated into these specifications by reference include Section 1926-650 through 1926-653. Legislation that has been enacted by the Texas Legislature (H-B No. 1569) with regard to Trench Safety Systems, is hereby

incorporated, by reference, into these specifications. C. Inspection, The Contractor shall make daily inspections of the trench safety system to ensure that the systems meet OSHA requirements. Daily inspection is to be made by a "competent person" provided by the Contractor. If evidence of possible cave-ins or slides is apparent, all work in the trench shall cease until the necessary precautions have been taken by the Contractor to safeguard personnel entering the trench. It is the sole duty, responsibility and prerogative of the Contractor, not the Board or the CM, to determine the specific applicability of the designed trench safety systems to each field condition encountered on the project. The Contractor shall maintain a permanent record of daily inspections.

1.04 SUBMITTALS A. Layout Drawings. Before starting trench excavation or related work, provide design and calculations and layout drawings for trench safety systems, shoring and bracing systems and other data prepared and sealed by a END OF SECTION 02222 registered Professional Engineer licensed in the State

A. Before starting any excavation or related work, the

1. Check and verify governing dimensions and elevations. Survey condition of adjoining properties. Take photographs to record any prior settlement or cracking of structures, pavements and other improvements. Prepare a list of such damages. verified by dated photographs and signed by

benchmark elevations sufficiently distant so as not to be affected by movement resulting from excavation 3. During excavation, resurvey benchmarks weekly, employing a licensed Land Surveyor licensed in the State of Texas. Maintain accurate log of surveyed elevations for comparison with original elevations.

1.06 EXISTING UTILITIES

A. Protect existing active sewer, electricity and other utility services and structures.

PART 2: PRODUCTS

2.01 MATERIALS

A. General. Provide suitable shoring and bracing materials which will support loads imposed. Materials need not be new. but should be in serviceable condition.

B. If wood is part of shoring system, remove before placement of backfill, and do not allow to be placed in concrete.

C. Permanent (sacrificial) shoring shall be of a non-decomposing metal (gaivanized, coated or grouted) composition. No wood forms will be

allowed as permanent shoring.

PART 3: EXECUTION

3.01 SHORING

A. Wherever shoring is required, locate the system to clear permanent construction and to permit forming and finishing of concrete surfaces. Provide shoring system adequately anchored and braced to resist earth and hydrostotic pressures, and level loads as necessary

B. Shoring systems retaining earth on which the support or stability of existing structures is dependent must be left in place at completion of work.

A. Locate bracing to clear existing features and other permanent work. If necessary to move a brace, install new bracing prior to removal of original

B. Do not place bracing where it will be cast into or included in permanent pavement. C. Install internal bracing, if required

D. Maintain bracing until structural elements are rebraced by other bracing or until permanent construction is able to withstand lateral earth and hydrostatic

underlying soils and damage to structures, pavements, facilities and F. Repair or replace, as acceptable to

in stages to avoid disturbance to

A. All work to be completed in this Section shall be included in the lump sum

A. Payrnent for all trench safety systems shall be made in a lump sum per base bid. safety system design, labor, tools, materials, equipment and incidentals to

ndicated in the scope of this project.

Job No. 00018

Ccei

Drawn By

SITEWORK

EXPIRATION DATE: AFFIXATION DATE:

A

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SPECIFICATIONS

LUIS D. CARRERA

of 15

up,

PART 4: METHOD OF MEASUREMENT

PART 5: BASIS OF PAYMENT

the system and backfill.

Plan No.

Sheet Title

Sheet No.

to prevent spreading or distortion to E. Remove sheeting, shoring and bracing

the Construction Manager, adjacent work damaged or displaced through the installation or removal of shoring and bracina work.

bid for the several bid items as

complete the work, including removal of

of Texas. System design calculations must be acceptable to the City of Dallas. 1.05 JOB CONDITIONS

Contractor and the Construction Manager. 2. Survey adjacent improvements, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations. Locate datum level used to establish

Promptly notify the Construction Manager if changes in elevation occur or if cracks, sags or other damage is evident.

3930 Meredith Avenue Dallas, Texas 75211

CANALINA consulting engineers, inc.

Structural, Civil, & Construction Engineering

55182 FOISTERED Tel: (214) 330-4771 Fax: (214) 330-2167 Date 131 2005

Signed:

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Date

31 JAN 2005

Revisions

subarades. B. Related work specified elsewhere:

1. General and Supplementary Conditions of the Division 1 — As applicable . Section 01410 - Testing Laboratory Service 4. Section 02220 - Earthwork 5. Section 02510 - Asphaltic Concrete Payement 6. Section 02511 - Portland Cement Concrete Pymt.

1.02 QUALITY ASSURANCE

The following Codes, Regulations, Reference Standards and Specifications apply to work included in this

A. Codes and regulations of the jurisdictional

1. ASTM: C-131, D-1556, D-698, D-2217, D-2922,

2. Texas SDHPT: Test Methods: Tex-110-E, Tex-116-E 1.03 SUBMITTALS

Submit the following for approval in accordance with Section 01410 - "Testing Laboratory Services", and the additional requirements as specified for each:

A. Samples. At least seven (7) calendar days in advance of desired date of approval, submit for testing two (2) 1 cubic foot samples of base material or certified tes results of same, performed by an independent test laboratory certifying that the proposed material complies with the specifications.

B. Source Quality Control.

1. Not less than 10 calendar days prior to the beginning of work, inform the Contracting Officer of source of material to be used.

2. Once the material has been approved, do not change source of supply without authorization and then only after receiving approval of the new source

3. Do not construe approval as approval of the entire location, but as approval only insofar as the material continues to conform to specified requirements.

4. Maintain quality of material which will be sampled and tested as directed by the Contracting

5. The Contracting Officer has the right to reject material at the worksite by visual inspection, pending sampling and testing.

C. Documentation. Submit delivery tickets from each load delivered to the worksite which include, as a minimum the supplier, material and its composition and material weight.

PART 2: PRODUCTS

2.01 FLEXIBLE BASE

B. Physical Requirements.

A. In accordance with Item 249, Flexible Base (Delivered), of the Texas State Department of Highways and Public Transportation (Texas SDHPT).

. Type: Type A, crushed or broken aggregate 2. Gradation: Grade One

2.02 BINDER

Test the binder to ensure the following requirements are met:

A. Liquid Limit. Not to exceed 40 when tested in accordance with ASTM D-4318. B. Plastic Limit. Determined in accordance with ASTM

C. Plasticity Index. Minimum of 4 and maximum of 12 when calculated in accordance with ASTM D-4318.

D. Prepare samples for testing according to ASTM D-4318 and in accordance with the requirements of ASTM D-2217. E. Materials retained on the No. 4 sieve shall have a

percent wear of not more than 45 when tested according

F. The material when tested under The Wet Ball for Determining the Disintegration of Flexible Base Materials, Tex-116-E, shall not develop more than 50 percent soil binder.

G. The material, when tested in accordance with Tex-110-E, shall meet the required gradation

PART 3: EXECUTION

3.01 EQUIPMENT

A. Use equipment of size and weight necessary to shape material as shown and to compact material to specified minimum density. B. Provide sufficient equipment to achieve specified

compaction at rate consistent with rate of placement of

C. Obtain approval of equipment prior to use on the

D. Maintain equipment in first class operating

condition while in operation. 3.02 PLACING MATERIAL

A. Subgrade Preparation. In accordance with Section 02220 - "Earthwork".

B. Place material in its final location so as to

provide uniformity of grading throughout work. C. Place material in uniform layers so that each layer

has compacted lift thickness of 6 inches maximum and 3 inches minimum, for the full width of the layer. D. Where thickness is shown or specified as more than 6 inches, place material in two or more layers of equal

thickness so that specified requirements are met.

3.03 COMPACTION

Moisture content and densities shall conform to Paragraph 3.04 of this Section for the following: A. During placing and compacting, maintain moisture content and dry density within the allowable tolerances

B. Compact each layer to required density before

C. Compact areas not accessible to rollers to required

density by means of approved mechanical tampers.

1. Construct base to the following tolerances:

a. Thickness of base: Plus zero or minus 3/8-inch

(1) Plus 1/8-inch or minus 3/8-inch of

(2) Deviation not more than 1/2-inch from

steel straightedge as specified in

Section 02511 - "Concrete Pavement".

2. Maintain moisture content within two percentage

points of optimum moisture content. The "Density

3. Compact material under curbs and gutters,

accordance with ASTM D-698.

B. Tests.

yards placed.

PART 4: METHOD OF MEASUREMENT

PART 5: BASIS OF PAYMENT

PAYMEN'

3.06 DEFICIENT BASES

Control® method of compaction shall be used in accordance with Item 249, Flexible Base, TX. SDHPT.

gutters, curbs and pavement to 95 percent of maximum

4. Compact material under sidewalks to 95 percent

content, in accordance with ASTM D-1556 or D-2922

1. Laboratory reference optimum moisture content and

maximum density shall be determined in accordance

with ASTM D-698. Field density shall be determined in accordance with ASTM D-1556-D-2922.

first 100 cubic yards placed; and a minimum of one

2. Perform no less than three (3) tests for the

(1) additional test for every additional 100 cubic

A. Maintain base for pavement in specified conditions

A. Where directed, repair or replace with new material

all payement base that does not meet requirements.

