

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-QSB

X Quarterly report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the quarterly period ended June 30, 1996 or

Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

For the transition period from _____ to _____

Commission File Number 0-16106

APA OPTICS, INC.

(exact name of small business issuer as specified in its charter)

Minnesota 41-1347235
 (State or other jurisdiction of (I.R.S. Employer Identification
 No.)
 incorporation or organization)

2950 N.E. 84th Lane, Blaine, Minnesota 55449
 (Address of principal executive offices and zip code)

Issuer's telephone number, including area code: (612) 784-4995

Indicate whether the issuer (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the issuer was required to file such reports), and (2) has been subject to the filing requirement for the past 90 days.

Yes X No

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date:

Class:	Outstanding at June 30, 1996
Common stock, par value \$.01	8,146,360

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PART 1, FINANCIAL INFORMATION

ITEM 1, FINANCIAL STATEMENTS

APA OPTICS, INC.
 CONDENSED BALANCE SHEETS

<TABLE> <CAPTION> ASSETS	June 30 1996	March 31 1996
<S>	<C>	<C>
CURRENT ASSETS:	(Unaudited)	(Audited)*
Cash and short-term investments	\$3,829,920	\$2,256,309
Accounts receivable	384,597	406,852
Inventories:		
Raw Materials	31,805	24,806
Work-in-process & finished goods	143,407	105,993
Costs in excess of billings on research contracts	218,433	210,658
Prepaid expenses	18,589	30,305
Bond reserve funds	91,667	66,667
TOTAL CURRENT ASSETS	4,718,418	3,101,590
PROPERTY AND EQUIPMENT, NET	1,309,050	1,157,570
OTHER ASSETS	2,850,482	497,189
	\$ 8,877,950	\$ 4,756,349
LIABILITIES AND SHAREHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Current Portion of Long-Term Debt	\$ 135,638	\$ 100,000
Accounts payable	65,691	112,857
Accrued expenses	101,470	91,264

TOTAL CURRENT LIABILITIES	302,799	304,121
LONG TERM DEBT	4,004,362	345,000
SHAREHOLDERS' EQUITY		
Undesignated shares; 5,000,000 shares authorized; none issued	---	---
Common stock, \$.01 par value; 15,000,000 shares authorized; 8,146,360 & 7,990,007 issued	81,464	79,900
Paid-in-capital	7,456,339	6,930,826
Retained earnings (deficit)	(2,967,014)	(2,903,498)
	4,570,789	4,107,228
	\$ 8,877,950	\$ 4,756,349

</TABLE>

* Derived from audited financial statements

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APA OPTICS, INC.
CONDENSED STATEMENTS OF OPERATIONS
(UNAUDITED)

<TABLE>

<CAPTION>

	Three months ended	
	June 30,	
	1996	1995
<S>	<C>	<C>
REVENUES	\$ 538,388	\$ 592,017
COSTS AND EXPENSES:		
Cost of sales and services	356,740	445,326
Selling, general & administrative	149,226	152,627
Research & development	108,356	2,467
	614,322	600,420
Gain/Loss from Operations	(75,934)	(8,403)
INTEREST INCOME & EXPENSE:		
Interest Income	21,188	2,445
Interest Expense	(8,521)	(10,279)
	12,667	(7,834)
INCOME (LOSS) BEFORE INCOME TAXES	(63,267)	(16,237)
INCOME TAX EXPENSE (BENEFIT)	250	250
NET INCOME (LOSS)	\$ (63,517)	\$ (16,487)
EARNINGS (LOSS) PER COMMON & COMMON EQUIVALENT SHARE (EXHIBIT 11)		
	\$ (.01)	\$ (.00)
WEIGHTED AVERAGE SHARES OUTSTANDING		
	8,000,784	7,381,792

</TABLE>

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APA OPTICS, INC.
CONDENSED STATEMENTS OF CASH FLOWS
(UNAUDITED)

<TABLE>

<CAPTION>

	Three Months Ended	
	June	
	1996	1995
<S>	<C>	<C>
OPERATING ACTIVITIES		
Net Income (loss)	\$ (63,517)	\$ (16,487)
Adjustments to reconcile net income to net cash		

provided by operating activities:		
Depreciation and amortization	109,294	103,193
Changes in operating assets and liabilities:		
(Increase) decrease in accounts receivable	22,255	(38,953)
(Increase) decrease in inventories and prepaid expenses	(65,472)	(18,424)
Increase (decrease) in accounts payable and accrued expenses	(1,322)	(60,324)
Other	24,028	(38,003)
Net cash provided by (used in) operating activities	25,266	(68,998)
INVESTING ACTIVITIES		
(Purchases) Sales of property and equipment	(248,773)	(23,376)
Net cash used in investing activities	(248,773)	(23,376)

FINANCING ACTIVITIES		
Proceeds from the sale of common stock	527,077	4,492
Long term debt proceeds	3,659,362	---
Ernest money deposit on bond financing	(315,000)	---
Debt placement costs	(277,182)	---
Bond reserve funds	(1,797,139)	---
Net cash provided by financing activities	1,797,118	4,492
Increase (decrease) in cash	1,573,611	(87,882)
Cash at Beginning of Period	2,256,309	401,034
Cash at End of Period	\$3,829,920	\$ 313,152

</TABLE>

NOTE TO CONDENSED FINANCIAL STATEMENTS

1. In the opinion of management, the information furnished reflects all adjustments which are necessary to a fair statement of the results of the interim periods presented. All adjustments were of a normal recurring nature. The results of any interim period are not necessarily indicative of results for the full year.

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ITEM 2. MANAGEMENT'S DISCUSSION
AND ANALYSIS OF FINANCIAL CONDITION
AND RESULTS OF OPERATIONS

Results of Operations:

Revenues for the first quarter of fiscal 1997 ended June 30, 1996 were \$538,388, a decrease of 9% from the first quarter of fiscal 1996 ended June 30, 1995. While the production revenues increased by \$21,665 during the first quarter of fiscal year 1997 as compared to the first quarter of fiscal year 1996, the contract revenues decreased by \$75,294 resulting in an overall decrease of \$53,629 for the period. The decrease in revenues for the first quarter of fiscal 1997 as compared to revenues of the first quarter of fiscal 1996 can be attributed to a substantial increase in internal research & development funded by the Company, by personnel who would otherwise be generating revenues working on government paid contracts. Also, the Company has experienced significant administration costs associated with the Aberdeen project. The increase in IR&D results from continuing efforts in the modulator production plans for our Aberdeen facility. Internal research and development expenses were \$108,356 during the first quarter of fiscal year 1997 as compared to \$2,467 for the first quarter of fiscal year 1996.

The Company's backlog of unfinished government contracts is approximately \$3.6 million at the end of the first quarter of fiscal 1997. The Company has hired additional research scientists in the first quarter, which is expected to result in increased contract revenues in the second quarter of fiscal 1997.

For the first quarter of fiscal 1997, the Company is reporting a net loss of (\$63,517) as compared to a net loss of (\$16,487) for the first quarter of fiscal 1996. This increase in losses of \$47,030 is mainly due to an increase of \$105,889 in company paid research and development expenses. The Company anticipated it would initially lose money on the Aberdeen project, as reported previously in our fiscal 1996 annual report. The Company's combined research & development activities (contract and internal) increased by \$30,595 for the first quarter of fiscal 1997 as compared to the first quarter of fiscal 1996.

Liquidity and Capital Resources:

The Company's cash balance at June 30, 1996 is \$3,829,920, an increase of \$1,573,611 from the year ended March 31, 1996. The Company's current ratio is over fifteen to one. The Company believes that it has sufficient cash to maintain its normal operations through the balance of fiscal 1997 and beyond. During

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the first quarter of fiscal 1997 the Company closed on the financial assistance programs from the State of South Dakota and Aberdeen, South Dakota.

The total financing is not complete at this time, but the Company has acquired funding of \$3,445,000 along with equity proceeds of \$500,000, and a land grant of \$250,000. The facility in Aberdeen will begin construction during the second quarter of fiscal 1997.

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PART II. OTHER INFORMATION

ITEMS 1 - 5. Not Applicable.

ITEM 6. Exhibits and Reports on Form 8-K

(a) Exhibit

- 4.1(a) State of South Dakota Board of Economic Development \$300,000 Promissory Note, REDI Loan No: 95-13-A
- 4.1(b) State of South Dakota Board of Economic Development Security Agreement, REDI Loan No: 95-13-A dated May 28, 1996
- 4.2(a) \$700,000 Loan Agreement dated June 24, 1996 by and between Aberdeen Development Corporation and APA Optics, Inc.
- 4.2(b) \$300,000 Loan Agreement dated June 24, 1996 by and between Aberdeen Development Corporation and APA Optics, Inc.
- 4.2(c) \$250,000 Loan Agreement dated June 24, 1996 by and between Aberdeen Development Corporation and APA Optics, Inc.
- 4.2(d) \$300,000 Loan Agreement dated June 24, 1996 by and between Aberdeen Development Corporation and APA Optics, Inc.
- 4.3(a) Loan Agreement between South Dakota Economic Development Finance Authority and APA Optics, Inc.
- 4.3(b) Mortgage and Security Agreement - One Hundred Day Redemption from APA Optics, Inc. to South Dakota Economic Development Finance Authority dated as of June 24, 1996
- 4.4(a) Subscription and Investment Representation Agreement of NE Venture, Inc.
- 4.4(b) Form of Common Stock Purchase Warrant for NE Venture, Inc.

11: Statement RE: Computation of per share earnings.

27: Financial Data Schedule

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(b) Reports on Form 8-K

There were no reports on Form 8-K filed during the three months ended June 30, 1996.

Signatures

In accordance with the requirements of the Securities Exchange Act of 1934, the issuer has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

APA OPTICS, INC.

08/13/96

s/s Anil K. Jain

Date

Anil K. Jain
President
Principal Executive Officer
Treasurer & Principal Financial
Officer

08/13/96

s/s Randal J. Becker

Date

Randal J. Becker
Principal Accounting Officer

<TABLE> <S> <C>

<ARTICLE> 5

<S>	<C>
<PERIOD-TYPE>	3-MOS
<FISCAL-YEAR-END>	MAR-1-1996
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<CASH>	3,829,920
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<DEPRECIATION>	109,294
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<INTEREST-EXPENSE>	8,521
<INCOME-PRETAX>	(63,267)
<INCOME-TAX>	250
<INCOME-CONTINUING>	(63,517)
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<CHANGES>	0
<NET-INCOME>	(63,517)
<EPS-PRIMARY>	(.01)
<EPS-DILUTED>	(.01)

</TABLE>

EXHIBIT 11

APA OPTICS, INC.

<TABLE>
<CAPTION>Statement RE: Computation
of Per Share Earnings

	Three months ended	
	June 30,	
	1996	1995
<S>	<C>	<C>
Average common shares outstanding	8,000,784	7,381,792
Dilutive stock options and warrants (A)	---	---
Total	8,000,784	7,381,792
Net income (loss)	\$ (63,517)	\$ (16,487)
Per share amount	\$ (.01)	\$ (.00)

</TABLE>

(A) Calculated using the "treasury stock" method.

STATE OF SOUTH DAKOTA
BOARD OF ECONOMIC DEVELOPMENT

REDI Loan Number 95-13-A

PROMISSORY NOTE

Blaine, MN
(City and State)

\$300,000

'
19

(Date)

For value received, the undersigned APA OPTICS, INC.

promises to pay to the order of SOUTH DAKOTA BOARD OF ECONOMIC DEVELOPMENT at its office in the City of PIERRE, State of SOUTH DAKOTA or at holder's option, at such other place as may be designated from time to time by the holder THREE HUNDRED THOUSAND AND NO/100 ----- Dollars, (\$300,000) with interest on unpaid principal computed from the date of each advance to the undersigned at the rate of THREE percent (3%) per annum, payment to be made in installments as follows:

Fifty-nine (59) equal monthly installments of principal and interest in the amount of \$1,664 (based on a level 240 month amortization) beginning thirty (30) days from note date and a final payment of all unpaid principal and accrued interest thereon due sixty (60) months from note date.

This note is secured by:
First commercial security interest in specified equipment.

Any sum payable hereunder and not paid when due shall thereafter bear interest at a specified fixed rate three (3) percentage points higher than the prime rate of interest published weekly in the Wall Street Journal per annum until paid.

Payment of any installment of principal or interest owing on this Note may be made prior to the maturity date thereof without penalty. Borrower shall provide holder with written notice of intent to prepay part or all of this loan at least twenty-one (21) days prior to the anticipated prepayment date. If borrower makes a prepayment and fails to give the required advance notice of intent to prepay, then notwithstanding any other provisions to the contrary in this note or other document, borrower shall be required to pay lender twenty-one (21) days interest on the unpaid principal as of the date preceding such prepayment.

The term "Indebtedness" as used herein shall mean the indebtedness evidenced by this Note, including principal, interest, and expenses, whether contingent, now due or hereafter to become due and whether heretofore or contemporaneously herewith or hereafter contracted. The term "Collateral" as used in this Note shall mean any funds, guaranties, or other property or rights therein of any nature whatsoever or the proceeds thereof which may have been, are, or hereafter may be, hypothecated, directly or indirectly by the undersigned or other, in connection with, or as security for, the Indebtedness or any part thereof. The Collateral, and each part thereof, shall secure the Indebtedness and each part thereof. The covenants and conditions set forth or referred to in any and all instruments of hypothecation constituting the Collateral are hereby incorporated in this Note as covenants and conditions of the undersigned with the same force and effect as though such covenants and conditions were fully set forth herein.

The Indebtedness shall immediately become due and payable, without notice or demand, upon the appointment of a receiver or liquidator, whether voluntary or involuntary, for the undersigned

or for any of its property, or upon the filing of a petition by or against the undersigned under the provisions of any State insolvency law or under the provisions of the Bankruptcy Reform Act of 1978, as amended, or upon the making by the undersigned of an assignment for the benefit of its creditors.

Holder is also authorized to declare all or any part of the Indebtedness immediately due and payable upon ten (10) days of written notice given to Borrower. Notice shall be deemed given when transmitted by telex or telecopier or personally delivered, or three days after being deposited in the U.S. mail, postage prepaid, or one day after delivery to a nationally recognized overnight carrier service, in each case addressed to the Borrower at their address shown on the signature page, or at such other address as the Holder may, by written notice received by the Borrower, designate as their address for purposes of notice hereunder. Default is deemed to occur upon the happening of any of the following events: (1) Failure to pay any part of the Indebtedness when due; (2) nonperformance by the undersigned of any agreement with, or any condition imposed by any secured lender, Holder, or State of South Dakota, Board of Economic Development through the Governor's Office of Economic Development (hereafter called "GOED"), with respect to the Indebtedness; (3) Holder's discovery of the undersigned's failure in any application of the undersigned to Lender, Holder or BED to disclose any fact deemed by Holder to be material or of the making therein or in any of the said agreements, or in any affidavit or other documents submitted in connection with said application or the indebtedness, or any misrepresentation by, on behalf of, or for the benefit of the undersigned; (4) the reorganization (other than a reorganization pursuant to any of the provisions of the Bankruptcy Reform Act of 1978, as amended) or merger or consolidation of the undersigned (or the making of any agreement therefor) without the prior written consent of Holder; (5) the undersigned's failure duly to account, to Holder's satisfaction, at such time or times as Holder may require, for any of the Collateral, or proceeds thereof, coming into the control of the undersigned; (6) the institution of any suit affecting the undersigned deemed by Holder to affect adversely its interest hereunder in the Collateral or otherwise, or, (7) violate any other covenant contained in the loan documents, including the Security Agreement and Mortgage. Holder's failure to exercise its rights under this paragraph shall not constitute a waiver thereof.

Upon the nonpayment of the Indebtedness, or any part thereof, when due, whether by acceleration or otherwise, Holder is empowered to sell, assign, and deliver the whole or any part of the Collateral at public or private sale, without demand, advertisement or notice of the time or place of sale or of any adjournment thereof, which are hereby expressly waived. After deducting all expenses incidental to or arising from such sale or sales, Holder may apply the residue of the proceeds thereof to the payment of the Indebtedness, as it shall deem proper, returning the excess, if any, to the undersigned.

Upon the occurrence of an event of default, Holder is further empowered to collect or cause to be collected or otherwise to be converted into money all or any part of the Collateral, by suit or otherwise, and to surrender, compromise, release, renew, extend, exchange, or substitute any item of the Collateral in transactions with the undersigned or any third party, irrespective of any assignment thereof by the undersigned, and without prior notice to or consent of the undersigned or any assignee. Whenever any item of the Collateral shall not be paid when due, or otherwise shall be in default, whether or not the indebtedness, or any part thereof, has become due, Holder shall have the same rights and powers with respect to such item of the Collateral as are granted in this paragraph in case of nonpayment of the Indebtedness, or any part thereof, when due. None of the rights, remedies, privileges, or powers of Holder expressly provided for herein shall be exclusive, but each of them shall be cumulative with and in addition to every other right, remedy, privilege, and power now or hereafter existing in favor of Holder, whether at law or equity, by statute or otherwise.

The undersigned agrees to take all necessary steps to administer, supervise, preserve, and protect the Collateral; and regardless of any action taken by Holder, there shall be no duty upon Holder in this respect. The undersigned shall pay all expenses of any nature, whether incurred in or out of court, and whether incurred before or after this Note shall become due at its maturity date or otherwise, including but not limited to reasonable attorney's fees and costs, which Holder may deem necessary or proper in connection with the satisfaction of the

Indebtedness or the administration, supervision, preservation, protection of (including, but not limited to, the maintenance of adequate insurance) or the realization upon the Collateral. Holder is authorized to pay at any time and from time to time any or all of such expenses, add the amount of such payment to the amount of the Indebtedness, and charge interest thereon at the rate specified therein with respect to the principal amount of this Note.

The security rights of Holder and its assigns hereunder shall not be impaired by Holders sale, hypothecation or rehypothecation of any note of the undersigned or any item of the Collateral, or by any indulgence, including but not limited to (a) any renewal, extension, or modification which Holder may grant with respect to the Indebtedness or any part thereof, or (b) any surrender, compromise, release, renewal, extension, exchange, or substitution which Holder may grant in respect of the Collateral, or (c) any indulgence granted in respect of any endorser, guarantor, or surety. The purchaser, assignee, transferee, or pledgee of this Note, the Collateral, and guaranty, and any other document (or any of them), sold, assigned, transferred, pledged, or repledged shall forthwith become vested with and entitled to exercise all the powers and rights given by this Note and all applications of the undersigned to Holder or BED, as if said purchaser, assignee, transferee, or pledgee were originally named as Payee in this Note and in said application or applications.

This promissory note is given to secure a loan which BED is making or in which it is participating with Lender pursuant to SDCL Chapters 1-16G and 1-33, as amended, and Rules and Regulations Article 68:02, Administrative Rules South Dakota (ARSD).

APA OPTICS, INC.

(SEAL)

By: /s/Anil K. Jain
Its President

Note. - Corporate applicants must execute Note, in corporate name, by duly authorized officer, and seal must be affixed and duly attested; partnership applicants must execute Note in firm name, together with signature of an authorized general partner.

STATE OF SOUTH DAKOTA
BOARD OF ECONOMIC DEVELOPMENT

SECURITY AGREEMENT

The undersigned Debtor (s) hereby grants to
SOUTH DAKOTA BOARD OF ECONOMIC DEVELOPMENT
711 Wells Avenue, Pierre, S.D. 57501

"Lender", a Security Interest in the following described property
"Collateral":

All machinery and equipment of Debtor described on
Exhibit A attached hereto together with all
accessions thereto and all substitutions and
replacements thereof and parts therefor.

All proceeds and products of all of the foregoing,

to secure payment to the Lender at the address stated
above of all notes of Debtor concurrently delivered
herewith, or heretofore or hereafter delivered to or
purchased or otherwise acquired by the Lender and all
other liabilities and indebtedness of Debtor to the
Lender, due or to become due, direct or indirect,
absolute or contingent, joint or several, howsoever
created, arising or evidenced, now existing or
hereafter at any time created, arising or incurred
(hereinafter called "Secured Obligations").

INFORMATIONAL (Check one or more).

The address of the Debtor, X Such address is
below, is his residence. Debtor's chief
place of business

Such address is where the X Debtor is a
Collateral is kept non-resident of
South Dakota

USE OF PROPERTY: Debtor warrants, covenants and
agrees that: The property is or is to be used by
Debtor primarily (check applicable):

1. In business: X equipment inventory
2. For personal, family, or household use ____
3. In farming operations: __ equipment __ farm
products

PURPOSE: (check if applicable) The security
interest herein is given on this collateral for a
purchase money loan: ____

Debtor warrants, represents and agrees that:

1. The Collateral is or will be kept at Aberdeen, SD
and will not be removed from such location or locations
unless, prior to any such removal, Debtor has given written
notice to the Lender of the location or locations to which
Debtor desires to remove the Collateral and the Lender has
given written consent to such removal.
2. Debtor has or will acquire title to and will at all
times keep the Collateral free of all liens and
encumbrances, except the Security Interest created hereby
and liens held by other lenders providing financing for the
SD project, and has full power and authority to execute this
Security Agreement, to perform Debtor's obligations
hereunder and to subject the Collateral to the Security
Interest created hereby. No financing statement covering
all or any part of the Collateral, except any which may have
been filed by the Lender and other permitted lienholders, is
on file at any public office.

3. Debtor will at any time or times hereafter execute such financing statements and other instruments and perform such acts as the Lender may request to establish and maintain a valid Security Interest in the Collateral, and will pay all costs of filing and recording.

4. Debtor will keep the Collateral and all lands, plants, buildings, machinery, equipment and other property now or hereafter at any time owned or used by Borrower in connection with the manufacture, processing, production, storage, sale or lease of the Collateral, in good condition and insured against such risks and in such amounts as the Lender may request, and with an insurance company or companies satisfactory to the Lender, the policies to protect the Lender as his interest may appear and to be delivered to the Lender upon request.

5. Upon default by Debtor in any of the preceding agreements, the Lender at his option may

(i) effect such insurance and repairs and pay the premiums therefor and the costs thereof and

(ii) pay and discharge any taxes, liens, and encumbrances on the Collateral. All sums so advanced or paid by the Lender shall be payable by the Debtor on demand with interest at the highest rate allowed by law and shall be part of the Secured Obligations.

6. Debtor will not sell, lease or otherwise dispose of the Collateral other than in the ordinary course of business at prices constituting the then fair market value thereof, and will at all times during the term hereof maintain the inventory at such value as Lender may from time to time demand.

7. Lender shall have the authority, but shall not be obligated to:

(a) place on any Chattel Paper received as Proceeds a notation or legend showing the Lender's Security Interest;

(b) in the name of the Debtor or otherwise, to demand, collect, receive and receipt for, compound, compromise, settle and give acquittance for, and prosecute and discontinue any suits or proceedings in respect of any or all of the Collateral;

(c) take any action which the Lender may deem necessary or desirable in order to realize on the Collateral, including, without limitation, the power to perform any contract, to endorse in the name of Debtor any checks, drafts, note or other instruments or documents received in payment for or on account of the Collateral;

(d) after any default, to enter upon and into and take possession of all or such part or parts of the properties of Debtor, including lands, plants, buildings, machinery, equipment and other property as may be necessary or appropriate in the judgment of the Lender to permit or enable the Lender to manufacture, produce, process, store or sell or complete the manufacture, production, processing, storing or sale of all or any part of the Collateral, as the Lender may elect, and to use and operate said properties for said purposes and for such length of time as the Lender may deem necessary or appropriate for said purposes without the payment of any compensation to Debtor therefor.

8. Debtor will keep accurate books, records and accounts with respect to the Collateral, and with respect to the general business of Debtor, and will make the same available to the Lender at its request for examination and inspection; and will make and render to the Lender such reports, accountings and statements as the Lender from time to time may request with respect to the Collateral; and will permit any authorized representative of the Lender to examine and inspect, during normal business hours, any and all premises where the Collateral is or may be kept or located.

9. The occurrence of any of the following events shall constitute a Default:

(a) failure of Debtor, or of any co-maker, endorser, surety or guarantor to pay when due any amount payable under any of the Secured Obligations;

(b) failure to perform any agreement or covenant of Debtor contained herein;

(c) any statement, representation or warranty of Debtor made herein or at any time furnished to the Lender is untrue in any respect as of the date made;

(d) entry of any judgment against Debtor in excess of \$50,000, unless such judgment is by a federal or state governmental entity;

(e) appointment of a receiver due to, loss, substantial damage to, destruction, theft, or encumbrance to or of any portion of the Collateral, or the making of any levy, seizure, or attachment thereof;

(f) Debtor becomes insolvent or unable to pay his debts as they mature, or makes an assignment for the benefit of his Creditors or any proceeding is commenced by or against Debtor alleging that he is insolvent or unable to pay his debts as they mature;

(g) death of any Debtor who is a natural person or of any partner of any Debtor which is a partnership;

(h) dissolution, consolidation, or merger, or transfer of a substantial part of the property of any Debtor which is a partnership;

(i) such a material change in the condition or affairs (financial or otherwise) of Debtor or any co-maker, endorser, surety or guarantor of any of the Secured Obligations as in the opinion of the Lender impairs the Lender's security or increases his risks; or

10. Whenever a Default shall exist, the Lender may, at its option and without demand or notice, declare all or any part of the Secured Obligations immediately due and payable, and the Lender may exercise, in addition to the rights and remedies granted hereby, all rights and remedies of a secured party under the Uniform Commercial Code or any other applicable law.

11. Debtor agrees, in the event of Default, to make the Collateral available to the Lender at a place or places acceptable to the Lender, and to pay all costs of the Lender in the collection of any of the Secured Obligations and the enforcement of any of the Lender's rights. If any notification of intended disposition of any of the Collateral is required by law, such notification shall be deemed reasonably and properly given if mailed at least ten (10) days before such disposition, postage prepaid, addressed to the Debtor at the address shown below.

12. No delay or failure by the Lender in the exercise of any right or remedy shall constitute a waiver thereof, and no single or partial exercise by the Lender of any right or remedy shall preclude other or further exercise thereof or the exercise of any other right or remedy.

13. If more than one party shall sign this Agreement, the term "Debtor" shall mean all such parties, and each of them and all such parties shall be jointly and severally obligated hereunder.

14. All parties agree the terms of the within instrument shall be construed according to the laws of the state of South Dakota and all actions or proceedings brought hereunder shall be heard in a court of competent jurisdiction within the state of South Dakota .

Executed and delivered at Blaine, Minnesota,
this 28th day of May, 1996.

ADDRESS:
2950 North East 84th Lane
Blaine, MN 55449

APA OPTICS, INC.

(Seal)

BY: /s/ Anil K. Jain
ITS: President

NOTE: Corporate applicants must execute Security Agreement,
in corporate name, by duly authorized officer, and seal must
be affixed and duly witnessed; partnership applicants must
execute Security Agreement in firm name, together with
signature of an authorized general partner.

LOAN AGREEMENT

THIS LOAN AGREEMENT, made and entered into this 24th day of June, 1996, by and between ABERDEEN DEVELOPMENT CORPORATION, a South Dakota corporation with principal offices at 514.5 South Main Street, PO Box 1179, Aberdeen, South Dakota 57402-1179, hereinafter called "LENDER", and APA OPTICS, INC., a Minnesota for profit corporation with principal offices at 2950 N.E. 84th Lane, Blaine, Minnesota 55449, hereinafter called "BORROWER",

W I T N E S S E T H:

THAT IN CONSIDERATION OF THE COVENANTS AND CONDITIONS HEREINAFTER CONTAINED IT IS HEREBY MUTUALLY AGREED AS FOLLOWS:

1. That LENDER agrees to loan to BORROWER and BORROWER agrees to borrow funds from Aberdeen Development Corporation pursuant to the terms and conditions of this Loan Agreement, the sum of \$700,000.00 which shall be evidenced by APA Optics, Inc. signing a Promissory Note in favor of the Aberdeen Development Corporation in the sum of \$700,000.00 to be paid over twenty (20) years with interest at the rate of 3% per annum. Interest shall be calculated from January 1st to December 31st each year and predicated on 365 days. Payments shall be applied first to interest then to principal as payments are made and required hereunder.

Payments in the amount of \$3,882.18 to begin on or before July 24, 1996 and a like amount thereafter due and payable on the 24th day of each month thereafter until June, 2002, when all remaining principal and interest shall be paid.

The Borrower shall be entitled to a credit (the "Job Credit") on all payments due under the Promissory Note to be calculated as follows: The Job Credit shall be calculated based on the full time employees employed by the Borrower at its facility (the "Facility") in Aberdeen, South Dakota, at the end of each year during the term of the Promissory Note. The basic Job Credit each year shall be \$7,500.00 times the increase in the number of full time employees at the Facility at the end of that year compared to the number of such employees at the end of the immediately preceding year. The Borrower shall be entitled to an additional Job Credit each year equal to 12.5% times the amount by which (a) the annualized total payroll (including all fringe benefits and bonuses) for all full time employees at the Facility during December of that year exceeds (b) \$20,000.00 times the number of full time employees at the Facility at the end of that year. The Job Credit shall be determined by the Borrower and the Lender by January 31 of each year for the prior year. For purposes of performing the calculation, "full time employee" means any employee assigned to the Facility working more than an average of 30 hours per week.

The Borrower may at its option apply the Job Credit calculated in January of each year to (a) the monthly installments due during that year or to (b) later installments or the balloon payment.

In no event shall the aggregate Job Credit during the life of the Promissory Note, together with the job credit allowed under the \$300,000.00 Promissory Note from the Borrower to the Lender dated as of the date hereof exceed \$750,000.00.

A job credits calculation is explained below:

Job Credits

Year	Additi onal Employ ees	Addit ional Payro ll	Base Payro ll	Exces s Payro ll	Base Payro ll	Exce ss Payr oll	Tota l	Tota l To Date
1	20	600,0 00	400,0 00	200,0 00	150,0 00	25,0 00	175, 000	175, 000
2	20	650,0 00	400,0 00	250,0 00	150,0 00	31,2 50	181, 250	356, 250
3	40	1,400 ,000	800,0 00	600,0 00	300,0 00	75,0 00	375, 000	731, 250
4	35	1,250 ,000	700,0 00	550,0 00	18,75 0	0	18,7 50	750, 000

TOTA	115	3,900	2,300	1,600	618,7	131,	750,
L		,000	,000	,000	50	250	000

BORROWER shall issue warrants to LENDER in accordance with a Warrant Agreement for purchase of common stock dated as of the date hereof.

Payments shall be made by BORROWER to LENDER at LENDER'S address hereinafter set forth.

Borrower may prepaid the obligation represented by this agreement, both principal and interest, at any time without any penalty whatsoever.

Borrower will establish a budget for construction of facility and acquisition of equipment, etc. for that facility for an amount of \$3,200,000.00. Borrower further covenants and agrees that for the first 24 months following execution of this Agreement it will provide Lender with an accounting reflecting expenditures made under budget from the proceeds provided by Lender to Borrower under this Agreement.

2. Whenever and wherever time appears herein time shall be considered of the essence.

3. For purpose of this agreement all notice or notices given shall be sent as follows:

To LENDER:

Aberdeen Development Corporation
514.5 South Main Street
PO Box 1179
Aberdeen, SD 57402-1179

To BORROWER:

APA Optics, Inc.
2950 N.E. 84th Lane
Blaine, MN 55449

4. The Borrower agrees with Lender and represents as follows:

- A. Borrower shall carry key man life insurance on Dr. Anil Jain, as principal officer, in an amount of \$2,000,000.00 and shall give proof of the carrying of such coverage to Lender and, if requested, shall provide a duplicate or specimen policy and, similarly, Borrower shall give proof on an annual basis of the payment of premiums on said life insurance policy so long as this agreement and the debt represented thereby is outstanding.
- B. Borrower represents its current senior management are: Jain, Khan, Olsen and Becker and that these individuals are management and any change in management for whatever reason shall result in Borrower being required to give notice to the that effect to Lender.
- C. Borrower covenants that as of the date of this agreement the company is free from any union representation and that as of the date of this agreement there is not active organizational campaign going on seeking representation for Borrower's employees.
- D. Borrower covenants that as of the date of this agreement the equipment both at its Blaine operation and at Aberdeen, or to be acquired for Aberdeen, will be provided by exhibit to this agreement and that current equipment as represented has not changed as to ownership or placement or location nor is any exhibited equipment subject to any lease with Borrower being the lessee thereof except for leases of equipment with an aggregate book value not in excess of \$100,000.00. Borrower covenants further that if any or all of the equipment from either the Blaine, Minnesota plant or Aberdeen, South Dakota plant, at any time during the term of this agreement while said loan is in place and remains unpaid, is removed without the permission or consent of Lender that this will constitute a condition of default and Borrower may declare the full sum due and owing payable immediately. Provided, however, that Borrower may remove for resale or trade-in purposes

equipment having for that purpose a value of \$15,000.00 per transaction with the further understanding that in no event will Borrower remove property for resale or trade or for surplus or obsolescence having annually a total value of \$75,000.00 while this Agreement is still in full force and effect.

E. Borrower further covenants that as of the date of this agreement all tax obligations and liabilities on properties whether at Blaine, Minnesota or to be used in the Aberdeen, South Dakota project are current and paid and no deficiency or delinquency exists and that Borrower covenants and agrees that it will continue to keep all tax payments and liabilities, whether real property or personal property, paid and current so that the same are not in default and in the event of default acknowledges that Lender may make those payments and add any of those payments to the obligation under this agreement, shall add interest thereto and it shall become a continuing and ongoing obligation of Borrower until paid.

F. Borrower covenants and agrees that it will maintain life insurance as previously in this agreement mentioned and will similarly carry general liability in the amounts as set forth in Certificate of Insurance exhibit attached to this agreement and as set forth as follows:

General aggregate	\$1,000,000
Products-comp aggregate	\$1,000,000
Personal and ADY injury	\$1,000,000
Each occurrence	\$1,000,000
Fire damage (any one fire)	\$100,000
Medical expenses (any one person)	\$5,000
Automobile liability - combined single limit	
\$1,000,000	
Excess liability (each occurrence).	\$3,000,000

Borrower covenants and agrees that it will furnish proof of coverage and proof of payment so long as this agreement shall remain in full force and effect.

G. Borrower covenants and agrees that it has a reporting obligation to Lender so long as the obligation under this agreement remains in effect to report as to the business condition and in addition agrees that it will provide to the observer, who will be an agreed party to represent the interest of Lender, all financial data and information reasonably sought by such observer and further covenants and agrees that information shall be prepared in accordance with accepted accounting standards consistent with FASBE regulations and shall no less frequently than quarterly provide a statement of operations of the business of APA OPTICS, INC. at both its Blaine, Minnesota and Aberdeen, South Dakota operations.

H. Borrower covenants that so long as this agreement is outstanding or any debt represented thereby is still due and owing that it will indemnify and hold harmless Lender from any cause of action, claim or proceeding brought by any person, partnership, corporation or any entity whatsoever against Lender for any claim or demand arising out of the operation of APA OPTICS, INC., Blaine, Minnesota or Aberdeen, South Dakota, and further agrees to provide defense costs, including reasonable attorney's fees to Lender, by reason of it being involved in such litigation.

I. In addition to this agreement Borrower covenants and agrees to execute appropriate security agreements covering only its equipment in the Blaine, Minnesota plant and its personal property in the ultimate Aberdeen, South Dakota facility, provided, however, that when Borrower's obligation to Lender for this Agreement, and for any and all other financial agreements cumulatively, has an unpaid balance of \$250,000.00 plus the remaining balance on the \$250,000.00 note from the Borrower to the Lender dated as of the date hereof, then Lender covenants and agrees to satisfy and cancel the security agreements then in place and outstanding.

J. Borrower covenants and agrees that it will pay all costs, expenses and fees in connection with this and other loan agreements as relates to the Aberdeen, South Dakota project, which includes but is not necessary limited to recording fees, filing fees or other costs incurred by any public entity by reason of acknowledgment of any documentation or records supporting this loan environment.

K. Borrower covenants and agrees that in the event of default of any of the warranties, representatives, conditions or covenants of Borrower that Lender at its sole option and discretion shall have the right to determine whether or not such default shall constitute significant default for the purpose of declaring the full sum due under this agreement immediately due and payable or whether to allow or permit Borrower to correct such default. Such action on the part of Borrower in any case shall be no later than 30 days from the date of the occurrence of such default.

5. This agreement shall be governed by the laws of the state of South Dakota regardless of the residence, personal or corporate, of any of the parties to this agreement.

6. This agreement may be executed in original and in one or more counterparts but shall constitute one and in the same agreement.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first above written.

ABERDEEN DEVELOPMENT CORPORATION

By /s/ Rodney Fouberg
Its President

ATTEST: LENDER

/s/ James C. Barringer_____
Its Executive Vice President

WITNESS:

/s/ Cheryl A. Olson

APA OPTICS, INC.