A. All work to be completed in this Section shall be

A. The work described in this Section will be paid for

compensation for shaping and fine grading the roadbed

at the Contract unit price which price shall be full

for securing and furnishing all materials, including

and labor involved in weighing the material wher

required; for loosening, blasting, excavation,

Section and related other sections of the

specifications and plans.

SECTION 02400 - STORM DRAINAGE

END OF SECTION 02230

Contract

Structures

1.02 REQUIREMENTS, CODES

1.03 SUBMITTALS

all royalty and freight involved; for furnishing scales

screening, crushing and temporary stockpiling when

required; for loading all materials; for all hauling

and delivering on the road; for spreading, mixing,

blading, dragging, shaping and finishing; and for all

necessary to complete the work as specified in this

A. This section includes all work required to complete

B. Related information or Work specified elsewhere in

1. General and Supplementary Conditions of the

. Section 01410 — Testing Laboratory Services

6. Section 02514 - Concrete Construction for

A. The following are minimum requirements and shall

federal codes and ordinances shall govern when their

B. All materials and construction shall conform to the

Governments Standard Specifications for Public Works

Construction, the Texas Department of Transportation

Storm Drainage Requirements, and the City of Dallas

requirements for public works construction, standard

A. Manufacturer's product data shall be submitted by

the Contractor to the Engineer for the following:

latest edition of the North Central Texas Council of

govern, except that all local, state, county, and/or

5. Section 02221 - Excavation, Trenching, Embedment,

the Project Manuals includes, but is not limited to,

as indicated by the Plans and Specifications, and

furnish all supplementary items necessary for the

proper installation of the site storm drainage.

2. Division 1 - As applicable

and Backfilling for Utilities

requirements are in excess hereof.

Castings
 Embedment Material

5. Joint Material

3. Pipe and Fittings, each type 4. Precast Concrete Structures

4. Section 02200 - Earthwork

manipulation, materials, labor, tools and incidentals

as indicated in the scope of this project.

included in the lump sum bid for the several bid items

until succeeding pavement course is placed.

maximum density at or above optimum moisture

density at or above optimum moisture content, in

D. Puddling or jetting is prohibited

b. Surface of base:

3.04 FIELD QUALITY CONTROL

A. Allowable Tolerances

2.01 MATERIALS, GENERAL

A. Bedding: See Section 02221 - Excavation, Trenching, Embedment, and Backfilling for Utilities

B. Backfill: See Section 02221 - Excavation, Trenching Embedment, and Backfilling for Utilities C. Storm sewer pipe twelve (12) inches in diameter and larger: Reinforced concrete pipe conforming to ASTM

C-76, Class III or IV as shown on the Plans. 2.02 PIPE JOINT MATERIAL

A. For concrete pipe or box sections, furnish rubber gasket pipe joint material, such as Ram-Nek flexible plastic gasket as manufactured by the K. T. Snyder Company, Inc., or approved equal and meeting all requirements of Federal Specification SS-S-00210. "Sealing Compound, Performed Plastic for Pipe Joints". Use a primer of the type recommended by the manufacturer of the compound used.

B. Joints in precast pipe sewers shall be formed in a careful, thorough, and workmonlike manner. All pipe composed of one part portland cement and two parts sand, so placed as to form a durable watertight joint. The ends of the pipe shall be cleaned thoroughly and wetted before making the joint.

2.03 INLET AND JUNCTION BOX MATERIAL

A. Grate inlet shall consist of a precast or cast-in-place box with a grate cover and frame as specified on the Plans.

B. All frames and covers for inlets shall be non-rocking and heavy duty.

C. Finish mortar conforming to ASTM C-270 Mortar Type M using Portland Cement. Use aggregate conforming to ASTM

A. Material storage, sequence, construction signing or barricades, any required permitting, & cleanup shall be the sole responsibility of the Contractor. All layouts and arades shall be as shown on the Plans, immediately notify the Engineer of any discrepancies or conflicts in the Plans prior to proceeding with the Work.

3.02 EXCAVATION, BEDDING, AND BACKFILL

. All excavation, bedding, and backfill shall conform to Section 02221, the Plans, and the North Central Texas Council of Governments Standard Specifications for Public Works Construction, latest edition.

3.03 PIPE INSTALLATION

A. Furnish and place in position, as directed, all necessary stakes, grade and botter boards for locating work. Do not place pipe until the excavation has been completed, the bottom of the trench condition, line and arade has been obtained. Lay pipe accurately to line and grade in a straight line with spigot or tangue end of the pipe pointing in the direction of flow. Fit pipes together and match them so that when laid, the pipe will form a sewer or culvert with a smooth and uniform invert.

3.04 CONCRETE PIPE OR BOX JOINT INSTALLATION

A. Cold compound joints:

. Neoprene or Rubber Gasket Joints: Rubber gaskets meeting ASTM C 443 may be used in joining concrete pipe. Ends of the pipe must be accurately made and designed for use in gaskets. Lay the pipe sections in the trench to true alignment and grade. Take care in placing pipe and making field joints. Properly lubricate the arrove end of the pipe and rubber gasket with flax soap or equal. Mineral lubricants will not be permitted. Stretch a aasket over the spigot end of the pipe and carefully seat the gasket in the groove. Do not twist, roll, cut, crimp, or otherwise injure gaskets or force them out of position during closure of the joint. Joints in pipe twelve (12) inches and over may be pulled home by suitable winch, come-along or jack, three (3) tons minimum capacity. Correct joint rebound before backfilling pipe. Pull or push home pipe smaller than twelve (12) inches in diameter by suitable means. Remove foreign matter or dirt from the pipe and keep the pipe clean during and after laying.

B. Positioning: Joints made with cold compound maybe pulled home by means of a suitable winch or other suitable power equipment or a come-along. Do not use of bar stuck into the ground for positioning joints on pipe large than ten (10) inches. A bar may be used to push home the joints in pipe ten (10) inches and smaller, provided the joints are pushed all the way home. Positioning will be checked by measuring the laid length per joint so that the number of joints multiplied by the laying length per joint must equal the actual length of sewer in any given section. Pull pipe home in a straight line with all parts of the pipe during or after the pulling operation. Pull or push home rubber gasket joints by any suitable means that will provide adequate pressure to ensure proper assembly of the joint. Use special care to ensure that the joints are pushed home and remain in that position. Complete the joints in accordance with the published instructions of the manufacturer. Neoprene or rubber gasket joints shall, unless otherwise specified, be pointed on the outside with cement mortar.

3.05 GRATE INLET INSTALLATION

A. Construct or install all inlets to line and grade at locations shown or as established by the Engineer. Construct the box section of the inlets per the Plans and Section 02514. Neatly cut off all injet leads at the inside face of the inlet wall and point up with mortar. Shape the floor of all inlets by filling with mortar to facilitate drainage and prevent siltation.

END OF SECTION 02400

SECTION 02510 - ASPHALTIC CONCRETE PAVEMENT

PART 1: GENERAL

1.01 SCOPE

Perform all Work and furnish all materials required

for manufacturing and placing hot mix asphaltic concrete pavina surface.

B. Related information or Work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

1. General and Supplementary Conditions of the 2. Division 1 — As applicable 3. Section 01410 - Testing Laboratory Services

1.02 REFERENCES A. The Asphalt Institute - Manual MS-4 - The Asphalt Handbook

4. Section 02200 - Earthwork

B. The Asphalt Institute - Manual MS-13 - Asphalt C. ASTM D-946 - Asphalt Cement for Use in Pavement D. Standard Specifications for Construction of Highways, Streets, and Bridges for the Texas Department

> edition thereof). E. North Central Texas Council of Governments Standard

1.03 QUALITY ASSURANCE

A. Perform work in accordance with current Texas Department of Transportation Specifications and the North Central Texas Council of Governments Standard Specifications for Public Works Construction, latest

of Transportation, State of Texas (1982 or latest

Specifications for Public Works Construction, latest

B. American Society for Testing and Materials.

C. Mixing Plant: Conform to current Texas Department of Transportation Specifications.

D. Obtain materials from same source throughout

A. Testing and analysis of asphaltic mix will be performed under provisions of Section 01410. B. Submit proposed mix design for review prior to

C. Testing organization will take samples and perform tests in accordance with ASTM methods. 1.05 SUBMITTALS

commencement of Work.

B. Submit manufacturers' instructions under provisions of General Conditions.

A. Submit product data under provisions of General

.06 ENVIRONMENTAL REQUIREMENTS A. Do not place asphalt when base surface temperature is less than 50ø F and falling.

A. Prime Coat: MC-30 or MC-70 Asphalt.

C. Asphalt Cement: ASTM D-946.

dust, free of foreign matter,

Mix Asphaltic Concrete, Type "O".

support paving and imposed loads.

0.20 gallons/square yard.

3.03 PLACING ASPHALT PAVEMENT

inaccessible to rolling equipment.

with 10-foot straight edge.

design thickness.

B. Tack Coat: Grade SS-1 Emulsified Asphalt

F. Mineral Filler: Finely ground particles of

D. Aggregate for Surface Mix: ASTM C-131, C-136, D-423, D-424.

limestone, hydrated lime, or other approved mineral

A. Use dry materials to avoid foaming. Mix uniformly

B. Hot mix asphaltic concrete surface course should

A. Prepared subgrade shall be tested in conformance with Section 01410 and approved by Soils Engineer.

B. Verify cement treated base is dry and ready to

C. Verify grades and elevations of base are correct.

A. Apply prime coat over substrate at uniform rate of

B. Apply primer in accordance with manufacturer's

D. Apply primer to contact surfaces of curbs and

A. Place surface course within 24 hours of priming base

B. Place each course to compacted thickness identified

C. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas

D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

A. Flatness: Maximum variation of 1/4 inch measured

B. Compacted Scheduled Thickness: Within 1/4 inch of

C. Variation from True Elevation: Within 1/2 inch.

C. Use clean sand to blot excess primer.

D. Beginning of installation means acceptance of

Transportation Standard Specifications Item 340 - Hot

meet the requirements of Texas Department of

E. Fine Aggregate: ASTM C-131, C-136, D-423, D-424.

PART 2: PRODUCTS

PART 3: EXECUTION

3.02 PREPARATION

3.04 TOLERANCES

2.02 ASPHALT PAVING MIX

3.05 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under

provisions of Section 01410. 3.06 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for six (6) hours. 3.07 SCHEDULE

A. The surface course noted below shall apply for each specific thickness as noted on the Plans.

Percent Aggregate Type "D" by Weight or Volume Passing 1/2" sieve 100 Passing 3/8" sieve 85 to 100 Passing 3/8" sieve, 21 to 53 retained on No. 4 sieve Passing No. 4 sieve, 11 to 32 retained on No. 10 sieve Total retained on No. 10 sieve 54 to 74 Passina No. 10 sieve, retained on No. 40 sieve 6 to 32 Passing No. 40 sieve, retained on No. 80 sieve Passing No. 80 sieve, retained on No. 200 sieve 3 to 27 Passing No. 200 sieve The asphaltic material shall form from 4 to 8 percent

of the mixture by weight or from 9 to 19 percent of the mixture by volume, unless specified otherwise on the

END OF SECTION 02510

SECTION 02511 - PORTLAND CEMENT CONCRETE PAVEMENT

(SEE SHEET S702 FOR THIS SECTION)

SECTION 02514 - CONCRETE CONSTRUCTION FOR STRUCTURES

PART 1: GENERAL

A. Section includes all materials and work required t complete, as indicated by the Plans and Specifications, and furnish all supplementary items necessary for the proper installation of Concrete Construction for

B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to. the following:

 General and Supplementary Conditions of the Division 1 - As applicable 3. Section 01410 — Testing Laboratory Services I. Section 02200 — Earthwork

1.02 REQUIREMENTS AND CODES

A. The following Specifications are minimum requirements and shall govern, except that all federal, local, county, and/or state codes and ordinances shall govern when their requirements exceed those specified

B. Comply with all requirements of the North Central

Texas Council of Governments Standard Specifications

5. Section 02400 - Storm Drainage

for Public Works Construction latest edition. PART 2: PRODUCTS

2.01 MATERIALS A. Use Portland Cement conforming to ASTM C-150, Type I unless authorized to use Type II. Meet ASTM Specifications for weight variations and length of storage. Use no caked cement. Deliver in bags for site-mixed concrete. Use only one brand of cement in

any one structure. B. Furnish clean water, free from harmful amounts of oils, acids, alkalis or other damaging substances, in accordance with ACI and ASTM requirements.

C. Provide coarse aggregates conforming to ASTM C-33. Unless otherwise specified, use standard size from No. 4 to 1-1/2 inch and modify only in accordance with the following. Supply aggregate not larger than 1/5 of the narrowest dimension between sides of forms, nor larger than 3/4 of minimum clear spacing between reinforcing

D. Provide fine aggregate meeting the requirement of

E. Use an air entraining admixture conforming with ASTM

F. Use new billet steel bars, Grade 60, conforming to ASTM A-615. Provide bars manufactured by the open hearth process. When placed in work, steel must be free from dirt, scale, rust, paint, oil, or other harmful materials. Where shown, use welded wire fabric conforming to ASTM A-82. Supply the gauge and spacing shown, with longitudinal and transverse wires electrically welded together at points of intersection, using welds strong enough not to be broken during handling or placing. Weld and fabricate fabric sheets according to ASTM A-185. Submit manufacturer's certificates giving properties of steel and supply specimens, free of cost, for testing when required

G. For curing concrete, provide liquid membrane forming compounds. Use a Type 2, white pigmented compound conforming to ASTM C-309. H. Nonshrinking grout shall be nonmetallic, nonstaining

type conforming to CRD-C-621-84A and ASTM C-827 I. Expansion joints shall be one—half (1/2) inch thick asphalt impregnated cane fiber expansion joints, conforming to ASTM D-1751 with removable plastic cap

leaving one-half (1/2) inch deep for sealant.

J. Control joint shall be rigid plastic joint forms. minimum one-eighth (1/8) inch thick, two (2) inches deep, with arrow shaped tip and removable top as manufactured by Burke ("Zip Strip") or approved equal. Sawout control joints can be used in lieu of plastic

2.02 STORAGE OF MATERIALS

2.03 CONCRETE

A. Store cement off of the ground in a well-ventilated weatherproof building.

B. Prevent mixture of foreign materials with aggregate and preserve graduation of aggregate.

C. Materials:

surface of concrete.

1. General Form Lumber. Use seasoned lumber of

good quality, free from loose or unsound knots, knot

holes, twists, shakes, decay and other imperfections

Use S4S lumber for facing or sheathing. Use nominal

two (2) inch lumber as minimum thickness of forms

adequately to prevent misalignment. Provide lumber

2. Lining for Rubbed Finished Surfaces. Provide form

irregularities for exposed concrete faces which are

to be given rubbed finish. Use plywood of 1/4 inch

minimum thickness, and preferably oiled at the mill.

Re-oil or lacquer the liner on the job before using.

with waterproof adhesive backed on adequate stude

and wales. In such cases, form lining will not be

required. Apply rubbed finishes where indicated on

strips, or similar uses, of redwood, cypress or

pine. Furnish a quality that will not split when

milicut molding dressed on all faces. Unless

concrete. Provide form tie holes not larger than 7/8

spreaders. Remove spreaders which are separate from

E. Treat facing of forms with approved form oil before

wet surfaces of forms which will come in contact with

concrete is placed. When so directed, treat both sides

of face forms with oil. Apply oil before reinforcement

is placed.Immediately before the concrete is placed,

F. Applicable provisions of these Specifications apply

equally to metal forms. Counter sink bolt and rivet

heads on facing sides. Use only metal forms which

Keep metal free from rust, grease or other foreign

material that will tend to disfigure or discolor

construction loads without significant distortion.

A. Install rigid falsework having no excessive

used for design of structures.

3.05 PLACING REINFORCEMENT

END OF SECTION 02514

settlement or deformation. Use sound timber in

falsework centering. Use hardwood timber for wedges.

B. Construction for a design load of 110 pounds per

A. Place reinforcing steel accurately and secure it

and hot-dip galvanized metal chairs and spacers.

the Engineer before concrete is placed.

adequately in position in the forms. Maintain reinforcing steel in place using an approved concrete

Provide a bat tie pigtail extending more than 3/8 inch

B. Provide minimum spacing center—to—center of parallel

bars 2-1/2 times nominal diameter of the bar. In no

case permit clear distance between bars be less than

Minimum cover measured from surface of concrete to

1-1/2 times maximum size of coarse aggregate.

face of reinforcing bar will be three (3) inches.

C. Bend reinforcing steel to required shapes while

will be cause for rejection. Detail bars in accordance with ACI 315-57.

steel is cold. Excessible irrequignities in bending

D. Splicing of bars will not be permitted without

written approval. Approved bar bending schedules or

placing drawings constitute written approval. Splice

reinforcement but not less than 12 inches. Stagger

splices or else locate at points of low tensile stress.

bars with a lop of 24 times the diameter of

SECTION 02525 - CONCRETE CURBS

(SEE SHEET \$702 FOR THIS SECTION

3930 Meredith Avenue

Dallas, Texas 75211

CASSESA consulting engineers, inc.

Structural, Civil, & Construction Engineering

be inspected per Section 01410 and approved by

past the outside face of the bar. All reinforcing steel

cubic foot for concrete, and a live load of 50 pounds

per square foot of horizontal surface of formwork with

maximum unit stresses 125 percent of allowable stresses

3.04 FALSEWORK

present a smooth surface and which line up properly.

concrete. Provide metal pan forms that are clean and in

good condition, free from dents and rust. Provide Plans

and a gauge and in condition to support concrete and

forms as concrete is being placed.