By: /s/ Anil Jain
Dr. Anil Jain
Its President

ATTEST: BORROWER

/s/ Kenneth A. Olsen
Its Vice President

WITNESS:

/s/ Randal J. Becker

Prepared by:
MALONEY & MALONEY
PO Box 755
Aberdeen, SD 57402-0755
605/229-2752

LOAN AGREEMENT

THIS LOAN AGREEMENT, made and entered into this 24th day of June, 1996, by and between ABERDEEN DEVELOPMENT CORPORATION, a South Dakota corporation with principal offices at 514.5 South Main Street, PO Box 1179, Aberdeen, South Dakota 57402-1179, hereinafter called "LENDER", and APA OPTICS, INC., a Minnesota for profit corporation with principal offices at 2950 N.E. 84th Lane, Blaine, Minnesota 55449, hereinafter called "BORROWER",

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Payments in the amount of \$1,663.79 to begin on or before July 24, 1996, and a like amount thereafter due and payable on the 24th day of each and every month until June 24, 2003, when all remaining principal and interest shall be paid.

The Borrower shall be entitled to a credit (the "Job Credit") on all payments due under the Promissory Note to be calculated as follows: The Job Credit shall be calculated based on the full time employees employed by the Borrower at its facility (the "Facility") in Aberdeen, South Dakota, at the end of each year during the term of the Promissory Note. The basic Job Credit each year shall be \$7,500.00 times the increase in the number of full time employees at the Facility at the end of that year compared to the number of such employees at the end of the immediately preceding year. The Borrower shall be entitled to an additional Job Credit each year equal to 12.5% times the amount by which (a) the annualized total payroll (including all fringe benefits and bonuses) for all full time employees at the Facility during December of that year exceeds (b) \$20,000.00 times the number of full time employees at the Facility at the end of that year. The Job Credit shall be determined by the Borrower and the Lender by January 31 of each year for the prior year. For purposes of performing the calculation, "full time employee" means any employee assigned to the Facility working more than an average of 30 hours per week.

The Borrower may at its option apply the Job Credit calculated in January of each year to (a) the monthly installments due during that year or to (b) later installments or the balloon payment.

In no event shall the aggregate Job Credit during the life of the Promissory Note, together with the job credit allowed under the \$700,000.00 Promissory Note from the Borrower to the Lender dated as of the date hereof exceed \$750,000.00.

A job credits calculation is explained below:

Job Credits

Year	Additi onal Employ ees	Addit ional Payro ll	Base Payro ll	Exces s Payro ll	Base Payro ll	Exce ss Payr oll	Tota l	Tota l To Date
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2	20	650,000	400,000	250,000	150,000	31,250	181,250	356,250
3	40	1,400,000	800,000	600,000	300,000	75,000	375,000	731,250
4	35	1,250,000	700,000	550,000	18,750	0	18,750	750,000
TOTAL	115	3,900,000	2,300,000	1,600,000	618,750	131,250	750,000	
L		,000	,000	,000	50	250	000	

BORROWER shall issue warrants to LENDER in accordance with a Warrant Agreement for purchase of common stock dated as of the date hereof.

Payments shall be made by BORROWER to LENDER at LENDER'S address hereinafter set forth.

Borrower may prepay the obligation represented by this agreement, both principal and interest, at any time without any penalty whatsoever.

Borrower will establish a budget for construction of facility and acquisition of equipment, etc. for that facility for an amount of \$3,200,000.00. Borrower further covenants and agrees that for the first 24 months following execution of this Agreement it will provide Lender with an accounting reflecting expenditures made under budget from the proceeds provided by Lender to Borrower under this Agreement.

2. Whenever and wherever time appears herein time shall be considered of the essence.

3. For purpose of this agreement all notice or notices given shall be sent as follows:

To LENDER:

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514.5 South Main Street
PO Box 1179
Aberdeen, SD 57402-1179

To BORROWER:

APA Optics, Inc.
2950 N.E. 84th Lane
Blaine, MN 55449

4. The Borrower agrees with Lender and represents as follows:

- A. Borrower shall carry key man life insurance on Dr. Anil Jain, as principal officer, in an amount of \$2,000,000.00 and shall give proof of the carrying of such coverage to Lender and, if requested, shall provide a duplicate or specimen policy and, similarly, Borrower shall give proof on an annual basis of the payment of premiums on said life insurance policy so long as this agreement and the debt represented thereby is outstanding.
- B. Borrower represents its current senior management are: Jain, Khan, Olsen and Becker and that these individuals are management and any change in management for whatever reason shall result in Borrower being required to give notice to the that effect to Lender.
- C. Borrower covenants that as of the date of this agreement the company is free from any union representation and that as of the date of this agreement there is not active organizational campaign going on seeking representation for Borrower's employees.
- D. Borrower covenants that as of the date of this agreement the equipment both at its Blaine operation and at Aberdeen, or to be acquired for Aberdeen, will be provided by exhibit to this agreement and that current equipment as represented has not changed as to ownership or placement or location nor is any exhibited equipment subject to any lease with Borrower being the lessee thereof except for leases of equipment with an aggregate book value not in excess of \$100,000.00. Borrower covenants further that if any or all of the equipment from either the Blaine, Minnesota plant or Aberdeen, South Dakota plant, at any time during the term of this agreement while said loan is in place and remains unpaid, is removed without the permission or consent of Lender that this will constitute a condition of default and Borrower may declare the full sum due and owing payable immediately. Provided, however, that Borrower may remove for resale or trade-in purposes equipment having for that purpose a value of \$15,000.00

per transaction with the further understanding that in no event will Borrower remove property for resale or trade or for surplus or obsolescence having annually a total value of \$75,000.00 while this Agreement is still in full force and effect.

E. Borrower further covenants that as of the date of this agreement all tax obligations and liabilities on properties whether at Blaine, Minnesota or to be used in the Aberdeen, South Dakota project are current and paid and no deficiency or delinquency exists and that Borrower covenants and agrees that it will continue to keep all tax payments and liabilities, whether real property or personal property, paid and current so that the same are not in default and in the event of default acknowledges that Lender may make those payments and add any of those payments to the obligation under this agreement, shall add interest thereto and it shall become a continuing and ongoing obligation of Borrower until paid.

F. Borrower covenants and agrees that it will maintain life insurance as previously in this agreement mentioned and will similarly carry general liability in the amounts as set forth in Certificate of Insurance exhibit attached to this agreement and as set forth as follows:

General aggregate	\$1,000,000
Products-comp aggregate	\$1,000,000
Personal and ADY injury	\$1,000,000
Each occurrence	\$1,000,000
Fire damage (any one fire)	\$100,000
Medical expenses (any one person)	\$5,000
Automobile liability - combined single limit	\$1,000,000
Excess liability (each occurrence).	\$3,000,000

Borrower covenants and agrees that it will furnish proof of coverage and proof of payment so long as this agreement shall remain in full force and effect.

G. Borrower covenants and agrees that it has a reporting obligation to Lender so long as the obligation under this agreement remains in effect to report as to the business condition and in addition agrees that it will provide to the observer, who will be an agreed party to represent the interest of Lender, all financial data and information reasonably sought by such observer and further covenants and agrees that information shall be prepared in accordance with accepted accounting standards consistent with FASBE regulations and shall no less frequently than quarterly provide a statement of operations of the business of APA OPTICS, INC. at both its Blaine, Minnesota and Aberdeen, South Dakota operations.

H. Borrower covenants that so long as this agreement is outstanding or any debt represented thereby is still due and owing that it will indemnify and hold harmless Lender from any cause of action, claim or proceeding brought by any person, partnership, corporation or any entity whatsoever against Lender for any claim or demand arising out of the operation of APA OPTICS, INC., Blaine, Minnesota or Aberdeen, South Dakota, and further agrees to provide defense costs, including reasonable attorney's fees to Lender, by reason of it being involved in such litigation.

I. In addition to this agreement Borrower covenants and agrees to execute appropriate security agreements covering only its equipment in the Blaine, Minnesota plant and its personal property in the ultimate Aberdeen, South Dakota facility, provided, however, that when Borrower's obligation to Lender for this Agreement, and for any and all other financial agreements cumulatively, has an unpaid balance of \$250,000.00 plus the remaining balance on the \$250,000.00 note from the Borrower to the Lender dated as of the date hereof, then Lender covenants and agrees to satisfy and cancel the security agreements then in place and outstanding.

J. Borrower covenants and agrees that it will pay all costs, expenses and fees in connection with this and

other loan agreements as relates to the Aberdeen, South Dakota project, which includes but is not necessary limited to recording fees, filing fees or other costs incurred by any public entity by reason of acknowledgment of any documentation or records supporting this loan environment.

K. Borrower covenants and agrees that in the event of default of any of the warranties, representatives, conditions or covenants of Borrower that Lender at its sole option and discretion shall have the right to determine whether or not such default shall constitute significant default for the purpose of declaring the full sum due under this agreement immediately due and payable or whether to allow or permit Borrower to correct such default. Such action on the part of Borrower in any case shall be no later than 30 days from the date of the occurrence of such default.

5. This agreement shall be governed by the laws of the state of South Dakota regardless of the residence, personal or corporate, of any of the parties to this agreement.

6. This agreement may be executed in original and in one or more counterparts but shall constitute one and in the same agreement.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first above written.

ABERDEEN DEVELOPMENT CORPORATION

ATTEST
:
/s/ James C. Barringer
Its Executive Vice
President

By: /s/ Rodney Fouberg
Its President
LENDER

WITNESS:

/s/ Cheryl A. Olson
APA OPTICS, INC.

ATTEST
:
/s/ Kenneth A. Olsen
Its Vice President

By: /s/ Anil K. Jain
Dr. Anil Jain
Its President
BORROWER

WITNESS:

/S/ Randal J. Becker

Prepared by:
MALONEY & MALONEY
PO Box 755
Aberdeen, SD 57402-0755
605/229-2752

LOAN AGREEMENT

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W I T N E S S E T H:

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Payment as follows:

Years 1 and 2. No payments.

Years 3 through 20. Payments of \$13,889.00 per year to begin on or before June 24, 1999 with like amount due and payable on or before June 24 each and every year thereafter for the years 1999 through 2016.

Payments shall be made by BORROWER to LENDER at LENDER'S address hereinafter set forth.

Borrower may prepay the obligation represented by this agreement at any time without any penalty whatsoever.

Borrower will establish a budget for construction of facility and acquisition of equipment, etc. for that facility for an amount of \$3,200,000.00. Borrower further covenants and agrees that for the first 24 months following execution of this Agreement it will provide Lender with an accounting reflecting expenditures made under budget from the proceeds provided by Lender to Borrower under this Agreement.

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4. The Borrower agrees with Lender and represents as follows:

A. Borrower shall carry key man life insurance on Dr. Anil Jain, as principal officer, in an amount of \$2,000,000.00 and shall give proof of the carrying of such coverage to Lender and, if requested, shall provide a duplicate or specimen policy and, similarly, Borrower shall give proof on an annual basis of the payment of premiums on said life insurance policy so long as this agreement and the debt represented thereby is outstanding.

B. Borrower represents its current senior management are: Jain, Khan, Olsen and Becker and that these individuals are management and any change in management for

whatever reason shall result in Borrower being required to give notice to the that effect to Lender.

- C. Borrower covenants that as of the date of this agreement the company is free from any union representation and that as of the date of this agreement there is not active organizational campaign going on seeking representation for Borrower's employees.
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General aggregate	\$1,000,000	
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Personal and ADY injury	\$1,000,000	
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Fire damage (any one fire)	\$100,000	
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Automobile liability -		
combined single limit	\$1,000,000	
Excess liability (each occurrence).		\$3,000,000

Borrower covenants and agrees that it will furnish proof of coverage and proof of payment so long as this agreement shall remain in full force and effect.

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K. Borrower covenants and agrees that in the event of default of any of the warranties, representatives, conditions or covenants of Borrower that Lender at its sole option and discretion shall have the right to determine whether or not such default shall constitute significant default for the purpose of declaring the full sum due under this agreement immediately due and payable or whether to allow or permit Borrower to correct such default. Such action on the part of Borrower in any case shall be no later than 30 days from the date of the occurrence of such default.

5. This agreement shall be governed by the laws of the state of South Dakota regardless of the residence, personal or corporate, of any of the parties to this agreement.

6. This agreement may be executed in original and in one or more counterparts but shall constitute one and in the same agreement.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first above written.

ABERDEEN DEVELOPMENT CORPORATION

ATTEST
:
/s/ James C. Barringer
Its Executive Vice
President

By: /s/ Rodney Fouberg
Its President
LENDER

WITNESS:

/s/ Cheryl A. Olson
APA OPTICS, INC.

ATTEST
:
/s/ Kenneth A. Olsen
Its Vice President

By: /s/ Anil K. Jain
Dr. Anil Jain
Its President
BORROWER

WITNESS:

/S/ Randal J. Becker

Prepared by:
MALONEY & MALONEY
PO Box 755
Aberdeen, SD 57402-0755
605/229-2752

LOAN AGREEMENT

THIS LOAN AGREEMENT, made and entered into this 24th day of June, 1996, by and between ABERDEEN DEVELOPMENT CORPORATION, a South Dakota Corporation, with offices at 514.5 South Main Street, PO Box 1179, Aberdeen, South Dakota 57402-1179, hereinafter called "LENDER", and APA OPTICS, INC., a Minnesota for profit corporation with principal offices at 2950 N.E. 84th Lane, Blaine, Minnesota 55449, hereinafter called "BORROWER",

W I T N E S S E T H:

THAT IN CONSIDERATION OF THE COVENANTS AND CONDITIONS HEREINAFTER CONTAINED IT IS HEREBY MUTUALLY AGREED AS FOLLOWS:

1. That LENDER agrees to loan to BORROWER and BORROWER agrees to borrow funds from the Aberdeen Development Corporation pursuant to the terms and conditions of this Loan Agreement, the sum of \$300,000.00 which shall be evidenced by APA Optics, Inc. signing a Promissory Note in favor of Aberdeen Development Corporation in the sum of \$300,000.00 to be paid over twenty (20) years with interest at the rate of 3% per annum. Balloon payment after 5th year. Interest shall be calculated from January 1st to December 31st each year and predicated on 365 days. Payments shall be applied first to interest then to principal as payments are made and required hereunder.

Payments in the amount of \$1,663.79 to begin on or before July 24, 1996 and a like amount thereafter due and payable on the 24th day of each and every month. Balance of \$240,926.52 due at end of 5th year or after 60th payment.

Payments shall be made by BORROWER to LENDER at LENDER'S address hereinafter set forth.

Borrower may prepay the obligation represented by this agreement, both principal and interest, at any time without any penalty whatsoever.

Borrower will establish a budget for construction of facility and acquisition of equipment, etc. for that facility for an amount of \$3,200,000.00. Borrower further covenants and agrees that for the first 24 months following execution of this Agreement it will provide Lender with an accounting reflecting expenditures made under budget from the proceeds provided by Lender to Borrower under this Agreement.

2. Whenever and wherever time appears herein time shall be considered of the essence.

3. For purpose of this agreement all notice or notices given shall be sent as follows:

To LENDER:

Aberdeen Development Corporation
514.5 South Main Street
PO Box 1179
Aberdeen, SD 57402-1179

To BORROWER:

APA Optics, Inc.
2950 N.E. 84th Lane
Blaine, MN 55449

4. The Borrower agrees with Lender and represents as follows:

A. Borrower shall carry key man life insurance on Dr. Anil Jain, as principal officer, in an amount of \$2,000,000.00 and shall give proof of the carrying of such coverage to Lender and, if requested, shall provide a duplicate or specimen policy and, similarly, Borrower shall give proof on an annual basis of the payment of premiums on said life insurance policy so long as this agreement and the debt represented thereby is outstanding.

- B. Borrower represents its current senior management are: Jain, Khan, Olsen and Becker and that these individuals are management and any change in management for whatever reason shall result in Borrower being required to give notice to the that effect to Lender.
- C. Borrower covenants that as of the date of this agreement the company is free from any union representation and that as of the date of this agreement there is not active organizational campaign going on seeking representation for Borrower's employees.
- D. Borrower covenants that as of the date of this agreement the equipment both at its Blaine operation and at Aberdeen, or to be acquired for Aberdeen, will be provided by exhibit to this agreement and that current equipment as represented has not changed as to ownership or placement or location nor is any exhibited equipment subject to any lease with Borrower being the lessee thereof except for leases of equipment with an aggregate book value not in excess of \$100,000.00. Borrower covenants further that if any or all of the equipment from either the Blaine, Minnesota plant or Aberdeen, South Dakota plant, at any time during the term of this agreement while said loan is in place and remains unpaid, is removed without the permission or consent of Lender that this will constitute a condition of default and Borrower may declare the full sum due and owing payable immediately. Provided, however, that Borrower may remove for resale or trade-in purposes equipment having for that purpose a value of \$15,000.00 per transaction with the further understanding that in no event will Borrower remove property for resale or trade or for surplus or obsolescence having annually a total value of \$75,000.00 while this Agreement is still in full force and effect.
- E. Borrower further covenants that as of the date of this agreement all tax obligations and liabilities on properties whether at Blaine, Minnesota or to be used in the Aberdeen, South Dakota project are current and paid and no deficiency or delinquency exists and that Borrower covenants and agrees that it will continue to keep all tax payments and liabilities, whether real property or personal property, paid and current so that the same are not in default and in the event of default acknowledges that Lender may make those payments and add any of those payments to the obligation under this agreement, shall add interest thereto and it shall become a continuing and ongoing obligation of Borrower until paid.
- F. Borrower covenants and agrees that it will maintain life insurance as previously in this agreement mentioned and will similarly carry general liability in the amounts as set forth in Certificate of Insurance exhibit attached to this agreement and as set forth as follows:

General aggregate	\$1,000,000
Products-comp aggregate	\$1,000,000
Personal and ADY injury	\$1,000,000
Each occurrence	\$1,000,000
Fire damage (any one fire)	\$100,000
Medical expenses (any one person)	\$5,000
Automobile liability - combined single limit	
\$1,000,000	
Excess liability (each occurrence).	\$3,000,000

Borrower covenants and agrees that it will furnish proof of coverage and proof of payment so long as this agreement shall remain in full force and effect.

- G. Borrower covenants and agrees that it has a reporting obligation to Lender so long as the obligation under this agreement remains in effect to report as to the business condition and in addition agrees that it will provide to the observer, who will be an agreed party to represent the interest of Lender, all financial data and information reasonably sought by such observer and further covenants and agrees that information shall be prepared in accordance with accepted accounting standards consistent with FASBE regulations and shall

no less frequently than quarterly provide a statement of operations of the business of APA OPTICS, INC. at both its Blaine, Minnesota and Aberdeen, South Dakota operations.

- H. Borrower covenants that so long as this agreement is outstanding or any debt represented thereby is still due and owing that it will indemnify and hold harmless Lender from any cause of action, claim or proceeding brought by any person, partnership, corporation or any entity whatsoever against Lender for any claim or demand arising out of the operation of APA OPTICS, INC., Blaine, Minnesota or Aberdeen, South Dakota, and further agrees to provide defense costs, including reasonable attorney's fees to Lender, by reason of it being involved in such litigation.
- I. In addition to this agreement Borrower covenants and agrees to execute appropriate security agreements covering only its equipment in the Blaine, Minnesota plant and its personal property in the ultimate Aberdeen, South Dakota facility, provided, however, that when Borrower's obligation to Lender for this Agreement, and for any and all other financial agreements cumulatively, has an unpaid balance of [not more than] \$250,000.00 plus the remaining balance on the \$250,000.00 note from the Borrower to the Lender dated as of the date hereof, then Lender covenants and agrees to satisfy and cancel the security agreements then in place and outstanding.
- J. Borrower covenants and agrees that it will pay all costs, expenses and fees in connection with this and other loan agreements as relates to the Aberdeen, South Dakota project, which includes but is not necessary limited to recording fees, filing fees or other costs incurred by any public entity by reason of acknowledgment of any documentation or records supporting this loan environment.
- K. Borrower covenants and agrees that in the event of default of any of the warranties, representatives, conditions or covenants of Borrower that Lender at its sole option and discretion shall have the right to determine whether or not such default shall constitute significant default for the purpose of declaring the full sum due under this agreement immediately due and payable or whether to allow or permit Borrower to correct such default. Such action on the part of Borrower in any case shall be no later than 30 days from the date of the occurrence of such default.

5. This agreement shall be governed by the laws of the state of South Dakota regardless of the residence, personal or corporate, of any of the parties to this agreement.

6. This agreement may be executed in original and in one or more counterparts but shall constitute one and in the same agreement.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed the day and year first above written.

ABERDEEN DEVELOPMENT CORPORATION

ATTEST
:
/s/ James C. Barringer
Its Executive Vice
President

By: /s/ Rodney Fouberg
Its President
LENDER

WITNESS:

/s/ Cheryl A. Olson
APA OPTICS, INC.

ATTEST
:
/s/ Kenneth A. Olsen
Its Vice President

By: /s/ Anil K. Jain
Dr. Anil Jain
Its President

BORROWER

WITNESS:

/S/ Randal J. Becker

Prepared by:

MALONEY & MALONEY

PO Box 755

Aberdeen, SD 57402-0755

605/229-2752

LOAN AGREEMENT

between

SOUTH DAKOTA ECONOMIC DEVELOPMENT FINANCE AUTHORITY

and

APA OPTICS, INC.

Dated as of June 1, 1996

Relating to Pooled Loan Program
South Dakota Economic Development Finance Authority

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THIS LOAN AGREEMENT, dated as of June 1, 1996 (the "Agreement"), is by and between the South Dakota Economic Development Finance Authority, a body corporate and politic authorized to act on behalf of the State of South Dakota (together with any legal successor thereto, herein referred to as the "Authority"), and APA Optics, Inc., a corporation duly organized and existing under the laws of the State of Minnesota having its principal place of business in Blaine, Minnesota, and authorized to do business in the State of South Dakota (the "Borrower").

W I T N E S S E T H:

WHEREAS, the Authority was created by South Dakota Codified Laws, Chapter 1-16B, as amended (the "Act"), to act on behalf of the State of South Dakota (the "State") within the scope of powers granted to it in the Act to make loans to enterprises to finance economic development projects as provided in the Act; and

WHEREAS, to provide the funds to make the loans under the Act, the Authority has established its South Dakota Economic Development Loan Program (the "Program"); and

WHEREAS, in accordance with the Program, the Board of Directors of the Authority on September 11, 1990, adopted its Economic Development Revenue Bond First Amended and Restated General Bond Resolution (Pooled Loan Program), as heretofore or hereafter supplemented and amended from time to time (the "General Bond Resolution"), pursuant to which General Bond Resolution (and resolutions to be adopted from time to time by the Authority as supplemental resolutions thereto), the Authority has issued and intends to issue its revenue bonds in series from time to time (the "Bonds"), and to loan the proceeds thereof to "enterprises" to finance "economic development projects" with the meaning of the Act, for use by them in connection with their business operations; and

WHEREAS, the Bonds of each such series, as provided in the General Bond Resolution, are special obligations of the Authority, the principal of, premium, if any, and interest on which are payable solely from and secured solely by the revenues, funds and other property or assets of the Authority described in the General Bond Resolution (and the supplemental resolutions) and pledged thereto; and

WHEREAS, it is the further purpose of the Authority with respect to its Program to provide additional financial assistance to the enterprises participating therein by creating an account within the State Treasury to be known as the "Capital Reserve Fund," transferring certain moneys from the State Treasury and from other sources to the Capital Reserve Fund and pledging and allocating the moneys on deposit in the Capital Reserve Fund to guarantee debt service payments and certain mandatory prepayments payable on or with respect to the Bonds; and

WHEREAS, pursuant to a resolution adopted by the Board of Directors of the Authority on December 18, 1986 (the "Capital Reserve Fund Resolution"), the Authority created and established the Capital Reserve Fund as an account within the State Treasury and pursuant to a Capital Reserve Fund Pledge and Escrow Agreement, dated as of December 18, 1986 (the "Capital Reserve Fund Pledge and Escrow Agreement"), by and between the Authority and The First National Bank in Sioux Falls, as escrow agent (together with its successors, the "Escrow Agent"), the Authority provided for the holding, investment, application, disposition of and use of moneys in the Capital Reserve Fund and various other

matters related thereto; and

WHEREAS, the Borrower has applied to the Authority for assistance under the Program in connection with the financing of a project to consist of the construction and equipping on approximately 12 acres of land of an approximately 24,000 square foot manufacturing facility in Aberdeen, South Dakota (the "Project"); and

WHEREAS, by a resolution adopted by the Board of Directors of the Authority on August 21, 1995, the Authority has found that the Borrower is an "enterprise" under the Act and that the Project qualifies for a loan under the Act and has determined to provide such loan by the inclusion of the Project in the Program; and

WHEREAS, to implement this determination the Authority proposes (i) to issue a series of Bonds under the General Bond Resolution and its Series Supplemental Resolution and (ii) to loan the proceeds of the sale of said Bonds to the Borrower to finance a portion of the cost of the Project, upon the terms and conditions set forth in this Agreement;

NOW, THEREFORE, for and in consideration of the premises and the mutual covenants hereinafter contained, the parties hereto hereby covenant and agree as follows:

ARTICLE I

DEFINITIONS AND RULES OF INTERPRETATION

Section 1.1. Definitions. The following terms as used in the Loan Agreement shall have the following meanings unless the context hereof otherwise requires:

"Accountant" means a firm of independent public accountants of recognized standing, selected by the Borrower and acceptable to the Authority.

"Act" means South Dakota Codified Laws, Chapter 1-16B, as now in effect and as it may from time to time be amended and supplemented, together with the rules promulgated by the Authority from time to time thereunder.

"Agreement" means this Loan Agreement, as it may be amended or supplemented from time to time.

"Appraised Value" means the value established by an independent appraiser acceptable to the Authority.

"Authority" means the South Dakota Economic Development Finance Authority, or any successor to its powers and authority under the Act.

"Authority Resolution" means the General Bond Resolution and the Series Supplemental Resolution.

"Authorized Representative" means, in the case of the Authority, the Chairman, the Vice Chairman or the Executive Director of the Authority; in the case of the Borrower, its President or any Vice President; and, in the case of both, such additional persons as, at the time, are designated to act in behalf of the Authority or the Borrower, as the case may be, by written certificate furnished to the Trustee and the Authority or the Borrower, as the case may be, containing the specimen signature of each such person and signed on behalf of (i) the Authority by the Chairman, the Vice Chairman or the Secretary of the Authority, and (ii) the Borrower by the President or any Vice President of the Borrower.

"Board" means the Board of Directors of the Authority or any successor governing body of the Authority.

"Bonds" means any of the Authority's Economic Development Revenue Bonds (Pooled Loan Program) issued from time to time under the General Bond Resolution and then Outstanding.

"Bond Counsel" means Counsel who is nationally recognized as experienced in matters relating to the exemption from federal income taxation of interest payable on obligations of states and their political subdivisions, and who is selected by the Authority and acceptable to the Trustee.

"Bond Proceeds" means the amount, including accrued

interest, if any, received by the Authority as the purchase price of the Series Bonds, and deposited by the Trustee in accordance with the provisions of the Authority Resolution into certain funds and accounts created thereunder, and investment income thereon.

"Bond Rate" means, as of the date of calculation and with respect to any period, the weighted average rate of interest payable on the Outstanding Series Bonds in accordance with their terms, determined as of such date with respect to such period (including any fluctuations of rate, if any).

"Bond Year" means, for the Series Bonds, the 12-month period beginning on April 2 of any year and ending on April 1 of the succeeding year; provided, however, that the initial Bond Year shall begin on the date in which such Bonds are issued and end on the next succeeding April 1.

"Bondowner" or "Owner" or similar term, when used with respect to a Bond, means the Person in whose name such Bond is registered in the Bond Register.

"Borrower" means (i) APA Optics, Inc., a corporation duly organized and existing under the laws of the State of Minnesota, and its successors and assigns, or (ii) any surviving, resulting or transferee Person as provided in Section 8.3 hereof.

"Buildings" means all those buildings, improvements, structures or renovations to existing buildings, improvements or structures and other related facilities (i) affixed or attached, or to be affixed or attached, to the Land, (ii) financed with the proceeds of the Series Bonds or of any payment by the Borrower pursuant to Section 3.3 or Section 4.5 hereof, and (iii) not part of the Equipment, as such may exist from time to time.

"Capital Reserve Fund" means that fund in the State Treasury that has been created in accordance with the Act and the Capital Reserve Fund Resolution and is held by the Escrow Agent pursuant to the Pledge and Escrow Agreement.

"Capital Reserve Fund Payments" means any payments made by the Escrow Agent to the Trustee for deposit into Holding Account and the Special Redemption Account pursuant to Section 7 of the Pledge and Escrow Agreement.

"Capital Reserve Fund Reimbursement Amount" means, as of the date of calculation and with respect to the Series Bonds, an amount equal to the aggregate of all Capital Reserve Fund Payments made with respect to such Series Bonds, less those sums that have been applied to reimburse the Capital Reserve Fund for such Capital Reserve Fund Payments, plus, unless waived by the Authority in any given case, interest accruing on the amount of such unpaid Capital Reserve Fund Payments at the Bond Rate.

"Capital Reserve Fund Resolution" means the resolution adopted by the Board on December 18, 1986, pursuant to which the Authority created the Capital Reserve Fund.

"Capitalized Interest Account" means the Account so designated which is created and established by Section 3.01(k) of the Series Supplemental Resolution pursuant to the General Bond Resolution.

"Capitalized Lease Obligations" means all lease obligations which have been or should be, in accordance with generally accepted accounting principles, capitalized on the books of the lessee.

"Closing Date" means the date of issuance and delivery of the Series Bonds.

"Code" means the Internal Revenue Code of 1986, as amended from time to time, and the Treasury Regulations promulgated thereunder.

"Collateral" means all Property subject to any mortgage or security interest described in Section 5.4 of this Agreement.

"Completion Date" means the date of completion of the Project, as certified pursuant to Section 4.4(b) hereof.

"Condemnation" means the taking of title to, or the use of, Property under the exercise of the power of eminent domain by any governmental entity or other Person acting under governmental authority.

"Construction Period" means, with respect to the Project, the period (a) beginning on the earlier of (i) the date of commencement of the Project, or (ii) the Closing Date, and (b) ending on the Completion Date.

"Costs of Issuance" means all items of expense payable or reimbursable directly or indirectly by the Authority and related to the authorization, sale and issuance of the Series Bonds, which items of expense shall include but not be limited to printing and photocopying costs, filing and recording fees, title insurance premiums and fees, initial fees and charges of the Trustee, initial Capital Reserve Fund Premiums, if any, initial cost of providing any Credit Enhancement, legal fees and charges, professional consultants' fees, costs of credit ratings, fees and charges for execution, transportation and safekeeping of Bonds, underwriter's discount or placement fees and expenses (including filing or registration fees under applicable securities laws), costs and expenses of refunding and other costs, charges and fees in connection with the original issuance of Bonds.

"Costs of Issuance Account" means the Account so designated which is created and established by Section 3.01(j) of the Series Supplemental Resolution pursuant to the General Bond Resolution.

"Cost of the Project" means all those items of cost and expenses enumerated in Section 4.3(a) hereof.

"Counsel" means an attorney or firm of attorneys duly admitted to practice law before the highest court of any state of the United States of America and not a full-time employee of the Borrower, and who is acceptable to the Authority and the Trustee.

"Current Assets" means, as of the date of determination, the current assets of the Borrower, in accordance with generally accepted accounting principles.

"Current Liabilities" means, as of the date of determination, the current liabilities of the Borrower, in accordance with generally accepted accounting principles.

"Debt Service Account" means the Account so designated which is created and established by Section 3.01(l) of the Series Supplemental Resolution pursuant to the General Bond Resolution.

"Debt Service" means, with respect to any Outstanding Series Bonds and for any period or on any date, the amount required to pay the principal of and interest on all such Outstanding Series Bonds during such period or on such date, assuming that Outstanding Serial Series Bonds are to be paid at their Stated Maturities and Outstanding Term Series Bonds are to be paid on Sinking Fund Payment Dates; provided, however, that if the maturity of the Series Bonds has been accelerated, "Debt Service" shall include the principal amount of the Outstanding Series Bonds and interest accrued thereon to the date of calculation.

"Debt Service Payment" means, with respect to any Interest Payment Date, the interest payable on the Series Bonds on such Interest Payment Date, plus (ii) the principal, if any, payable on the Series Bonds on such Interest Payment Date, plus (iii) the premium, if any, payable on the Series Bonds on such Interest Payment Date.

"Determination of Taxability" means the issuance of a statutory notice of deficiency by the Internal Revenue Service, a ruling by the National Office of the Internal Revenue Service, or a final decision of a court of competent jurisdiction that holds in effect or a change in any law or regulation that has the effect that the interest payable on the Series Bonds is includible in the gross income of the Owner for federal income tax purposes (other than an Owner who is a Substantial User of the Facilities or a related person thereto within the meaning of Section 147(a) of the Code), if the period, if any, for contest or appeal of such action, ruling or decision by the Borrower or the Owners has expired without such contest or appeal having been properly initiated by the Borrower or the Owners, or the receipt by the Trustee of an opinion of Bond Counsel which states in effect that the interest payable on the Series Bonds is includible in the gross income of the Owners for federal income tax purposes (other than an Owner who is a Substantial User of the Facilities or a related person thereto); provided, however, that a Determination of Taxability shall not be deemed to arise solely as a result of interest on the Series Bonds being included as a measure of an alternative minimum tax imposed on an Owner under the Code; and provided, further, that neither the Borrower

nor any Bondowner is under any obligation to contest or appeal any action, ruling or decision that may result in a Determination of Taxability.

"Equipment" means all machinery, equipment, furniture and other personal property which is acquired, in whole or in part, with the proceeds of the Series Bonds (which property is described generally in Exhibit B annexed to this Agreement), exclusive of items constituting Fixtures under the Mortgage, whether or not located on or in the Land, and any such items acquired in replacement thereof or in substitution therefor, as such may exist from time to time in accordance with the provisions of this Agreement.

"Escrow Agent" means The First National Bank in Sioux Falls, of Sioux Falls, South Dakota, or any successor escrow agent under the Pledge and Escrow Agreement.

"Facilities" means the Land, the Buildings and the Equipment to be acquired, constructed and installed by the Borrower with the Bond Proceeds or any payment by the Borrower pursuant to Section 4.5 hereof, with such additions thereto and substitutions therefor as may exist from time to time in accordance with the provisions of this Agreement.

"Funded Indebtedness" means, for any Person, all Indebtedness which matures by its terms more than one year from the date as of which any calculation of Funded Indebtedness is made, and any Indebtedness maturing within one year from such date which is renewable or extendible at the option of the debtor to a date beyond one year from such date, including any Indebtedness renewable or extendible (whether or not heretofore renewed or extended) under, or payable from the proceeds of other Indebtedness which may be incurred pursuant to the provisions of, any revolving credit agreement or other similar agreement.

"General Bond Resolution" means the Economic Development Revenue Bonds (Pooled Loan Program) First Amended and Restated General Bond Resolution adopted by the Board on September 11, 1990, as the same has been or hereafter may be amended or supplemented from time to time by any supplemental resolution thereunder.

"Holding Account" means the Account so designated which is created and established by Section 3.01(c) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Indebtedness" means, for any Person, (i) all indebtedness or other obligations of such Person for borrowed money or for the deferred purchase price of property or services (but not including accounts payable not yet delinquent) (ii) all indebtedness or other obligations of any other Person for borrowed money or for the deferred purchase price of property or services the payment or collection of which such Person has guaranteed (except by reason of endorsement for collection in the ordinary course of business) or in respect of which such Person is liable, contingently or otherwise, including, without limitation, liable by way of agreement to purchase, to provide funds for payment, to supply funds to or otherwise to invest in such other Persons, or otherwise to assure a creditor against loss, (iii) all indebtedness or other obligations of any other Person for borrowed money or for the deferred purchase price of property or services secured by (or for which the holder of such indebtedness has an existing right, contingent or otherwise, to be secured by) any mortgage, deed of trust, pledge, lien, security interest or other charge or encumbrance upon or in property (including, without limitation, accounts and contract rights) owned by such Person, whether or not such indebtedness or obligations and (iv) Capitalized Lease Obligations of such Person.

"Indemnified Parties" means the Authority and its directors, officers, employees and agents.