Facing may be constructed of 3/4 inch plywood made

nailed and which can be maintained to true line. Use

approved thickness for general use and back by

sufficient number of stude and wales.

surfaces or form-lining surfaces free of

for bottom of caps, or 3/4 inch form plywood backed

of nominal one (1) inch thickness or form plywood or

which would affect strength or impair the finished

 C. Store reinforcing steel to protect it from mechanical injury and rust.

A. Use either ready mixed concrete conforming to ASTM C-94 or site-mixed concrete.

2.04 MEASUREMENT OF MATERIALS A. Measure materials by weight

> B. Water may be measured by volume. C. Cement may be measured by bag. One bag weighs 94

2.05 CLASSIFICATION AND PROPORTIONING

A. Concrete shall be normal weight concrete consisting of a proportioned mixture of Portland Cement, fine and coarse aggregate and water.

1. Concrete proportions shall be selected on the basis of trial mixes conforming to ACI 211.1.

otherwise provided, fillet forms at sharp corners 2. The Contractor shall employ a qualified testing and edges with triangular chamfer strips of 3/4 laboratory to provide concrete design mixes for the inch, measured on sides. Project. The testing laboratory shall establish the proportioning of materials and additives required to D. Use metal form ties of approved type to hold forms produce the concrete strengths specified. in place. Do not use wire ties or snap ties. Remove form ties to depth of at least 3/4 inch from surface of

B. Proportion materials to produce concrete that will have a minimum compressive strength at twenty-eight (28) days of:

1. Reinforced Concrete Inlets: 3,500 psi, 540

pounds minimum of cement per cubic yard, air 2. All other reinforced concrete structures: 3,000

C. Slumps shall range from two and one-half (2-1/2)inches minimum to a four (4) inch maximum. Tolerance

D. Air content shall be six (6) percent plus/minus one (1) percent by volume using ASTM test method.

psi, 517 pounds of cement per cubic yard minimum,

E. Admixtures to retard or accelerate setting, reduce water ratio or prevent freezing shall not be used, unless approved by the Owner and Engineer.

No calcium chloride admixtures may be used

in slump shall not exceed ACI recommendation.

F. No fly ash or plasticizers shall be used.

2.06 QUALITY OF CONCRETE

A. Test cylinders or beams will be made in numbers required to maintain a check on the strength of the concrete as described in Section 01410. Provide and maintain curing facilities as required in ASTM C- 31. Moisture tests of aggregate will be made at sufficient intervals for accurate batching and proportioning.

B. Meet ASTM standard for sampling and testing as described in Section 01410. Use ASTM C-42 for test

C. Apply normal Portland Cement seven (7)—day and twenty-eight (28)-day tests and meet minimum strengths required at three to seven days as directed by Section

D. Should seven (7)-day or three (3)-day test strengths as applicable for type of cement being used, fail to meet established strength standards, extended curing or resumed curing on those portions of structure represented by test specimen may be required. Should additional curing fail to give required strength, strengthening or replacement of portions of structure which fail to develop required strength could be required at the Contractor's sole expense.

PART 3: EXECUTION

3.01 WORK CONDITIONS A. Mix concrete in quantities required for immediate use, and place concrete within one (1) hour after start of mixing. Clock stamp delivery ticket of all batches with time of mixing at ready mix plant. Notify Engineer, Owner, and testing laboratory a minimum of

forty—eight (48) hours prior to placement of concrete.

B. When adverse weather conditions affect quality of concrete, postpone the work. Do not mix concrete when the air temperature is at or below 40øF and falling. Concrete may be mixed when the temperature is 35øF and rising. Take temperature readings in the shade away from artificial heat. If authorized for placement during cold weather, place concrete in accordance with PCA Standard, Design and Control of Concrete Mixtures. Protect concrete from temperatures below 32øF until the concrete has cured for a minimum of three days at 70øF

or five days at 50øF. 3.02 CONCRETE MIXING

A. Ready-mixed concrete shall conform to ASTM C-94 and the National Ready Mix Concrete Association. Use of non-aditating trucks is not permitted. Use of retempered concrete is not permitted.

B. The addition of water at the job site is permitted providing that only sufficient water is used to provide a workable mix and the design water/cement ratio and the maximum slump are not exceeded. The addition of cement at job site to maintain water/cement ratio is NOT permitted.

C. Air-entraining agents shall be introduced into the concrete, in accordance with manufacturer's D. Arrange for continuous supply of all materials. Do

ready-mix supplies without written approval of the

NOT change source of cement, aggregate, admixtures, or

3 03 FORMS

Owner and Engineer.

A. Provide mortar-tight forms sufficient in strength to prevent bulging between supports. Set and maintain forms to lines designated. Construct forms to permit removal without damage to concrete. Forms may be given slight draft to permit ease of removal. Provide adequate cleanout openings and before placing concrete, remove extraneous matter from within forms.

B. Use fluid pressure of 150 pounds per cubic foot and live load of 50 pounds per square foot on horizontal surfaces with maximum unit stresses of 125 percent allowable stresses used for design of structures.

SECTION 02584 - PAVEMENT MARKING

PART 1: GENERAL

A. Perform all work required for pavement marking as

indicated on the plans and specified herein. B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

> 1. General and Supplementary Conditions of the **EXPIRATION DATE:**

> 2. Division 1 - As applicable 3. Section 02511 - Portland Cement Concrete Pavement 4. Section 02525 - Concrete Curbs **AFFIXATION DATE:**

C. Pavement marking and other painting to be done under this specifications includes:

 All parking space marking, directional arrows, curbs, entrance arrows, fire lane lines, accessible parking symbol on pavement, diagonal safety marking required at accessible parking spaces and any other marking or painting required by codes, ordinances or laws in conjunction with traffic movement or control and parking on the site.

1.02 REQUIREMENTS, CODES 3. Special Form Lumber. Make molding for chamfer

A. The following specifications are minimum requirements and shall govern, except that all local, state, county and/or federal, codes and ordinances shall govern when their requirements exceed those

B. Contractor shall coordinate fire lane requirements with City of Dallas Fire Department.

A. Submit complete manufacturer's product data sheets inch in diameter. Do not burn off ties. Do not use pipe

> 1.04 JOB CONDITIONS A. Environmental Requirements. Do not apply materials in rainy or faggy conditions, or when ambient or pavement temperatures are below 50øF, or when such

conditions are anticipated in subsequent 8 hours.

PART 2: PRODUCTS

for marking paint.

A. Paint for all fire lane striping shall be a weather resistant traffic paint, bright red, as manufactured by Sherwin-Williams or Glidden.

B. Paint for letters along fire lane striping and all other paints shall be a weather resistant traffic paint, white, as manufactured by Sherwin-Williams or

PART 3: EXECUTION

3.01 PREPARATION

3.02 APPLICATION

A. Inspect all surfaces to be painted. Contractor shall repair all surface damage and defects. B. Clean surface of all foreign material.

curbs at all drive approaches, and as required to form all directional arrows on site. B. Apply one coat, 9 mil. thickness in four (4)-inch-wide stripes at the spacing and angles as shown on the plans to create parking stalls, handicap symbols, all safety marking as required by the Americans with Disabilities Act of 1990, and any other striping or symbols required by city, county, state,

A. Apply one coat, 9 mil. thickness on face and top of

and/or federal codes, ordinances, or laws. C. If one coat does not provide acceptable coverage, recoat until acceptable coverage is attained.

3.03 PROTECTION A. Protect adjacent surfaces from overspray or

END OF SECTION 02584

S

Job No.

Date

Revisions Δ

Ccei

Sheet Title

SITEWORK SPECIFICATIONS

LUIS D. CARRERA 55182 FOISTERE

Signed:

Tel: (214) 330-4771

Fax: (214) 330-2167

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CONCRETE PAVEMENT

installation of Portland Cement Concrete Pavement B. This item shall consist of furnishing and placing Portland Cement Concrete Povement on the prepared

subgrade, in conformity with the Plans, as herein specified. All reinforced concrete pavement excluding sidewalks and turned down curb, shall conform to th provisions and requirements of these Specifications.

C. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to, the following:

1. General and Supplementary Conditions of the 2. Division 1 - As applicable 3. Section 01410 - Testing Laboratory Service 4. Section 02100 - Site Preparation 5. Section 02200 - Earthwork

B. Comply with all requirements of the North Central

Texas Council of Governments Standard Specifications

A. Determine pavement thickness by measuring cores

taken at points as directed. At least one core will be

taken for each 500 square yards of pavement. The

Owner's representative will perform the initial coring.

core, additional cores must be taken along the length

of deficient thickness. Take the additional cores at

of pavement in each direction from the identified point

C. Pavement meeting or exceeding designated thickness

will be accepted provided design strengths as specified

D. Pavement within 1/4-inch of the designated thickness

will be considered of satisfactory thickness. Payement

thickness will be determined by the same method as

used to determine the area of deficient thickness. The

Contractor shall remove the pavement and replace it

with pavement of the designated thickness for which

payment will be made as specified. No reimbursement

A. Do not mix different classes of aggregate without

prior written approval. The class of aggregate being

used can be changed before or during the job with

proper notice. The new class must meet specification

B. Segregated aggregate will be rejected. Before using

aggregate whose particles are separated by size, mix

C. Aggregates mixed with dirt, weeds or foreign matter

will be rejected. Do not dump or store aggregate on the

them uniformly to grading requirements.

A. Submit items listed in Section 01410.

A. Coordinate with all other trades to allow

installation of embedded items, sleeves, conduit, etc.,

A. Portland Cement. Sample and test cement to verify

referenced standards may be used if the method of

B. Water. Furnish clean, drinkable water free from

injurious amounts of oils, acids, alkalis or other

cement, provide satisfactory weighing devices.

handling is approved by the Engineer. When using bulk

deleterious substances, in accordance with ACI and ASTM

C. Coarse Aggregate. Provide crushed stone or gravel

specified limits, complying with ASTM C-33. When tested

by standard laboratory methods, coarse aggregate must

Percent by Weight

Percent Retained

0 to 20

25 to 65

which is clean, hard, durable and well graded within

The maximum percentage by weight of deleterious

substances must not exceed the following values.

conform to the following requirements:

Other local deleterious substances,

The sum of the percentages of above

Furnish coarse aggregate worn no more than 45 percent

Conform to the following grading requirements for

aggregate tested on a standard square-opening sieve.

D. Fine Aggregate: Provide washed sand having clean,

hard durable grains, well graded from coarse to fine.

other injurious matter. When tested by standard

The sand must be free from soft or flaky particles or

laboratory methods, fine aggregate must conform to the

compliance with standards of ASTM C-150. Type I unless

otherwise approved by Engineer. Bulk cement which meets

will be granted for removing pavement of unsatisfactory

which is deficient by more than 1/4-inch of the

unsatisfactory thickness. The area of unsatisfactor

designated thickness will be considered as

1.04 HANDLING AND STORAGE

prepared subarade.

prior to placing concrete.

A. See Section 01410.

1.05 SUBMITTALS

1.06 COORDINATION

PART 2: PRODUCTS

2.01 MATERIALS

1.07 QUALITY ASSURANCE

requirements.

Constituents

Clay Lumps Soft Fragments

2-1/2 inches

3/4 inch

1-3/4 inches

following requirements:

Removed decantation

such as friable pieces

constituents shall not exceed

when tested according to AASHTO T96.

on the Plans have also been achieved or exceeded.

B. If a deficient thickness is found in an initial

10-foot intervals until cores are obtained which

measure the designated thickness. The cost of

additional cores to determine area of deficient

thickness will be paid for by the Contractor.

for Public Works Construction, latest edition.

1.03 ACCEPTANCE OF PAVEMENT THICKNESS

Cold bend reinforcing steel to shapes shown. Once steel . Section 02230 - Aggregate Base has been bent, it may not be re-bent. 7. Section 02525 - Concrete Curbs

Wire fabric must be of gauge and facing shown and must meet ASTM A-82. Use fabric in which longitudinal and 1.02 REQUIREMENTS, CODES transverse wires have been electrically welded at A. The following Specifications are minimum points of intersection. Welds must have sufficient requirements and shall govern, except that all local, strength not to be broken during handling or placing county, state, and/or federal codes and ordinances Welding and fabrication of fabric sheets must conform shall govern when their requirements exceed those to standard ASTM A-185. specified herein.

Furnish the manufacturers certificate giving property of steel. Provide specimens for testing, when required.

Weight removed by elutriation test must be not more

When subjected to color test for organic impurities,

manufactured by the open hearth process and conforming

to ASTM A-615, Grade 60. Store steel to protect it from

mechanical injury and rust. At the time of placement,

steel should be free from dirt, scale, rust, paint, oil

fine aggregate must not show color darker than

E. Reinforcing Steel. Provide new billet steel

Screen or Sieve

3/8 inch screen

1/4 inch screen

100 mesh sieve

20 mesh sieve

than two (2) percent.

or other injurious materials.

standard color.

F. Air Entraining Agent. Furnish an air entraining agent which meets standard of ASTM C-260. Use MB-VR by Master Builder's Company, Air-in by Hunt Process Corporation-Southern, or an approved equal.

G. Expansion Joint Material. Furnish filler board of selected stock. Use wood of density and type as

1. Clear, all-heat cypress weighing no more than forty (40) pounds per cubic foot, after being oven dried to constant weight.

2. Clear, all-heat redwood weighing no more than thirty (30) pounds per cubic foot, after being oven dried to constant weight.

elastomeric polymer exceeding Federal Specifications 1. Load Transmission Devices. Provide smooth steel bar

H. Joint Sealing Compound. Furnish hot-poured

dowel, as shown. Steel bars must conform to standards of ASTM A-615, Grade 60. J. Metal Supports for Reinforcing Steel and Joint Assembly. Employ metal of approved shape and size.

Space supports as directed. K. Liquid Membrane Forming Compound for Curing Concrete. Provide Type II white pigmented compound

L. Refer to ACI Standard 305 for hot weather concreting when outside temperature is 75ø F and rising.

conforming to standards of ASTM C-309.

2.02 PROPORTIONING

A. Responsibility. Proportioning of the concrete mix is the responsibility of the Contractor. Design the concrete mixture and furnish a statement giving the proportion of materials in the mix. Submit commercial laboratory report showing that proportions and materials selected will produce laboratory mixed concrete of the specified quality, having strength 10 percent higher than that specified. Submit mix design to the Owner for their approval prior to commencing concrete paving. Testing of design mixes is the Contractor's responsibility, per Section 01410.

B. Concrete Mix. Provide a concrete mix that is uniform and workable. Design the mix to produce concrete which will have a compressive strength as specified on the Plans and typical sections. Settlement of concrete must be at least 2-1/2 inches, but no more than four (4) inches, when gauged by a standard slump

C. Concrete mix must contain at least 5.0 sacks of cement per cubic yard, with not more than 6.5 gallons of water, net per sack of cement. The net amount of water is the amount of add at the mixer, plus prewater in the aggregate, minus absorption the aggregate displays in minutes. No water allowance will be made for evaporation after batching. Coarse dry aggregate will not exceed 85 percent of the loose volume o

D. Add the air entraining agent to the concrete to produce the effect that could be obtained by use of air-entrained Portland cement, as specified in ASTM C-150. Use the amount needed to entrain six (6) percent ñ1 percent of the total volume of concrete. Add the agent to the batch in a solution of the mixing water. Batch this solution by means of a mechanica batcher capable of accurate measurement. Ensure a uniform distribution throughout the batch during the specified mixing period.

E. Retardant is optional when the temperature exceeds 85ø F, and must be approved by the Engineer. Proportion as recommended by the manufacturer. Use the same brand as used for the air entraining agent. Add and batch the material using the same methods as used for the air entraining agent.

2.03 MIXING EQUIPMENT

A. Mixing equipment must be in first class working condition and must be inspected and approved by the Owner before paving operations will be permitted.

B. Weigh materials separately and accurately using standard scales attached to a standard batching plan approved by the Owner. Consider a sack of cement weighing 94 pounds to be one (1) cubic foot. Employ beam type or springless dial type scales. Equip the beam type with a springless dial indicator showing at least 100 pounds over or under the required weight. Use graduated scales or dial indicator showing increments of five (5) pounds or less. Use scales accurate within four (4) pounds per 1,000 pounds per net load in the

C. A capacity of not less than a 21-E mixer, as rated by Mixer Manufacturers Bureau of Associated General Contractors, is required. Provide a speed regulator to hold a mixer to the normal speed of revolution. Equip the mixer with an automatic timer and lock for the discharging device to prevent discharge until all materials have been mixed together for the minimum time required. The timer and lock must operate independently of the drum. Also provide a bell to indicate completion of a mixing time. The bell must be plainly audible to a distance of 50 feet from the mixer.

Conform to the following grade requirements for Equip the mixer with an accurate device to measure water within one (1) percent of the total amount required. Construct the measuring drum with an opening Percent Retained to atmospheric pressure when the measured amount of by Weight water is inside. Place and construct the drum so that a single batch of water can be discharged into a calibrated tank or a weighing device attached to the mixer, without seriously delaying paving operations. Check the operation of this water measuring device 0 to 5 15 to 50

> D. Batch trucks, for the transportation of measured materials from the batching plant to the mixer, must be 3.04 covered right to prevent excessive evaporation or any

2.04 MIXING

A. Central batching and transit mixing will be permitted. A central mixing plant will be allowed upon approval of mixing and handling methods.

B. Mix concrete in a batch-mixer as specified only in such quantities as are required for immediate use. Thoroughly mix aggregate and cement for a period of no less than 50 seconds, computed from the time the last aggregate disappears into the drum until the concrete begins to appear in the discharge chute. Lock the mixer discharge with an automatic timing device until the specified time has elapsed. Introduce water into the drum during the first 15 seconds of mixing. Discharge the entire contents of the drum before the materials are placed for a succeeding batch. Retempering or remixing will not be permitted.

C. For transit mixed concrete use a water-type truck mixer. Mix each batch for 1.00 revalutions at the mixer manufacturer's mixing speed. Perform additional mixing or agitation at the speed specified for agitation.