"Independent" when used with respect to any specified Person means such a Person who (i) is in fact independent; (ii) does not have any direct financial interest or any material indirect financial interest in the Borrower, other than the payment to be received under a contract for services to be performed by such Person; and (iii) is not connected with the Authority, the Borrower as an official, officer, employee, promoter, underwriter, trustee, partner, affiliate, subsidiary, director or person performing similar functions. Whenever it is herein provided that any Independent Person's opinion or certificate shall be furnished to the Trustee, such Person shall be appointed

by the Authority, the Borrower or the Trustee, as the case may be, and such opinion or certificate shall state that the signer thereof has read this definition and that such signer is Independent within the meaning hereof.

"Interest Payment Date" means each April 1 and October 1 so long as any Series Bonds are Outstanding, commencing October 1, 1996.

"Investment Instructions" means the Investment Instructions, in substantially the form set forth as Exhibit C hereto, which are to be delivered by the Authority and the Borrower to the Trustee, and any amendment thereof or supplement thereto.

"Land" means the real estate described in Exhibit A hereto on which is located or is to be located the Buildings and the Equipment, with such additions thereto and substitutions therefor as may exist from time to time in accordance with the provisions of this Agreement.

"Lien" means any interest in Property securing an obligation owed to a Person, whether such interest is based on the common law, statute or contract, and including but not limited to the security interest arising from a mortgage, encumbrance, pledge, conditional sale or trust receipt or a Uniform Commercial Code security interest, lease, consignment or bailment for security purposes. The term "Lien" includes reservations, exceptions and encroachments, easements, rights of way, covenants, conditions, restrictions, leases and other similar title exceptions and encumbrances, including but not limited to mechanics', materialmen's, warehousemen's, carriers' liens and other similar encumbrances, affecting real property. For the purposes of this Agreement, a Person shall be deemed to be the owner of any Property which it has acquired or holds title subject to a conditional sale agreement or other arrangement pursuant to which title to the Property has been retained by or vested in some other Person for security purposes.

"Loan" means the loan made by the Authority to the Borrower pursuant to Section 3.2 of this Agreement and as evidenced by the Note.

"Loan Account" means the Account so designated which is created and established by Section 3.01(a) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Loan Reserve Account" means the Account so designated which is created and established by Section 3.01(d) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Loan Reserve Account Requirement" means, as of the date of calculation, with respect to the Series Bonds, the maximum amount of principal and interest payable on the then Outstanding Series Bonds in any Bond Year, assuming that Series Bonds subject to mandatory sinking fund redemption are to be redeemed on such mandatory sinking fund redemption dates (initially, \$178,000).

"Loan Term" means the period commencing with the Closing Date and continuing until all the Series Bonds and interest thereon have been paid in full or provision for such payment has been made pursuant to Article XI of the General Bond Resolution and all obligations hereunder have been satisfied.

"Mortgage" means that Mortgage and Security Agreement_One Hundred Eighty Day Redemption, dated as of the date of this Agreement, from the Borrower, as mortgagor, to the Authority, as mortgagee, with respect to the Land, as such may be amended or supplemented from time to time.

"Municipality" means the City of Aberdeen, South Dakota, within the corporate borders of which the Land is located.

"Net Proceeds" means so much of the gross proceeds with respect to which that term is used as remain after payment of all expenses, costs and taxes (including attorneys' fees) incurred in obtaining such gross proceeds.

"Net Worth" means, at any date, the Tangible Assets of a Person which would be shown, in accordance with generally accepted accounting principles, on its balance sheet, minus liabilities (other than capital stock and surplus or its equivalent but including all reserves for contingencies and other potential liabilities) which would be shown, in accordance with generally accepted accounting principles, on such balance sheet.

"Note" means the promissory note of the Borrower dated as of the date of the Series Bonds, evidencing the Borrower's obligations pursuant to this Agreement, substantially in the form of Appendix I hereto.

"Official Action Resolution" means that resolution adopted by the Board on August 21, 1995, with respect to the Borrower and the Project.

"Optional Redemption Account" means the Account so designated which is created and established by Section 3.01(f) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Permitted Encumbrances" means (i) Liens described in Exhibit A hereto, (ii) this Agreement, the Mortgage, the Authority Resolution and any security interest created thereunder, (iii) utility, access and other easements and rights of way, restrictions and exceptions that, in the opinion of the Authority, do not materially impair the utility or the value of the Property affected thereby for the purposes for which it is intended; (iv) mechanics, materialmen's, warehousemen's, carriers' and other similar Liens and any other Liens to the extent permitted by Section 8.13 hereof, (v) Liens for taxes or assessments at the time not delinquent; (vi) any lease, sublease, assignment or reassignment entered into in conformity with Section 8.10 of this Agreement, (vii) the security interests in the Equipment to be granted to the Aberdeen Development Corporation securing indebtedness not exceeding \$1,250,000 if they are subordinated to the security interest of the Loan Agreement; and (viii) the security interests in the Equipment to be granted to the NECOG Development Corporation securing indebtedness not exceeding \$150,000 if they are subordinated to the security interest of the Loan Agreement.

"Person" means an individual, partnership, corporation, limited liability company, limited liability partnership, joint venture, association, joint stock company, trust, unincorporated organization or government or any agency or political subdivision thereof.

"Plans and Specifications" means the plans and specifications for the Project, including a schedule detailing the components of the Project and their respective costs or proposed costs, filed by the Borrower with the Trustee, as the same may be implemented and detailed from time to time and as the same may be revised from time to time in accordance with Section 4.2(b) of this Agreement. The Plans and Specifications shall include a list of all the Equipment that the Borrower will acquire with respect to the Project.

"Pledge" means the pledge by the Authority of the rights and interest of the Authority in and to this Agreement and the Mortgage, including all rights to receive payment thereunder, such pledge by the Authority being made pursuant to Section 1.04 of the General Bond Resolution and Article V of the Series Supplemental Resolution to the Bondowners for the payment of the principal of, premium, if any, and interest on the Bonds in accordance with their terms.

"Pledge and Escrow Agreement" means that Capital Reserve Fund Pledge and Escrow Agreement, dated as of December 18, 1986, between the Authority and the Escrow Agent, as such may be amended or supplemented in accordance with its terms.

"Principal User" means any Person constituting a "principal user" within the meaning of Section 103 of the Code.

"Program" means the Authority's South Dakota Economic Development Pooled Loan Program implemented under the Act and the General Bond Resolution.

"Program Accountant" means a firm of independent public accountants or financial consultants appointed by the Board to calculate or verify financial matters relating to the Program, including the calculation of the amount to be rebated to the United States pursuant to Section 148(f) of the Code and other calculations required by the Investment Instructions, or any successor accountant or financial consultant appointed by the Board to perform the same functions.

"Program Expenses" means the expenses of the Program, including (without limitation) the fees and expenses of the Trustee and of the Program Accountant and such other fees and expenses of the Program or of the Authority relating thereto as

shall be approved by the Authority.

"Program Expense Fund" means the Fund so designated, which is created and established by Section 5.01 of the General Bond Resolution.

"Program Payments" means a payment by the Borrower with respect to Program Expenses.

"Project" means the construction of the Buildings and the acquisition and installation of the Equipment.

"Project Supervisor" means AMCON Corp., of Burnsville, Minnesota, or any title insurance company licensed to operate in the State and with offices located in the State or any architect or engineer or firm of architects or engineers licensed to practice in the State and with offices in the State, or any combination thereof, which is appointed by the Authority and satisfactory to the Trustee.

"Property" means any interest in any kind of property or asset, whether real, personal or mixed, or tangible or intangible.

"Rebate Account" means the Account so designated which is created and established by Section 3.01(h) of the Series Supplemental Resolution, pursuant to the Series Supplemental Resolution.

"Reconstruction Account" means the Account so designated which is created and established by Section 3.01(i) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Redemption Price" means, when used with respect to the Series Bonds, the principal amount of such Bonds or portions thereof plus the applicable premium, if any, payable upon the redemption thereof pursuant to the Series Supplemental Resolution.

"Reimbursement Account" means the Account so designated which is created by Section 3.01(g) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Related Person" means any Person constituting a "related person" within the meaning of Section 144(a) (3) of the Code.

"Revenue Account" means the Account so designated which is created and established by Section 3.01(b) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"Series Bonds" means the Authority's Economic Development Revenue Bonds (Pooled Loan Program) (APA Optics, Inc. Project), Series 1996A, in the aggregate principal amount of \$1,895,000, authorized to be issued by the Series Supplemental Resolution.

"Series Supplemental Resolution" means the resolution adopted by the Board on June 13, 1996, authorizing the issuance of the Series Bonds, as the same may be amended or supplemented from time to time in accordance with its terms.

"Sinking Fund Payment" means, with respect to any Term Series Bonds, the amount required to redeem such Series Bonds on a Sinking Fund Payment Date.

"Sinking Fund Payment Date" means one of the dates set forth in the Series Supplemental Resolution for the making of mandatory principal payments on Term Series Bonds.

"Special Redemption Account" means the Account so designated which is created and established by Section 3.01(e) of the Series Supplemental Resolution, pursuant to the General Bond Resolution.

"State" means the State of South Dakota.

"Stated Maturity" when used with respect to any Series Bond or any installment of interest thereon means the date specified in such Series Bond as the fixed date on which principal of such Bond or such installment of interest is due and payable.

"Substantial User" means any Person constituting a "substantial user" within the meaning of Section 147(a) of the Code.

"Tangible Assets" means total assets except: (i) that portion of deferred assets and prepaid expenses (other than

prepaid insurance, prepaid rent and prepaid taxes) which do not mature, or in accordance with generally accepted accounting principles, are not amortizable within one year from the date of calculation, and (ii) trademarks, trade names, good will, and other similar intangibles.

"Term Series Bond" means any Series Bond for the payment of the principal of which mandatory payments are required by the Series Supplemental Resolution to be made at times and in amounts sufficient to redeem all or a portion of such Series Bond prior to its Stated Maturity.

"Trustee" means The First National Bank in Sioux Falls, of Sioux Falls, South Dakota, or any successor trustee appointed pursuant to the General Bond Resolution.

"Voting Stock" means securities of any class or classes of a corporation the holders of which are ordinarily, in the absence of contingencies, entitled to elect a majority of the corporate directors (or Persons performing similar functions).

Section 1.2. Rules of Interpretation.

(a) This instrument shall be interpreted in accordance with and governed by the laws of the State.

(b) The words "herein" and "hereof" and words of similar import, without reference to any particular section or subdivision, refer to this Agreement as a whole rather than to any particular section or subdivision hereof.

(c) Reference in this instrument to any particular section or subdivision hereof are to the section or subdivision of this instrument as originally executed.

(d) Any terms not defined herein but defined in the Authority Resolution shall have the same meaning herein unless the context hereof clearly requires otherwise.

(e) The headings of sections herein are for convenience only and are not a part of this instrument.

(f) Unless the context hereof clearly requires otherwise, the singular shall include the plural and vice versa, and the masculine shall include the feminine and vice versa.

(g) "Or" is not exclusive but contemplates or permits one or more or all of the alternatives conjoined.

(h) Notwithstanding anything contained in this Agreement to the contrary, nothing herein shall be construed as (i) obligating the Borrower (A) to make any payments to cure any deficit in any Account created by the Series Supplemental Resolution (the "Related Account") resulting from payments (except Program Payments) made under the General Bond Resolution to the Trustee or to the owners of any Bonds (except the Series Bonds) or (B) to pay the principal of or interest on any Series Bonds payable solely because of the acceleration of Bonds (unless the Loan has theretofore been accelerated) or (ii) depriving the Borrower of the right (hereby granted) to be reimbursed or credited for any sums held in a Related Account that are so paid to the Trustee or owners of other Bonds as provided in clause (i) (A) above.

Section 1.3. Appendix and Exhibits. Attached to and by reference made a part of this Agreement are the following Appendix and Exhibits:

Appendix I: the form of the Note;

Exhibit A: the legal description of the Land; and

Exhibit B: a description of the Equipment; and

Exhibit C: the Investment Instructions.

ARTICLE II

REPRESENTATIONS AND COVENANTS

Section 2.1. Representations and Covenants of the Authority. The Authority makes the following representations and covenants as the basis for the undertakings on its part herein contained:

(a) The Authority is duly established and existing and is

constituted as a body corporate and politic to act on behalf of the State and created and existing by virtue of the laws of the State and has the power to enter into the transactions contemplated by this Agreement and the Mortgage and to adopt the Authority Resolution, and to carry out its obligations hereunder and thereunder. The Project is of a nature that qualifies under the Act for the financial assistance provided by the Program. By proper official action, the Authority has been duly authorized to execute and deliver or accept this Agreement, the Note and the Mortgage and has duly adopted the Authority Resolution.

(b) Neither the execution and delivery or acceptance of this Agreement, the Note or the Mortgage or the adoption of the Authority Resolution, the consummation of the transactions contemplated hereby or thereby nor the fulfillment of or compliance with the provisions of this Agreement or the Mortgage and the Authority Resolution will conflict with or result in a breach of any of the terms, conditions or provisions of the Act, or any restriction, agreement or instrument to which the Authority is a party or by which it is bound, or will constitute a default under any of the foregoing, or will result in the creation or imposition of any Lien upon any of the Property of the Authority under the terms of any such instrument or agreement (other than as contemplated by this Agreement, the Mortgage and the Authority Resolution).

(c) The Authority will lend to the Borrower the sum of \$1,895,000 pursuant to this Agreement to finance (i) a portion of the cost of the Project, (ii) a deposit into the Loan Reserve Account required under the provisions of the General Bond Resolution and (iii) certain Costs of Issuance with respect to the issuance of the Series Bonds, all in furtherance of the purposes of the Act.

(d) To finance a portion of the Project Costs and the other costs described in subsection (c) of this Section 2.1, the Authority will issue its Series Bonds which will mature, bear interest, be redeemable and have the other terms and conditions as set forth in the Authority Resolution.

Section 2.2. Representations and Covenants of the Borrower. The Borrower makes the following representations and covenants as the basis for the undertakings on its part herein contained:

(a) The Borrower is a corporation duly incorporated under the laws of the State of Minnesota, is in good standing under its articles of incorporation and the laws of the State of Minnesota and of the State, is duly authorized to do business in the State of Minnesota and in the State, has the power to enter into this Agreement, the Note and the Mortgage and to borrow money pursuant hereto and by proper corporate action has been duly authorized to execute and deliver this Agreement, the Note and the Mortgage.

(b) Neither the execution and delivery of this Agreement, the Note and the Mortgage, the consummation of the transactions contemplated hereby nor the fulfillment of or compliance with the provisions of this Agreement, the Note and the Mortgage will conflict with or result in a breach of any of the terms, conditions or provisions of any restriction or any agreement or instrument to which the Borrower is a party or by which it is bound, or will constitute a default under any of the foregoing, or result in the creation or imposition of any Lien of any nature upon any of the Property of the Borrower under the terms of any such instrument or agreement or violate any provision of the articles of incorporation or bylaws of the Borrower. No event has occurred and no condition exists which, with the passage of time or the giving of notice, would constitute an event of default under any such agreement or instrument.

(c) So long as any of the Series Bonds shall be Outstanding, the Borrower will not take any action, or fail to take any action, or cause, suffer or permit others to take or fail to take action, which would (i) cause the Project not to qualify under the Act for the financial assistance provided by the Program (as such Act is in effect on the Closing Date) or (ii) adversely affect the tax-exempt status of the interest payable on any of the Series Bonds then Outstanding.

(d) Neither "construction" nor "acquisition" of the Project "commenced" prior to August 21, 1995 (the date of adoption of the Official Action Resolution) within the meanings ascribed to such terms under Section 144(a) of the Code.

(e) No other bonds, notes or other obligations the interest on which is, or is claimed to be, exempt from federal income

taxation under Section 103 of the Code are outstanding, the proceeds of which have been used to finance facilities located, in whole or in part, in the Municipality, the Principal User of which is the Borrower, any other Principal User of the Facilities or one or more Related Persons thereto, except as set forth in Section 2.2(r).

(f) The Facilities consist, and will at all times consist, entirely of land or of property which is of a character subject to the allowance for depreciation provided in the Code.

(g) Substantially all (at least 95%) of the proceeds of the Series Bonds will be expended on costs of a manufacturing facility (within the meaning of Section 144(a)(12)(C) of the Code), properly capitalized or to be capitalized by the Borrower for federal income tax purposes (or which would be so capitalized but for (or with) a proper election by the Borrower), incurred with respect to the acquisition and improvement of land and acquisition and construction of facilities classified as depreciable property pursuant to the applicable provisions of the Code. No part of the Bond Proceeds will be used, directly or indirectly, to provide working capital or to finance inventory.

(h) No part of the Facilities was "placed in service" (determined in accordance with the provisions of Section 144(a) of the Code) more than one year prior to the date of issue of the Series Bonds.

(i) The Facilities will be located entirely within the Municipality.

(j) The findings and determinations made by the Authority in the Official Action Resolution concerning the Borrower and the Project are true and correct. In particular, the financing of the Project will not have the effect of a transfer of jobs from one area of the State to another.

(k) The availability of the financial assistance by the Authority as provided in this Agreement, in the Authority Resolution and by the Program has been a substantial inducement to the Borrower to undertake the Project and to locate the Project in the State.

(l) No officer or official of the Authority has any interest (financial, employment or other) in the Borrower or the transactions contemplated by this Agreement. (m) Any items of Cost of the Project to be paid to the Borrower or its Related Persons reflect (i) direct cost of labor, materials or supplies, or (ii) overhead and profit attributable to the Project in accordance with generally accepted accounting principles, and not in excess of the amount that would have been paid to an unrelated Person.

(n) The Borrower will be the only "principal user" (within the meaning of Section 144(a) of the Code) of the Facilities. The Borrower is the only Person in possession or control, by occupancy, lease, license, contract or otherwise, of any part of the Facilities.

(o) The Borrower, any other Principal User of the Facilities and any Related Persons thereto do not operate any facility in any county or incorporated municipality which shares a common border with the Municipality, which facility is contiguous to the Land or which facility constitutes an "integrated facility" (as defined in Section 144(a) of the Code and applicable Treasury Regulations) with the Facilities or any part thereof.

(p) The Facilities as designed will comply in all material respects with all presently applicable environmental, building, zoning and subdivision laws, ordinances, rules and regulations.

(q) The Borrower reasonably estimates that the aggregate Cost of the Project will be at least \$2,010,000, plus interest on the Series Bonds during the Construction Period of the Project but excluding amounts required to be deposited into the Loan Reserve Account or the Costs of Issuance Account.

(r) The Borrower and its Related Persons do not presently intend to enter into any obligations which obligations would be used to or would tend to secure, in whole or in part, any "private activity bonds" within the meaning of Section 141(a) of the Code other than the Series Bonds. In addition, the Borrower and its Related Persons thereto do not presently intend to own or occupy, in whole or in part, any facilities which facilities

would be financed, in whole or in part, by outstanding tax-exempt facility-related bonds" other than the Series Bonds. Neither the Borrower nor any of its Related Persons has owned or occupied Property that was financed in whole or in part from proceeds of tax-exempt facility-related bonds, except for those facilities in Blaine, Minnesota financed by bonds issued by the City of Blaine, Minnesota and the Minnesota Agricultural Board.

(s) All Related Persons to the Borrower are set forth below:

None

(t) The "average maturity" of the Series Bonds is not more than 12.53 years and 120% of the "average reasonably expected economic life" of the Facilities is not less than 20.95 years (as such terms are determined in accordance with Section 147(b) of the Code, calculating for the average reasonably expected economic life of the Facilities from the date the Facilities are expected to be placed in service (July 1, 1998), which date is later than the Closing Date). Accordingly, 120% of the average reasonably expected economic life of the Facilities exceeds the average maturity of the Series Bonds.

(u) No more than 25% of the proceeds of the Series Bonds shall be used to provide a facility the primary purpose of which is any of the following: retail food and beverage services, automobile sales or service, or the provision of recreation or entertainment. In addition, no portion of the proceeds of the Series Bonds shall be used to provide any of the following: any private or commercial golf course, country club, massage parlor, tennis club, skating facility (including rollerskating, skateboard and ice skating), racquet sports facility (including any handball or racquetball court), hot tub facility, or racetrack, residential rental property, any airplane, skybox or other private luxury box, any health club facility, or any facility primarily used for gambling, or any store the principal business of which is the sale of alcoholic beverages for consumption off premises. In addition, none of the proceeds of the Series Bonds will be used for the acquisition of "land" within the meaning of Section 147(c) of the Code.

(v) There has been no material adverse change in the condition of the Borrower (financial or otherwise), since the last annual and interim financial statements and reports furnished by the Borrower to the Authority in or pursuant to the Borrower's application to the Authority for financial assistance and the information contained in said statements fairly presents the financial condition of the Borrower as of the dates of such financial statements and reports.

(w) There is no action or proceeding pending or, to the best knowledge of the Borrower, threatened against the Borrower, before any court, administrative agency or arbitration board that may materially adversely affect the properties, business, prospects, profits or condition (financial or otherwise) of the Borrower or the ability of the Borrower to perform its obligations under this Agreement or the Note or which, if determined adversely to the Borrower, would result in a determination that the Borrower violated environmental laws, rules or administrative orders.

(x) The Borrower has all requisite power and authority and all necessary authorizations, licenses and permits, without unusual restrictions or limitations, to own and operate its Property and to carry on its business as now conducted, and is duly qualified, is authorized to do business, and is in good standing in each jurisdiction where the character of its Property or the nature of its activities makes such qualification necessary.

(y) The Borrower has no contingent liabilities other than those disclosed in the financial statements described in Section 2.2(v) hereof.

(z) No event of default has occurred in any agreement as to any outstanding indebtedness of the Borrower for money borrowed and no condition, event or act exists which, with the giving of notice or the lapse of time, or both, would constitute such an event of default under any such agreement.

(aa) The Facilities have not been and are not presently expected to be sold or otherwise disposed of by the Borrower during the term of the Series Bonds. The Facilities are being held by the Borrower for use in the Borrower's trade or business

or for the production of income, within the meaning of Section 167 of the Code, and not for the purpose of resale.

(bb) No proceeds of the Series Bonds will be used for the acquisition of any property (or an interest therein) unless the first use of such property is pursuant to such acquisition.

(cc) Neither the Borrower, any other Principal User of the Facilities during the three-year period beginning on the Closing Date, nor any "related person" within the meaning of Section 144(a)(3) of the Code to the Borrower or any other Principal User of the Facilities during the three-year period beginning on the Closing Date, will have allocated to them (all within the meaning of Section 144(a)(10) of the Code), as an owner or user of facilities financed from the proceeds of tax-exempt facility-related bonds outstanding on the Closing Date, including the Series Bonds, in an aggregate authorized face amount in excess of \$40,000,000.

(dd) The Facilities will not share any common facilities, including heating, cooling, parking, elevator and stairway facilities, with any other structure or facility.

(ee) The Borrower will not permit any Person to become a "principal user" of the Facilities if as a result the limitations applicable under Section 144(a)(1) or 144(a)(10) of the Code would be violated and result in a loss of the exemption from federal income taxation of interest on the Series Bonds.

(ff) The Borrower agrees not to lease, sell, assign, grant or convey all or any portion of the Facilities or any interest therein to the United States or any agency or instrumentality thereof within the meaning of Section 149(b) of the Code if the result thereof would be to cause the interest on the Series Bonds to become includable in gross income for purposes of federal income taxation.

(gg)(1) The Borrower covenants not to invest, or cause to be invested, any "gross proceeds" of the Series Bonds (as defined in Section 148(f)(6)(B) of the Code and the regulations promulgated thereunder) if such investment would cause the interest to be paid to the Owner of any Series Bond to become includable in gross income of the recipient thereof for federal income tax purposes.

(2) The Borrower shall cause to be made the calculation(s) required by the Investment Instructions and shall provide to the Authority and the Trustee such calculations with a letter from the Program Accountant verifying the accuracy of such calculations. The Authority shall direct the Trustee to make deposits to and disbursements from the Rebate Account in accordance with the Investment Instructions and to invest the Rebate Account pursuant to said Investment Instructions and direction from the Authority and direct the Trustee to deposit income from such investments immediately upon receipt thereof in the Rebate Account.

(3) The Authority may deliver to the Borrower and the Trustee Investment Instructions that supersede or amend the extant Investment Instructions, if the new Investment Instructions are accompanied by an opinion of Bond Counsel addressed to the Authority and the Trustee to the effect that the use of said new Investment Instructions will not cause the interest on the Series Bonds to become includable in gross income for purposes of federal income taxation (other than to an Owner which is a substantial user of the Facilities or a related person thereto).

(4) The Borrower shall cause to be made the computation of the Rebateable Arbitrage as of April 1 of each year described in Section V of the Investment Instructions. If a deposit to the Rebate Account is required as a result of such computation, the Borrower shall notify the Authority and the Trustee by May 1 of each year that a payment is required and make such deposit. Records of the determinations required by this paragraph and Section V of the Investment Instructions must be retained by the Borrower and the Trustee until six years after the Series Bonds are no longer outstanding.

(5) Not later than 30 days after the end of the fifth bond year (30 days after April 1, 2000) and every five years thereafter, the Borrower shall direct the Trustee to pay to the United States at least ninety percent (90%) of the Rebate Amount from the amount on deposit in the Rebate Account as of such payment date as provided in the Authority Resolution. Not later

than 30 days after the final retirement of the Series Bonds, the Borrower shall direct the Trustee to pay to the United States one hundred percent (100%) of the Rebate Amount from the Rebate Account as provided in the Indenture. Each payment required to be paid to the United States pursuant to this paragraph (5) shall be filed with the Internal Revenue Service Center, Philadelphia, Pennsylvania 19255 or such other address as the Internal Revenue Service may designate from time to time. The Borrower shall provide with such direction a copy of Form 8038-T and a statement summarizing the determination of the amount to be paid to the United States.

(6) The provisions of this subsection (gg) shall survive, until the Borrower observes its covenants and agreements under this Subsection (gg), the retirement and payment of the Series Bonds and the discharge of the other obligations of the Borrower hereunder.

(7) Terms used in this Subsection (gg) which are not defined herein or in Section 1.1 of this Loan Agreement shall have the meanings set forth in the Investment Instructions.

Section 2.3. Covenant with Bondowners. The Authority and the Borrower agree that this Agreement is executed in part to induce the purchase by others of the Series Bonds. Accordingly, subject to the provisions of Section 2.4 and Section 2.5 of this Agreement, all covenants and agreements on the part of the Authority and the Borrower set forth in this Agreement are hereby declared to be for the benefit of the Owners from time to time of such Series Bonds.

Section 2.4. Capital Reserve Fund Right of Reimbursement. If any Capital Reserve Fund Payments are made from the Capital Reserve Fund with respect to the Series Bonds, the Borrower hereby agrees to reimburse the Capital Reserve Fund by payment to the Authority of an amount equal to the Capital Reserve Fund Reimbursement Amount. This obligation of the Borrower shall accrue as of the date a Capital Reserve Fund Payment is made and shall be secured as provided in Section 5.4 of this Agreement and enforced and reduced as provided in Section 10.2 of this Agreement and, in each case, as may be provided in the General Bond Resolution; provided, however, that such right of reimbursement shall be subordinate to the payment of the Note and as further provided in the General Bond Resolution.

Section 2.5. Authority Right of Reimbursement. If the Authority elects to redeem the Series Bonds in whole or in part from any moneys available to the Authority for such purpose from any source other than the Capital Reserve Fund (and other than those sources pledged to pay Bonds pursuant to Section 1.04 of the General Bond Resolution), the Borrower hereby agrees to reimburse the Authority in an amount equal to the amount so paid by the Authority with respect to the Series Bonds. This obligation of the Borrower shall accrue as of the date the Authority makes such a payment and shall be secured as provided in Section 5.4 of this Agreement and enforced and reduced as provided in Section 10.2 of this Agreement and, in each case, as provided in the General Bond Resolution; provided, however, that such right of reimbursement shall be subordinate to the payment of the Note and as further provided in the General Bond Resolution.

ARTICLE III

AGREEMENT TO ISSUE SERIES BONDS AND TO LOAN PROCEEDS THEREOF; BORROWER'S CONTRIBUTION TO COSTS OF PROJECT

Section 3.1. Issuance of Series Bonds; Deposit of Bond Proceeds. In order to provide funds for (i) payment of all or a portion of the Cost of the Project, together with other payments and incidental expenses in connection therewith, (ii) a deposit into the Loan Reserve Account required under the provisions of the General Bond Resolution and (iii) certain Costs of Issuance with respect to the issuance of the Series Bonds, the Authority agrees that it will issue and sell the Series Bonds and cause the Bond Proceeds to be delivered to the Trustee.

Section 3.2. Agreement To Make Loan. The Authority agrees that, upon (i) the sale and delivery of the Series Bonds and (ii) satisfaction of the terms and conditions set forth in this Agreement, it will and does hereby lend the Borrower the sum of \$1,895,000 in accordance with the provisions of this Agreement, such loan to be evidenced by the Note. The obligation of the Authority to make said loan shall be discharged and the obligation of the Borrower hereunder and under the Note shall

become effective, when the following sums, totaling \$1,895,000, are deposited in the following funds and accounts established under the Authority Resolution, or are otherwise directly applied for certain purposes, in any case, in the following amounts:

- (1) To the Loan Reserve Account, \$178,000.00;
- (2) To pay Costs of Issuance with respect to the Series Bonds as a discount from the par amount of the Series Bonds, the amount of \$37,900.00 (for underwriter's discount);
- (3) To the Capitalized Interest Account, \$102,924.67; and
- (4) To the Loan Account, \$1,576,175.33, being the cash balance of the Bond Proceeds (other than amounts representing accrued interest on the Series Bonds), to pay the Cost of the Project.

Section 3.3. Borrower's Contribution to Costs of the Project. The Borrower hereby represents that the amount of the Loan deposited into the Loan Account to pay for the Cost of the Project is less than the total Cost of the Project (other than interest payable on the Series Bonds during the Construction Period of the Project and Costs of Issuance) by an amount equal to \$434,525. Accordingly, pursuant to the loan criteria for its Program, the Authority hereby requires the Borrower to make an equity contribution to pay for such deficiency in the Cost of the Project, such equity contribution to take the form of the payment of the costs of the acquisition of the Land and certain site improvements as a donation by Aberdeen Development Corporation, and the balance from funds contributed by the Borrower (including the deposit to the Loan Account as provided in Section 4.2(f) hereof), resulting in the cost of the Land, the Buildings and the Equipment upon completion of the Project exceeding the proceeds of the Series Bonds applied to the costs of acquisition or construction thereof. Such costs of acquisition, construction and installation of the Building and of Equipment so paid or funded shall not be paid or reimbursed to the Borrower from the Loan Account except as otherwise provided in Section 4.3 hereof.

ARTICLE IV

DEVELOPMENT OF THE PROJECT; APPLICATION OF MONEYS IN LOAN ACCOUNT

Section 4.1. Prior Acquisition of Land. The Borrower will on or before the Closing Date acquire the Land in fee simple subject only to the Permitted Encumbrances.

Section 4.2. Acquisition, Construction and Installation of the Facilities; Deposit to Loan Account.

(a) The Borrower agrees that it will acquire, construct and install the Facilities or cause the Facilities to be acquired, constructed and installed on the Land in accordance with the Plans and Specifications.

(b) The Borrower shall provide to the Trustee a copy of the Plans and Specifications. With the consent of the Authority, the Borrower may revise the Plans and Specifications from time to time; provided, however, that no material change shall be made in the Plans and Specifications which would alter the proposed use of the Facilities or materially reduce the cost of the Facilities, unless the Trustee shall be furnished with an unqualified opinion of Bond Counsel that construction of the Facilities in accordance with the revised Plans and Specifications will not adversely affect the tax-exempt status of the interest payable on the Series Bonds.

(c) The Borrower hereby agrees that in order to effectuate the purposes of this Agreement, it will make, execute, acknowledge and deliver any contracts, order, receipts, writings and instructions with any other Persons, and in general do all things which may be requisite or proper, all for acquiring, construction and installing the Facilities. So long as the Borrower is not in default under any of the provisions of this Agreement, the Borrower shall carry out the acts and agreements provided in this Section 4.2 and such obligations shall not be terminated by act of the Authority or the Borrower. The Borrower agrees to acquire, construct and to install the Facilities with all reasonable dispatch, and to use its reasonable efforts to cause such acquisition, construction and installation to be completed by June 24, 1998, or as soon thereafter as may be practicable; but if for any reason such acquisition, construction and completion are not completed by said date, there shall be no

resulting liability on the part of the Authority and no diminution in or postponement of the payments required in Section 5.1 hereof or under the Note to be paid by the Borrower.

(d) The Borrower shall obtain all necessary approvals from any and all governmental agencies requisite to the acquiring, constructing and installation of the Facilities, and the Facilities shall be acquired, constructed and installed in compliance with all State and local laws, ordinances and regulations applicable thereto. The Borrower agrees that the improvements to be made with respect to the Facilities will not encroach upon or overhang any easement or right-of-way nor upon the land of others and that all improvements when erected shall be wholly within the building restriction lines however established and will not violate applicable use or other restrictions contained in prior conveyances, zoning ordinances or regulations. Upon completion of the Project, the Borrower shall obtain all required occupancy permits and authorizations from appropriate authorities, if any be required, authorizing the occupancy and uses of the Facilities for the purpose contemplated hereby.

(e) THE AUTHORITY MAKES NO WARRANTY, EITHER EXPRESS OR IMPLIED, AS TO THE CONDITION, TITLE, DESIGN, OPERATION, MERCHANTABILITY OR FITNESS OF THE FACILITIES OR THAT IT IS OR WILL BE SUITABLE FOR THE BORROWER'S PURPOSES OR NEEDS.

(f) On the date of issuance of the Series Bonds, the Borrower shall remit to the Trustee \$315,000 in immediately available funds for deposit in the Loan Account for disbursement to pay Project Costs as provided in Section 4.3 hereof.

Section 4.3. Application of Moneys in Loan Account.

(a) The Authority and the Borrower agree that upon substantial completion and completion of the Project and submission to the Trustee and the Project Supervisor of the certificates required by Section 4.4(a) or (b) hereof, as the case may be, the following items of costs and expenses incurred by the Borrower on and after the date of adoption by the Authority of the Official Action Resolution in connection with the Project and theretofore paid may be reimbursed from moneys in the Loan Account to the extent permitted by and subject to the limitations of the Act, the Code and this Agreement:

(i) the cost of preparing the Plans and Specifications for the Project (including any preliminary study or planning of the Project or any aspect thereof);

(ii) all costs of acquiring, constructing, equipping and installing the Facilities (including architectural, engineering and supervisory services with respect thereto), but shall not include any costs of the acquisition of the Land or site improvements;

(iii) any expenses of the Borrower in enforcing any remedy against any contractor or subcontractor in accordance with Section 4.7 hereof;

(iv) the cost of all premiums (A) for any title insurance on the Land paid during the Construction Period and (B) for all insurance maintained pursuant to Section 6.4 hereof during the Construction Period for such Facility;

(v) any taxes, assessments and other charges specified in Section 6.3 hereof during the Construction Period for the Project;

(vi) fees, taxes, charges and other expenses for recording or filing, as the case may be, this Agreement, any other agreements contemplated hereby, the Mortgage, the Series Supplemental Resolution, any financing statements and any other documents that the Authority or the Trustee may deem desirable in order to perfect or protect any security interest contemplated by this Agreement, the Mortgage or the Series Supplemental Resolution;

(vii) any Costs of Issuance (except underwriter's discount), subject to Section 8.7 hereof;

(viii) to pay interest owing on the Series Bonds during the Construction Period (pursuant to Section 5.1 of this Agreement);

(ix) all fees and expenses of the Project Supervisor;

and

(x) all advances, payments and expenditures made by the Authority or any other person with respect to the foregoing expenses.

All of the foregoing Costs of the Project are hereby approved by the Authority as "Project Costs" (within the meaning of the General Bond Resolution) with respect to the Project.

In addition, from the Borrower funds deposited in the Loan Account pursuant to Section 4.2(f) hereof (with investment income thereon, the "Equity Deposit"), the Trustee may make disbursements to the Borrower for the reimbursement of Project Costs theretofore paid by the Borrower.

(b) As conditions precedent to the payment of funds from the Loan Account, except with respect to capitalized interest and Costs of Issuance, the Borrower shall deliver to the Project Supervisor, a requisition complying with Section 5.2(b) of the General Bond Resolution executed by an Authorized Representative of the Borrower together with the following: (i) copies of invoices, bills or other similar proof from vendors of services, materials, goods or property that a payment is required from the Loan Account with respect to the Project (and in the case of disbursement from the Equity Deposit, evidence of payment thereof by the Borrower), and (ii) copies of lien waivers with respect to all work done or materials supplied for the Project for which payment was made pursuant to all previous draw requests, unless theretofore furnished to the Project Supervisor. The Project Supervisor shall certify to the Trustee in writing the receipt of all of such items, stating that they are in conformity with the requirements of this Agreement.