D. Stamp the time of loading the transit-mix truck on the delivery ticket before the truck leaves the plant. Equip truck mixers with water tank and measuring devices which permit positive measurement of mixing water. When aggregate contains more than six (6) percent water, place the concrete within 1/2 hour after the introduction of water. When gaggegate contains from three (3) percent to six (6) percent water, place the concrete within 1/2 hour after the introduction of cement. Transmit-mix concrete must conform to other applicable requirements of this section.

PART 3: EXECUTION

3.01 WEATHER CONDITIONS

A. Place concrete only when the air temperature is above 350 F and rising. The Contractor is responsible for the quality and strength of concrete placed under any weather conditions.

3.02 EQUIPMENT

Equipment for preparing subgrade and for finishing and compacting must be in good working order and be approved before commencing work.

A. Subgrade Planer and Template. Use a subgrade planer with adjustable cutting blades to trim the subgrade to the exact sections shown on the Drawing. Select a planer with visible rollers which ride on the form. The planer frame must have sufficient weight so that it will remain on the form at all times, and have such strength and rigidity that, under tests made by changing the support form wheels to center, the planer will not develop deflection of more than 1/8 inch. Tractors used to pull the planer must not produce ruts or indentations in the subgrade. When the slip form method of paving is used, operate the subgrade planer on a prepared track grade or have it controlled by an electronic sensor system operated from a string line that establishes the horizontal alignment and elevation of the subbase.

Provide a template for checking the contour of the subarade. The template must be long enough to rest upon side forms and have such strength and rigidity that under tests made by changing the support to the center, the template will not show deflection of more than 1/8. Fit the template with accurately adjustable rods to gauge the cross sections of the slab bottom when the template is restina on the side forms.

B. Machine Finisher. Provide a power-drive, transverse finishing machine designed and operated to strikeoff and consolidate the concrete. Select a machine with two screens accurately adjusted to the crown of the pavement and with a frame equipped to ride on the form. Use a finishing machine with rubber tires if it operates on concrete pavement.

C. Hand Finishing. Provide a mechanical strike and tamping template the width of the pavement to be finished. Shape the template to the pavement section. Also provide floats of approved design. Provide two bridges for finishing expansion and dummy joints and necessary edging and finishing tools to complete the

D. Burlap Drag for Finishing Slab. Furnish four piles of 10-cunce burlap material fastened to a bridge to form a continuous strip of burlap the full width of the pavement. The three (3) foot width of burlap material must be in contact with the pavement surface. Keep the burlap drags clean and free of encrusted mortar.

E. Vibrators. Furnish mechanically operated synchronized vibrators mounted on ramping bar which rides on the forms. Also employ approved hand-manipulated mechanical vibrators. Furnish vibrators with a frequency of vibration providing the maximum consolidation of concrete without segregation

F. Traveling Form Paver. A traveling form paver of approved design may be used in lieu of construction methods employing forms, consolidating, finishing and floating equipment. If a traveling form paver is used, all requirements of this specification for subgrade, pavement tolerances, pavement depth, alignments, consolidation, finishing and workmanship must be met in full. If a traveling form paver proves inadequate, in providing a pavement which meets the drawings and specification in all respects, its use will be immediately discontinued when so ordered by the conventional methods will be used. Equip the traveling pover with a longitudinal transangular finishing float adjustable to crown and grade. The float must be long enough to extend across the pavement practically to the side forms or the edge of the slab.

Prior to beginning paving operations, ensure that a continuous deposit of concrete can be made at the paver to minimize starting and stapping. Pave by conventional means those locations inaccessible to a traveling pover, or having horizontal or vertical curvature that a traveling pover cannot negotiate.

Do not place reinforcing steel mechanically. Where the Plans require tie bars to be installed for adjacent paving, securely tie and support the bars to prevent displacement. Alternatively, tie bars may be installed with an approved mechanical bar insert mounted on a traveling—form pover. Replace any povement in which tie bars assume a final position other than that shown on

A. Properly prepare, shape and compact each section of subgrade before placing forms, steel or concrete, per requirements of Section 02230. After forms have been set to proper grade and alianment, use a subgrade planer to shape the subgrade to its final cross section. Check the contour of the subgrade with the template. No concrete shall be placed until the subgrade passes compaction testing per Sections 01410

A. Side Forms. Use metal forms of approved shape and section. A form as deep as the pavement edge thickness is preferred. Forms with depth up to one (1) inch greater or less than povement thickness may be used Forms with less depth than povement thickness will be brought to required depth by securely attaching wooden planks of approved section and size to the bottom of the form. Use a form section at least 10 feet in length, and staked in position with at least three pins. Forms must have adequate strength to withstand machine loads without visible springing or settlement. Use forms free from warps, bends, and kinks and sufficiently true to provide a straight edge and verify that it conforms with the requirements for the surface of completed pavement. Use flexible or curved forms of wood or metal to set proper radius on curves of 100 feet radius or less.

B. Form Setting. Rest forms directly on subgrade. Do not shim with pebbles or dirt. Remove subgrade that will not support the loaded form. Replace and compact subgrade to required density. Accurately set forms to required grade and alignment and, during the entire operation of placing, compacting and finishing of concrete, do not deviate from this grade and alignment more than 1/8 inch in 10 foot of length. Do not remove forms for at least 24 hours after the completion of finishing operations. Provide a supply of forms that will be adequate to complete with this requirement and for orderly and continuous placing of concrete. Set the forms and check the grade for at least 130 feet ahead of the mixer.

Adjacent slabs may be used instead of the forms, provided that the concrete is well protected from possible damage by finishing equipment. These adjacent slabs must not be used for forms until the concrete has aged at least seven (7) days. For short radius curves, forms less than 10 feet in length of curved forms may be used. For curb returns at street intersections and driveways, wood forms of good grade and quality may be used. Do not use any material which, in the opinion of the Engineer, is unsuitable for forms.

3.05 REINFORCING STEEL AND JOINT ASSEMBLIES

A. Accurately place reinforcing steel and joint assemblies and position them securely in accord with details shown. Wire reinforcing bars securely together at intersections and splices. Bars and coatings must be free of rust, dirt, or other foreign matter when the concrete is installed.

B. Place pavement joint assemblies at required locations and elevation and rigidly secure all parts in required positions. Install dowel bars accurately in joint assemblies as shown, each parallel to the pavement surface and to the center line of the pavement and rigidly secure in the required position to prevent displacement during placing and finishing of concrete. Accurately cut header boards, joint filler and other material used for forming joints to receive each dowe

A. Batches not placed as specified within 30 minutes

Fine aggregate containing more than six (6) percent

moisture and coarse aggregate containing more than

subgrade or subbase in successive batches. Distribute

the pour by shoveling or by other approved methods.

concrete to the required depth and for entire width of

C. Do not use rakes in handling concrete. At the end of

the day or in case of unavoidable interruption of more

section on which work has been suspended is not less

than 10 feet from the preceding joint. Sections less

D. Take special care in placing and spading concrete

to prevent honeycombing. Voids in the edge of the

A. Consolidate the concrete using an approved mechanical vibratory unit designed to vibrate concrete

pavement, not quite touching the side forms. Equip the

B. Space individual vibrators at close enough intervals

pavement uniformly. Mount mechanical vibrators to avoid

C. Furnish enough hand-manipulated mechanical vibrators

for proper consolidation of concrete along forms, at

A. Finish concrete povernent by power-driven transverse

to vibrate and consolidate the entire width of the

contact with forms, reinforcement, transverse or

joints and in areas not covered by mechanically

finishing machines or by hand finishing methods.

After transverse screening, use a hand-operated

template forward in the direction of the work.

B. Use the transverse finishing machine to make at

longitudinal float to test and level the surface to the

C. Hand finish with a mechanical strike and tamping

template as wide as the pavement to be finished. Shape

the template to the pavement section. Move the strike

maintaining a slight excess of material in front of the

cutting edge. Make at least two trips over each grea.

Screen the pavement surface to the required section.

Work the screen with a combined transverse and

progressing. Maintain the screen in contact with the

D. On narrow strips and transitions, finish concrete

reinforcement and embedded fixtures. Strike off

pavement by hand. Thoroughly work concrete around

concrete with a strike off screen. Move the strike-off

motion in direction work is progressing, maintaining

slight excess of materials in front of the cutting

screen forward with combined transverse & longitudinal

the screen in contact with the forms, and maintaining a

edge. Tamp the concrete with a tamping template. Use a longitudinal float to level the surface.

forms. Use a longitudinal float to level the surface.

longitudinal motion in the direction work is

least two trips over each area. Make the last trip over

a given area a continuous run of not less than 40 feet.

finished pavement will be cause for rejection.

internally. Extend a vibratory unit across the

unit with synchronized vibrators.

longitudingi joints.

controlled vibrators.

required grade.

3.08 FINISHING

3.07 COMPACTING

against forms and at longitudingl and transverse joints

than 10 feet long must be removed and replaced.

than 30 minutes, place a transverse construction joint

at the point of stopping work, provided that the

three (3) percent moisture will likewise be rejected.