Notwithstanding anything contained herein to the contrary,

(i) The Trustee shall make no advances from the Loan Account while there is any lien or encumbrance upon the Land, other than Permitted Encumbrances, nor will the Trustee make any advances from the Loan Account while there is any charge, question or claim of any kind whatsoever, whether of record or not, which, in the opinion of Independent Counsel for the Trustee, may constitute a cloud on the title to the Land, render the title to the Land unmarketable, or otherwise invalidate or have priority over the Mortgage or in any way render the Loan or its enforcement insecure;

(ii) Neither the Authority nor the Trustee shall be under any obligation to see to the proper application of advances by the Borrower, its contractor or subcontractor, and nothing shall prevent the Authority or the Trustee from deducting from any advance, any sums due to the Authority or the Trustee from the Borrower for sums paid and expended by the Authority or the Trustee for taxes or assessments, for insurance premiums and like payments, pursuant to its or their rights under the terms hereof; and

(iii) No advance other than for capitalized interest or from the Equity Deposit shall be made by the Trustee until the Borrower presents to the Trustee (A) a certificate of substantial completion as set forth in Section 4.4(a) hereof and (B) a certificate of the grantor or its successor, in recordable form, to the effect that the Project has satisfied and is released from the covenants in the Statement to Conditions, Covenants, Restrictions and Reservations and Easements Affecting Aberdeen East Industrial Park, Aberdeen, South Dakota, dated November 7, 1995, made by Aberdeen Development Corporation, relating to the construction and completion of the Project.

In connection with clauses (i), (ii) and (iii) above and the preconditions established therein, the Trustee may request the Project Supervisor to certify to the Trustee the existence of such preconditions in connection with making any advances from the Loan Account and the Trustee shall be entitled to rely conclusively upon such certification. In rendering such certification, the Project Supervisor may rely on an opinion of Independent Counsel to the extent such certification covers matters of law. In addition, in making any such payment from the Loan Account the Trustee may rely on such requisitions and proof delivered to it and the Trustee shall be relieved of all liability with respect to making such payments if such payments are made in accordance with the foregoing. The Borrower hereby agrees that it shall pay all reasonable costs of filing such

requisitions and proof delivered to the Trustee and the Project Supervisor.

The Trustee shall keep and maintain adequate records pertaining to the Loan Account and all disbursements therefrom, and after the Project has been completed and the Borrower has filed with the Authority a certificate of completion of the Project as otherwise provided, the Authority thereafter shall file an accounting with respect to the Loan Account and all disbursements therefrom with the Authority and with the Borrower.

Notwithstanding anything contained herein, no funds shall be disbursed from the Loan Account, except with respect to interest during construction or from the Equity Deposit, until the Trustee has received the title insurance policy and survey required by Section 4.6 hereof and certificates evidencing the insurance coverage required by Sections 6.4 and 6.5 hereof.

(c) Upon (i) completion of the Project as certified to pursuant to Section 4.4(b) hereof, or (ii) the acceleration of the Loan pursuant to Section 10.2(a)(i) of this Agreement, any moneys remaining in the Loan Account, except for amounts to be paid pursuant to the draw made upon completion or those retained therein for the payment of incurred and unpaid items of the Cost of the Project, shall be applied in accordance with Section 5.02(b) of the General Bond Resolution; provided that minor items of work and materials awaiting seasonal completion may be specified in the Borrower's requisition, which specification shall include the amount, not to exceed three percent (3%) of the Loan, required to be seasonably completed, and upon completion of such work and disbursement of such funds following a further requisition of the Borrower under this Section 4.3, any remaining funds in the Loan Account shall be applied in accordance with Section 5.02(b) of the General Bond Resolution.

Section 4.4. Certificates of Substantial Completion and Completion.

(a) Substantial completion of the Project (apart from acquisition and installation of all items of Equipment) shall be evidenced by a certificate signed by an Authorized Representative of the Borrower and the Project Supervisor stating that (i) the acquisition, construction and installation of the Facilities (exclusive of the acquisition and installation of all items of Equipment) has been completed substantially in accordance with the Plans and Specifications therefor, (ii) all costs and expenses of acquiring, constructing and installing the Facilities (exclusive of items of Equipment thereafter to be acquired and installed) have been paid or provided for, (iii) that there exists no Liens or encumbrances with respect to the Project other than Permitted Encumbrances or Liens and encumbrances which the Authority or the Trustee shall have waived in writing, and (iv) that, as certified by the Borrower, any disbursement from the Loan Account for reimbursement of such Costs of the Project shall not cause the Borrower to be in default in its obligations hereunder, including Section 3.3 hereof; provided that minor items of work and materials awaiting seasonal completion may be specified in the Borrower's requisition, which specification shall include the amount, not to exceed three percent (3%) of the Loan, required to be seasonably completed.

(b) Completion of the Project from shall be evidenced by a certificate signed by an Authorized Representative of the Borrower and the Project Supervisor stating that (i) the acquisition, construction and installation of the Facilities has been completed substantially in accordance with the Plans and Specifications therefor and (ii) except for amounts to be retained in the Loan Account as provided in Section 4.3(c) hereof, all costs and expenses of acquiring, constructing and installing the Facilities have been paid or provided for and that there exists no Liens or encumbrances with respect to the Project other than Permitted Encumbrances or Liens and encumbrances which the Authority or the Trustee shall have waived in writing; provided that minor items of work and materials awaiting seasonal completion may be specified in the Borrower's requisition, which specification shall include the amount, not to exceed three percent (3%) of the Loan, required to be seasonably completed.

Section 4.5. Completion by Borrower. To the extent that the Bond Proceeds that are deposited into the Loan Account are not sufficient to pay in full all costs of the Project, as is contemplated in Section 3.3 hereof, the Borrower agrees to pay all sums as may be necessary to complete the Project. At the Trustee's request, the Borrower will provide the Trustee with evidence satisfactory to the Trustee as to whether or not the

remaining moneys in the Loan Account available to pay the Costs of the Project shall be sufficient to pay the remaining Costs of the Project. In the event that the Trustee, or the Project Supervisor at the request of the Trustee, shall determine at any time that the remaining moneys in the Loan Account available for payment of the remaining Costs of the Project shall not be sufficient to pay the costs thereof in full, the Trustee shall give written notice thereof to the Borrower and the Borrower shall promptly pay to the Trustee for deposit into the Loan Account moneys sufficient to pay the Costs of the Project in excess of the moneys available therefor in the Loan Account. The Trustee shall make such determination each time the Plans and Specifications are revised in accordance with Section 4.2(b) of this Agreement. No payment by the Borrower pursuant to this Section 4.5 shall entitle the Borrower to any diminution or abatement of the other amounts payable by the Borrower under this Agreement or the Note.

Section 4.6. Title Insurance and Survey.

(a) The Borrower at its own expense has obtained or will obtain, and throughout the Loan Term will maintain in force, a policy or policies of title insurance (ALTA extended coverage form) written by a title insurance company licensed to do business in the State and satisfactory to the Authority in the face amount of the Note insuring for the benefit of the Authority as the holder of the Note the Lien of the Mortgage on the Land as a first mortgage lien on the Land, free and clear of Liens or encumbrances except Permitted Encumbrances. The Net Proceeds of such insurance, if received prior to the Completion Date of the Project, shall be delivered to the Trustee and deposited in the Loan Account and, if received thereafter, shall be delivered to the Trustee and deposited in the Special Redemption Account.

(b) In addition, the Borrower shall concurrently with the execution and delivery of this Agreement deliver to the Authority and the Trustee, a plat or survey of the Land prepared by a registered land surveyor, addressed and certified to the Authority and the Trustee, containing the correct legal description of and showing and listing by document number all easements, encroachments and other encumbrances upon the Land and the location of all improvements thereon and encroachments and overlaps with respect thereto.

Section 4.7. Remedies To Be Pursued Against Contractors and Subcontractors and their Sureties. In the event of default of any contractor or subcontractor under any contract made by it in connection with the Project or in the event of a breach of warranty with respect to any materials, workmanship, or performance guaranty, the Borrower shall promptly proceed, either separately or in conjunction with others, to exhaust the remedies of the Borrower against the contractor or subcontractor so in default and against each surety for the performance of such contract. The Borrower agrees to advise the Authority of the steps it intends to take in connection with any such default. The Borrower may prosecute or defend any action or proceeding or take any other action involving any such contractor, subcontractor or surety which the Borrower deems reasonably necessary. The Net Proceeds of any amounts recovered pursuant to this Section 4.7, if received prior to the Completion Date, shall be delivered to the Trustee and deposited in the Loan Account and, if received thereafter, shall be delivered to the Trustee and deposited in the Special Redemption Account.

ARTICLE V REPAYMENT PROVISIONS; SECURITY CLAUSES

Section 5.1. Repayment of Loan.

(a) Principal of the Loan shall be paid by the Borrower on the dates and in the amounts provided in the Note. Interest on the unpaid balance of the Loan shall be payable at the times stated in the Note at the rate provided in the Note. All such amounts to be so paid shall be paid by the Borrower to the Trustee on behalf of the Authority.

(b) The Note shall provide that interest thereon shall accrue from the date thereof and shall be payable thereon on the first day of the following month and thereafter on the first day of each month until the principal sum of the Loan is discharged, each such payment to include interest payable in advance due to and including the first day of the next succeeding month. The

principal amount of the Loan shall be payable at the same times and in the same manner as interest. Principal and interest payments on the Loan shall be made in monthly installments through the date of final maturity of the Note, applied first to the payment of interest then due on the unpaid principal amount of the Loan, and the remaining balance of each such installment applied to the Loan. The monthly installments to be paid on the Loan shall be in an amount equal to (i) one-sixth of the interest payable on the Series Bonds on the next succeeding Interest Payment Date and (ii) one-twelfth of the principal payable on the Series Bonds on the next two succeeding Interest Payment Dates, whether at Stated Maturity or upon Sinking Fund Redemption; provided that such payments shall be redeemed or abated, in inverse chronological order before an Interest Payment Date, by any amounts then on deposit in the Holding Account and available to pay such interest or principal on such Interest Payment Date, and provided further that the installment payable on July 1, 1996 shall be in the amount of \$3,056.80. All payments of principal of, premium, if any, and interest on the Note by the Borrower shall be made to the Trustee at the address set forth in Section 12.1 of this Agreement.

(c) If on any Interest Payment Date the amount then on deposit in the Holding Account shall not be sufficient to pay the interest on or principal of the Series Bonds then due, the Borrower shall forthwith pay any such deficiency into the Revenue Account for transfer into the Holding Account.

(d) The Borrower shall have the option to make payments designated as and representing advance loan payments on the Note under and pursuant to this Agreement (or Section 5.2 of this Agreement) to the Trustee for deposit in the Revenue Account. Such payments shall not in any way alter or suspend any obligations of the Borrower under the terms of this Agreement (i) except to the extent that such payment shall be transferred by the Trustee under the provisions of the Authority Resolution to the Holding Account and shall result in a credit against payments on the Note as provided in Section 5.1(b) of this Agreement or the retirement of principal amounts of the Series Bonds, pursuant to these provisions, or (ii) except to the extent that such payments shall otherwise be transferred by the Trustee in accordance with the provisions of Section 5.06(a) of the General Bond Resolution and shall result in a credit against payments as provided in Section 5.2 of this Agreement; and the Borrower shall, in either case, continue to perform and be responsible for the performance of all the terms and provisions of this Agreement.

(e) If at any time the amount held by the Trustee in the Holding Account and the Loan Reserve Account shall be sufficient to pay at the times required the principal of, premium, if any, and interest on the Series Bonds then unpaid, the Borrower shall not be obligated to make any further payments under the foregoing provisions.

(f) If the Borrower should fail to pay when due an amount required under this Section 5.1, the amount so in default shall continue as an obligation of the Borrower until it shall have been fully paid, and the Borrower shall pay the same with interest thereon at the Bond Rate until paid.

(g) The Borrower agrees to make the above-mentioned payments without any further notice, in lawful money of the United States of America which, at the time of payment, shall be legal tender for the payment of public and private debts.

Section 5.2. Other Amounts Payable.

(a) The Borrower shall pay to the Trustee for deposit by the Trustee in the Revenue Account, the following amounts (in addition to those amounts described in Section 5.1(b) of this Agreement) at the times set forth below:

(i) On April 1 of each year, the Program Payments due with respect to the Bond Year then ended; provided, however, that, to the extent that on any April 1 there are amounts in the Revenue Account in excess of the amounts required to be deposited therein pursuant to Section 5.1, Section 5.2(a) (i), Section 5.2(a) (ii) and Section 5.2(a) (iii) of this Agreement, the amount required to be paid by the Borrower pursuant to this Section 5.2(a) (i) shall be reduced by the amount of such excess;

(ii) On each April 1 and October 1, a sum sufficient to satisfy any outstanding Capital Reserve Fund

Reimbursement Amount;

(iii) On each Interest Payment Date, a sum sufficient so that amounts then on deposit in the Loan Reserve Account shall not be less than the Loan Reserve Account Requirement.

(b) Notwithstanding anything contained in this Agreement to the contrary, any amount payable as and for an outstanding Capital Reserve Fund Reimbursement Amount under Section 5.2(a)(ii) of this Agreement shall not be payable as and for unpaid amounts due under Section 5.1(b) and Section 5.1(f) of this Agreement.

(c) Notwithstanding anything contained in this Agreement to the contrary, any amount payable pursuant to Section 5.2(a)(iii) of this Agreement shall not be payable as and for unpaid amounts due under Section 5.1(b) and Section 5.1(f) of this Agreement.

(d) In addition to the foregoing payments, the Borrower shall make such reports and shall pay during the Loan Term the annual fees required to maintain the secondary market trading of the Series Bonds in the State. Such fees shall be paid directly by the Borrower to the South Dakota Department of Commerce and Regulation, Division of Securities, by the time required by law each year, with the Borrower to provide evidence satisfactory to the Authority to be provided to the Authority that each such payment has been made. The Borrower shall also make such reports and pay such fees in any other state designated by the Authority in writing.

(e) Simultaneously with the delivery by the Borrower of the certificate of completion of the Project pursuant to Section 4.4(b) of this Agreement, the Borrower shall pay to the Trustee for deposit into the Loan Account all amounts equal to capitalized interest that the Borrower withdrew from the Loan Account pursuant to Section 4.3(a)(viii) of this Agreement (except that the Borrower shall not be required to pay such amounts to the extent that such capitalized interest has been paid from investment earnings deposited in or transferred to the Loan Account, and available to pay capitalized interest owing on the Series Bonds during the Construction Period). In lieu of making any payments required pursuant to the preceding sentence, the Borrower may, instead, deposit with the Trustee and the Project Supervisor proof satisfactory to the Trustee and the Project Supervisor that an amount equal to such payments has been made to pay certain Costs of the Project and that such Costs of the Project have not been the subject of any requisition submitted pursuant to Section 4.3(a) of this Agreement or have been paid from the Borrower's equity contribution pursuant to Section 3.3 and Section 4.3(b)(iv) of this Agreement.

Section 5.3. Obligations of Borrower Unconditional. The obligations of the Borrower to make the payments required by this Agreement and the Note and to perform and observe any and all of the other covenants and agreements on its part contained herein shall be absolute and unconditional irrespective of any defense or any rights of setoff, recoupment or counterclaim it may otherwise have against the Authority or the Trustee or any Owners of the Bonds. The Borrower agrees it will not (i) suspend, discontinue or abate any payment required by this Agreement and the Note or (ii) fail to observe any of its other covenants or agreements in this Agreement and the Note or (iii) seek judicial or other relief from the obligations to make any payment required by, or to perform any covenant in, this Agreement and the Note or (iv) except as provided in Section 7.1(b), Section 7.2(b) or Section 11.1 hereof, terminate this Agreement for any cause whatsoever including, without limiting the generality of the foregoing, failure to complete the Project, failure of the Borrower to use the Facilities as contemplated in this Agreement or otherwise, any defect in the title, design, operation, merchantability, fitness or condition of the Facilities or in the suitability of the Facilities for the Borrower's purposes or needs, failure of consideration, destruction of or damage to the Facilities, commercial frustration of purpose, or the taking by Condemnation of title to or the use of all or any part of the Facilities, any change in the tax or other laws of the United States of America or of the State or any political subdivision of either, or any failure of the Authority to perform and observe any agreement, whether expressed or implied, or any duty, liability or obligation arising out of or in connection with this Agreement. Nothing contained in this Section 5.3 shall be construed to release the Authority from the performance of any of the agreements on its part contained in this Agreement.

Section 5.4. Security Clauses.

(a) In order to secure the payment of this Agreement, the Note and the Series Bonds according to their tenor and effect, and to secure the right of reimbursement of the Capital Reserve Fund provided for in Section 2.4 of this Agreement and the right of reimbursement of the Authority provided for in Section 2.5 of this Agreement and to secure the performance by the Borrower of all of its covenants expressed or implied in this Agreement, the Borrower shall concurrently herewith grant and deliver a mortgage lien to the Authority in the Land and all buildings, structures and fixtures and certain equipment heretofore or hereafter placed thereon pursuant to the Mortgage, which Mortgage is to be pledged by the Authority to the Bondowners pursuant to the Authority Resolution as security for the Series Bonds. The Mortgage shall be subject only to Permitted Encumbrances.

(b) In order further to secure the payment of this Agreement, the Note and the Series Bonds according to their tenor and effect, and to secure the right of reimbursement of the Capital Reserve Fund provided for in Section 2.4 of this Agreement and the right of reimbursement of the Authority provided for in Section 2.5 of this Agreement and to secure the performance by the Borrower of all its covenants expressed or implied in this Agreement, the Borrower hereby grants to the Authority a first security interest in the Equipment, and agrees that this Agreement shall be deemed to be a security interest within the meaning of the Uniform Commercial Code of the State. The Borrower agrees that in the event that any additional items of machinery, equipment, furniture or other personal property are located on the Land or in the Project or are used in the operations of the Project, this Agreement shall immediately attach to and constitute a security interest in such additional items without further act or deed of the Borrower, and such items shall become Equipment for all purposes of this Agreement. Notwithstanding the foregoing, the Borrower agrees that promptly upon the location or use of such additional items of personal property at or in the Project to furnish to the Trustee a description of the additional items of personal property, which description shall be sufficient for the creation and perfection of a security interest in said equipment under the Uniform Commercial Code of the State, and a statement to the effect that such items of equipment are owned by the Borrower and are free and clear of all security interests, liens, and encumbrances of any kind whatsoever (other than Permitted Encumbrances). The Authority's rights herein as secured party are to be pledged by the Authority to the Bondowners pursuant to the Authority Resolution as security for the Series Bonds.

(c) The Borrower shall have the right at any time or from time to time to sell or otherwise dispose of all or any part of the Equipment subject, however, to all of the following terms and conditions:

(i) the Borrower shall, prior to or simultaneously with, any such sale or other disposition of any item of Equipment, cause to be substituted therefor equipment which is determined by the Trustee to have a value substantially equal to the value of the item of Equipment so sold or otherwise disposed of at the time the item of Equipment was originally acquired by the Borrower pursuant to the terms hereof, but which equipment may, however, be of a different kind or type or have a different function or purpose;

(ii) the security interest granted pursuant to subsection (b) of this Section 5.4 shall attach to the equipment so substituted upon its acquisition by the Borrower and its installation on the Land and prior to the sale or other disposition of the equipment originally subject to such security interest;

(iii) the Borrower shall execute any and all documents, instruments, agreements or other writings (including, but not limited to, one or more Uniform Commercial Code financing statements) and otherwise do all acts and things which the Authority or the Trustee shall reasonably deem necessary or advisable to perfect or continue perfection of a security interest in the equipment so substituted;

(iv) the Borrower shall pay any and all reasonable expenses (including, but not limited to, any applicable filing fees) incurred by the Authority or the Trustee in connection with the perfection or continuation of such security interest; and

(v) the Borrower shall, not less than fifteen days

prior to the consummation of any such sale or disposition, furnish the Trustee with a certificate signed by an Authorized Representative of the Borrower setting forth (1) a description of the item of Equipment which the Borrower proposes to sell or otherwise dispose of, which description has been previously set forth in the copy of Exhibit B hereto maintained by the Trustee in accordance with Section 8.04 of the Series Supplemental Resolution, (2) a description of the equipment to be proposed to be substituted for the item of Equipment sold or otherwise disposed of, which description shall be sufficient for the creation and perfection of a security interest in said equipment under the Uniform Commercial Code of the State, (3) a statement to the effect that the equipment proposed to be so substituted is now owned by and in the possession of the Borrower and is free and clear of all security interests, liens, and encumbrances of any kind whatsoever (other than Permitted Encumbrances), and (4) a submission of reasonable proof satisfactory to the Trustee that such equipment proposed to be substituted is now owned by and in possession of the Borrower and is free and clear of all security interest, liens and encumbrances of any kind whatsoever (other than Permitted Encumbrances).

The description of substituted equipment provided for in Section 5.4(c)(v)(2) above shall, when furnished to the Trustee, constitute an amendment or supplement to Exhibit B hereof. Items of Equipment replaced and substituted pursuant to the terms of this Section 5.4(c) shall be deleted from Exhibit B by the Trustee.

The Borrower shall not substitute or replace any item of Equipment pursuant to this Section 5.4(c) for any property which is not free and clear of all security interests, liens and encumbrances of any kind whatsoever (other than Permitted Encumbrances).

(d) The Borrower will from time to time, upon the written request of the Authority or the Trustee, file with the Authority and the Trustee a list of Equipment currently on the Land, which list shall further identify said items of equipment substituted pursuant to Section 5.4(c) hereof and the date and reason for substitution. The Borrower shall have sixty days in which to respond to each such request, but shall be obligated to respond to such request no more than twice each calendar year.

(e) Notwithstanding the provisions set forth in Section 5.4(c) of this Agreement, the Borrower shall have the right at any time or from time to time to sell or otherwise dispose of all or any part of the Equipment free and clear of the security interest set forth in Section 5.4(b) and Section 5.4(c) of this Agreement, without being obligated to substitute new equipment therefor, if:

(i) The items of Equipment so disposed from time to time have an aggregate Appraised Value at the time of disposition not in excess of \$1,000 (the Borrower is to furnish to the Trustee written evidence of such Appraised Value for each item of Equipment so disposed); or

(ii) The ratio of the outstanding principal amount of the Loan to the Appraised Value of the Collateral (excluding the items of Equipment to be so disposed) at the time of the proposed disposition shall not be less than eighty percent (80%) (the Borrower is to furnish to the Trustee written evidence of such Appraised Value of the Collateral).

Section 5.5. Investment of Funds and Accounts; Consent to Election.

(a) Notwithstanding anything contained in this Agreement to the contrary, any moneys at any time in the Loan Reserve Account, the Loan Account, the Holding Account, the Optional Redemption Account, the Rebate Account, the Reconstruction Account, the Reimbursement Account, the Revenue Account, the Special Redemption Account or any other Fund or Account created under, or authorized by, the General Bond Resolution or the Series Supplemental Resolution may be invested and reinvested by the Authority as provided in Section 5.16 of the General Bond Resolution and any letter of instruction issued by the Authority to the Trustee thereunder, to which such investment and reinvestment, the Borrower hereby consents. Neither the Authority nor its members, officers or employees shall be liable for any rate of interest achieved or not achieved on such investment or for any depreciation in the value of, or for any

loss arising from, any such investment. Investment income earned from money deposited in any such Funds and Accounts shall be applied by the Trustee in the manner provided for in the Authority Resolution.

(b) The Borrower hereby consents to the election made by the Authority in Section 2.10 of the Series Supplemental Resolution with respect to Section 144(a)(4) of the Code.

ARTICLE VI

MAINTENANCE, MODIFICATIONS, TAXES AND INSURANCE

Section 6.1. Maintenance and Modifications of Collateral by Borrower.

(a) The Borrower agrees that during the Loan Term it will, at its own expense, (i) keep the Collateral in as reasonably safe condition as its operations shall permit; (ii) make all necessary repairs and replacements to the Collateral (whether ordinary or extraordinary, structural or nonstructural, foreseen or unforeseen); and (iii) operate the Collateral in a sound and economic manner.

(b) The Borrower from time to time may, at its own expense, make any structural additions, modifications or improvements to the Collateral or any part thereof which it may deem desirable. All such structural additions, modifications or improvements so made by the Borrower shall become a part of the Collateral. The Borrower agrees to deliver to the Authority all documents which may be necessary or appropriate to convey to the Authority a mortgage lien of the priority described in Section 5.4 of this Agreement, or other satisfactory security interest in, such Collateral.

Section 6.2. Installation of Additional Personalty. Subject to the provisions of Section 5.4 of this Agreement and the Mortgage, the Borrower from time to time may, at its own expense, install additional machinery, equipment or other personal property in the Facilities (which may be attached or affixed to the Collateral) not constituting Equipment, and such machinery, equipment or other personal property shall not become, or be deemed to become, a part of the Collateral. The Borrower shall keep appropriate records of all of such machinery, equipment or other personal property installed at the Facilities sufficient to identify the same. Subject to the Mortgage, the Borrower from time to time may remove or permit the removal of such machinery, equipment and other personal property from the Facilities and may create or permit to be created any Lien on such machinery, equipment or other personal property; provided that any such removal of such machinery, equipment or other personal property shall not adversely affect the structural integrity of the Facilities or impair the overall operating efficiency of the Facilities for the purposes for which they are intended and provided further that if any damage is occasioned to the Facilities by such removal, the Borrower agrees to repair promptly such damage at its own expense.

Section 6.3. Taxes, Assessments and Utility Charges.

(a) The Borrower agrees to pay, as the same respectively become due, (i) all taxes and governmental charges of any kind whatsoever which may at any time be lawfully assessed or levied against or with respect to (1) the Collateral, (2) any machinery, equipment or other property installed or brought by the Borrower therein or thereon (including without limitation any sale or use taxes), (3) the employees of the Borrower located at or assigned to the Facilities, and (4) the income or revenues of the Borrower from the Facilities, (ii) all utility and other charges, including "service charges," incurred or imposed for the operation, maintenance, use, occupancy, upkeep and improvement of the Collateral, and (iii) all assessments and charges of any kind whatsoever lawfully made by any governmental body for public improvements; provided that, with respect to special assessments or other governmental charges that may lawfully be paid in installments over a period of years, the Borrower shall be obligated under this Agreement to pay only such installments as are required to be paid during the Loan Term.

(b) The Borrower may in good faith contest any such taxes, assessments and other charges. In the event of any such contest, the Borrower may permit the taxes, assessments or other charges so contested to remain unpaid during the period of such contest and any appeal therefrom; provided that adequate book reserves in accordance with generally accepted accounting principles (in the

opinion of the Borrower's Accountant) have been established with respect thereto. If the Authority or the Trustee shall notify the Borrower that by nonpayment of any such items the Mortgage or security interest created pursuant to Section 5.4(b) and (c) as to any part of the Collateral will be materially endangered or the Collateral or any part thereof will be subject to loss or forfeiture, however, such taxes, assessments or charges shall be paid promptly or secured by posting a bond in form and substance satisfactory to the Authority and the Trustee.

Section 6.4. Insurance Required. At all times throughout the Loan Term, including without limitation during any period of construction of the Facilities, the Borrower shall, at its own expense, maintain insurance against such risks and for such amounts as are customarily insured against by businesses of like size and type, and shall pay, as the same become due and payable, all premiums in respect thereof, including, but not necessarily limited to:

(a) Insurance protecting the interests of the Borrower, the Trustee and the Authority against loss or damage to the Collateral by fire, lightning or other casualties, with a uniform standard extended coverage endorsement, such insurance to be in an amount not less than the lesser of the full insurable value of the Collateral or the outstanding principal amount of the Note.

(As an alternative to the above requirements in this subsection (a), the Borrower may insure such Property under a blanket insurance policy or policies covering not only the Collateral but other Property as well).

(b) Workers' compensation insurance, disability benefits insurance, and each other form of insurance which the Borrower is required by law to provide, covering loss resulting from injury, sickness, disability or death of employees of the Borrower who are located at or assigned to the Facilities.

(c) Insurance protecting the Borrower against loss or losses from liabilities (including, without limitation, products liability) imposed by law or assumed in any written contract and arising from bodily injury including personal injury and death and damage to the Property of others, caused by any accident or occurrence, with limits of not less than \$1,000,000 per accident or occurrence, excluding liability imposed upon the Borrower by any applicable workmen's compensation law; and a blanket excess liability policy in the amount not less than \$2,000,000, protecting the Borrower against any loss or liability or damage for bodily injury including personal injury and death and Property damage.

(d) The Borrower may satisfy the requirements of subsections (a) through (c) of this Section 6.4 through builder's risk insurance during construction of the Project.

Section 6.5. Additional Provisions Respecting Insurance.

(a) All insurance required by Section 6.4 hereof shall be procured and maintained in financially sound and generally recognized responsible insurance companies selected by the Borrower and authorized to write such insurance in the State. Such insurance may be written with deductible amounts acceptable to the Authority. All policies evidencing such insurance shall provide for (i) payment of the losses to the Borrower, the Authority and the Trustee as their respective interests may appear, and (ii) at least thirty (30) days' written notice of the proposed cancellation thereof to the Borrower and the Trustee. The policies required by Section 6.4(a) hereof shall contain standard mortgagee clauses requiring that all Net Proceeds of insurance resulting from any claim in excess of \$50,000 for loss or damage covered thereby be paid to the Trustee.

(b) All such policies of insurance, or a certificate or certificates of the insurers that such insurance is in force and effect, shall be deposited with the Trustee on or before the Closing Date. Prior to expiration of any such policy, the Borrower shall not less than thirty (30) days before such expiration furnish the Trustee with evidence that the policy has been renewed or replaced or is no longer required by this Agreement.

Section 6.6. Application of Net Proceeds of Insurance. The Net Proceeds of the insurance carried pursuant to (i) subsection (a) of Section 6.4 hereof shall be applied as provided in Section 7.1 hereof and (ii) subsections (b) and (c) of Section 6.4 hereof shall be applied toward extinguishment or satisfaction of the

liability with respect to which such insurance proceeds may be paid.

Section 6.7. Right of Authority To Pay Taxes, Insurance Premiums and Other Charges. If the Borrower fails (i) to pay any tax, assessment or other governmental charge required to be paid by Section 6.3 hereof or (ii) to maintain any insurance required to be maintained by Section 6.4 hereof, the Authority or the Trustee may pay such tax, assessment or other governmental charge or the premium for such insurance. No such payment by the Authority or the Trustee shall affect or impair any rights of the Authority under this Agreement, the Note and the Mortgage or of the Authority or the Trustee under the Authority Resolution arising as a consequence of such failure by the Borrower. The Borrower shall reimburse the Authority or the Trustee, as the case may be, for any amount so paid by the Authority or the Trustee, as the case may be, pursuant to this Section 6.7, together with interest thereon from the date of payment by the Authority at the Bond Rate.

Section 6.8. Environmental Matters. To the best knowledge of the Borrower, based on the Phase I Environmental Assessment, dated May 10, 1996, prepared by Gem Star Associates, Inc., of Waubay, South Dakota, and other inquiry deemed reasonable by the Borrower, (i) no dangerous, toxic or hazardous pollutants, contaminants, chemicals, waste, materials or substances, as defined in or governed by the provisions of any federal, state or local law, statute, code, ordinance, regulation, requirement or rule relating thereto (collectively, "Environmental Regulations"), and also including urea-formaldehyde, polychlorinated biphenyls, asbestos, asbestos containing materials, nuclear fuel or waste, radioactive materials, explosives, carcinogens and petroleum products, or any other waste, material, substance, pollutant or contaminant which would subject the owner of the Facilities to any damages, penalties or liabilities under any applicable Environmental Regulation (collectively, "Hazardous Substances") are now or have been stored, located, generated, produced, processed, treated, transported, incorporated, discharged, emitted, released, deposited or disposed of in, upon, under, over or from the Facilities; (ii) no threat exists of a discharge, release or emission of a Hazardous Substance upon or from the Facilities into the environment; (iii) the Facilities have not been used as or for a mine, a landfill, a dump or other disposal facility, industrial or manufacturing facility, or a gasoline service station; (iv) no underground storage tank is now located in the Facilities or has previously been located therein but has been removed therefrom; (v) no violation of any Environmental Regulation now exists relating to the Facilities, no notice of any such violation or any alleged violation thereof has been issued or given by any governmental entity or agency, and there is not now any investigation or report involving the Facilities by any governmental entity or agency which in any way relates to Hazardous Substances; (vi) no person, party or private or governmental agency or entity has given any notice of or asserted any claim, cause of action, penalty, cost or demand for payment or compensation, whether or not involving any injury or threatened injury to human health, the environment or natural resources, resulting or allegedly resulting from any activity or event described in (i) above; (vii) there are not now any actions, suits, proceedings or damage settlements relating in any way to Hazardous Substances, in, upon, under, over or from the Facilities; (viii) the Facilities are not listed in the United States Environmental Protection Agency's National Priorities List of Hazardous Waste Sites or any other list of Hazardous Substance sites maintained by any federal, state or local governmental agency; and (ix) the Facilities are not subject to any lien or claim for lien or threat of a lien in favor of any governmental entity or agency as a result of any release or threatened release of any Hazardous Substance.

The Borrower shall not store, locate, generate, produce, process, treat, transport, incorporate, discharge, emit, release, deposit or dispose of any Hazardous Substance in, upon, under, over or from the Facilities, shall not permit any Hazardous Substance to be stored, located, generated, produced, processed, treated, transported, incorporated, discharged, emitted, released, deposited, disposed of or to escape therein, thereupon, thereunder, thereover or therefrom, shall cause all Hazardous Substances found thereon to be properly removed therefrom and properly disposed of in accordance with all applicable Environmental Regulations, shall not install or permit to be installed any underground storage tank therein or thereunder, and shall comply with all Environmental Regulations which are applicable to the Facilities; provided, however, that the

Borrower may store, use, transfer and dispose of commercial quantities of Hazardous Substances necessary for its business operations at the Facilities and used in the ordinary course of business, so long as the storage, use, transfer and disposal of such Hazardous Substances is in compliance in all material respects with all applicable Environmental Regulations. At any time, and from time to time, if the Authority or the Trustee so requests, the Borrower shall have any environmental review, audit, assessment and/or report relating to the Facilities theretofore provided by the Borrower to the Authority or the Trustee updated, at the Borrower's sole cost and expense, by an engineer or scientist acceptable to the Authority and the Trustee, or shall have such a review, audit, assessment and/or report prepared for the Authority and the Trustee, if none has previously been so provided; provided, however, that if such request is made more often than once each two years or does not follow the occurrence of an event or a condition that causes the Authority or the Trustee to reasonably believe a violation of Environmental Regulations at the Facilities has occurred, then such update or report shall be at the expense of the Authority. The Borrower acknowledges that it has furnished to the Authority a Phase I Environmental Assessment, dated May 10, 1996. The Borrower shall indemnify the Authority and the Trustee against, shall hold the Authority and the Trustee harmless from, and shall reimburse the Authority and the Trustee for, any and all claims, demands, judgments, penalties, liabilities, costs, damages and expenses, including court costs and attorneys' fees directly or indirectly incurred by the Authority or the Trustee (prior to trial, at trial and on appeal) in any action against or involving the Authority or the Trustee, resulting from any breach of the foregoing covenants, or from the discovery of any Hazardous Substance, in, upon, under or over, or emanating from, the Facilities, whether or not the Borrower is responsible therefor, it being the intent of the Borrower, the Authority and the Trustee that the Authority and the Trustee shall have no liability or responsibility for damage or injury to human health, the environment or natural resources caused by, for abatement and/or clean-up of, or otherwise with respect to, Hazardous Substances by virtue of the interest in the Facilities of the Authority or of the Trustee as mortgagee or as the result of the Authority or the Trustee exercising any of its rights or remedies with respect thereto under the Mortgage or the Loan Agreement including but not limited to becoming the owner thereof by foreclosure or conveyance in lieu of foreclosure. The foregoing representations, warranties and covenants of this Section 6.8 shall be deemed continuing covenants, representations and warranties for the benefit of the Authority and the Trustee, and any successors and assigns of the Authority or the Trustee, including but not limited to any purchaser at a foreclosure sale, any transferee of the title of the Authority or the Trustee or any other purchaser at a foreclosure sale, and shall survive the satisfaction or release of this Loan Agreement or the Mortgage, any foreclosure of the Mortgage and/or any acquisition of title to the Facilities or any part thereof by the Authority or the Trustee, or anyone claiming by, through or under the Authority or the Trustee, by deed in lieu of foreclosure or otherwise. Any amounts covered by the foregoing indemnification shall bear interest from the date incurred at the rate of 12% per annum or, if less, the maximum rate permitted by law, and shall be payable on demand.

ARTICLE VII

DAMAGE, DESTRUCTION AND CONDEMNATION

Section 7.1. Damage or Destruction.

(a) If the Collateral shall be damaged or destroyed (in whole or in part) at any time during the Loan Term:

(i) the Authority shall have no obligation to replace, repair, rebuild or restore the Collateral;

(ii) there shall be no abatement or reduction in the amounts payable by the Borrower under this Agreement (whether or not the Collateral is replaced, repaired, rebuilt or restored); and

(iii) except as otherwise provided in subsection (b) of this Section 7.1, the Borrower shall promptly replace, repair, rebuild or restore the Collateral to substantially the same condition and value as an operating entity as existed prior to such damage or destruction, with such changes, alterations and modifications as may be desired by the Borrower; provided that such changes, alterations or

modifications do not (A) so change the nature of the Facilities that they do not qualify under the Act for the financial assistance provided by the Program or (B) adversely affect the tax-exempt status of the interest on the Bonds.

Except as otherwise provided in subsection (b) of this Section 7.1, the Borrower shall apply to the replacement, repair, rebuilding or restoration of the Collateral so much as may be necessary of any Net Proceeds of insurance resulting from claims for such losses.

If the claim for loss resulting from such damage or destruction exceeds \$50,000, all Net Proceeds of insurance shall be paid to and held by the Trustee in the Reconstruction Account. The Trustee, upon receipt of a certificate of an Authorized Representative of the Borrower that payments are required for such purpose, shall apply so much as may be necessary of the Net Proceeds of such insurance to the payment of the costs of such replacement, repair, rebuilding or restoration, such moneys to be applied either on completion thereof or as the work progresses, at the option of the Trustee.

In the event such Net Proceeds are not sufficient to pay in full the costs of such replacement, repair, rebuilding or restoration, the Trustee shall request the Borrower to pay into the Reconstruction Account an amount equal to that portion of the costs thereof in excess of such Net Proceeds, and, upon receipt of such request, the Borrower shall forthwith pay such amount to the Trustee. In the event that the Borrower fails to pay any such excess amount into the Reconstruction Account, then the Series Bonds shall be prepaid in accordance with Section 7.1(b) of this Agreement.

All such replacements, repairs, rebuilding or restoration made pursuant to this Section 7.1, whether or not requiring the expenditure of the Borrower's contribution, shall automatically become a part of the Collateral as if the same were specifically described herein.

Any balance of such Net Proceeds remaining after payment of all the costs of such replacement, repair, rebuilding or restoration shall be deposited in the Special Redemption Account held by the Trustee and used only to prepay the Series Bonds as provided in Section 5.11(a) of the General Bond Resolution.

(b) In the event that the Borrower shall fail or elect not to replace, repair or restore the Collateral, or if an Event of Default under Section 10.1 hereof shall have occurred or be continuing, then the Net Proceeds of the insurance shall be transferred from the Reconstruction Account to the Special Redemption Account or otherwise paid to the Trustee for deposit into the Special Redemption Account. To the extent that such Net Proceeds so transferred into the Special Redemption Account are not sufficient to pay the Series Bonds in whole pursuant to Section 2.04(b) of the Series Supplemental Resolution, the Borrower shall forthwith pay the amount of such deficiency to the Trustee for deposit into the Special Redemption Account.

(c) The Borrower shall not be obligated to replace, repair, rebuild or restore the Collateral, and all such Net Proceeds shall be paid to the Borrower for its corporate purposes, if the Series Bonds and interest thereon have been paid in full.

(d) The Borrower may adjust all claims under any policies of insurance required by Section 6.4(a) hereof; provided, however, that no such claim with respect to an insured event as to which the Authority or the Trustee may be or is alleged to be liable may be adjusted without the prior written consent of the Authority or the Trustee, as the case may be.

Section 7.2. Condemnation.

(a) If at any time during the Loan Term the whole or any part of title to, or the use of, the Collateral shall be taken by Condemnation, the Authority shall have no obligation to restore or replace the Collateral and there shall be no abatement or reduction in the amounts payable by the Borrower under this Agreement (whether or not the Collateral is restored or replaced).

Except as otherwise provided in subsection (b) of this Section 7.2, the Borrower shall promptly:

(i) restore the Collateral (excluding any Land taken by Condemnation) to substantially the same condition and value as an operating entity as existed prior to such Condemnation; or

(ii) upon receipt by the Borrower of written approval of the Trustee and the Authority as to the location thereof (which approval shall not be unreasonably withheld), acquire, by construction or otherwise, facilities of substantially the same nature and value as an operating entity as the Collateral (hereinafter referred to in this Section 7.2 as "Substitute Facilities"). Such Substitute Facilities shall (A) be of such nature so as to qualify under the Act for the financial assistance provided by the Program, (B) not adversely affect the tax-exempt status of the interest payable on the Series Bonds, and (C) be subject to no Liens prior to the Mortgage or the security interest created by Section 5.4(b) and (c) of this Agreement other than Permitted Encumbrances.

The Borrower shall cause all Net Proceeds of any award in any Condemnation proceeding, if such award exceeds \$50,000, to be paid to the Trustee which shall hold such moneys in the Reconstruction Account. The Trustee, upon receipt of a certificate of an Authorized Representative of the Borrower that payments are required for such purpose, shall apply so much as may be necessary of such Net Proceeds to the payment of the costs of the restoration of the Collateral or the acquisition of Substitute Facilities at the option of the Borrower, such moneys to be applied either on completion thereof or as the restoration or acquisition progresses, at the option of the Trustee.

In the event such Net Proceeds of any Condemnation award are not sufficient to pay in full the costs of restoration of the Collateral or such acquisition of Substitute Facilities, the Trustee shall request the Borrower to pay into the Reconstruction Account an amount equal to that portion of the costs thereof in excess of such Net Proceeds, and, upon receipt of such request, the Borrower shall forthwith pay such amount to the Trustee. In the event that the Borrower fails to pay any such excess amount into the Reconstruction Account, then the Series Bonds shall be prepaid in accordance with Section 7.2(b) of this Agreement.

The Collateral, as so restored, or the Substitute Facilities, whether or not requiring the expenditure of the Borrower's contribution, shall automatically become part of the Collateral as if the same were specifically described herein.

Any balance of such Net Proceeds of any Condemnation award remaining after payment of all costs of such restoration or acquisition shall be deposited in the Special Redemption Account held by the Trustee and used only to prepay the Series Bonds as provided in Section 5.11(a) of the General Bond Resolution.

(b) In the event that the Borrower shall fail or elect not to replace, repair or restore the Collateral or to acquire Substitute Facilities, or if an Event of Default under Section 10.1 hereof shall have occurred or be continuing, then the Net Proceeds of the Condemnation Award shall be transferred from the Reconstruction Account to the Special Redemption Account or otherwise paid to the Trustee for deposit into the Special Redemption Account. To the extent that such Net Proceeds so transferred into the Special Redemption Account are not sufficient to pay the Series Bonds in whole pursuant to Section 2.04(b) of the Series Supplemental Resolution, the Borrower shall forthwith pay the amount of such deficiency to the Trustee for deposit into the Special Redemption Account.

(c) The Borrower shall not be obligated to restore the Collateral or to acquire Substitute Facilities, and all such Net Proceeds shall be paid to the Borrower for its corporate purposes, if the Series Bonds and interest thereon have been paid in full.

(d) The Authority shall cooperate fully with the Borrower in the handling and conduct of any Condemnation proceeding with respect to the Collateral.

Section 7.3. Condemnation of Borrower-Owned Property Other Than Collateral. The Borrower shall be entitled to the proceeds of any Condemnation award or portion thereof made for damage to or taking of any Property which, at the time of such damage or taking, is not part of the Collateral and which is owned by the Borrower.

ARTICLE VIII

SPECIAL COVENANTS

Section 8.1. Qualification in the State. Throughout the Loan Term, the Borrower shall continue to be duly authorized to do business in the State.

Section 8.2. Hold Harmless Provisions.

(a) The Borrower during the Loan Term hereby releases the Indemnified Parties from, agrees that the Indemnified Parties shall not be liable for and agrees to indemnify and hold the Indemnified Parties harmless from and against any and all liability arising from or expense incurred by the Authority's making the Loan to the Borrower pursuant to this Agreement, including without limiting the generality of the foregoing, all causes of action and attorneys' fees and any other expenses incurred in defending any suits or actions which may arise as a result thereof; provided that any such liabilities or expenses of the Indemnified Parties are not incurred or do not result from the intentional or willful wrongdoing of the Indemnified Parties or any of their members, agents or employees.

(b) Notwithstanding any provision of this Agreement or the Authority Resolution to the contrary, the Borrower shall be liable for, and shall hold the Indemnified Parties harmless against, any liability for any failure by any Person to comply with the requirements of Section 148(f) of the Code, including, without limitation, the failure to make rebate payments due to the United States of America under Section 148(f) of the Code with respect to the Series Bonds. Further, the Borrower specifically agrees that Indemnified Parties shall not be held liable, or in any way responsible, for any investment of any Fund or Account or the Capital Reserve Fund or other "gross proceeds" (as defined in Section 148(f) of the Code) under the Code or the determination of any amount due to the United States of America or for any consequences resulting from any such mistake or error.

Section 8.3. Borrower To Maintain its Existence; Conditions Under Which Exceptions Permitted. The Borrower agrees that during the Loan Term it will maintain its corporate existence, will not dissolve or otherwise dispose of all or substantially all of its assets, and will not consolidate with or merge into another corporation or permit one or more corporations to consolidate with or merge into it; provided, however, that any mortgages and security interests in personal property entered into by the Borrower in the ordinary course of business with respect to any of its Property shall not be deemed to constitute a disposition of assets for purposes of this Section 8.3 and provided further that, if no Event of Default specified in Section 10.1 hereof shall have occurred, the Borrower may consolidate with or merge into another domestic corporation organized and existing under the laws of one of the states of the United States of America or of Canada, or permit one or more such domestic corporations to consolidate with or merge into it, or sell or otherwise transfer to another such domestic corporation all or substantially all of its assets as an entirety and thereafter dissolve, provided (a) that the surviving, resulting, or transferee corporation, as the case may be, is incorporated under the laws of the State or qualifies to do business in the State, (b) that the surviving, resulting or transferee corporation, as the case may be, assumes in writing all of the obligations of and restrictions on the Borrower under this Agreement, the Note, the Mortgage and any other agreement securing the Borrower's performance of its obligations hereunder, (c) that the consummation of the transaction will not adversely affect the tax-exempt status of the interest payable on the Series Bonds or any of the Bonds then Outstanding, (d) (1) that immediately after the consummation of the transaction, and after giving effect thereto, the surviving, resulting or transferee corporation, as the case may be, (A) has a Net Worth at least equal to the greater of: (i) Net Worth of the Borrower as of the end of its most recent fiscal year immediately prior to the transaction, or (ii) the Net Worth required to be maintained by the Borrower under Section 8.20(a) hereof upon the effective date of the transaction, and (B) the ratio of its Indebtedness to Net Worth is not more than 2:1, or (2) the prior written consent of the Authority shall be obtained, and (e) that as of the date of such consolidation, merger, sale or transfer, the Authority and Trustee shall be furnished with (i) an opinion of Independent Counsel opining as to compliance with items (a) and (b) of this Section 8.3, (ii) an opinion of Bond Counsel opining as to compliance with item (c) of this Section 8.3, (iii) a review of

an Accountant opining as to compliance with item (d)(1) of this Section 8.3 and (iv) a certificate, dated the effective date of such consolidation, merger, sale or transfer, signed by the chief executive officer and the chief financial officer of the Borrower or of the surviving, resulting of transferee corporation, as the case may be, to the effect that immediately after the consummation of the transaction, and after giving effect thereto, no event of default exists under this Agreement (as set forth in Section 10.1(a) hereof) and no event exists which, with the giving of notice or the lapse of time or both, would become such an Event of Default and that the provisions of Section 8.3(d) hereof are satisfied.

Section 8.4. Agreement To Provide Information. The Borrower agrees, whenever requested by the Trustee or the Authority, to provide and certify or cause to be provided and certified such information concerning the Borrower, its finances, and such other topics as the Trustee or the Authority from time to time reasonably considers necessary or appropriate, including, but not limited to such information as may be necessary to enable the Authority to make any reports required by the Act, any other law or governmental regulation or to enable the Authority to issue additional Series of Bonds under the General Bond Resolution and publicly or privately market the same.

The Borrower understands and acknowledges that the Authority is financing the Loan by the issuance of the Series Bonds under the Program pursuant to which the Authority issues Bonds from time to time to provide funds therefor. The Borrower covenants and agrees that, upon written request of the Authority from time to time, the Borrower will promptly provide to the Authority all information that the Authority reasonably determines to be necessary or appropriate to offer and sell Bonds or to provide continuing disclosure in respect of Bonds, whether under Rule 15c2-12 promulgated by the Securities and Exchange Commission under the Securities Exchange Act of 1934 (17 C.F.R. 240.15c2-12) or otherwise. The Borrower will also provide, with any information so furnished to the Authority, a certificate of its chief executive officer or chief financial officer to the effect that, to the best of his or her knowledge, such information does not include any untrue statement of a material fact or omit to state any material fact required to be stated therein to make the statements made, in light of the circumstances under which they are made, not misleading.

Section 8.5. Books of Record and Account; Financial Statements.

(a) The Borrower agrees to maintain proper accounts, records and books in which full and correct entries shall be made, in accordance with generally accepted accounting principles, of business and affairs of the Borrower. The Authority and the Trustee or their designated agents or representatives shall have the right to inspect such accounts, records and books during reasonable business hours.

(b) Within 120 days after the close of each fiscal year of the Borrower during the Loan Term, commencing with the fiscal year ending March 31, 1997, the Borrower shall furnish to the Authority and the Trustee a consolidated balance sheet, a consolidated statement of income and retained earnings and a consolidated statement of cash flows of the Borrower for the immediately preceding fiscal year, all in reasonable detail (including footnotes to such financial statements), such financial statements to be audited and accompanied by the opinion of an Accountant. Such financial statements shall be accompanied by a report containing the total compensation paid to all directors and officers of the Borrower during such fiscal year and all of the calculations required by Sections 8.20 and 8.21 of this Agreement to determine whether or not the Borrower is in compliance with the requirements of said Sections 8.20 and 8.21, such calculations to be prepared by an Accountant from the then-current audited, or unaudited interim, financial statements of the Borrower. In addition to the foregoing, except during any period when the Authority has notified the Borrower in writing that monthly financial statements are not required, the Borrower shall furnish to the Authority and the Trustee within 30 days after the expiration of each calendar month in each fiscal year of the Borrower, a consolidated balance sheet, consolidated statement of income and retained earnings and a consolidated statement of changes in cash flows of the Borrower for the period beginning on the first day of such fiscal year and ending on the date of such balance sheet, prepared in comparative form, setting forth the corresponding figures for the same period in the preceding fiscal year, all in reasonable detail and certified,

subject to year-end adjustment, by the chief financial officer of the Borrower, and including a statement that the Borrower is or is not in compliance with the requirements of Sections 8.20 through 8.22 hereof.

Section 8.6. Borrower To File Statements with Internal Revenue Service. The Borrower agrees to file, or cause to be filed, with the Internal Revenue Service of the United States Treasury Department or any other authorized governmental agency any and all statements or other instruments which may be required by Sections 144 or 149 of the Code, at the times required therein, with respect to the Series Bonds.

Section 8.7. Assurance as to Tax Exemption. Notwithstanding any other provision of this Agreement, so long as the Series Bonds shall be unpaid, neither the Authority nor the Borrower shall use, or direct or permit the use of, the Bond Proceeds or any other moneys within their respective control (including without limitation the proceeds of any insurance or any Condemnation award with respect to the Facilities) which, if such use had been reasonably expected on the date of issue of the Series Bonds, would have caused the Series Bonds to be "arbitrage bonds" within the meaning of Section 148(a) of the Code or which use has resulted or will result in violation of any of the requirements of Section 148 of the Code.

The Borrower also covenants that it will fulfill all conditions specified in Section 144(a) of the Code to qualify the Bonds as "qualified small issue bonds" thereunder and that it will not make or permit to be made or incurred any capital expenditures which under the provisions of Section 144(a)(4) of the Code would cause interest on the Series Bonds to be includable in gross income for purpose of federal income taxation in the hands of Bondowners other than a Substantial User of the Facilities or a "related person" (as defined in Section 147(a) of the Code).

The Borrower also covenants that it will fulfill all conditions specified in Sections 141, 144, 147, 148, 149 and 150 of the Code to qualify the Series Bonds as "qualified small issue bonds" under Section 144(a)(4) of the Code.

None of the proceeds of the Series Bonds deposited in the Loan Account or investment income therefrom will be applied to the payments of Costs of Issuance, or any other cost that is an "issuance cost" within the meaning of Section 147(g) of the Code.

Section 8.8. Certificate of No Default. The Borrower agrees to deliver to the Trustee and to the Authority within 60 days after the close of each of the first three quarters of each fiscal year of the Borrower and within 120 days after the close of each fiscal year of the Borrower, a certificate of an Authorized Representative of the Borrower (a) to the effect that he is not aware of any condition, event or act which constitutes an Event of Default hereunder and no condition, event or act which, with the giving of notice or the lapse of time or both, would constitute such an Event of Default, including specifically an Event of Default that has occurred or could occur under Sections 8.20, 8.21 and 8.22 and 10.01 hereof as a result of the payment of any dividend on preferred stock of the Borrower, or if any such condition, event or act exists, specifying the same, and (b) to the effect that he is not aware of any failure in the payment of any part of the principal of or interest on any outstanding indebtedness of the Borrower for money borrowed and as the same shall become due and payable, whether at the stated maturity of such indebtedness or at a date fixed for redemption or otherwise, or the acceleration of the maturity of any such indebtedness following a default under the terms of any agreement or instrument relating to any such indebtedness.

Section 8.9. Notice of Default. The Borrower will forthwith, upon the occurrence of an Event of Default hereunder or upon the occurrence of a condition, event or act which, with the giving of notice or the lapse of time, or both, would constitute such an Event of Default, notify in writing the Trustee and the Authority of the occurrence of such Event of Default.

Section 8.10. Assignment and Leasing.

(a) This Agreement may be assigned in whole or in part and the Facilities may be leased as a whole or in part by the Borrower, but only with the written consent of the Authority and the Trustee and provided further that:

(i) No assignment (other than pursuant to Section 8.3 hereof) or lease shall relieve the Borrower from primary liability for any of its obligations hereunder;

(ii) The assignee or lessee shall assume the obligations of the Borrower hereunder to the extent of the interest assigned or leased;

(iii) The Borrower shall, within ten (10) days after the delivery thereof, furnish or cause to be furnished to the Authority and to the Trustee a true and complete copy of each such assignment or lease, as the case may be, and the instrument of assumption;

(iv) Such assignment or lease shall not cause the interest on the Series Bonds or any other Bonds issued on a tax-exempt basis to become includible in gross income for federal income tax purposes (other than to a Person who is a "substantial user" of the facilities financed from proceeds of such Bonds or a related person to a substantial user thereof (within the meaning of section 147(a) of the Code);

(v) The assignment or lease shall be subject and subordinate to the Lien of this Agreement, the Mortgage and the Pledge; and

(vi) Neither the validity nor the enforceability of this Agreement, the Mortgage or any security interest created thereunder shall be adversely affected thereby.

(b) As of the purported effective date of any assignment or lease pursuant to subsection (a) of this Section 8.10, the Borrower shall furnish the Trustee with an opinion, in form and substance satisfactory to the Trustee, (i) of Bond Counsel opining that the tax-exempt status of the interest on the Series Bonds will not be adversely affected thereby, (ii) of Independent Counsel that the assignment or lease is subject and subordinate to the Lien of this Agreement, the Mortgage and the Pledge, (iii) of Independent Counsel that neither the validity nor the enforceability of this Agreement, the Note or the Mortgage will be adversely affected thereby and (iv) of Independent Counsel opining that the assumption of obligations of the Borrower by any Person pursuant to Section 8.10(a)(ii) hereof will constitute a valid and legally enforceable assumption by such Person.

(c) Any reassignment or sublease in turn of any assignment or lease entered into pursuant to subsection (a) of this Section 8.10 shall comply with and be subject to all the provisions of subsections (a) and (b) of this Section 8.10. Any sublease in turn of a lease entered into pursuant to subsection (a) of this Section 8.10 shall be subject and subordinate to such original lease.

Section 8.11. Right To Inspect the Facilities and Collateral. The Authority, the Trustee and the duly authorized agents of either of them shall have the right at all reasonable times or, if no Event of Default then subsists, only during regular business hours, to inspect the Facilities and the Collateral.

Section 8.12. Compliance with Orders, Ordinances, etc.

(a) The Borrower agrees that it will, throughout the Loan Term, promptly comply with all statutes, codes, laws, acts, ordinances, orders, judgments, decrees, injunctions, rules, regulations, permits, licenses, authorizations, directions and requirements of all federal, state, county, municipal and other governments, departments, commissions, boards, companies or associations insuring the premises, courts, authorities, officials and officers, foreseen or unforeseen, ordinary or extraordinary, which now or at any time hereafter may be applicable to the Collateral or any part thereof, or to any use, manner of use or condition of the Collateral or any part thereof.

(b) Notwithstanding the provisions of subsection (a) of this Section 8.12, the Borrower may in good faith contest the validity or the applicability of any requirement of the nature referred to in such subsection (a). In such event, the Borrower may fail to comply with the requirement or requirements so contested during the period of such contest and any appeal therefrom, unless the Authority or the Trustee shall notify the Borrower that by failure to comply with such requirement or requirements the Lien of the Mortgage or this Agreement as to any part of the Collateral may be materially endangered or the Collateral or any part thereof may be subject to loss or

forfeiture, in which event the Borrower shall promptly take such action with respect thereto as shall be satisfactory to the Trustee.

Section 8.13. Liens and Encumbrances.

(a) During the Loan Term and subject to the provisions of Section 5.4 of this Agreement and the Mortgage, the Borrower shall not permit or create or suffer to be permitted or created any Lien, except for Permitted Encumbrances, upon the Collateral or any part thereof, nor may the Borrower assign, sell or otherwise dispose of the Collateral or any part thereof, without the prior written consent of the Authority and the Trustee. Any such Lien, if nonetheless created or permitted, shall be discharged by the Borrower forthwith.

(b) Notwithstanding the provisions of subsection (a) of this Section 8.13, the Borrower may in good faith contest any Lien upon the Collateral or any part thereof by reason of any labor, services or materials rendered or supplied or claimed to be rendered or supplied with respect to the Project or any part thereof. In such event, the Borrower may permit the items so contested to remain undischarged and unsatisfied during the period of such contest and any appeal therefrom, unless the Authority or the Trustee shall notify the Borrower that by nonpayment of any such item or items the Lien of the Mortgage or the security interest created by Section 5.4(b) and (c) of this Agreement may be materially endangered or the Collateral or any part thereof may be subject to loss or forfeiture, in which event the Borrower shall promptly secure payment of all such unpaid items by filing the requisite bond, in form and substance satisfactory to the Trustee, thereby causing a Lien to be removed.

(c) Upon the request of the Authority or the Trustee, the Borrower shall provide the Authority and the Trustee, within sixty (60) days of such request, with proof satisfactory to the Trustee that all items of Collateral continue to be free and clear of all Liens and encumbrances (other than Permitted Encumbrances).

(d) Notwithstanding the provisions of subsection (a) of this Section 8.13, the Authority shall release from the Lien of the Mortgage any part of the Collateral constituting real property; provided (i) an Independent architect satisfactory to the Authority certifies that the real property to be released is not material to the continued business operations of the Borrower at the site owned by the Borrower and (ii) the Appraised Value of the real property to be released is not more than 5% of the overall Appraised Value of the Collateral constituting real property. Pursuant to this Section 8.13(d), the Authority shall execute such instruments as shall be necessary to effect such release from the Mortgage as provided above as may be requested by the Borrower.

Section 8.14. Identification of Equipment. All Equipment shall be properly identified by the Borrower by appropriate records, including computerized records.

Section 8.15. Relocation of Equipment. The Borrower covenants and agrees that during the Loan Term it will not remove any items of Equipment (except in accordance with the terms of Section 5.4(c) hereof) from the Land to a new location either within or outside of the State, without first obtaining the express written consent of the Authority with respect to such removal and relocation.

Section 8.16. Depreciation Deductions. The parties agree that the Borrower shall be entitled to all depreciation deductions with respect to any depreciable property in the Facilities pursuant to Section 167 of the Code to the extent permitted for property financed with tax-exempt bonds.

Section 8.17. Mortgage Covenants. The Borrower covenants and agrees to perform all of the obligations and covenants imposed upon it pursuant to the Mortgage and agrees that any failure to perform such covenants may constitute a default for purposes of this Agreement.

Section 8.18. Covenant Against Discrimination. The Borrower covenants and agrees that in the performance of this Agreement or the employment of persons at the Facilities it will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, religion, national origin or sex in any manner prohibited by the laws of

the United States of America or of the State.

Section 8.19. Employment Records. Within sixty (60) days after the close of each calendar year, the Borrower shall furnish a written report to the Authority of the total number of employees at the Facilities, and shall separately indicate: (a) the number of permanent new jobs which was estimated to be created by the Facilities on the Borrower's application to the Authority, with job descriptions and annual salaries; (b) which of these permanent new jobs are currently filled; and (c) the average number of full-time, part-time or seasonal employees at the Facilities within the three categories of (i) professional managerial, technical, (ii) skilled, and (iii) semi-skilled or unskilled for the current reporting period.

Section 8.20. Certain Financial Covenants.

(a) During the Loan Term, the Borrower shall maintain, as determined at the end of the most recent fiscal year for which audited financial statements of the Borrower are available, a Net Worth of not less than the following amounts set forth opposite the date of calculation below:

Date of Calculation	Minimum Net Worth
March 31, 1997	\$2,500,000
March 31, 1998	3,000,000
March 31, 1999	3,750,000
March 31, 2000 and thereafter	5,000,000

(b) During the Loan Term and as of any date of calculation, the Borrower shall maintain a ratio of earnings before paying interest on all of its Indebtedness, taxes and making allowances for depreciation (all in accordance with generally accepted accounting principles) averaged for the last three full fiscal years of the Borrower to regularly scheduled payments of principal and interest on all Indebtedness of the Borrower averaged for the last three full fiscal years of the Borrower of at least 2.0 to 1.0.

(c) The Borrower will pay punctually when due and payable, any Indebtedness heretofore or hereafter incurred or assumed by it and perform and observe the covenants, provisions and conditions to be performed and observed on the part of the Borrower in connection therewith, or in connection with any agreement or other instrument relating thereto, or in connection with any mortgage, pledge, security interest or other lien existing at any time upon any of the assets of the Borrower; provided, however, that nothing contained in this paragraph shall require the Borrower to pay any such Indebtedness or to perform or observe any such covenants, provisions and conditions so long as the Borrower in good faith shall contest any claim which may be asserted against it in respect of any such Indebtedness or of any such covenants, provisions and conditions and shall set aside on its books adequate reserves with respect thereto.

(d) Borrower shall maintain, as determined at the end of each fiscal year, a ratio of its Net Worth to Indebtedness of not less than the following amounts set forth opposite the date of calculation below:

Date of Calculation	Net Worth to Indebtedness
March 31, 1997	1.00 to 1.0
March 31, 1998	1.00 to 1.0
March 31, 1999	1.25 to 1.0
March 31, 2000	1.75 to 1.0
March 31, 2001 and thereafter	2.00 to 1.0

(e) Borrower shall maintain, as determined at the end of each fiscal year, a ratio of its Current Assets to Current Liabilities of not less than 3:1.

(f) Notwithstanding anything contained herein to the contrary, the failure by the Borrower to comply with the provisions of either Section 8.20(a), Section 8.20(b), Section 8.20(c), Section 8.20(d) or Section 8.20(e) of this Agreement shall not constitute an Event of Default hereunder, but shall result in the imposition of the following requirements on the Borrower during the continuance of such failure:

(i) That the Borrower shall not incur, assume, guarantee or become obligated in respect of any

Indebtedness, other than (i) Indebtedness payable to the Board of Economic Development of the State, in a principal amount not to exceed \$300,000, to finance costs of certain equipment to be located in the Buildings, (ii) Indebtedness payable to the Aberdeen Development Corporation, in a principal amount not to exceed \$1,250,000, (iii) Indebtedness payable to the Minnesota Agricultural and Economic Development Board, in a principal amount not to exceed \$345,000, (iv) Indebtedness payable to the Aberdeen Development Corporation, in a principal amount not to exceed \$300,000, (v) Indebtedness payable to the NECOG Development Corporation, in a principal amount not to exceed \$150,000, and (vi) Indebtedness which matures by its terms in 60 days or less and which is not renewable or extendible at the option of the Borrower to a date beyond said 60-day period in excess of the sum of the following: (y) 50% of the accounts receivable of the Borrower not delinquent more than 90 days; and (z) 50% of the inventory of the Borrower, valued at the lower of cost or market value; and (vii) Indebtedness in the form of purchase money security mortgages to purchase equipment to the extent the purchase money mortgage is not more than eighty percent (80%) of the purchase price of the property.

(ii) That, without the prior written consent of the Authority, the Borrower shall not pay any annual increases in total compensation (excluding insurance, medical, dental and pension benefits) to the shareholders, directors and officers of the Borrower or any person who is or has been at any time related by blood or marriage to any of such directors and officers in excess of 3%;

(iii) That, without the prior written consent of the Authority, the Borrower shall not pay pursuant to contract, agreement or other arrangement for goods or services rendered in the aggregate to a Related Person to the Borrower in a single fiscal year of the Borrower an amount in excess one percent (1%) of the sales of the Borrower for its last completed fiscal year;

(iv) That the Borrower will not pay any Indebtedness owed by it to either the shareholders, directors, officers and Related Persons or to any corporation the Voting Stock of which is owned by the shareholders, directors, officers or Related Persons or any Subsidiary of any of the foregoing; and

(v) That the Borrower will not loan or advance funds to any of the shareholders, directors, officers and Related Persons or to any corporation the Voting Stock of which is owned by the shareholders, directors, officers and Related Persons or any Subsidiary of any of the foregoing; and

(g) The calculations required to evidence compliance or noncompliance with the limitations imposed by the foregoing subsections of this Section 8.20 and Section 8.21 of this Agreement shall be prepared by an Accountant and submitted to the Authority and the Trustee annually pursuant to Section 8.5 of this Agreement.

Section 8.21. Covenants Against Loans, Dividends, etc. The Borrower covenants and agrees that it will not, without the prior written consent of the Authority, pay or declare any dividends on any class of its capital stock, redeem any capital stock or purchase any treasury stock, or make any loans or transfer title to any of its assets to any shareholder, director, officer, stockholder or Related Persons of the Borrower in an amount or at fair market value in the aggregate in excess of \$100,000 in any single fiscal year or in excess of \$200,000 in any five consecutive fiscal years.

Section 8.22. Covenant Against Unreasonable Compensation. The Borrower covenants and agrees that it will not pay directors' and officers' salaries or provide any form of compensation to its directors and officers in excess of that reasonable for services rendered.

Section 8.23. Restrictions on Sale or Assignment. In order to induce the Authority to make the Loan, the Borrower agrees that if its interest in the Mortgaged Property (as defined in the Mortgage) or any part thereof or interest therein or its interest in Property comprising more than fifty percent (50%) of the book value of its Property is leased, sold, assigned, transferred, conveyed or otherwise alienated, or mortgaged, pledged or

encumbered (other than by Permitted Encumbrances), by the Borrower, whether voluntarily or involuntarily or by operation of law, in either or any case without the prior written consent of the Authority, the Authority, at its option, may declare the Loan and all other obligations hereunder to be forthwith due and payable; provided that the Borrower may convey its interest in the Mortgaged Property or in its Property as permitted by Sections 8.3 and 8.10 hereof. Any change in the legal or equitable title of the Mortgaged Property or in the beneficial ownership of the Mortgaged Property, whether or not of record and whether or not for consideration, shall be deemed a transfer of an interest in the Mortgaged Property, except any change resulting from a merger, consolidation or transfer of assets, or a lease or assignment, permitted and in accordance with Sections 8.3 and 8.10 hereof.

In the event ownership of the Mortgaged Property, or any part thereof, becomes vested in a Person or Persons other than the Borrower, without the prior written approval of the Authority, the Authority may, without notice to the Borrower, waive such default and deal with such successor or successors in interest with reference to this Agreement, the Note and the Mortgage in the same manner as with the Borrower, without in any way releasing, discharging or otherwise affecting the liability of the Borrower hereunder, or for indebtedness secured hereby or by the Mortgage. No sale of the Mortgaged Property, no forbearance on the part of the Authority, no extension of time for the payment of the Loan or any change in the terms thereof consented to by the Authority, shall in any way whatsoever operate to release, discharge, modify, change or affect the original liability of the Borrower herein, either in whole or in part, nor shall the full force and effect of the lien of the Mortgage be altered thereby. Any deed conveying the interest of the Borrower in the Mortgaged Property, or any part thereof, in a transaction otherwise permitted by this Section 8.23 shall provide that the grantee thereunder assume all of the grantor's obligations under this Agreement, the Mortgage, the Note and all other instruments or agreements evidencing or securing the repayment of the Loan. In the event such deed shall not contain such assumption, the Authority shall have all rights reserved to it hereunder in the event of a default or if the Authority shall not elect to exercise such rights and remedies, the grantee under such deed shall nevertheless be deemed to have assumed such obligations by acquiring the Mortgaged Property or such portion thereof.

ARTICLE IX

PLEDGE OF CERTAIN INTERESTS

Section 9.1. Pledge of Certain Interests to Bondowners.

(a) The Authority under Section 1.04 of the General Bond Resolution and under Article V of the Series Supplemental Resolution has pledged all of its rights and interest and all provisions of this Agreement and the Note (except pursuant to Section 8.2 hereof), and the Mortgage as security for the payment of the principal of, premium, if any, and interest on the Bonds and the Series Bonds. Such Pledge shall in no way impair or diminish any obligation of the Borrower under this Agreement, the Note and the Mortgage. The Borrower hereby consents to such Pledge by the Authority.

(b) Except as provided in this Section 9.1 and in Article X of this Agreement and except as otherwise expressly provided in this Agreement, the Note and the Mortgage, the Authority shall not sell, assign, transfer, convey or otherwise dispose of its interest in or its rights under this Agreement, the Note and the Mortgage, without the prior written consent of the Borrower.

ARTICLE X

EVENTS OF DEFAULT AND REMEDIES

Section 10.1. Events of Default Defined.

(a) Any one of the following shall constitute an "Event of Default" under this Agreement:

(i) The failure by the Borrower to pay or cause to be paid, when due, the amounts specified to be paid pursuant to Section 5.1, Section 5.2(a) or Section 11.1(a) hereof and the Note;

(ii) The failure by the Borrower to observe and

perform any covenant contained in Section 8.3, 8.20(f), 8.21 or 8.23 hereof;

(iii) The failure by the Borrower to observe and perform any covenant, condition or agreement hereunder on its part to be observed or performed (except obligations referred to in Section 10.1(a) (i), (ii), (iv) and (v) hereof) for a period of thirty (30) days after written notice, specifying such failure and requesting that it be remedied, is given to the Borrower by the Authority or the Trustee;

(iv) The dissolution or liquidation of the Borrower or the filing by the Borrower of a voluntary petition in bankruptcy, or the failure by the Borrower within sixty (60) days to lift any execution, garnishment or attachment of such consequence as will impair its ability to carry on its operations at the Facilities, or the commission by the Borrower of any act of bankruptcy, or the adjudication of the Borrower as a bankrupt, or the assignment of assets by the Borrower for the benefit of its creditors, or the entry by the Borrower into an agreement of composition with its creditors, or the approval by a court of competent jurisdiction of a petition applicable to the Borrower in any proceeding for its reorganization instituted under the provisions of any state or federal bankruptcy or similar law, or appointment by final order, judgment or decree of a court of competent jurisdiction of a receiver of the whole or a substantial portion of the Property of the Borrower unless such receiver is removed or discharged within sixty (60) days of the date of his qualification). The term "dissolution or liquidation of the Borrower" as used in this subsection shall not be construed to include any transaction permitted by Section 8.3 hereof; or

(v) Default in the payment of any part of the principal of or interest on any Indebtedness of the Borrower for money borrowed having an outstanding principal amount of \$50,000, when and as the same shall become due and payable, whether at the stated maturity of such Indebtedness or at a date fixed for redemption or otherwise, which failure results in the acceleration of the maturity of any such indebtedness following a default under the terms of any agreement or instrument relating to any such indebtedness.