B. Deposit concrete rapidly and continuously on

after water or cement has been added will be rejected

C. Place all reinforcing steel and secure to chairs.

Cure all concrete pavement by protecting it against from the beginning of curing operations. Immediately after finishing operations have been completed, cover cases in which curing requires the use of water, the curing shall have prior to all water supply or supplies. Failure to provide sufficient cover material of the type the Contractor elects to use, failure to maintain saturation in wet curing methods, lack of requirements, or other failures to comply with curing surface test. Maintain concrete surface wet with a water spray if required, and replace the covering

A. Cotton Mat Method. After the concrete has been finished as specified above, and the concrete has taken its initial set, completely cover the surface with cotton mats and thoroughly saturate with water before application in such manner that they will contact the surface of the concrete equally at all points. Immediately upon the removal of side forms, establish drainage as specified or directed. Completely cover the edges of the concrete, if exposed, with either

Maintain the cotton mats on the concrete for not less than the specified curing period, and keep saturated so when lightly compressed, water will drip freely from them. Keep earth banked against edges of concrete or cotton mats covering edges saturated. The cotton mats used for curing shall meet the following requirements:

1. Each mat shall have a finished width of shrinkage shall be at least six (6) inches longer than the width of the concrete to be cured.

2. The mats shall be composed of a single layer of cotton filler, completely enclosed in a corner of cotton cloth. The cotton filler shall be of low grade cotton, cotton liners or such cotton waste as comber noils or cord flat strips. The mats shall contain not less than 3/4 pound of cotton filler per square yard of mat, uniformly distributed. The cotton cloth used for covering material shall be

4. To insure the complete covering of the concrete where the mats fit together, provide flap extending all along one side of each mat. This flap shall be composed of two thicknesses of the cover material and shall be at least six (6) inches in width.

E. After completion of the straight edge operations, make the first pass of a burlap drag as soon as construction operations permit and before the water sheen has disappeared from the surface. Follow this by as many passes as required to produce the desired texture depth. Permit no unnecessary delays between passes. Keep the drag wet, clean and free from

3.09 SURFACE TESTS

encrusted mortar during use.

A. Test the entire surface before the initial set and correct irregularities or undulations. Bring surface within requirements of the following test and ther finish. Place an approved 10-foot straight edge parallel to the center of the roadway to bridge any depressions and touch all high spots. Do not permit ordinates measured from the face of the straight edge to the surface of the pavement to exceed 1/16 inch pe foot from the nearest point of contact. In no case permit the maximum ordinate to a 10-foot straight edge to exceed 1/8 inch.

3.10 JOINTS

A Placement. Place joints of the types shown on the

8. Construction Joints. Place a transverse construction joint wherever concrete placement must be stopped for more than 30 minutes. Place longitudinal construction joints at interior edges of pavement lanes where required.

Work the concrete well against the bulkhead. The keyway on the longitudinal construction joint may be omitted when a traveling form payer is used, and when No. 5 deformed tie bars, 30 inches long and spaced 18 inches on centers, are used.

C. Expansion Joints. Place expansion joints at radius points of curb returns for cross street intersections. or as shown. Use no boards shorter than six (6) feet. When payement is 24 feet or narrower, use not more than two lengths of board. Secure pieces to form a straight joint. Shape board filler accurately to the cross section of the concrete slab. Use premolded devices of the type and size shown. Use a joint sealing compound

D. Sawed Joints. Saw joints to the details shown on the plans. Vary the time of sawing, depending on existing and anticipated weather conditions, to prevent uncontrolled cracking of the pavement. Saw joints as soon as the concrete has hardened sufficiently to permit cutting the concrete without excessive chipping spalling or tearing. Saw joints at the required spacing consecutively in the sequence of the concrete placement, unless otherwise approved. Use a chalk line or other suitable auide to mark the alignment of the joint, and maintain the saw cut straight from edge to edge of pavement. Wet the surface of pavement cured with membrane-curing compound with water in the region of the saw cut prior to sawing in order to protect the curing membrane from abrasion. Workmen shall wear clean rubber-soled footwear. Limit the number of persons walking on the pavement to those actually performing the sawing operation. Immediately after sawing each joint, thoroughly flush the saw cut and adjacent concrete surface with water until all waste from sawing is removed from the joint. Respray membrane cured surfaces damaged during the sawing operations as soon as the surface becomes dry. The sawing equipment shall be adequate in number of units and power to complete the sawing at the required rate. An ample supply of saw blades shall be available on the job before concrete

placement is started.

loss of moisture for a period of not less than 72 hours and cure the entire surface of the newly laid concrete to meet the requirements specified for whichever one of the following methods the Contractor may elect. In all water to adequately take care of both curing and other requirements shall be cause for immediate suspension of concreting operations. Remove covering material used in curing as necessary to comply with the requirements for material immediately on completion of testing and any required surface correction.

saturated cotton mats or saturated earth.

approximately five feet-six inches (5'6"), and after

Osanburg, weighing not less than 6-3/10 ounces per

3. All mats shall be stitched longitudinally with continuous parallel rows of stitching at intervals of not more than four (4) inches, or shall be tufted both transversely and longitudinally at intervals of not more than three (3) inches. The sewing or tufting shall not be done so tightly that the mat will not contact the surface of the concrete at all points when saturated with water.

B. Waterproofed Paper Method. After the concrete base or pavement has been finished as specified above and the concrete has taken its initial set, wet with water applied in the form of a fine spray and cover with waterproofed paper so placed and weighted as to cause it to remain in intimate contact with the concrete surface. Waterproofed paper used for the curing of concrete shall be of a type and quality approved by the Engineer, it shall be sufficiently strong and tough to permit its use under the conditions existing on street paving work without being torn or otherwise rendered unfit for the purpose during the curing period.

The waterproofed paper shall be prepared to form blankets of sufficient width to cover the entire surface and both edges of the concrete to be cured. Such blankets occasioned by joining paper sheets shall lap not less than five (5) inches and shall be securely sealed with asphalt cement having a melting point of approximately 180ø F. Place blankets to secure an overall lap of at least 12 inches and securely weight this lap to form a closed joint.

Maintain the paper covering in place continuously for

not less than the specified curing period.

Adequately weight the waterproofed paper blankets to prevent displacement or billowing due to wind, and secure the paper folded down over the side of the concrete by a continuous bank of earth. Plowing of this window into place will not be permitted.

Immediately repair all tears or holes appearing in the paper during the curing period by cementing patches over such defects. It shall be the Contractor's responsibility to prevent damage to the paper blankets which affect their serviceability and effectiveness as a concrete curing method. Blankets may be rejected at any time when they do not provide an airtight covering. Paper blankets rejected on account of pin holes or minor tears may be continued in service by folding the blanket over lengthwise, first thoroughly spraying one-half of the blanket with the asphalt cement used for seams. The two thicknesses shall be firmly pressed together and well comented; all blankets shall be firmly pressed together and well cemented; all blankets shall be of a width sufficient to cover the base surface of both edges. Doubled blankets may be rejected for the same causes as provided for single blankets. Immediately mark all paper blankets condemned for identification and then destroy or store entirely separate from approved blankets.

No walking on the paper shall be permitted at any time. and in locations where pedestrian traffic cannot be entirely controlled, provide walkways and barricades or substitute other permissible curing methods on such sections of the concrete.

C. Membrane Method. After the concrete base or pavement has been finished as specified above, spray the concrete with a curing compound suitable for the formation of an impermeable film which will adhere integrally to concrete. Apply in a manner and quantity that will secure a uniform coverage of not more than 200 square feet for each gallon of curing compound

The curing compound used shall contain a quick fading dye of suitable color to assure visibility during application and shall be of such ingredients as will not permanently after the natural color of the concrete. Under the normal conditions suitable for paving operations, the curing compound after application shall dry to touch within 45 minutes and shall dry thoroughly and completely within four (4) hours. When thoroughly dry, it shall provide a continuous flexible membrane free from breaks or pin holes and will not disintegrate, check, peel or crack during the required curing period when tested to meet the requirements of ASTM C-156. The curing compound shall provide a film which will have retained within the specimen the following percentages of the moisture present in the specimen when curing compound was applied: at least 97 percent at the end of 24 hours; a least 95 percent at the end of three (3) days; and at least 91 percent at the end of seven (7) days. The efficiency of the curing compound shall be tested to meet the requirements of ASTM C-156, except that paragraph six (6) of said procedure shall be changed to read as follows: "Immediately after molding, the mold and the specimen shall be weighed to the nearest gram and placed in an atmosphere maintained at a temperature of 115 (plus or minus 5) F and at a relative humidity controlled within the limits of 40 to 45 percent. Means shall be provided for circulating the gir."

3.12 JOINT SEALING

A. Seal joints only when surface and joints are dry, ambient temperature is above 50% F and rising, and weather is not foggy or rainy. Before work is started, the joint sealing equipment must be in first class working condition, and be approved by the Engineer. Use a concrete grooving machine or a power-operated wire brush and other equipment such as plows, brooms, brushes and blowers as required to produce satisfactory

B. Clean joints of loose scale, dirt, dust and curing compound. When required, remove the joint filler to the depth shown. The term joint includes wide joint spaces, expansion joints, dummy groove joints or cracks, either preformed or natural. Remove loose material from concrete surfaces adjacent to joints.