(b) Notwithstanding the provisions of Section 10.1(a), if by reason of force majeure either party hereto shall be unable in whole or in part to carry out its obligations under this Agreement and if such party shall give notice and full particulars of such force majeure in writing to the other party and to the Trustee within a reasonable time after the occurrence of the event or cause relied upon, the obligations under this Agreement of the party giving such notice, so far as they are affected by such force majeure, shall be suspended during the continuation of the inability, which shall include a reasonable time for the removal of the effect thereof. The suspension of such obligations for such period pursuant to this subsection (b) shall not be deemed an Event of Default under this Section 10.1. Notwithstanding anything to the contrary in this subsection (b), an event of force majeure shall not excuse, delay or in any way diminish the obligations of the Borrower to make the payments required by Section 5.1, Section 5.2 and Section 11.1(a) hereof, to obtain and continue in full force and effect the insurance required by Section 4.6 and Section 6.4 hereof, to provide the indemnity required by Section 8.2 hereof and to comply with the provisions of Sections 2.2(c), 2.2(g), 2.2(m), 2.2(u), 2.2(bb), 2.2(cc), 2.2(ff), 2.2(gg), 4.3, 4.5, 6.3, 6.5, 6.7, 8.3, 8.4, 8.6, 8.7, 8.8, 8.9, 8.10, 8.12, 8.13, 8.18, 8.19, 8.20, 8.21, 8.22 and 8.23 hereof. The term "force majeure" as used herein shall include, without limitation, acts of God, strikes, lockouts or other industrial disturbances, acts of public enemies, orders of any kind of the government of the United States of America or of the State or any of their departments, agencies, governmental subdivisions, or officials, or any civil or military authority, insurrections, riots, epidemics, landslides, lightning, earthquakes, fire, hurricanes, storms, floods, washouts, droughts, arrests, restraint of government and people, civil disturbances, explosions, breakage or accident to machinery, transmission pipes or canals, partial or entire failure of utilities, or any other cause or event not reasonably within the control of the party claiming such inability.

Section 10.2. Remedies on Event of Default.

(a) Whenever any Event of Default shall have occurred, the

Authority or the Trustee may take any one or more of the following remedial steps.:

(i) Declare, by written notice to the Borrower, to be immediately due and payable, whereupon the same shall become immediately due and payable and so accelerated: (i) all unpaid amounts payable pursuant to Section 5.1 hereof, and pursuant to the Note (constituting principal of the Loan and accrued but unpaid interest thereon) and (ii) all other payments due under this Agreement and pursuant to the Note (whether or not constituting principal of the Loan and accrued but unpaid interest thereon);

(ii) Terminate the disbursement of any moneys in the Loan Account in accordance with Section 4.3 hereof and, upon acceleration of the Loan pursuant to Section 10.2(a) (i) of this Agreement, transfer such moneys to the Special Redemption Account;

(iii) Foreclose and otherwise enforce the Mortgage on, and any security interest in, the Facilities or other Collateral;

(iv) Take possession of the Equipment and for that purpose the Borrower agrees that (a) it will, when so requested by the Authority or the Trustee assemble the Equipment and make it available to the Authority or the Trustee on the premises on which it is located and (b) the Authority and the Trustee, their employees, agents and representatives shall have the right to enter peacefully upon any premises in the possession of the Borrower wherein the Equipment or any part thereof may be located and take possession of and remove such Equipment without interference or hindrance from the Borrower, its officers, agents or employees or any person associated therewith;

(v) Upon not less than ten (10) days' notice to the Borrower (which the Borrower hereby agrees is commercially reasonable) the Authority or the Trustee may proceed to sell or otherwise dispose of the Equipment or any part thereof by public or private sale in any commercially reasonable manner (and without intending to limit the generality of the foregoing, the Borrower hereby agrees that the sale of such property at a public auction conducted by a reputable auctioneer in the manner in which such auctions are usually conducted is commercially reasonable); and

(vi) Take any other action at law or in equity which may appear necessary or desirable to collect the payments then due or thereafter to become due and to enforce the obligations, agreements or covenants of the Borrower under this Agreement, the Mortgage and the Note.

(b) Any sums realized as a consequence of any action taken pursuant to Section 10.2(a) shall be paid to the Trustee and shall be applied by the Trustee, subject to the provisions of Section 7.04 of the General Bond Resolution, in accordance with the provisions of Section 6.06(d) of the General Bond Resolution, to which such application the Borrower hereby consents.

Section 10.3. Remedies Cumulative. No remedy herein conferred upon or reserved to the Authority is intended to be exclusive of any other available remedy, but each and every such remedy shall be cumulative and in addition to every other remedy given under this Agreement or now or hereafter existing at law or in equity or by statute. No delay or omission to exercise any right or power accruing upon any default shall impair any such right or power or shall be construed to be a waiver thereof, but any such right and power may be exercised from time to time and as often as may be deemed expedient. In order to entitle the Authority to exercise any remedy reserved to it in this Article X, it shall not be necessary to give any notice, other than such notice as may be herein expressly required in this Agreement and the Note.

Section 10.4. Agreement To Pay Attorneys' Fees and Expenses.. In the event the Borrower should default under any of the provisions of this Agreement and the Authority or the Trustee should employ attorneys or incur other expenses for the collection of amounts payable hereunder or the enforcement of performance or observance of any obligations or agreements on the part of the Borrower herein contained, including without limitation obligations and agreements under this Section 10.4, the Borrower shall, on demand therefor, pay to the Authority or the Trustee the reasonable fees of such attorneys and such other

expenses so incurred. Commencement of a lawsuit to recover any amount payable under this Agreement or the Note shall be deemed a demand for payment of all expenses incurred in the course of such lawsuit, including without limitation attorneys' fees.

Section 10.5. No Additional Waiver Implied by One Waiver. In the event any agreement contained herein should be breached by either party and thereafter waived by the other party, such waiver shall be limited to the particular breach so waived and shall not be deemed to waive any other breach hereunder including without limitation a subsequent breach or subsequent breaches of the same provision of this Agreement.

ARTICLE XI

EARLY TERMINATION OF AGREEMENT; PREPAYMENT OF LOAN

Section 11.1. Early Termination of Agreement.

(a) The Borrower shall terminate this Agreement and shall comply with the requirements set forth in Section 11.2 hereof within 90 days after a Determination of Taxability. The obligation of the Borrower to comply with the requirements of this Section 11.1(a) shall be absolute and unconditional to the same extent as provided in Sections 5.1 and 5.3 of this Agreement.

(b) The Borrower shall have an option to terminate this Agreement upon filing with the Authority and the Trustee a certificate signed by an Authorized Representative of the Borrower stating the Borrower's intention to do so on the next succeeding Interest Payment Date pursuant to this Section 11.1(b) and complying with the requirements of Section 3.02(b) of the General Bond Resolution and upon further compliance with the requirements set forth in Section 11.2 hereof.

Section 11.2. Conditions to Early Termination of Agreement. In the event the Borrower exercises its option, or is required, to terminate this Agreement in accordance with any provision of Section 11.1 hereof, the Borrower shall comply with the requirements set forth in the following three subsections:

(a) The following payments shall be made:

(i) To the Trustee for the account of the Authority: an amount certified by the Trustee which, when added to the total amount on deposit with the Trustee for the account of the Authority and the Borrower and available for such purpose, will be sufficient (A) to pay, for deposit into the Special Redemption Account, the amount required by Section 2.04(a) of the Series Supplemental Resolution as the Redemption Price for the Series Bonds in connection with the redemption in whole of such Bonds, if such termination is pursuant to Section 11.1(a) hereof, or (B) to pay, for deposit into the Optional Redemption Account, the Redemption Price of the Series Bonds in connection with the redemption in whole of such Bonds, in accordance with the terms of Section 2.04(a) of the Series Supplemental Resolution, together with all interest on such Series Bonds which will accrue to the date of redemption (which shall be the next succeeding Interest Payment Date for which the Trustee may give notice pursuant to Section 3.03 and Section 3.04 of the General Bond Resolution), if such termination is pursuant to Section 11.1(b) hereof, plus, in either event, to pay any amounts then payable or to be payable to the United States under Section 148(f) of the Code following redemption of the Series Bonds;

(ii) To the Authority: an amount certified by the Authority sufficient to pay all unpaid fees and expenses of the Authority incurred under this Agreement and the Authority Resolution; and

(iii) To the appropriate Person: an amount sufficient to pay all other fees, expenses or charges, if any, due and payable or to become due and payable under this Agreement and the Authority Resolution and not otherwise paid or provided for.

(b) The certificate required to be filed pursuant to Section 11.1(b), shall specify the date upon which the payments pursuant to subdivision (a) of this Section 11.2 shall be made, which date shall not be less than ninety (90) nor more than one hundred twenty (120) days from the date such certificate is filed

with the Authority and the Trustee.

Section 11.3. Discharge of Lien. If the Borrower shall pay or cause to be paid to the Trustee for the account of the Authority the principal or Redemption Price, if applicable, and interest due or to become due at the times and in the manner stipulated in the Series Bonds and observe and perform all obligations and covenants to be performed by it hereunder and under the Note, then the rights in the Collateral hereby granted and all covenants, agreements and other obligations of the Borrower hereunder to the Authority and the Trustee shall thereupon cease, terminate and become void and be discharged and satisfied, except as otherwise provided in Section 12.9 hereof. In such event, the Authority and the Trustee shall cancel and discharge the Lien of the Mortgage and the security interest in the Equipment created in Section 5.4 of this Agreement and execute and deliver to the Borrower all such instruments as may be appropriate to evidence such discharge and satisfaction of such liens. After payment in full of the Series Bonds and the interest thereon and the payment of all other amounts, fees, charges and expenses required to be paid under this Agreement, the Note and the Series Supplemental Resolution, all amounts on deposit with the Trustee for the account of the Authority and the Borrower under this Agreement, the Note and the Series Supplemental Resolution, if any, shall be applied by the Trustee in accordance with the provisions of Section 5.21 of the General Bond Resolution.

Section 11.4. Prepayment of Loan in Part.

(a) The Borrower shall have the option to prepay the Loan in part upon filing with the Authority and the Trustee a certificate signed by an Authorized Representative of the Borrower stating the Borrower's intention to do so pursuant to this Section 11.4 and complying with the requirements of Section 2.04(a) of the Series Supplemental Resolution and Section 3.06 of the General Bond Resolution. Such certificate shall specify the date (which shall be an Interest Payment Date) and amount of the partial prepayment of the Loan, which date shall not be less than one hundred twenty (120) days nor less than ninety (90) days after the date such certificate is filed with the Authority and the Trustee.

(b) Upon the filing of such certificate, the Borrower shall pay to the Trustee for the account of the Authority a sum sufficient to pay, for deposit into the Optional Redemption Account, the Redemption Price of the Series Bonds to be redeemed (from the amounts of the Loan to be prepaid as certified in Section 11.4(b) of this Agreement) in accordance with the terms of Section 2.04(a) of the Series Supplemental Resolution, together with all interest on such Series Bonds which will accrue to the date of redemption.

Section 11.5. Consent to Refunding. If the Authority certifies to the Borrower that it wishes to refund the Series Bonds in order to permit the Authority to amend the provisions of the General Bond Resolution or the Pledge and Escrow Agreement without the necessity of obtaining Bondowner consent, the Borrower hereby agrees to continue to make payments and to be bound by this Agreement and the Note as if the Series Bonds continued to be Outstanding.

ARTICLE XII

MISCELLANEOUS

Section 12.1. Notices. All notices, other than interest billing notices, certificates or other communications hereunder shall be in writing and shall be sufficiently given and shall be deemed given when delivered and, if delivered by mail, shall be sent by certified or registered mail, postage prepaid, return receipt requested, addressed as follows:

To the
Authority: South Dakota Economic Development
Finance Authority
Governors Office of Economic
Development
711 East Wells Avenue
Pierre, South Dakota 57501
Attn: Executive Director

To the
Borrower: APA Optics, Inc.
2950 North East 84th Lane
Blaine, Minnesota 55449

Attn: Dr. Anil K. Jain

To the
Trustee:

The First National Bank in Sioux Falls
100 South Phillips
P.O. Box 1186
Sioux Falls, South Dakota 57117
Attn: Corporate Trust Department

A duplicate copy of each notice, certificate and other communication given hereunder by either the Authority or the Borrower to the other shall also be given to the Trustee. The Authority, the Borrower and the Trustee may, by notice given hereunder, designate any further or different addresses to which subsequent notices, certificates and other communications shall be sent.

Section 12.2. Binding Effect. This Agreement shall inure to the benefit of and shall be binding upon the Authority, the Borrower and their respective successors and assigns and shall create no rights in any other parties except as may be specifically set forth elsewhere in this Agreement, including Section 2.3 hereof.

Section 12.3. Severability. In the event any provision of this Agreement shall be held invalid or unenforceable by any court of competent jurisdiction, such holding shall not invalidate or render unenforceable any other provision hereof.

Section 12.4. Amendments, Changes and Modifications. This Agreement, the Mortgage and the Note may not be amended, changed, modified, altered or terminated without the concurring written consent of the Bondowners, except as provided in Section 6.08 of the General Bond Resolution.

Section 12.5. Privacy Disclosure. The Borrower understands that the information which the Borrower provides pursuant to this Agreement, including, but not limited to, information required under Sections 8.4, 8.5, 8.6, 8.8 and 8.19 hereof, will be used by the Authority to:

- (a) Assess the Borrower's financial status;
- (b) Make any reports required by the Act, any other law or government regulation;
- (c) Provide such information to the public, including, but not limited to, potential purchasers of the Bonds, Bondowners, Bond Counsel and the Authority's underwriters and placement agents, as is needed in connection with the sale, issuance and payment of Bonds;
- (d) Enforce this agreement and any mortgage or other security instrument between the Borrower and the Authority; and
- (e) Operate and evaluate its Program.

The Borrower further understands that there is a possibility that the information might constitute a public record and may be examined by anyone. The Borrower hereby consents to the use of such data as described above and to its public disclosure. Failure to provide the required data may constitute an Event of Default under Section 10.1.

Section 12.6. Execution Counterparts. This Agreement may be executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 12.7. Applicable Law. This Agreement shall be governed by the applicable laws of the State without giving effect to the conflicts-of-law principles thereof.

Section 12.8. Recording and Filing.

(a) The Mortgage and financing statements perfecting the security interest created therein or herein shall be recorded or filed, as the case may be, in such office or offices as may at the time be provided by law as the proper place for the recordation or filing thereof. The Borrower shall be responsible for such recording and filing and shall bear the expense associated therewith.

(b) The Authority and the Borrower shall execute and deliver all instruments and shall furnish all information

necessary or appropriate to perfect or protect any security interest created or contemplated by this Agreement, the Mortgage or the Authority Resolution.

Section 12.9. Survival of Obligations. This Agreement and the Note shall remain in full force and effect until the Series Bonds, together with all interest thereon, and all amounts payable under this Agreement and the Note and the Authority Resolution shall have been paid in full. However, the obligations of the Borrower to make the payments required by Section 5.1, Section 5.2(a) and Section 5.2(b) hereof and to provide the indemnity required by Section 8.2 hereof shall survive the termination of this Agreement and the full payment of the Bond.

Section 12.10. Table of Contents and Section Headings Not Material. The Table of Contents and the headings of the several Sections in this Agreement have been prepared for convenience of reference only and shall not control, affect the meaning of or be taken as an interpretation of any provision of this Agreement.

Section 12.11. Limited Liability. The Act prescribes and the parties intend that by reason of making this Agreement, by reason of the issuance of the Series Bonds, by reason of the performance of any act required of the Authority by this Agreement, or by reason of the performance of any act requested of the Authority by the Borrower, no indebtedness or charge against the general credit or taxing powers, if any, of the Authority within the meaning of any constitutional or statutory limitation shall occur.

IN WITNESS WHEREOF, the Authority and the Borrower have caused this Loan Agreement to be executed in their respective names as of June 1, 1996.

SOUTH DAKOTA ECONOMIC DEVELOPMENT
FINANCIAL AUTHORITY

By: /s/ Jack Lynass
Chairman

(SEAL)

ATTEST:

By: /s/ Lonae Lindquist
Secretary

APA OPTICS, INC.

By: /s/ Anil L.
Jain
President

(SEAL)

ATTEST:

By: /s/ Kenneth A. Olsen
Secretary

APPENDIX I

PROMISSORY NOTE

No. 1 \$1,895,000

APA Optics, Inc. (the "Borrower"), a corporation organized and existing under the laws of the State of Minnesota, and authorized to conduct business in the State of South Dakota, acknowledges itself indebted and for value received hereby promises to pay to the South Dakota Economic Development Finance Authority (the "Authority") or assigns, the principal sum of ONE MILLION NINE HUNDRED TWENTY THOUSAND AND 00/00 DOLLARS (\$1,895,000.00), together with interest on the unpaid principal balance of this Note until the Borrower's obligation with respect to the payment of such sum shall be discharged at a rate of interest equal from time to time to the weighted average of the stated rates of interest on the Outstanding Bonds referred to below (taking into account the different rates for the different

maturities and principal amounts of the Outstanding Bonds), but payable not as provided in the Bonds but as provided in Schedule I hereto and in the Loan Agreement referred to below.

This Note is issued to evidence the obligation of the Borrower under and pursuant to, and shall be governed by and construed in accordance with the terms and conditions of, a Loan Agreement, dated as of June 1, 1996 (the "Loan Agreement"), between the Authority and Borrower, for the repayment of the loan made by the Authority to the Borrower thereunder from the proceeds of the Authority's \$1,895,000 in aggregate principal amount of Economic Development Revenue Bonds (Pooled Loan Program) (APA Optics, Inc. Project), Series 1996A (the "Bonds") and the payment of interest thereon, including provision for prepayment of said loan in certain cases, and for the satisfaction of certain rights of reimbursement of the Capital Reserve Fund or the Authority as provided in the Loan Agreement under certain circumstances. This Note is secured by a Mortgage and Security Agreement_One Hundred Eighty Day Redemption, dated as of the date hereof (the "Mortgage"), with respect to the Land (as defined in the Loan Agreement), and is secured by a security interest in the Equipment (as defined in the Loan Agreement), granted by the Borrower to the Authority as provided in the Loan Agreement. The Loan Agreement (together with this Note) and the Mortgage have been pledged to the Owners of the Bonds issued from time to time under the First Amended and Restated Economic Development Revenue Bond (Pooled Loan Program) General Bond Resolution (the "General Bond Resolution") adopted by the Board of Directors of the Authority on September 11, 1990, as heretofore or hereafter amended or supplemented from time to time in accordance with its terms.

As provided in the Loan Agreement and subject to the provisions thereof, payments of principal of and interest on this Note are to be made in lawful money of the United States of America at the place and in the manner provided in the Loan Agreement, in installments due on the dates and in the amounts set forth on the payment schedule attached hereto as Schedule I, such installments to be reduced or abated as provided in Section 5.1 of the Loan Agreement.

This Note may be prepaid in whole or in part in accordance with the provisions of the Loan Agreement. In addition, upon the occurrence of a Determination of Taxability (as defined in the Loan Agreement), this Note shall be mandatorily prepaid and the Loan Agreement terminated in accordance with the provisions of, and for the amount specified in, Article XI of the Loan Agreement (and in particular, Section 11.1(a) and Section 11.2(a)(i)(A) thereof).

The Borrower agrees to make the payments on this Note on the dates and in the amounts specified herein and in the Loan Agreement and in addition agrees to make such other payments at such times and upon such conditions as are required pursuant to the Loan Agreement. Upon the occurrence of an Event of Default (as defined in the Loan Agreement), the principal of and accrued interest on this Note may be declared immediately due and payable as provided in the Loan Agreement. This Note may be cancelled, amended or supplemented as provided in the Loan Agreement.

Presentment for payment, notice of dishonor, protest and notice of protest are hereby waived by the Borrower.

IN WITNESS WHEREOF, APA Optics, Inc. has caused this Note to be executed in its name and on its behalf by its President by the manual signature of said officer, and its official seal to be impressed hereon and attested by the manual signature of its Secretary, all as of June 1, 1996.

APA OPTICS, INC.

(SEAL)

President

ATTEST:

Secretary

Payment Schedule

Installment Payment Date (the first day of the month)	Installment (includes principal and interest)
July 1996	\$ 3,056.80
August 1996 to and including March 1997	10,917.13
April 1997 to and including March 1998	14,408.75
April 1998 to and including March 1999	14,596.25
April 1999 to and including March 2000	14,757.92
April 2000 to and including March 2001	14,473.55
April 2001 to and including March 2002	14,597.71
April 2002 to and including March 2003	14,693.55
April 2003 to and including March 2004	14,760.21
April 2004 to and including March 2005	14,796.88
April 2005 to and including March 2006	14,386.05
April 2006 to and including March 2007	14,801.46
April 2007 to and including March 2008`	14,743.13
April 2008 to and including March 2009	14,655.63
April 2009 to and including March 2010	14,538.55
April 2010 to and including March 2011	14,753.13
April 2011 to and including March 2012	14,494.80
April 2012 to and including March 2013	14,625.00
April 2013 to and including March 2014	14,698.96
April 2014 to and including March 2015	14,716.67
April 2015 to and including March 2016	14,678.13

The foregoing payment schedule assumes that all Series Bonds are paid at their Stated Maturities or on Sinking Fund Payment Dates and is subject to the reductions and abatements provided in Section 5.1 of the Loan Agreement.

EXHIBIT A TO
LOAN AGREEMENT

DESCRIPTION OF LAND

Legal Description of the Land

Lots 1, 2 and the North 203.8 feet of Lot 3, Block 3, Aberdeen Industrial Park East Addition to Aberdeen, South Dakota located in the Northeast Quarter of Section 16, Township 123 North, Range 63 West of the 5th P.M., according to the plat thereof of record, Brown County, South Dakota.

Additional Permitted Encumbrances:

1. RESOLUTION concerning creation of the West Brown Irrigation District, dated Jan. 18, 1965, executed by the Board of Brown County Commissioners to the public; filed for record February 8, 1965 at 8:00 A.M. in Book 41 MR, page 534 records of said county.
2. RESERVATIONS contained in that certain State Patent, dated May 11, 1945, executed by State of South Dakota to F.W. Hatterscheidt; filed for record June 1, 1945 at 9:30 A.M. in Book 136, page 102 records of said county.
3. RIGHT-OF-WAY EASEMENT, dated August 20, 1991, executed by John Milton Howell and Thelma Howell, to WEB Water Development Association, Inc.; filed for record May 14, 1992 at 2:42 P.M. in Book 110 MR, page 415 records of said county.
4. STATEMENT TO CONDITIONS, COVENANTS, RESTRICTIONS AND RESERVATIONS AND EASEMENTS AFFECTING ABERDEEN EAST INDUSTRIAL PARK ABERDEEN, SOUTH DAKOTA, dated November 7, 1995, executed by

Aberdeen Development Corporation, and Midstates Printing, Inc., and Midcom, Inc. to the Public; filed for record November 20, 1995 at 9:16 A.M. in Book 117 MR, page 174 records of said county.

5. Subject to set-back line and utility easement as shown on the recorded plat.

EXHIBIT B TO
LOAN AGREEMENT

DESCRIPTION OF EQUIPMENT

Equipment	Number Required	Cost each NEW (\$1000 s)	Total Cost NEW (\$1000)	Anticipated Supplier
Wafer Saw	1	90	90	K&S 982/Disco DAD 520
Wafer Mounter	1	15	15	Kisco DFM-M150
Wafer Scribe	1	15	15	Tempress
Wafer Cleaning	1	25	25	Disco DCS 140
Die Eject Station	1	5	5	Royce DE35
Microscopes	6	5	30	10-60/Meiji LM Series
Laminar Flow Hoods	18	5	90	Clean Air
Leak Tester	1	20	20	Veeco MS 34DT
Mask Aligner	1	170	170	Kart Suse, America
Wet Benches	2	10	20	Clean Air Systems
Spectrophotomete r	1	30	30	Beckmann
TOTAL			\$510	

EXHIBIT C

INVESTMENT INSTRUCTIONS

June 25, 1996

The First National Bank in Sioux Falls
100 South Phillips
P.O. Box 1168
Sioux Falls, South Dakota 57117
Attn: Corporate Trust Department

Re: \$1,895,000 Economic Development Revenue Bonds (Pooled
Loan Program Project) (APA Optics, Inc. Project),
Series 1996A South Dakota Economic Development Finance
Authority

Ladies and Gentlemen:

This letter sets forth instructions regarding the investment and disposition of moneys deposited in various funds and accounts established under the First Amended and Restated General Bond Resolution, adopted by the Board of Directors of the South Dakota Economic Development Finance Authority (the "Authority") on September 11, 1990 (as heretofore or hereafter amended or supplemented from time to time in accordance with its terms, the "General Bond Resolution"), and the Series Supplemental Resolution, adopted by the Board of Directors of the Authority on June 13, 1996 (collectively, with the General Bond Resolution, the "Resolutions"), pursuant to which you are acting as Trustee, and the Capital Reserve Fund Pledge and Escrow Agreement, dated as of December 18, 1986 (the "Pledge and Escrow Agreement"), between the Authority and you, as Escrow Agent. The Resolution provides for the issuance by the Authority of its Economic Development Revenue Bonds (Pooled Loan Program Project) (APA Optics, Inc. Project), Series 1996A (the "Series 1996A Bonds"), in the aggregate principal amount of \$1,895,000. The proceeds of the Series 1996A Bonds are to be loaned to APA Optics, Inc., a Minnesota corporation (the "Borrower"), pursuant to a Loan Agreement, dated as of June 1, 1996 (the "Loan Agreement"), between the Authority and the Borrower, and are to be used to finance a portion of the costs of the acquisition, construction and equipping of a manufacturing facility (the "Project") in Aberdeen, South Dakota.

I. General Provisions and Definitions.

1.1. The purpose of these Instructions is to ensure that the investment of the moneys in the funds and accounts described herein will comply with the arbitrage limitations imposed by Section 148 of the Internal Revenue Code of 1986, as amended (the "Code"), and the regulations, temporary and final, applicable thereunder, including without limitation Income Tax Regulations, Sections 1.148-1 through 1.148-11, 1.149(b)-1, 1.149(d)-1, 1.149(e)-1, 1.149(g)-1, 1.150-1 and 1.150-2 (the "Regulations"). The Instructions implement the Arbitrage Certification executed by the Authority and endorsed by the Borrower and the Underwriter on the date of issue of the Series 1996A Bonds. These Instructions may be amended, supplemented or changed by the Authority, but only if the amendment, supplement or change is accompanied by an opinion of nationally recognized bond counsel stating that compliance with these Instructions as so amended, supplemented or changed will not adversely affect the exemption from federal income taxation of interest on the Series 1996A Bonds or other Bonds of the Authority.

1.2. In addition to the definitions assigned capitalized terms used in this Instructions the Resolutions, the Code and the Regulations, the following terms have the following meanings when used in these Instructions:

Bond Year means (i) the period from the Closing Date to April 1, 1997, and (ii) each subsequent period of one year ending on April 1 or, if the last Bond is not paid on an April 1, such shorter period from the last preceding April 2 to the date on which the last Bond is paid.

Closing Date means June 25, 1996, the date of issuance and delivery of the Series 1996A Bonds.

Computation Date means an installment computation date (the last day of the fifth and each succeeding fifth Bond Year) and the final computation date (the date the last Series 1996A Bond is discharged).

Gross Proceeds means, with respect to the Series 1996A Bonds, all proceeds of the Series 1996A Bonds (including sale proceeds, investment proceeds, replacement proceeds and transferred proceeds) and any funds (other than proceeds) that are part of a reserve or replacement fund for the Series 1996A Bonds, including without limitation, amounts on hand in the Loan Account, in Capitalized Interest Account, the Loan Reserve Account, the Special Redemption Account, the Optional Redemption Account, the Holding Account and the Debt Service Account.

Investment Property means any security, obligation (other than a Non-AMT Obligation), annuity contract or investment-type property.

Non-AMT Obligation means any obligation the interest on which is not includible in gross income under Section 103 of the Code and which is not a "specified private activity bond" (within the meaning of Section 57(a)(5)(C) of the Code).

Nonpurpose Investment means any Investment Property that is not a purpose investment in which Gross Proceeds of the Series 1996A Bonds are invested, including investments allocated to the Series 1996A Bonds in the Loan Account, the Capitalized Interest Account, the Loan Reserve Account, the Special Redemption Account, the Optional Redemption Account, the Holding Account and the Debt Service Account.

Rebatable Arbitrage means, as of any Computation Date, the excess of the future value of all nonpurpose receipts with respect to the Series 1996A Bonds over the future value of all nonpurpose payments with respect to the Series 1996A Bonds.

Voluntary Computation Date means April 1, 1997 and each April 1 thereafter, excluding Computation Dates.

Yield, with reference to any obligation, means that discount rate which, when computing the present value of all unconditionally payable payments of principal and interest paid and to be paid on such obligation, produces an amount equal to the present value of the issue price of the obligation.

1.3. Other than the Debt Service Account, the Loan Reserve Account and the Capital Reserve Fund, the Authority has not created or established, and does not expect to create or establish, any sinking or similar fund which is reasonably expected to be used to pay debt service on the Series 1996A Bonds or which is pledged as collateral to secure the Series 1996A

Bonds. No amounts in any other funds or amounts of the Authority are reserved for or pledged to the payment of debt service on the Series 1996A Bonds or will be used to replace funds that will be used to pay debt service on the Series 1996A Bonds.

II. The Loan Account and Capitalized Interest Account.

2.1. From the sale proceeds of the Series 1996A Bonds, \$1,679,100.00 (the "Original Proceeds") are to be deposited in the Loan Account and Capitalized Interest Account for the purpose of financing the acquisition and construction of the Project and the payment of interest thereon during construction of the Project. The Original Proceeds may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds. The period of unrestricted investment of the Original Proceeds shall end on the earlier of (i) June 25, 1999 or (ii) the date on which the Project would be completed if undertaken and completed with due diligence (excluding delays occasioned by force majeure) and the costs thereof promptly paid when due (the "Completion Date").

2.2. After the Completion Date any Original Proceeds on deposit in the Loan Account may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds, but only to the extent that the amounts so invested, when added to amounts described in Sections 2.4, 3.2, 3.4, 4.2 and 5.2 hereof that are invested at a Yield in excess of the Yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

2.3. Any interest earnings or investment gains realized from the investment of moneys on deposit in the Loan Account and Capitalized Interest Account may be reinvested pending disbursement in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds. The period of unrestricted investment of such earnings shall not exceed the longer of (i) a one-year period beginning on the date of receipt of each amount of investment income, or (ii) a period ending on the Completion Date.

2.4. After the period of unrestricted reinvestment of interest and investment earnings described in Section 2.4., such earnings may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds, but only to the extent that the amount so invested, when added to amounts described in Sections 2.2, 3.2, 3.4, 4.2 and 5.2 hereof that are invested at a Yield in excess of the yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

III. The Holding Account, Special Redemption Account, Optional Redemption Account and Debt Service Account.

3.1. Payments made by the Borrower pursuant to the Loan Agreement which are deposited in the Holding Account are to be transferred to the Debt Service Account for the purpose of paying principal of and interest on the Series 1996 Bonds within 13 months of receipt. Such moneys may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds. Interest realized from the investment of moneys on deposit in the Holding Account and Debt Service Account is to be used to pay principal of or interest on the Series 1996A Bonds. Pending disbursement to pay debt service, such interest earnings may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds. The Holding Account will be depleted annually on each April 1.

3.2. Any moneys deposited in the Debt Service Account which have been held or are expected to be held for more than 13 months from date of receipt may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds, but only to the extent that the amounts so invested, when added to amounts described in Sections 2.2, 2.4, 3.4, 4.2 and 5.2 hereof that are invested at a Yield in excess of the yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

3.3. Prepayments made by the Borrower pursuant to the Loan Agreement and certain other funds, representing unexpended proceeds of the Series 1996A Bonds, insurance claims or condemnation awards, are to be deposited in the Special Redemption Account or Optional Redemption Account as provided in the General Bond Resolution and are to be applied to the purchase or redemption of Series 1996A Bonds within 13 months of receipt

of such moneys and, as such, may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds. Interest realized from the investment of moneys on deposit in such Accounts is to be used to pay principal of the Series 1996A Bonds. Pending disbursement to pay debt service, such interest earnings may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds.

3.4. Any moneys deposited in the Special Redemption Account or the Optional Redemption Account which have been held or are expected to be held for more than 13 months from date of receipt may be invested in obligations that bear a Yield in excess of the Series 1996A Bonds, but only to the extent that the amounts so invested, when added to amounts described in Sections 2.2, 2.4, 3.4, 4.2 and 5.2 hereof that are invested at a Yield in excess of the Yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

IV. The Loan Reserve Account.

4.1. From the sale proceeds of the Series 1996A Bonds, \$178,000.00 is to be deposited in the Loan Reserve Account. The Loan Reserve Account is a reasonably required reserve within the meaning of Section 148(d)(1) of the Code. The balance in the Loan Reserve Account is to be maintained in an amount equal to the Loan Reserve Requirement (the maximum annual debt service payable on the Series 1996A Bonds in the current or any future Bond Year), initially \$178,000.

4.2. Any moneys deposited in the Loan Reserve Account in excess of the least of: (i) the Loan Reserve Requirement, (ii) the maximum annual debt service payable on the Series 1996A Bonds in the current or any future Bond Year, or (iii) 125 percent of the average annual debt service payable on the Series 1996A Bonds in the current or any future Bond Year, may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds, but only to the extent that the amounts so invested, when added to amounts described in Sections 2.2, 2.4, 3.2 and 5.2 hereof that are invested at a Yield in excess of the Yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

V. The Capital Reserve Fund.

5.1. The Authority has established the Capital Reserve Fund under the Pledge and Escrow Agreement as additional security for all Bonds issued under the General Bond Resolution, including the Series 1996A Bonds. The Authority has funded the Capital Reserve Fund from its own funds and not from proceeds of any Bonds. The amount on deposit therein, \$2,507,743, secures \$5,900,000 of outstanding Bonds, including the Series 1996A Bonds. The amount on deposit in the Capital Reserve Fund allocable to the Series 1996A Bonds (the "1996A Reserve Amount") as of the date hereof equals \$596,666. In determining the amount of the 1996A Reserve Amount and similar reserve amounts for other Series of Bonds, the Authority will allocate amounts on deposit in the Capital Reserve Fund to Series of Bonds then outstanding in proportion to their original principal amounts.

5.2. Any moneys on deposit in the Capital Reserve Fund representing the 1996A Reserve Amount may be invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds, but only to the extent that the amounts so invested, when added to amounts described in Sections 2.2, 2.4, 3.2, 3.4 and 4.2 hereof that are invested at a Yield in excess of the Yield of the Series 1996A Bonds, do not exceed the limitations on the dollar amount of such investments set forth in Section VI of these Instructions.

VI. Limitations on Investments.

6.1. The following limitations apply only to the investment of the amounts described in Sections 2.2, 2.4, 3.2, 3.4, 4.2 and 5.2 of these Instructions (the "Restricted Proceeds"):

(a) If at any time the amount of Restricted Proceeds exceeds \$94,750, the amount in excess of \$94,750 shall not be invested (except in Obligations) unless the Trustee receives an opinion of nationally recognized bond counsel that the investment of such excess will not cause the Series 1996A Bonds to be "arbitrage bonds" within the meaning of Section 148(a) of the Code.

(b) At no time during any Bond Year shall the amount of Restricted Proceeds invested in obligations that bear a Yield higher than the Yield of the Series 1996A Bonds exceed 150% of the debt service due on the Series 1996A Bonds during such Bond Year.

(c) The aggregate amount of Restricted Proceeds invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds shall be reduced, in any Bond Year within 30 days of any redemption or cancellation of Series 1996A Bonds resulting in a reduction in annual debt service, so that after such reduction the limitation in Section 6.1(b) hereof shall be satisfied, based upon the revised annual debt service.

6.2. For purposes of the limitations in Section 6.1(b) and (c) hereof, in determining the aggregate amount of Restricted Proceeds invested in obligations that bear a yield in excess of the Yield of the Series 1996A Bonds, each obligation shall be valued at its fair market value on the date such obligation is acquired by the Trustee at the direction of the Authority or the Borrower. In addition, the Yield of obligations acquired with Restricted Proceeds shall be determined based on such fair market value. For purposes of this Section VI, an obligation acquired with Restricted Proceeds need not be revalued after the date on which the obligation is acquired.

6.3. The determination of annual debt service on the Series 1996A Bonds must be made on the first day of each Bond Year. The debt service for any Bond Year means the scheduled amount of interest and amortization of principal payable during that Bond Year on the Series 1996A Bonds. For purposes of determining annual debt service, there shall not be taken into account amounts scheduled with respect to any portion of the Series 1996A Bonds that have been retired before the beginning of the Bond Year.

6.4. If on the first day of any Bond Year it is determined that the amount of Restricted Proceeds invested in obligations that bear a Yield in excess of the Yield of the Series 1996A Bonds exceeds 150 percent of debt service for the current Bond Year, such excess investments must be disposed of within 30 days.

6.5. In determining whether the limitations of this Section VI have been reached, any discount on obligations acquired with Restricted Proceeds must be taken into account ratably each year as additional Restricted Proceeds that are reinvested at the same yield as the discounted obligation. Thus, if a \$1,000, 10-year obligation is purchased at a yield higher than the yield of the Series 1996A Bonds for a purchase price of \$900, \$930 shall be considered invested at such higher yield after three years.

6.6. For purposes of satisfying the limitations on the dollar amount of investments set forth in this Section VI, the yield of the Series 1996A Bonds is 6.409224% per annum.

VII. Rebate.

7.1. The Authority, in Section 6.14 of the General Bond Resolution, and the Borrower, in Section 2.2(gg) of the Loan Agreement, have covenanted to comply with the requirement of Section 148(f) of the Code with respect to the Series 1996A Bonds. The Authority covenants that it will consult with nationally recognized bond counsel and undertake to determine what is required with respect to the rebate provisions contained in Section 148(f) of the Code from time to time and will comply with any requirements that may be applicable to the Bonds. The methodology described in these Instructions will be followed, except to the extent inconsistent with any requirements of future regulations or written advice received from nationally recognized bond counsel.

7.2. The Rebate Account has been established pursuant to Article III of the Series Supplemental Resolution. The Trustee has agreed to keep the Rebate Account separate and apart from all other funds and money held by it and shall administer the Rebate Account consistent with the provisions of these Instructions. The Rebate Account is established to segregate the Rebateable Arbitrage from the money of the Authority and permit the Authority to rebate amounts, if any, due the United States under Section 148(f) of the Code promptly when due. Amounts on hand in the Rebate Account may be invested without regard to Yield restriction.

7.3. Detailed records with respect to each and every Nonpurpose Investment attributable to Gross Proceeds of the

Series 1996A Bonds will be maintained by the Trustee with respect to Funds and Accounts established under the Resolutions and by the Authority or the Borrower with respect to other Gross Proceeds, if any, as the case may be, including: (i) purchase date, (ii) purchase price, (iii) brokerage or other transaction costs of purchase, (iv) information establishing fair market value on the date such investment became a Nonpurpose Investment, (v) any accrued interest paid, (vi) face amount, (vii) coupon or stated interest rate, (viii) periodicity of interest payments (ix) disposition price, (x) any accrued interest received, (xi) disposition date, and (xii) brokerage or other transaction costs of disposition. Such detailed recordkeeping is required for the calculation of the Rebatable Arbitrage which, in part, will require a determination of the difference between the actual aggregate earnings of all Nonpurpose Investments and the amount of such earnings assuming a rate of return equal to the Yield of the Bonds.

7.4. For purposes of Sections VII and VIII, amounts on deposit in the Holding Account, the Debt Service Account, the Optional Redemption Account and the Special Redemption Account to the extent in a Bond Year they constitute a bona fide debt service fund for the Bonds within the meaning of Section 1.18-1(b) of the Regulations and the gross earnings thereon during the Bond Year are less than \$100,000, and such funds do not constitute Gross Proceeds of the Bonds. Furthermore, if all funds in the Loan Account and the Capitalized Interest Account and all investment income on funds in the Loan Reserve Account through the Completion Date are expended on Costs of the Project by December 25, 1996, then such amounts shall not be deemed Gross Proceeds of the Bonds for purposes of this Section VII and Section VIII.

VIII. Rebatable Arbitrage Calculation and Payment.

8.1. For purposes of complying with Section 148(f), the Borrower will prepare or have prepared a calculation of the Rebatable Arbitrage consistent with the rules described in this Section VIII. The Authority will deliver to the Trustee a calculation of the Rebatable Arbitrage within 30 days after each Computation Date. In addition, the Borrower will within 30 days after each Voluntary Computation Date deliver to the Trustee a calculation of the Rebatable Arbitrage on the assumption such Voluntary Computation Date is a Computation Date.

8.2. The Authority shall direct the Trustee to pay to the United States Department of the Treasury from the Rebate Fund (A) not later than 60 days after each installment Computation Date: and (B) not later than 60 days after the final Computation Date, an amount equal to 100% of the Rebatable Arbitrage. If sufficient funds are not available in the Rebate Account to make the required payment, the Trustee shall submit a written demand upon the Borrower for the required additional funds which the Borrower agrees to pay forthwith.

8.3. Each payment required to be made pursuant hereto shall be filed with the Internal Revenue Service Center, Philadelphia, Pennsylvania 19255 (or at such other address as the Internal Revenue Service shall designate), on or before the date such payment is due, and shall be accompanied by a completed Internal Revenue Service Form 8038-T executed by the Authority. The Authority shall retain records of the calculations required by this Section VIII until six years after the final Computation Date.

8.4. The Authority shall file or cause to be filed such reports or other documents with the Internal Revenue Service as required by Section 148(f) of the Code in accordance with an opinion of nationally recognized Bond Counsel.

8.5. Notwithstanding anything in these Instructions or any other provisions of the Resolutions or the Loan Agreement to the contrary, the obligation to remit the Rebatable Arbitrage to the United States Department of Treasury and to comply with all other requirements contained in these Instructions shall survive the defeasance of the Series 1996A Bonds.

Very truly yours,

SOUTH DAKOTA ECONOMIC DEVELOPMENT
FINANCE AUTHORITY

By _____
Chairman of the Board of Directors

APA OPTICS, INC.

By _____
Its President

Receipt acknowledged this 25th day of June, 1996.

THE FIRST NATIONAL BANK OF SIOUX
FALLS, as Trustee

By:
Its

This Mortgage contains after-acquired property provisions.

MORTGAGE AND SECURITY AGREEMENT ONE HUNDRED
EIGHTY DAY REDEMPTION

from

APA OPTICS, INC.

to

SOUTH DAKOTA ECONOMIC DEVELOPMENT FINANCE AUTHORITY

Dated as of June 1, 1996

This instrument was drafted by

Dorsey & Whitney LLP
220 South Sixth Street
Minneapolis, Minnesota 55402

The name and post-office address of the mortgagee herein are as follows: Tax Statements for the property covered hereby should be sent to:

South Dakota Economic Development Finance Authority
711 East Wells Avenue
Pierre, South Dakota 57501
APA Optics, Inc.
2950 North East 84th Lane
Blaine, Minnesota 55449

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(Not a part of this Mortgage)

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THIS MORTGAGE AND SECURITY AGREEMENT ONE HUNDRED EIGHTY DAY REDEMPTION, dated as of June 1, 1996, between APA OPTICS, INC., a corporation organized and existing under the laws of the State of Minnesota, herein called the Borrower, and the SOUTH DAKOTA ECONOMIC DEVELOPMENT FINANCE AUTHORITY, or its successors or assigns, herein called the Authority;

W I T N E S S E T H:

WHEREAS, the Authority was created by South Dakota Codified Laws, Chapter 1-16B, as amended (herein referred to as the "Act"), to act on behalf of the State of South Dakota (the "State") within the scope of powers granted to it by the Act to make loans to enterprises to finance economic development projects as provided in the Act;

WHEREAS, to provide the funds to make the loans under the Act, the Authority has established its South Dakota Economic Development Loan Program (the "Program"); and

WHEREAS, in accordance with the Program, the Authority on September 11, 1990 adopted its Economic Development Revenue Bonds (Pooled Loan Program) First Amended and Restated General Bond Resolution (as heretofore or hereafter supplemented or amended, the "General Bond Resolution"), pursuant to which General Bond Resolution (and resolutions to be adopted from time to time by the Authority as supplemental resolutions thereto), the Authority

has issued and intends to issue revenue bonds (the "Bonds"), and to loan the proceeds thereof to "enterprises" within the meaning of the Act to finance "economic development projects" with the meaning of the Act, for use by them in connection with their business operations; and

WHEREAS, such Bonds, as provided in the General Bond Resolution, shall be special, limited obligations of the Authority, the principal of, premium, if any, and interest on which are payable solely from and secured solely by the revenues, funds and other property of the Authority described in the General Bond Resolution and the resolutions supplemental thereto and pledged therefor; and

WHEREAS, the Borrower has applied to the Authority for assistance under the Program in connection with the financing of a project to consist of the construction and equipping of a manufacturing facility located in Aberdeen, South Dakota (the "Project"); and

WHEREAS, by a resolution adopted on August 21, 1995, the Board of Directors of the Authority has found that the Borrower is an "enterprise" under the Act and that the Project is an "economic development project" under the Act and has determined to provide such loan by the inclusion of the Project in the Program; and

WHEREAS, in furtherance of the foregoing, the Authority proposes (i) to issue a series of Bonds under the General Bond Resolution and a Series Supplemental Resolution and (ii) to loan the proceeds of the sale of such Bonds to the Borrower to finance a portion of the cost of the Project, upon the terms and conditions set forth in a Loan Agreement, of even date herewith (the "Loan Agreement"), between the Authority and the Borrower, which loan shall be evidenced by a promissory note of the Borrower, of even date herewith (the "Note");

WHEREAS, the Authority has required, as a condition for issuing the Bonds and entering into the Loan Agreement, that the Borrower secure the Bonds and its obligations under the Loan Agreement and the Note by this Mortgage and Security Agreement; and

WHEREAS, the amount presently estimated to be necessary to finance costs of the Project permitted by the Act, will require the issuance, sale and delivery of the Bonds in the aggregate principal amount of \$1,895,000, as hereinafter provided, maturing as therein provided, but in no event later than April 1, 2016 and bearing interest at the rates therein provided, not exceeding 6.75% per annum.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS, THIS MORTGAGE AND SECURITY AGREEMENT WITNESSETH:

The Borrower, in consideration of the premises and in order to secure the payment of the principal of and interest on the Bonds according to their tenor and effect and as provided in the General Bond Resolution and the Series Supplemental Resolution and the performance and observance by the Borrower of all the covenants expressed or implied herein, in the Loan Agreement, the Note and in the other Collateral Documents (as hereinafter defined), does hereby grant, bargain, sell, convey, confirm, assign, transfer, mortgage and pledge to the Authority, and to its successors and to them and their assigns, forever, and grant a security interest in, the following:

GRANTING CLAUSE FIRST

The Borrower's entire estate and interest in the real estate described in Exhibit A hereto and made a part hereof, situated in the County of Brown, State of South Dakota;

GRANTING CLAUSE SECOND

The Borrower's entire estate and interest in and to all buildings, structures, additions and improvements now or hereafter located on the real estate described in Exhibit A, and all tenements, hereditaments, appurtenances, rights, privileges and immunities thereunto belonging or appertaining;

GRANTING CLAUSE THIRD

The Borrower's entire estate and interest in and to any Fixtures (as hereinafter defined) owned by the Borrower now or hereafter attached to or installed within or used or usable in

connection with the operation of the Facilities (as hereinafter defined);

GRANTING CLAUSE FOURTH

The Borrower's entire estate and interest in and to any and all building materials and supplies now or hereafter located on the Land and now or hereafter owned by the Borrower and suitable or intended for incorporation in any building, structure or other improvement now standing or to be constructed on the Land;

GRANTING CLAUSE FIFTH

All of the estate, interest, right, title, other claim or demand, including claims or demands with respect to security deposits, which the Borrower now has or may hereafter acquire in the Land, the Improvements or the Fixtures, and any and all awards made for the taking by eminent domain or by any proceeding or the proceeds of insurance with respect hereto, purchase in lieu thereof of the whole or any part of the Facilities, including without limitation any awards resulting from a change of grade of streets and awards for severance damage;

GRANTING CLAUSE SIXTH

All rents, income, profits, revenues, royalties, bonuses, rights, accounts, contract rights and benefits under any and all leases or tenancies now existing or hereafter created in all or any portions of the Facilities or any part thereof, or arising out of the construction, use or operation of the Facilities or any part thereof, and any other equitable or contract rights pertaining to the Facilities, with the right to receive and apply the same to said indebtedness, and the Authority may demand, sue for and recover such payments but shall not be required to do so;

GRANTING CLAUSE SEVENTH

All proceeds from any property described in the Granting Clauses hereof, and any and all other property of every name and nature from time to time hereafter by delivery or by writing of any kind conveyed, mortgaged, pledged, assigned or transferred, as and for additional security hereunder by the Borrower or by anyone in its behalf or with its written consent to the Authority, which is hereby authorized to receive any and all such property at any and all times and to hold and apply the same subject to the terms hereof;

TO HAVE AND TO HOLD all the same with all privileges and appurtenances hereby conveyed and assigned, or agreed or intended so to be to the Authority and its successors and to them and their assigns forever;

WITH POWER OF SALE for the purposes of South Dakota Codified Laws, Chapter 21-49, as amended;

SUBJECT TO Permitted Encumbrances as defined in Section 1-1 hereof;

PROVIDED, HOWEVER, that if the Borrower, its successors or assigns, shall well and truly pay, or cause to be paid, when due, the principal of the Bonds and the premium, if any, and the interest due or to become due thereon, at the times and in the manner mentioned in the Bonds according to the true intent and meaning thereof, and shall well and truly keep, perform and observe all the covenants and conditions pursuant to the terms of this Mortgage, the Loan Agreement and the Note to be kept, performed and observed by them, and shall pay to the Authority all sums of money due or to become due to it in accordance with the terms and provisions hereof, then this Mortgage and the rights hereby granted shall cease, terminate and be void; otherwise, this Mortgage shall be and remain in full force and effect.

The Borrower and the Authority mutually covenant and agree, as follows:

ARTICLE ONE

DEFINITIONS, EXHIBIT AND GENERAL PROVISIONS

Section 1-1. Definitions. In this Mortgage the following terms have the following respective meanings unless the context hereof clearly requires otherwise:

Act: South Dakota Codified Laws, Chapter 1-16B, as amended.

Authority: the South Dakota Economic Development Finance Authority, a body corporate and politic of the State, or any successor to its powers and authority under the Act or any successor or assign to its interest hereunder.

Bonds: the Economic Development Revenue Bonds (Pooled Loan Program) (APA Optics, Inc. Project), Series 1996A, dated, as originally issued, as of June 1, 1996, issued by the Authority.

Borrower: APA Optics, Inc., a Minnesota corporation, or its permitted successors and assigns under the Loan Agreement.

Collateral Documents: the following documents each of which shall be in form and substance acceptable to the Authority:

- (a) the Mortgage;
- (b) the Loan Agreement; and
- (c) the Note.

Counsel: an attorney designated by or acceptable to the Authority, duly admitted to practice law before the highest court of any state; an attorney for the Borrower or the Authority may be eligible for appointment as Counsel.

Default: any event which is, or after notice or lapse of time or both would become, an Event of Default under this Mortgage.

Event of Default: any of the events referred to as such in Section 4-1 hereof.

Facilities: collectively, the Land, the Improvements and the Fixtures, as such properties may at any time exist.

Fixtures: any and all items of fixtures owned by the Borrower now or hereafter attached to or installed within or used in connection with the Improvements or the Land, including, but not limited to, any and all partitions, screens, awnings, motors, engines, boilers, furnaces, pipes, plumbing, elevators, cleaning, call and sprinkler systems, fire extinguishing apparatus and equipment, water tanks, heating, ventilating, air conditioning and air cooling equipment, refrigeration equipment, and gas and electric machinery and appurtenances and all other non-consumable personal property of every kind and nature permanently affixed to the Land, including all extensions, additions, improvements, betterments, renewals and replacements of any of the foregoing, all of which are hereby declared and shall be deemed to be fixtures and an accession to the freehold and a part of the realty, excluding any items of Equipment (as defined in the Loan Agreement).

Improvements: any additions, enlargements, improvements, extensions or alterations of or to any improvements, structures or other facilities located on the Land, and any personal property acquired or constructed by the Borrower and located on the Land.

Land: the real estate, interests in real estate and other rights located in Brown County, South Dakota, and described in Exhibit A hereto, together with all additions thereto and substitutions therefor, less such interests in real estate and other rights as may be released pursuant to the provisions hereof.

Loan Agreement: the Loan Agreement, of even date herewith, between the Authority and the Borrower, including any amendment thereof or supplement thereto entered into in accordance with the provisions thereof.

Mortgage: this Mortgage and Security Agreement--One Hundred Eighty Day Redemption, including any mortgage supplemental hereto or amendatory hereof entered into in accordance with the provisions hereof.

Mortgaged Property: the property and funds described in the Granting Clauses of this Mortgage.

Note: the promissory note of the Borrower dated as of the date hereof, evidencing the Borrower's obligation to repay the loan under the Loan Agreement.

Permitted Encumbrances: (i) liens described in Exhibit A hereto, (ii) this Mortgage, the Agreement, the General Bond Resolution and any security interest created thereunder, (iii) utility, access and other easements and rights of way, restrictions and exceptions that, in the opinion of the Authority, do not materially impair the utility or the value of the Facilities affected thereby for the purposes for which they are intended; (iv) mechanics, materialmen's, warehousemen's, carriers' and other similar liens and any other liens to the extent permitted by Section 8.13 of the Loan Agreement, (v) liens for taxes or special assessments at the time not delinquent, (vi) any lease, sublease, assignment or reassignment entered into in conformity with Section 8.10 of the Loan Agreement which is subordinate to this Mortgage, (vii) the security interests in the Equipment to be granted to the Aberdeen Development Corporation securing indebtedness not exceeding \$1,250,000 if they are subordinated to the security interest of the Loan Agreement; and (viii) the security interests in the Equipment to be granted to the NECOG Development Corporation securing indebtedness not exceeding \$150,000 if they are subordinated to the security interest of the Loan Agreement.

Person: any individual, corporation, partnership, limited liability company, limited liability partnership, joint venture, association, joint stock company, trust, unincorporated organization, or government or any agency or political subdivision thereof.

State: State of South Dakota.

Trustee: The First National Bank in Sioux Falls, in Sioux Falls, South Dakota, or any successor Trustee under the General Bond Resolution (as defined in the Loan Agreement).

Section 1-2. Exhibit. Attached to and by reference made a part of this Mortgage is Exhibit A, a legal description of the Land.

Section 1-3. Rules of Interpretation.

(1) This Mortgage shall be interpreted in accordance with and governed by the laws of the State without giving effect to the conflicts-of-law principles thereof.

(2) The words "herein," "hereof" and "hereunder" and words of similar import, without reference to any particular section or subdivision, refer to this Mortgage as a whole rather than to any particular section or subdivision hereof.

(3) Any terms not defined herein but defined in the Loan Agreement shall have the same meaning herein unless the context hereof requires otherwise.

(4) The Table of Contents and headings of articles and sections herein are for convenience only and are not a part of this Mortgage.

(5) Unless the context hereof clearly requires otherwise, the singular shall include the plural and vice versa, and the masculine shall include the feminine and vice versa.

ARTICLE TWO

GENERAL

Section 2-1. Title and Instruments of Further Assurance. The Borrower covenants that it has not made, done, executed or suffered, and will not make, do, execute or suffer, any act or thing whereby its estate or interest in and title to the Facilities or any part thereof shall or may be impaired or charged or encumbered in any manner whatsoever except by Permitted Encumbrances; that it will not convey all or any part of its estate or interest in and title to the Facilities to any Person, except as expressly permitted in this Mortgage, without the prior written consent of the Authority; and that it will do, execute, acknowledge and deliver or cause to be done, executed, acknowledged and delivered, such mortgages or instruments supplemental hereto and such further acts, instruments and transfers as the Authority may reasonably require for the better assuring, transferring, mortgaging, pledging, assigning and confirming unto the Authority all and singular the property herein described and the revenues assigned and pledged hereby.

Section 2-2. Rights Under Loan Agreement. The Loan

Agreement sets forth covenants and obligations of the Authority and the Borrower, and reference is hereby made to the Loan Agreement for a detailed statement of said covenants and obligations.

Section 2-3. Performance of and Authority for Covenants. The Borrower covenants that it will faithfully perform at all times any and all covenants, undertakings, stipulations and provisions contained in this Mortgage, the Note and the Loan Agreement; that it is duly authorized under the Constitution and laws of the State of Minnesota to execute the Loan Agreement, the Note and this Mortgage, to mortgage and grant a security interest in the property described and mortgaged and secured herein and to assign and pledge the revenues in the manner and to the extent herein set forth; that all action on its part for the execution and delivery of this Mortgage, the Note and the Loan Agreement has been duly and effectively taken.

ARTICLE THREE

POSSESSION, USE AND RELEASE OF MORTGAGED PROPERTY; ADDITIONS TO MORTGAGED PROPERTY

Section 3-1. Possession and Use. Subject to the terms hereof and the Loan Agreement, until the happening of an Event of Default hereunder, the Borrower shall be permitted to possess, use and enjoy the Mortgaged Property and to receive and use the issues and profits of the Mortgaged Property.

Section 3-2. Release of Land. In addition to the rights granted to the Borrower elsewhere in this Mortgage, the Borrower shall have the right, at any time and from time to time, but only upon the prior written consent of the Authority, which consent shall not be unreasonably withheld, to obtain a release from the lien of this Mortgage of any part of the Land not containing any permanent structure necessary for the total operating unity and efficiency of the Improvements (as determined by an Independent Architect) and the Authority shall, from time to time, release from the lien of this Mortgage such real property, but only upon receipt by the Trustee of the following:

- (A) A request of an Authorized Representative of the Borrower for such release;
- (B) A certificate of an Authorized Representative of the Borrower, signed also as to clause (1) of this subsection by a registered land surveyor and as to clause (3) of this subsection by an Independent Architect, stating or setting forth in substance as follows:
 - (1) the quantity of the Land to be released;
 - (2) that the property to be released is not necessary for the total operating unity and efficiency of the Improvements;
 - (3) that the release will not impair the structural integrity of the Mortgaged Property or the usefulness of the Mortgaged Property for the purposes for which they were intended and will not inhibit adequate means of ingress to or egress from the Improvements or limit or inhibit adequate parking for the Improvements;
 - (4) that no default under this Mortgage or the Loan Agreement has occurred which has not been cured; and
 - (5) that all conditions precedent herein provided for relating to such release have been complied with;
- (C) A survey prepared by a registered land surveyor describing and showing the Land, after giving effect to such release;
- (D) Cash, if any, required by the Authority in its written consent to the release;
- (E) The written consent of the Authority to the release; and

- (F) An Opinion of Counsel, stating that the certificates, opinions and other instruments and cash which have been or are therewith delivered to and deposited with the Trustee conform to the requirements of this Section 3-2 and that, upon the basis of such application, the property may be lawfully released from the lien of this Mortgage and that all conditions precedent herein provided for relating to such release have been complied with.

Simultaneously with the release of any real property as provided in this Section 3-2, the cash, if any, in the amount specified in Subsection (D) of this Section 3-2, shall be deposited in the 1996A Special Redemption Account. The Borrower shall not be entitled to any abatement or diminution of the payments required under Section 5.1 of the Agreement as a result of such release.

The Authority shall also release Property from the lien hereof as required by Section 8.13(d) of the Loan Agreement.

Section 3-3. Grant of Easements, Liens, Etc. The Borrower may at any time or times grant to itself or others easements, licenses, rights-of-way and other rights or privileges in the nature of easements with respect to the Land, free from the lien of this Mortgage, or the Borrower may release existing easements, licenses, rights-of-way and other rights or privileges, with or without consideration, and the Authority will execute and deliver any instrument necessary or appropriate to confirm and grant or release any such easement, license, right-of-way or privilege; provided, however, that prior to any such grant or release, there shall have been supplied to the Authority and the Trustee a certificate of an Authorized Representative of the Borrower and a certificate of an Independent Architect:

- (a) stating that such grant or release is not detrimental to the proper operation of the Mortgaged Property; and
- (b) stating that such grant or release will not materially impair the operating unity or the efficiency of the Improvements on such Land or materially and adversely affect the character thereof.

Section 3-4. Tie-In Walls. The Borrower may, at its own expense,

- (a) connect or "tie-in" walls (including use of existing walls, footings and foundations for the support of future adjacent buildings) and utilities and other facilities located on the Land to other structures erected on the Land or on real property adjacent to or near the Land or partly on such adjacent real property and partly on the Land; or
- (b) in connection with the expansion or improvement of any building on the Land, tear down any wall of such building and build an addition to such building as a separate structure (either on the Land or on real property adjacent thereto or partly on such adjacent real property and partly on the Land); provided, however, that prior to any such expansion, addition, improvement, tearing down or connection with the "tie-in" walls, utilities and other facilities, the Authority shall have approved the same in writing (which approval shall not be unreasonably withheld) based on a certification or opinion of an Independent Architect that the same will not materially impair the operating unity, structural integrity, or the efficiency of the Improvements on the Land or materially adversely affect the character thereof, and based on an Opinion of Counsel stating that all party-wall agreements, easements, cross-easements or other instruments, relating to such expansion, addition, improvement, tearing down or connection with the "tie-in" walls, utilities and other facilities, which are necessary or desirable to define the relative rights of the owners and encumbrances of the same therein, and to preserve fully the security hereof, have been duly executed, delivered and recorded, to which Opinion of Counsel copies of all such instruments shall be attached. The Authority shall release from the lien of this Mortgage any interest in the Land or the Improvements, or join in any such party-wall agreements, easements, cross-easements or other

agreements, to the extent necessary to effect the purpose of this Section 3-4, including the release of Land under which foundations or footings are located and which is required for construction of such expansions, improvement or additions.

Section 3-5. Removal of Fixtures. The Borrower will not remove or permit the removal of any items of Fixtures from the Land, except in accordance with the provisions of this Section 3-5:

(1) In any instance where the Borrower in its sound discretion determines that any item of Fixtures has become inadequate, obsolete, worn out, unsuitable, undesirable or unnecessary for the operation of the Facility, the Borrower may, at its expense, remove and dispose of it and substitute and install other items of furniture, machinery, equipment or other personal property, not necessarily having the same function; provided that such removal and substitution shall not materially impair the operating utility of the Improvements. All substituted items shall be installed free of all liens and encumbrances, other than Permitted Encumbrances, and shall become a part of the Mortgaged Property as Fixtures. The Borrower will cooperate with the Authority and the Trustee and will pay all necessary costs, including reasonable attorneys' fees, incurred in subjecting to the lien of this Mortgage all items so substituted, and the Authority will cooperate with the Borrower in securing, if necessary, release of the property for which the substitution is made and in providing such bills of sale or other documents as may be required to facilitate the removal and substitution. In the event the market value of the substituted items is less than the market value of the Fixtures disposed of, as reasonably determined by the Mortgagor, the Borrower shall pay to the Trustee an amount equal to the difference.

(2) The Mortgagor shall promptly report to the Authority and the Trustee by a certificate of an Authorized Representative of the Borrower the removal of any Fixtures for which substitute items of Fixtures are not installed in the Facility pursuant to Subsection (1) of this Section 3-5, and amounts required to be accounted for by the Borrower, if any, shall promptly be paid to the Trustee for deposit in the 1996A Special Redemption Account after any substitution; provided that no certificate need be given or payment made unless the aggregate book value of items of Fixtures removed during any fiscal year of the Mortgagor is at least \$10,000. The certificate of an Authorized Representative of the Borrower submitted shall specify the items of Fixtures removed, the items of property substituted therefor, if any, and the amount, if any, required to be paid to the Trustee pursuant to the provisions of this Section 3-5. Where the certificate of an Authorized Representative of the Borrower indicates that substitute items of property have been acquired and installed, the certificate shall be accompanied by an Opinion of Counsel stating that all steps requisite to perfection of the security interest of the Authority in and to such substitute items of property have been duly taken. The Borrower and the Authority will execute all instruments advisable in the Opinion of Counsel for perfection of the respective security interests as aforesaid.

Section 3-6. Additions to Mortgaged Property. All buildings, structures or improvements which may be acquired or constructed by the Borrower subsequent to the date hereof and which are located on the Land, except as released pursuant to this Article Three, and all property of every kind or nature added to or installed in any building, structure or improvement located on the Land (exclusive, however, of trade fixtures and other items of machinery, equipment and personal property not acquired in whole or in part with proceeds of the Bonds or installed on the Land in substitution therefor or in replacement thereof as provided in Section 3-5(1) hereof) after the date hereof shall, immediately upon the acquisition thereof by the Borrower, and without any further conveyance or assignment, become subject to the mortgage, lien and security interest of this Mortgage. Nevertheless, the Borrower, in accordance with the provisions of Section 2-1 hereof, will do, execute,

acknowledge and deliver, all and every such further acts, conveyances and assurances as the Authority shall require for accomplishing the purposes of this Section 3-6.

ARTICLE FOUR

DEFAULT PROVISIONS AND REMEDIES OF AUTHORITY

Section 4-1. Events of Default. If any of the following events occur, it is hereby defined as and declared to be and to constitute an Event of Default hereunder:

(A) If default shall be made in the due and punctual payment of the principal of, premium, if any, or interest on the Note;

(B) If default shall be made in the due and punctual payment of any moneys required to be paid to the Authority under the provisions hereof and such default continues for 30 days after notice in writing given by the Authority to the Borrower, specifying such default and requesting that it be remedied; or

(C) If default shall be made in the performance or observance of any other covenants, agreements or conditions of the Borrower in this Mortgage, and such default continues for 30 days after notice in writing given by the Authority to the Borrower, specifying such default and requesting that it be remedied; or

(D) If an "event of default" occurs under Section 10.1 of the Loan Agreement and is continuing; or

(E) If a event of default occurs under any other Collateral Document.

Section 4-2. Remedies. If one or more Events of Default shall have occurred and be continuing, the Borrower hereby empowers and confers upon the Authority the right and option to exercise and the Authority shall be entitled to exercise any or all of the following remedies, as appropriate:

(A) Upon not less than 20 days' notice given by the Authority, the Authority may declare the principal of the Note, with interest accrued thereupon, immediately due and payable, whereupon the Borrower will pay to the Authority, the whole amount then due and payable on the Note, with interest at the respective rates prescribed in the Note on overdue principal and (to the extent that payment of such interest is legally enforceable) on overdue installments of interest; and, in addition thereto, such further amount as shall be sufficient to cover the costs and expenses of collection, including the reasonable compensation, expenses, disbursements and advances of the Authority, its agents and counsel. If the Borrower fails to pay or cause to be paid on its behalf such amounts forthwith upon such demand, the Authority, shall be entitled to recover judgment against the Borrower.

The Authority shall be entitled, if permitted by law, to recover judgment as aforesaid either before, after or during the pendency of any proceedings for the enforcement of the lien of this Mortgage and in case of a lease or sale of the Mortgaged Property and the application of the proceeds of lease or sale as aforesaid, the Authority shall be entitled to enforce payment of, and to receive, all amounts then remaining due and unpaid upon the Note and shall be entitled to recover judgment for any portion of the same remaining unpaid with interest as aforesaid. No recovery of any such judgment by the Authority, and no levy of any execution under any such judgment upon any property forming a part of the Mortgaged Property shall affect or impair the lien of this Mortgage upon the Mortgaged Property, or any rights, power or remedies of the Authority hereunder or under the Loan Agreement.

(B) Foreclose this Mortgage by judicial proceedings pursuant to the statutes of the State in such case made and provided, power being expressly granted to sell the Mortgaged Property at public auction, as an entirety or in parcels as hereinafter provided, and to convey the same to the purchaser in fee simple in accordance with the statutes, and to apply the proceeds from such sale as set forth in Section 4-7 hereof;

(C) Proceed to protect and enforce its rights by suit, whether for specific performance of any covenant herein

contained, or in aid of the execution of any power herein granted, or for the foreclosure of this Mortgage and the sale of the Mortgaged Property under the judgment or decree of a court of competent jurisdiction, or for the enforcement of any other right, as the Authority shall deem most effectual for such purpose;

(D) Appoint a receiver to take possession of the Mortgaged Property if the Mortgaged Property is abandoned or, if not abandoned, petition a court of competent jurisdiction for the appointment of a receiver to take possession of and manage and operate the Mortgaged Property, in either case for the benefit of the Authority and to the extent permitted by law;

(E) Exercise any remedies available under any Collateral Document;

(F) Take whatever action at law or in equity may appear necessary or appropriate to collect the Note and other payments or amounts then due and thereafter to become due hereunder, or to enforce performance or observance of any obligation, agreement or covenant of the Borrower under this Mortgage; or

(G) Exercise all rights and remedies available to a secured party under the South Dakota Uniform Commercial Code.

Section 4-3. Assignment of Rents. As further security for the Note and the Loan Agreement, the Borrower hereby assigns to the Authority all of the rents, revenues, issues, earnings, income, products and profits of the Facilities, such assignment to become effective upon the occurrence of an Event of Default and the filing of a suit or other commencement of judicial proceedings to enforce the rights of the Authority under this Mortgage, and it shall be lawful for the Authority by such officer or agent as it may appoint to take possession of the Facilities and all or any part of the rents, revenues, issues, earnings, income, products and profits of the Facilities and copies of the books, papers and accounts of the Borrower pertaining thereto; and to hold, operate and manage the same, and from time to time make all needful repairs and improvements as the Authority shall deem wise; and the Authority may lease the Facilities or any part thereof in the name of and for the account of the Borrower and collect, receive and sequester the rents, revenues, issues, earnings, income, products and profits therefrom, and out of the same and any moneys received from any receiver of any part thereof pay, or set up proper reserves for the payment of, all proper costs and expenses of so taking, holding and managing the same, including reasonable compensation to the Authority, its agents and counsel and any charges of the Authority hereunder, and any taxes and assessments and other charges prior to the lien of this Mortgage which the Authority may deem it wise to pay, and all expenses of such repairs and improvements, and apply the remainder of the moneys so received by the Authority in accordance with the provisions of Section 4-8 hereof. Whenever all that is due under the Note and under the Loan Agreement shall have been paid and all Events of Default cured or waived, the Authority shall surrender possession of the Facilities and the rents, revenues, issues, earnings, income, products and profits to the Borrower, its successors or assigns; the same right of possession, however, to exist upon any subsequent Event of Default.

While in possession of the Facilities and of such rents, revenues, issues, earnings, income, products and profits, the Authority shall render annually to the Borrower a summarized statement of income and expenditures in connection therewith.

Section 4-4. Remedies Not Exclusive; Waiver. No remedy by the terms of this Mortgage conferred upon or reserved to the Authority is intended to be exclusive of any other remedy, but each and every such remedy shall be cumulative and shall be in addition to any other remedy given to the Authority or now or hereafter existing at law or in equity or by statute. The assertion or exercise of any right or remedy hereunder shall not prevent the concurrent assertion or exercise of any other appropriate right or remedy.

No delay or omission to exercise any right or power accruing upon any Event of Default shall impair any such right or power or shall be construed to be a waiver of any such Event of Default, or acquiescence therein; and every such right and power may be exercised from time to time and as often as may be deemed expedient by the Authority.

No waiver of any Event of Default hereunder shall extend to

or shall affect any subsequent Event of Default or shall impair any rights or remedies consequent thereon.

Section 4-5. Termination of Proceedings. In case the Authority shall have proceeded to enforce any right under this Mortgage, and such proceedings shall have been discontinued or abandoned for any reason, or shall have been determined adversely to the Authority, then and in every such case the Borrower and the Authority shall be restored, subject to any final determination in such proceeding, to their former positions and rights hereunder with respect to the Mortgaged Property, and all rights, remedies and power of the Authority shall continue as if no such proceedings had been taken.

Section 4-6. Waiver of Events of Default. The Authority may in its discretion waive any Event of Default hereunder and its consequences and rescind any declaration of acceleration of the Note.

Section 4-7. Authority as Purchaser. In case of any sale of the Mortgaged Property pursuant to any judgment or decree of any court or by advertisement or otherwise in connection with the enforcement of any of the terms of this Mortgage, the Authority, its successors or assigns, may become the purchaser, and for the purpose of making settlement for or payment of the purchase price, shall be entitled to turn in and use the Note and any claims for interest matured and unpaid thereupon, together with additions to the mortgage debt, in order that there may be credited as paid on the purchase price the sums then due under the Note, including principal and interest thereon and any accrued additions to the mortgage debt.

Section 4-8. Application of Proceeds. The purchase money proceeds and avails of any sale of the Mortgaged Property or any part thereof, and the proceeds and avails of any remedy hereunder shall be paid to the Authority and applied as follows:

- (a) First, to the payment of costs and expenses of foreclosure and of sale, including all legal costs and charges of such foreclosure and the maximum attorneys' fees permitted by law;
- (b) Second, to the payment of all expenses, liability and advances incurred or made hereunder by the Authority, and of all taxes, installments of assessments or liens superior to the lien of this Mortgage paid by the Authority, if such expenses and costs are included in the judgment upon which the sale was made;
- (c) Third, to the payment to the Authority of the amount then owing and unpaid under the Loan Agreement, the Note and this Mortgage for principal and interest and other indebtedness and, in case any such proceeds shall be insufficient to pay the whole amount so due, then in such order as Authority may determine; and
- (d) Fourth, any excess to the payment to the Borrower, its successors and assigns, or to whomsoever may be lawfully entitled to receive the same.