C. Fill joints neatly with joint sealer to the depth shown. Pour sufficient joint sealer into the joints so that, upon completion, the surface of the sealer within the joint will be 1/4 inch below the level of the adjacent surface or at an elevation as directed.

3.13 PROTECTION AND OPENING PAVEMENT TO TRAFFIC

A. Barricade a pavement section from use for at least 72 hours during the curing period. Concrete pavement shall be closed to all traffic including vehicles of the Contractor, until the concrete is not less than seven (7) days old and has attained the minimum average modulus of rupture or compressive strength as required by these Specifications. The period of closure to traffic may be extended if, in the opinion of the Engineer and the Owner, weather or other conditions make it advisable to provide and extension of time of protection. On those sections of pavement open to raffic, seal the joints, clean the povement and place earth against the pavement edges before permitting use by traffic. Such opening of pavement to traffic in no way relieves the Contractor from his responsibility for

3.14 TESTING

A. Laboratory Services. The Contractor will appoint a commercial laboratory. Payment for laboratory services will be as outlined in Division 1 - "General Requirements", see Section 01410.

B. Duties. Arrange for the laboratory to inspect and test materials entering the concrete and check the design of concrete mixes to meet specified strengths uses and finishes. The lab will analyze aggregate for quality, durability, grading, and free water content. The lab will take representative specimens of ingredients and mixes; make test cylinders and measure their compressive strength. The lab will check the moisture content of aggregates and control their mix subject to approval.

SECTION 02525 - CONCRETE CURBS

PART 1: GENERAL

C. Test Procedures. The laboratory will make tests in

conformance with current standard test procedures of

D. Test Reports. The laboratory will promptly furnish

to the Owner, the Engineer and the Contractor.

E. Test Cylinders. Three test cylinders for

written reports covering results of test & inspections

compressive strength test will be made for each 500

square yards or less of pavement that is placed in one

day or as specified by Section 01410. Cylinders will be

tested at the ages of seven (7) and twenty-eight (28)

days. The required strengths at 28 days are 3000 psi

compressive and 500 psi tensile, respectively. Testing

for tensile strength shall be per ASTM Standards for

using applicable ASTM standards for sampling and

Beam Tests. Cylinders will be made, cured and tested

F. Yield. Make a yield test in accordance with ASTM

such cement content is found to be less than that

specified per cubic yard, reduce batch weights until

A. The Owner shall be provided with a two (2) year

Portland Cement Concrete pavement or asphaltic concrete

pavement. The warranty time span shall begin the date

the Owner indicates final acceptance of the pavement.

subcontractor and cosigned by the General Contractor.

unconditional maintenance free warranty on either

The warranty shall be executed by the paving

B. Warranty shall be submitted to Owner.

the amount of cement per cubic yard of concrete

conforms to requirements.

END OF SECTION 02511

ASTM and AASHTO, per Section 01410.

A. Perform all work required to complete, as indicated on the plans and specifications, and furnish all supplementary items necessary for the proper installation of integral and separate concrete curbs.

B. Related information or work specified elsewhere in the Project Manuals includes, but is not limited to the

. General and Supplementary Conditions of the Contract 2. Division 1 - As applicable 3. Section 01410 - Testing Laboratory Services 4. Section 02200 - Earthwork 5. Section 02511 - Portland Coment Concrete Pavemer

C-138 for cement content per cubic yard of concrete. If PRODUCTS

A. Concrete and related materials required for concrete curbs are specifiedin Section 02511 - "Portland Cement Concrete Povement".

B. Mortar for mortar finish composed of one part Portland Cement and 1-1/2 parts of fine aggregate may be used when approved.

PART 3: EXECUTION

3.01 GUIDELINE

Set the quideline to follow the top line of the curb. Attach the indicator to provide a constant comparison between the top of the curb and the guideline.

3.02 FORMS

Brace forms sufficiently to maintain position during pour. Use metal templates cut to the section shown on the curb and gutter drawing. All framework must produce

3.03 REINFORCEMENT

Reinforcing steel, as indicated on the plans, shall be secured in proper position so that the steel will remain in place throughout the pour.

Joints shall match those of the adjoining concrete pavement, unless specifically indicated otherwise on the plans, or joint spacing of existing curb and gutter for separate curb and gutter.

Place concrete in forms to required depth. Consolidate thoroughly. Do not permit rock pockets in the form. Entirely cover the top surfaces with mortar.

3.06 MANUAL FINISHING

A. After concrete is in place, remove front curb forms. Form the exposed portions of curb, using a mule which conforms to the curb shape, as shown. A thin coat of mortar, similar to the mortar used in the concrete mixture, may be worked into the exposed face of the curb using a mule and two handled wooden darby at least three feet long.

B. Before applying the final finish, use a 10 foot straight edge. Move the straight edge up the curb to the back form of the curb. Repeat until the curb is true to the grade and section. Lap straight edge every

C. Steel trowel finish surfaces to a smooth, even finish. Make the face of the finished curb true and straight. Make the top surfaces of the curb uniform width and free from humps, sags, or other irregularities. Surfaces of curb top and curb face must not vary more than 1/8 inch from the edge of a straight edge laid along them, except at grade changes.

D. Finish visible surfaces and edges of the finished curb free from blemishes, from marks and tool marks,

3.07 MECHANICAL FINISHING

Mechanical curb forming and finishing machines may be used instead of or in conjunction with previously described methods, with approval. Use of mechanical methods must provide the curb design and finish as specified and shown on the plans.

3.08 CURING Immediately after finishing operations, cure the exposed surfaces of curbs and gutters in the same manner as concrete

povement END OF SECTION 02525

CARERA consulting engineers, inc.

Structural, Civil, & Construction Engineering

3930 Meredith Avenue

Dallas, Texas 75211

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CIVIL SITEWORK

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Plan No.

31 JAN 2005

Revisions

SPECIFICATIONS

LUIS D. CARRERA

55182 S

Tel: (214) 330-4771

Fax: (214) 330-2167

and of uniform color, shape and appearance.

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Drawn By

AFFIXATION DATE:

EXPIRATION DATE:

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00018

Sheet No.

Carrera Consulting Engineers, Inc.

civil - structural - construction engineering 3930 Meredith Avenue; Dallas, Texas 75211

(214) 330-4771 fax: (214) 330-2167 email: (c277372@aol.com)

Date: 27 December 2006

From: Luis D. Carrera, P.E.

To:

Murdock Management, Inc.

Attn: Mr. Jay Snyder

1595 North Central Expressway, Suite 101

Richardson, Texas 75080

Aircorp - 15900 Dooley Road; Addison, Texas PROJECT:

LIST OF MATERIALS & APPURTENANCES IN PUBLIC INFRASTRUCTURE

Water Service (Each for Domestic and Irrigation Service)

- 1-8"x2" Ford 202B Double Strap Service Saddle
- 1-2" Ford SB1000 Corporation Stop
- 1-2" Copper Type K Soft Drawn Pipe to Curb Stop without Joint
- 1-2" Ford SV43-77W-G Curb Stop
- 1-2" Water Meter with Bass & Hayes #55B Box with Touch-Pad Hole in Lid
- 1-2" Double Check Detector Assembly with Bass & Hayes #55B Box with Touch-Pad Hole in Lid

Water Service (Fire Line)

- 1-8"x6" Mueller H-304 Stainless Steel Tap Sleeve with Mueller 6" Tapping Sleeve
- 1-6" Double Detector Check Device with By-Pass Meter & Precast Concrete Vault
- 1-130 Lineal Feet of 6" PVC Pipe (200 PSI) Meeting ANSI/AWWA C-909-98

Water Service (Fire Hydrant Line)

- 1-8"x6" Mueller H-304 Stainless Steel Tap Sleeve with Mueller 6" Tapping Sleeve
- 1- 200 Lineal Feet of 6" PVC Pipe (200 PSI) Meeting ANSI/AWWA C-909-98
- 1- Standard 90-Degree Bend (MJxFL)
- 1- Gate Valve (FLxFL)
- 1- Fire Hydrant (FL)

Storm Water Drain System

- 1-27 Lineal Feet of 18-inch R.C.P. Storm Sewer Connected to Ex. 30-inch R.C.P. along Dooley Road
- 1- 16 Lineal Feet of 12-inch R.C.P. Storm Sewer Connected to Existing Curb Inlet along Dooley Road
- 1-72 Lineal Feet of 12-inch R.C.P. Culvert in Taxiway Apron
- 2- 12-inch Type "B" Concrete Headwalls at Ends of 12-inch R.C.P. Culvert

Concrete Pavement

- 1- 1208 Square Feet of 8-inch Concrete Pavement at Drive Approaches
- 1-288 Square Feet of 8-inch Concrete Pavement at Street Repairs
- 1- 1553 Square Feet of 4-inch Concrete Sidewalk along Dooley Road
- 1-7796 Square Feet of 10-inch Concrete Pavement at Taxiway Apron
- 1-3735 Square Feet of 8-inch Concrete Pavement within Utility Easement

Cost of Work in Public Infrastructure

Utility Work:

\$ 28,154.00

Concrete Work:

\$ 37,420.00

TOTAL COST: \$65,574.00