Section 4-9. Security Agreement. This instrument is intended to constitute a security agreement pursuant to the South Dakota Uniform Commercial Code covering any of the items or types of property as a part of the Mortgaged Property which may be subject to the Uniform Commercial Code. The Authority, in exercising its rights hereunder, shall also have, without limitation, all of the rights and remedies provided by the South Dakota Uniform Commercial Code, including the right to proceed under the South Dakota Uniform Commercial Code provisions governing default as to any personal property which may be included in the Mortgaged Property separately from the real estate included therein, or to proceed as to all of the Mortgaged Property in accordance with its rights and remedies in respect of said real estate.

Section 4-10. Application of Chapter 21-49. THE PARTIES AGREE THAT THE PROVISIONS OF THE ONE HUNDRED EIGHTY DAY REDEMPTION MORTGAGE ACT (SOUTH DAKOTA CODIFIED LAWS, CHAPTER 21-49) GOVERN THIS MORTGAGE.

Section 4-11. Assignment by Authority. The Borrower hereby acknowledges and agrees that the Authority may assign its interest in this Mortgage to the Trustee as security for the payment of the principal of, premium, if any, and interest on the Series Bonds, Program Payments and other amounts payable under

the Loan Agreement and the Note.

ARTICLE FIVE

MISCELLANEOUS

Section 5-1. Supplements or Amendments to this Mortgage. This Mortgage may not be supplemented or amended without the written consent of the Authority and the Borrower.

Section 5-2. Severability. If any provision of this Mortgage shall be held or deemed to be or shall, in fact, be inoperative or unenforceable as applied in any particular case in any jurisdiction or jurisdictions or in all jurisdictions or in all cases because it conflicts with any provisions or any constitution or statute or rule of public policy, or for any other reason, such circumstances shall not have the effect of rendering the provision in question inoperative or unenforceable in any other case or circumstance, or of rendering any other provision or provisions herein contained invalid, inoperative, or unenforceable to any extent whatever.

The invalidity of any one or more phrases, sentences, clauses or paragraphs in this Mortgage contained shall not affect the remaining portions of this Mortgage or part thereof.

Section 5-3. Notices. All notices, certificates or other communications hereunder shall be sufficiently given and shall be deemed given when mailed by certified mail, postage prepaid, with proper address as indicated below. The Borrower and the Authority may, by written notice given by each to the others, designate any other address or addresses to which notices, certificates or other communications to them shall be sent when required as contemplated by this Mortgage. Until otherwise provided by the respective parties, all notices, certificates and communications to each of them shall be addressed as follows:

To the Borrower: APA Optics, Inc.
 2950 North East 84th Lane
 Blaine, Minnesota 55449
 Attn: Dr. Anil K. Jain

To the Authority: South Dakota Economic Development
 Finance Authority
 Governors Office of Economic
Development
 711 East Wells Avenue
 Pierre, South Dakota 57501
 Attn: Executive Director

Section 5-4. Counterparts. This Mortgage may be simultaneously executed in several counterparts, each of which shall be an original and all of which shall constitute but one and the same instrument.

Section 5-5. Construction Mortgage. The Mortgage secures on obligation incurred for the construction of an improvement on Land, and is a "construction mortgage" within the meaning of South Dakota Codified Laws, Section 57A-9-313, of the Uniform Commercial Code.

Section 5-6. Fixture Filing. This instrument shall be deemed to be a Fixture Financing Statement within the meaning of the South Dakota Uniform Commercial Code, South Dakota Codified Laws, Section 57A-9-313:

- (1) Name and Address of Debtor: APA Optics, Inc.
 2950 North East 84th Lane
 Blaine, Minnesota 55449
 Attn: Dr. Anil K. Jain
 Employer Identification No. 41-
1347235
- (2) Name and Address of South Dakota Economic Development
 Secured Party: Finance Authority
 Governors Office of Economic
Development
 711 East Wells Avenue
 Pierre, South Dakota 57501
- (3) Description of the types These items defined and described
 (or items) of property as Fixtures in Section 1-1 hereof.
 covered by this Financing
 Statement

(4) Description of real estate See Exhibit A hereto.
to which collateral is
attached or upon which it
is located:

Some of the above-described collateral is or is to become
fixtures upon the above-described real estate, and this Financing
Statement is to be filed for record in the real estate records of
the Register of Deeds of Brown County, South Dakota.

IN WITNESS WHEREOF, the Borrower has executed this Mortgage
as of the date first above written.

APA OPTICS, INC.

By /s/ Anil K.

Jain _____

Its President

Attest: /s/ Kenneth A.

Olsen _____

Its Secretary

STATE OF MINNESOTA)
) ss.
COUNTY OF HENNEPIN)

On this ____ day of June, 1996, before me, a Notary Public,
personally appeared Dr. Anil K. Jain and _____, known
to me or satisfactorily proved to be the President and the
Secretary, respectively, of APA Optics, Inc., the corporation
that executed the foregoing instrument.

/s/ Lenore

Aaseng _____

Notary Public,
State of Minnesota

(NOTARIAL SEAL)
EXHIBIT A

Legal Description of the Land

Lots 1, 2 and the North 203.8 feet of Lot 3, Block 3,
Aberdeen Industrial Park East Addition to Aberdeen, South Dakota
located in the Northeast Quarter of Section 16, Township 123
North, Range 63 West of the 5th P.M., according to the plat
thereof of record, Brown County, South Dakota.

Additional Permitted Encumbrances:

1. RESOLUTION concerning creation of the West Brown Irrigation District, dated Jan. 18, 1965, executed by the Board of Brown County Commissioners to the public; filed for record February 8, 1965 at 8:00 A.M. in Book 41 MR, page 534 records of said county.
2. RESERVATIONS contained in that certain State Patent, dated May 11, 1945, executed by State of South Dakota to F.W. Hatterscheidt; filed for record June 1, 1945 at 9:30 A.M. in Book 136, page 102 records of said county.
3. RIGHT-OF-WAY EASEMENT, dated August 20, 1991, executed by John Milton Howell and Thelma Howell, to WEB Water Development Association, Inc.; filed for record May 14, 1992 at 2:42 P.M. in Book 110 MR, page 415 records of said county.
4. STATEMENT TO CONDITIONS, COVENANTS, RESTRICTIONS AND RESERVATIONS AND EASEMENTS AFFECTING ABERDEEN EAST INDUSTRIAL PARK ABERDEEN, SOUTH DAKOTA, dated November 7, 1995, executed by Aberdeen Development Corporation, and Midstates Printing, Inc., and Midcom, Inc. to the Public; filed for record November 20, 1995 at 9:16 A.M. in Book 117 MR, page 174 records of said county.
5. Subject to set-back line and utility easement as shown on

the recorded plat.

APA OPTICS, INC.

SUBSCRIPTION AND INVESTMENT REPRESENTATION AGREEMENT
OF NE VENTURE, INC.

THIS AGREEMENT, made effective this day of June, 1996, between APA OPTICS, INC., a Minnesota corporation (the "Company"), and NE Venture, Inc., a South Dakota corporation (the "Subscriber"):

W I T N E S S E T H

In consideration of the mutual promises contained herein, and other good and valuable consideration, the parties hereto agree as follows:

1. Agreement of Sale. Pursuant to Paragraph 7 of the Agreement of Intent and Due Diligence between the Company and Aberdeen Development Corporation ("ADC") dated May 8, 1995, as amended effective August , 1995 (the "Agreement of Intent"), the Company agrees to sell to the Subscriber, and the Subscriber agrees to purchase from the Company, shares of Common Stock, par value \$.01 per share, of the Company (the "Common Stock") in the amounts and under the terms described below:
 - a. On the date hereof, the Subscriber shall purchase 148,148 shares of Common Stock at a purchase price of \$3.375 per share, or a total of \$500,000. The Closing (the "First Closing") of such purchase and sale shall be held concurrently with the \$700,000 loan to the Company by the Subscriber or ADC described in Paragraph 6 of the Agreement of Intent.
 - b. On the date which is 90 days after the First Closing, the Subscriber shall purchase \$700,000 worth of Common Stock, at a price per share equal to the average of the bid and asked prices of the Common Stock on The NASDAQ Small-Cap Market during the fiscal quarter immediately preceding such purchase. The closing (the "Second Closing") of such purchase and sale shall be held concurrently with the \$300,000 loan to the Company by the Subscriber or ADC described in Paragraph 6 of the Agreement of Intent.
2. Issuance of the Warrants. In connection with loans described in Paragraph 6 of the Agreement of Intent, the Company shall issue to the Subscriber on each of the first five anniversary dates of this Agreement, a warrant to purchase shares of Common Stock (the "Warrants"), the number of which shall be calculated by dividing the dollar amount of job credits earned by the Company in the 12 months preceding that anniversary date (as described in the Agreement of Intent) by the exercise price. The exercise price shall be \$4.00 for Warrants issued on the first anniversary date and shall increase by \$1.00 per year thereafter so that the exercise price of the Warrants issued on the fifth anniversary date shall be \$8.00. The Warrants shall be substantially in the form attached hereto as Exhibit A. If the loans described in Paragraph 6 of the Agreement of Intent are not made or if no job credits are earned, no Warrants shall be issued. The exercise price set forth in this Paragraph 2 to be used to calculate the number of Warrants to be issued pursuant to this Paragraph 2 shall be subject to adjustment from time to time in the manner and upon the occurrence of the events described in Paragraph 4 of the form of Warrant attached as Exhibit A to this Agreement.
3. Purchase of and Sale of Common Stock.
 - a. In order to purchase the Common Stock to be sold pursuant to Paragraph 1(a) or 1(b) hereunder, the Subscriber will notify the Company of its intent to make such purchase and within ten business days thereafter shall deliver cash or a check in the amount of the purchase price to the Company (the date on which the Subscriber shall deliver such payment is hereinafter referred to as the "First Closing Date"). If Common Stock is to be purchased

pursuant to Paragraph 1(b) hereof, the Subscriber shall notify the Company at least five business days prior to the date on which the Subscriber intends to deliver payment so that the Company may verify the purchase price (the date on which the Subscriber shall deliver such payment is hereinafter referred to as the "Second Closing Date") .

b. At each closing, the Company will deliver to the Subscriber a certificate registered in the Subscriber's name, dated as of such Closing Date, representing the shares of Common Stock purchased by the Subscriber at such Closing Date (the "Shares") against payment to the Company of the purchase price of the Shares being purchased by the Subscriber.

4. Representations and Warranties of the Company. In consideration of the Subscriber's agreement to purchase the Securities (as defined in Paragraph 6 of this Agreement), the Company represents and warrants to the Subscriber as follows:

a. Organization. The Company is a duly organized and validly existing corporation under the laws of the State of Minnesota. The Company has the requisite corporate power and authority to own its properties and to carry on its business in all material respects as it is now being conducted and as proposed to be conducted. The Company has no subsidiaries or direct or indirect ownership interest in any firm, corporation, association or business. The Company has the requisite corporate power and authority to authorize, issue, sell and deliver the Securities and to otherwise perform its obligations under this Agreement. The Company is qualified to do business in each jurisdiction in which the conduct of its business or the ownership of its properties requires such qualification.

b. Good Standing. The Company is in good standing under the laws of the State of Minnesota, and there are no proceedings or actions pending to limit or impair any of its powers, rights and privileges, or to dissolve it.

c. Corporate Authorization. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly authorized by proper corporate action of the company. This Agreement has been duly executed and delivered by authorized officers of the Company and is a valid and binding agreement on the part of the Company that is enforceable against the Company in accordance with its terms, except as the enforceability thereof may be limited by applicable bankruptcy, insolvency, moratorium, reorganization or other laws of general application affecting enforcement of creditors' rights or by general principles of equity.

d. Shares. The Shares, when issued and paid for pursuant to the terms of this Agreement, will be duly and validly authorized, validly issued and outstanding, fully paid, nonassessable shares and will be free and clear of all pledges, liens, encumbrances and restrictions, except as set forth in Paragraph 7 of this Agreement.

e. No Brokers or Finders. Except for the financial consultant being used by the Company, no person, firm or corporation has or will have, as a result of any act or omission of the Company, any right, interest or valid claim against the Company or the Subscriber for any commission, fee or other compensation as a finder or broker in connection with the transactions contemplated by this Agreement.

f. Governmental Consents. Based in part upon the representations of the Subscriber in Paragraph 5, no consent, approval, qualification, or order or authorization of, or filing with, any local, state or federal governmental authority is required on the part of the Company in connection with the Company's valid execution, delivery or performance of this Agreement, the offer, sale, issuance or delivery of the Securities by the Company, or the performance by the Company of its obligations in respect thereof except such filings as have been made prior to the applicable Closing, except any notices of sale required to be filed with the Commission (as defined below) under Regulation D of the Act (as defined below), or such post-closing filings as may be required under applicable state securities laws, which will be timely filed within

the applicable periods therefor.

g. No Conflicts. Neither the execution, delivery or performance by the Company of this Agreement, nor compliance with the terms and provisions hereof nor the consummation of the transactions contemplated hereby will (i) contravene any applicable law, statute, rule, regulation, order, writ, injunction or decree of any Federal, state or local government, court or governmental department, commission, board, bureau, agency or instrumentality, (ii) conflict or be inconsistent with, or result in any breach of any of the terms, covenants, conditions or provisions of, or constitute a default (either immediately or with notice or the passage of time or both) under, any indenture, mortgage, deed of trust, credit agreement or instrument or any other material agreement or instrument to which the Company is a party or by which it may be bound or to which any of the foregoing may be subject or (iii) violate any provisions of the Articles of Incorporation or Bylaws of the Company.

h. Litigation. There are no legal actions, suits, arbitrations or other legal, administrative or governmental proceedings pending or, to the best of the Company's knowledge, threatened against the Company or its properties, assets or business which, if determined adversely, would have a material adverse effect on the Company or its properties, assets or business and neither the Company nor any of its officers is aware of any facts which might result in or form the basis for any such action, suit or other proceeding. The Company is not in material default with respect to any judgment, order or decree of any court or any governmental agency or instrumentality.

i. Building Project. The Company will establish, and deliver to the Subscriber, a budget for the construction of the Company's new facility in Aberdeen, SD and for the acquisition of equipment for that facility. The budget shall show a total project cost including construction and acquisition costs of not less than \$3,200,000.00. During the first 24 months following execution of this Agreement, the Company will provide the Subscriber with an accounting reflecting expenditures made under such budget from the proceeds of the sale of the Common Stock under this Agreement or the exercise of the Warrants under this Agreement.

j. Securities Laws Filings. The Company has furnished to Subscriber complete and accurate copies of its annual report on Form 10-KSB ("10-KSB") for the fiscal year ended March 31, 1995, and quarterly reports on Form 10-QSB for the quarters ended June 30, 1995, September 30, 1995 and December 31, 1995, Proxy Statement for the Annual Meeting of Shareholders held August 16, 1995, and the 1995 Annual Report to Shareholders (the "SEC Filings"), in each case as filed with the Securities and Exchange Commission (the "Commission"). The Company has not filed with the Commission any registration statement, report, proxy or information statement or other information under the Act (as defined below), or the Securities Exchange Act of 1934, as amended (the "Exchange Act"), since the date of the filing of the 10-KSB, except the other SEC Filings, nor has it amended any of the SEC Filings except for an amendment to the June 30, 1995 Form 10-KSB.

k. Changes. There has been no material adverse change in the financial condition or business, assets or properties of the Company since March 31, 1995, and December 31, 1995, other than normal recurring operating losses.

l. Capitalization and Voting Rights. The authorized capital of the Company consists, or will consist prior to the First Closing, of (a) 15,000,000 shares of common stock, \$0.01 par value (the "Common Stock"), of which there are 7,990,007 fully paid and nonassessable shares duly issued and outstanding and no other shares issued and outstanding, 415,000 shares reserved for issuance upon the exercise of warrants and 10,000 shares reserved for issuance pursuant to the exercise of stock options and (b) 5,000,000 undesignated shares, none of which are outstanding. All of the outstanding shares of Common Stock have been validly issued and are fully paid and nonassessable. No class of capital stock of the Company is entitled to preemptive or similar rights to purchase any

securities of the Company.

5. Representations and Warranties of the Subscriber. In consideration of the Company's agreement to sell the Securities, the Subscriber hereby represents and warrants to the Company as follows:

a. Information About the Company. The Subscriber has received, read, and understands the Agreement of Intent and the Company's Annual Report on Form 10-KSB for the fiscal year ended March 31, 1995 and Quarterly Reports on Form 10-QSB for the quarters ended June 30, 1995, September 30, 1995 and December 31, 1995. Further, the Subscriber has had the opportunity to ask questions of, and receive answers from, the Company, or an agent of the Company, concerning the terms and conditions of the investment and the business and affairs of the Company and to obtain any additional information necessary to verify such information, and the Subscriber has received such additional information concerning the Company as the Subscriber considers necessary or advisable in order to form a decision concerning an investment in the Company.

b. High Degree of Risk. The Subscriber realizes that the Securities are speculative and involve a high degree of risk, including the risks of receiving no return on the investment and of losing the investment in the Company.

c. Ability to Bear the Risk. The Subscriber is able to bear the economic risk of investment in the Securities, including the total loss of such investment.

d. Appropriate Investment. The Subscriber believes, in light of the information provided pursuant to Paragraph 5(a) above, that subscribing for the Securities pursuant to the terms of this Agreement is an appropriate and suitable investment for the Subscriber.

e. Business Sophistication. The Subscriber and its executive officers are experienced and knowledgeable in financial and business matters, capable of evaluating the merits and risks of purchasing securities of the Company.

f. Residency. The Subscriber is a corporation incorporated under the laws of the State of South Dakota.

g. Exemption. The Company reserves the right to request information from the Subscriber from time to time to permit the Company to verify that the issuance of the Shares, the Warrants and the shares of Common Stock issuable upon exercise of the Warrants is exempt under the Act and any applicable state law.

6. Investment Purpose in Acquiring the Units. The Subscriber and the Company acknowledge that neither the Shares, the Warrants, nor the shares of Common Stock issuable upon exercise of the Warrants (collectively, the "Securities"), have been registered under the Securities Act of 1933, as amended (the "Act"), or applicable state securities laws and that such Securities will be issued to the Subscriber in reliance on exemptions from the registration requirements of the Act and applicable state securities laws and in reliance on the Subscriber's and the Company's representations and agreements contained herein. The Subscriber is subscribing to acquire the Securities for the account of the Subscriber for investment purposes only and not with a view to their resale or distribution. The Subscriber has no present intention to divide its participation with others or to resell or otherwise dispose of all or any part of the Securities. In making these representations, the Subscriber understands that, in the view of the Commission, exemption of the Securities from the registration requirements of the Act would not be available if, notwithstanding the representations of the Subscriber, the Subscriber has in mind merely acquiring the Securities for resale upon the occurrence or nonoccurrence of some predetermined event.

7. Compliance with Securities Act. The Subscriber agrees that if the Securities or any part thereof are sold or distributed in the future, the Subscriber shall sell or distribute them pursuant to the requirements of the Act and applicable state securities laws. The Subscriber agrees that the Subscriber will not transfer any part of the Securities without (a) obtaining an opinion of counsel satisfactory in form and substance to the counsel for the Company to the effect that such transfer is exempt from the registration requirements

under the Act and applicable state securities laws or (b) such registration.

8. Restrictive Legend. The Subscriber agrees that Company may place a restrictive legend on the certificates representing the Securities containing substantially the following language:

"The securities represented by this certificate have not been registered under the Securities Act of 1933, as amended, or any state securities laws. They may not be sold, offered for sale, or transferred in the absence of either an effective registration under the Securities Act of 1933, as amended, and under the applicable state securities laws, or an opinion of counsel satisfactory to the Company that such transaction is exempt from registration under the Securities Act of 1933, as amended, and under the applicable state securities laws."

9. Removal of Legend. Upon the sale of any of the Securities in accordance with Rule 144 or any similar rule then in effect, or pursuant to an effective registration statement, the Company shall instruct its transfer agent to issue new certificates for the Securities without the restrictive legend described in Paragraph 8. In addition, if the Subscriber delivers to the Company an opinion of counsel to the effect that no subsequent transfer of such Securities will require registration under the Act, the Company will promptly upon such contemplated transfer deliver new certificates evidencing such Securities that do not bear the legend set forth in Paragraph 8.

10. Stop Transfer Order. The Subscriber agrees that the Company may place a stop transfer order with its registrar and stock transfer agent covering all certificates representing the Securities.

11. Knowledge of Restrictions upon Transfer of the Securities. The Subscriber understands that the Securities are not freely transferable and may in fact be prohibited from sale for an extended period of time and that, as a consequence thereof, the undersigned must bear the economic risk of investment in the Securities for an indefinite period of time and may have extremely limited opportunities to dispose of the Securities. The Subscriber understands that Rule 144 under the Act permits the transfer of "restricted securities" of the type here involved only under certain conditions, including a minimum two-year holding period and the availability to the public of certain information concerning the Company.

12. Registration Rights. (a) In the event the Company files a registration statement under the Act during Registration Period (as defined below) for any Security, the Company will use its best efforts to permit the Subscriber to register that Security on a piggyback basis as part of such registration. The Company may require that the Subscriber pay all incremental costs associated with such piggyback registration. The Company may restrict the volume of the Subscriber's piggyback registration if the Company reasonably determines that such a reduction is necessary to avoid a material adverse impact on the registration and if, in connection with such reduction, the Company treats all holders of unregistered securities in an equivalent manner. The "Registration Period" with respect to any Security shall be the period beginning on the first anniversary date of the issuance of such Security to the Subscriber and ending on the second anniversary of the issuance of such Security, provided that the Registration Period with respect to any Security shall, if it has not previously expired, continue for so long as the Subscriber is not free to sell the Security under Rule 144(k). In the case of a Warrant, issuance shall be deemed to have occurred upon issuance of Common Stock upon exercise of the Warrant.

b. Indemnification. In the event that any Securities held by Subscriber are included in a registration statement under Paragraph 12 of this Agreement:

(i) The Company will indemnify and hold harmless the Subscriber and each of its officers and directors, and any underwriter (as defined in the Act) for the Subscriber and each person, if any, who controls the Subscriber or such underwriter within the meaning of the Act from and against any and all loss, damage, liability, cost and expense (or actions, proceedings or settlements in respect thereof) to which the Subscriber or any such underwriter or controlling person may become subject under the Act or otherwise, arising out of or based upon any statement or alleged untrue

statement of any material fact by the Company contained in such registration statement, any prospectus contained therein or any amendment or supplement thereto or any document incident to any registration, qualification or compliance, or arising out of or based upon the omission or alleged omission by the Company to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading and will reimburse the Subscriber and each person controlling the Subscriber, each such underwriter, and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating and defending or settling any such claim, loss, damage, liability, or action; provided, however, that the Company will not be liable in any such case to the extent that any such loss, damage, liability, cost or expense arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission so made in conformity with information furnished by the Subscriber, such underwriter or such controlling person. It is agreed that the indemnity agreement contained in this Paragraph 12(b)(i) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, or action if such settlement is effected without the consent of the Company (which consent has not been unreasonably withheld).

(ii) The Subscriber will indemnify and hold harmless the Company, and each of its officers and directors, and any underwriter (as defined in the Act) and each person, if any, who controls the Company or such underwriter within the meaning of the Act from and against any and all loss, damage, liability, cost and expense (or actions, proceedings or settlements in respect thereof) to which the Company or any such underwriter or controlling person may become subject under the Act or otherwise, arising out of or based upon any untrue or alleged untrue statement of any material fact by the Subscriber contained in such registration statement, any prospectus contained therein or any amendment or supplement thereto or any document incident to any registration, qualification or compliance, or arising out of or based upon the omission or the alleged omission by the Subscriber to state therein a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances in which they were made, not misleading or any violation by the Subscriber of the Act or any rule or regulation thereunder applicable to the Subscriber and relating to action or inaction required of the Subscriber in connection with any such registration, qualification, or compliance, and will reimburse the Company and each person controlling the Company, each such underwriter, and each person who controls any such underwriter, for any legal and any other expenses reasonably incurred in connection with investigating and defending or settling any such claim, loss, damage, liability, or action; provided, however, that the Subscriber shall be liable in the case of any such untrue statement or alleged untrue statement or omission or alleged omission only to the extent that any such untrue statement or alleged untrue statement or omission or alleged omission was so made in reliance upon and in conformity with information furnished to the Company by the Subscriber. It is agreed that the indemnity agreement contained in this Paragraph 12(c)(ii) shall not apply to amounts paid in settlement of any such loss, claim, damage, liability, or action if such settlement is effected without the consent of the Subscriber (which consent shall not be unreasonably withheld).

(iii) If the indemnification provided for in Subsections (i) or (ii) above is held by a court of competent jurisdiction to be unavailable to the indemnified party with respect to any loss, liability, claim, damage, or expense referred to therein, then the indemnifying party, in lieu of indemnifying such indemnified party hereunder, shall contribute to the amount paid or payable by such indemnified party as a result of such loss, liability, claim, damage, or expense in such proportion as appropriate to reflect

the relative fault of the indemnifying party on the one hand and of the indemnified party on the other in connection with the statements or omissions that resulted in such loss, liability, claim, damage, or expense as well as any other relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or omission to state a material fact relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information, and opportunity to correct or prevent such statement or omission.

13. Conditions of the Subscriber's Obligation. The obligation of the Subscriber to purchase and pay for the Shares that the Subscriber has agreed to purchase on a Closing Date is subject to the fulfillment prior to or on such Closing Date of the following conditions, any of which may be waived in whole or in part with respect to such Closing Date by the Subscriber.

a. No Errors, etc. The representations and warranties of the Company under this Agreement will be true in all material respects as of the relevant Closing Date with the same effect as though made on and as of such Closing Date.

b. Compliance with Agreement. The Company shall have performed and complied in all material respects with all agreements or conditions required by this Agreement and the Agreement of Intent to be performed and complied with by it prior to or as of such Closing Date.

c. Secretary's Certificate. The Company shall have delivered to the Subscriber a certificate, dated such Closing Date, executed by the Secretary of the Company and substantially in the form of Exhibit B.

d. President's Certificate. The president of the Company shall have delivered to the Subscriber at such Closing a certificate certifying that the conditions specified in this Paragraph 13 have been fulfilled.

e. Required Filings. All material governmental filings, authorizations and approvals that are required for the consummation of the transactions contemplated hereby will have been duly made and obtained.

14. Conditions to the Company's Obligations. The obligation of the Company to consummate the transactions contemplated by this Agreement on a Closing Date is subject to the satisfaction of the following conditions on or before such Closing Date, any of which may be waived in whole or in part by the Company.

a. No Errors, Etc. The representations and warranties of the Subscriber under this Agreement will be true in all material respects as of the relevant Closing Date as though made on and as of such Closing Date.

b. Compliance with Agreement. The Subscriber will have performed and complied in all material respects with all agreements required by this Agreement and the Agreement of Intent to be performed and complied with by it prior to or as of such Closing Date.

c. Required Filings. All material governmental filings, authorizations and approvals that are required for, or as a result of, the consummation of the transactions contemplated hereby will have been duly made and obtained.

15. Mutual Conditions. The several obligations of the Company and of the Subscriber to consummate the transactions contemplated by this Agreement on a Closing Date are subject to the satisfaction of the following conditions as of such Closing Date.

a. Pending Proceedings. There will not be threatened, instituted or pending any action or proceeding before any court or governmental authority or agency, domestic or foreign, (i) challenging or seeking to make illegal, delay or otherwise directly or indirectly restrain or prohibit the consummation of the transactions contemplated hereby or seeking to obtain material damages in connection with such transactions, (ii) seeking to invalidate or render unenforceable any material provision of this Agreement or

(iii) otherwise relating to and materially adversely affecting the transactions contemplated hereby.

b. Governmental Actions. There will not be any action taken or any statute, rule, regulation, judgment, order or injunction, enacted, entered, enforced, promulgated, issued or deemed applicable to the transactions contemplated hereby by any federal, state or foreign court, government or governmental authority or agency that could reasonably be expected to result, directly or indirectly, in any of the consequences referred to in Paragraph 15(a).

16. Binding Effect. Except as otherwise expressly provided in this Agreement or the exhibits hereto, neither this Agreement nor any interest herein shall be assignable by the Subscriber or the Company without the prior written consent of the other party. The provisions of this Agreement shall be binding upon and inure to the benefit of the parties hereto, and their respective heirs, legal representatives, successors and assigns.

17. Representations to Survive Delivery. The covenants, representations, warranties, agreements and statements of the Company and of the Subscriber contained in this Agreement or in any certificate, statement or document furnished in connection herewith or in connection with the transactions contemplated hereby will remain operative and in full force and effect and will survive any investigation at any time by the Company or the Subscriber, the payment of the purchase price pursuant to Section 3 above and the delivery of certificates representing the Securities. All statements contained in any certificate, instrument or other writing (except legal opinions) delivered pursuant hereto or in connection with the transactions contemplated herein shall constitute representations and warranties hereunder made by the party hereto who is responsible for such delivery.

18. Changes, Waiver, Etc. Neither this Agreement nor any provision hereof may be changed, waived, discharged or terminated orally, but only by a statement in writing signed by the party against which enforcement of the change, waiver, discharge or termination is sought.

19. Expenses. Except as otherwise expressly provided for herein or in the Agreement of Intent, the Subscriber and the Company will pay all of their own expenses (including attorneys' and accountants' fees) in connection with the negotiation and preparation of this Agreement, the performance of their respective obligations hereunder and the consummation of the transactions contemplated hereby (whether consummated or not).

20. Rule 144 Reporting. With a view to maintaining the availability to the Subscriber of Rule 144 under the Act, the Company agrees to use its best efforts to:

a. Make and keep available public information regarding the Company at all times as those terms are understood and defined in Rule 144 under the Act; and

b. File with the Commission in a timely manner all reports and other documents required of the Company under the Act and the Exchange Act at any time during which it is subject to such reporting requirements.

c. The Company will, so long as the Subscriber owns any of the Securities, furnish to the Subscriber upon written request, a copy of the most recent annual or quarterly report of the Company, and such other reports and documents as the Subscriber may reasonably request in availing itself of any rule or regulation of the Commission allowing the Subscriber to sell any such securities without registration.

21. Severability. If one or more provisions of this Agreement are held to be unenforceable under applicable law, such provision shall be excluded from this Agreement, and the balance of this Agreement shall be interpreted as if such provision were so excluded and shall be enforceable in accordance with its terms.

22. Counterparts. This Agreement may be executed concurrently in one or more counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

23. Entire Agreement. This Agreement (including the exhibits

hereto) constitute the entire agreement of the parties hereto with respect to the subject matter hereof (and thereof).

24. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Minnesota.

NE VENTURE, INC.

By

Its

P.O. Box 1179
Aberdeen, South Dakota 57402-1179

The Company hereby accepts the subscription evidenced by this Subscription and Investment Representation Agreement:

APA OPTICS, INC.

By:

Its:

Date:

SUBSCRIBER INFORMATION

NE VENTURE, INC.

(Please print name(s) in which the Securities are to be issued)

Taxpayer I.D. No. (If more than one investor)

Address: P.O. Box 1179

City: Aberdeen State: SD Zip Code: 57402-1179

Telephone Number (605) 229-5335

Check One:

Individual Ownership Tenants in Common
Joint Tenants (JTWROS) X Other (Specify: Corporation)

CERTIFICATE OF SIGNATORY

I, NE, am the Venture, of Inc. (the "Entity").

I certify that I am empowered and duly authorized by the Entity to execute and carry out the terms of the Subscription and Investment Representation Agreement and to purchase and hold the Securities and certify further that the Subscription and Investment Representation Agreement has been duly and validly authorized by

Exhibit 4.4(b)

COMMON STOCK PURCHASE WARRANT

To Purchase
Shares of Common Stock of

APA OPTICS, INC.

THIS CERTIFIES THAT NE Venture, Inc., a South Dakota corporation ("NE Venture") (the "Holder"), or its successors or permitted assigns, is entitled to subscribe to and purchase from APA Optics, Inc., a Minnesota corporation (the "Company"), at any time on or after _____, 199 , to and including _____, 200 , _____ fully paid and nonassessable shares of the Company's Common Stock, \$.01 par value (the "Warrant Shares"), at the price of \$ _____ per share (the "Warrant Exercise Price"), subject to adjustment as hereinafter indicated.

This Warrant is issued pursuant to the Agreement of Intent and Due Diligence by and between the Company and Aberdeen Development Corporation dated May 8, 1995, as amended effective August _____, 1995, and the Subscription and Investment Representation Agreement by and between the Company and the Holder made effective April _____, 1996 (the "Subscription Agreement"), and is subject to the provisions thereof and the following provisions, terms, and conditions:

1. Exercise and Transferability.

(a) The rights represented by this Warrant may be exercised by the holder hereof, in whole or in part (but not as to fewer than 100 shares of Common Stock), by written notice of exercise delivered to the Company and by the surrender of this Warrant (properly endorsed if required) at the principal office of the Company and upon payment to it by cash or certified or cashier's check of the Warrant Exercise Price for the Warrant Shares being purchased.

(b) This Warrant may not be transferred, except by will, pursuant to the operation of law, or in compliance with the provisions of Section 9 hereof.

2. Issuance of the Warrant Shares. The Company agrees that the Warrant Shares purchased hereby shall be and are deemed to be issued to the record holder hereof as of the close of business on the date on which this Warrant shall have been surrendered and payment made for the Warrant Shares as aforesaid. Subject to the provisions of the next succeeding Section, certificates for the Warrant Shares so purchased shall be delivered to the Holder hereof within a reasonable time, not exceeding ten (10) days after the rights represented by this Warrant shall have been so exercised, and, unless this Warrant has expired, a new Warrant representing the right to purchase the number of Warrant Shares, if any, with respect to which this Warrant shall not then have been exercised shall also be delivered to the Holder hereof within such time. Notwithstanding the foregoing, however, the Company shall not be required to deliver any certificate for shares of Common Stock upon exercise of this Warrant, except in accordance with the provisions, and subject to the limitations, of Section 9 hereof, to the extent that such provisions and limitations are applicable.

3. Covenants of the Company. The Company covenants and agrees that the Warrant Shares issued upon the exercise of the rights represented by this Warrant will, upon issuance, be duly authorized and issued, fully paid, nonassessable, and free from all taxes, liens, and charges with respect to the issue thereof, and without limiting the generality of the foregoing, the Company covenants and agrees that it will from time to time take all such action as may be required to assure that the par value per share of the Common Stock is at all times equal to, or less than, the then effective Warrant Exercise Price. The Company further covenants and agrees that during the period within which the rights represented by this Warrant may be exercised, the Company will at all times have authorized and reserved for issuance upon exercise of the rights evidenced by this Warrant a sufficient

number of shares of its Common Stock to provide for the exercise of such rights.

4. Antidilution Adjustments. The provisions in this Warrant relating to the number of Warrant Shares and the Warrant Exercise Price are subject to adjustment as hereinafter provided.

(a) In case the Company shall declare a dividend or make any other distribution upon the Common Stock of the Company payable in shares of Common Stock or other securities, upon exercise of this Warrant, the Holder shall be entitled to receive, for each share of Common Stock purchased pursuant to such Warrant, the number of shares of Common Stock or other securities, as the case may be, issued per share of Common Stock in payment of such dividend or distribution.

(b) In case at any time the Company shall subdivide its outstanding shares of Common Stock into a greater number of shares, the Warrant Exercise Price in effect immediately prior to such subdivision shall be proportionately reduced and the number of Warrant Shares purchasable pursuant to this Warrant immediately prior to such subdivision shall be proportionately increased, and, conversely, in case at any time the Company shall combine its outstanding shares of Common Stock into a smaller number of shares, the Warrant Exercise Price in effect immediately prior to such combination shall be proportionately increased and the number of Warrant Shares purchasable upon the exercise of this Warrant immediately prior to such combination shall be proportionately reduced. Except as provided in this Subsection 4(b), no adjustment in the Warrant Exercise Price and no change in the number of Warrant Shares so purchasable shall be made pursuant to this Section 4 as a result of, or by reason of, any such subdivision or combination.

(c) If the Company takes any other action, or if any other event occurs, which does not come within the scope of the provisions of Section 4(a) or 4(b), but which should result in an adjustment in the Warrant Exercise Price and/or the number of shares subject to this Warrant in order to fairly protect the purchase rights of the Holder, an appropriate adjustment in such purchase rights shall be made by the Company.

(d) Upon any adjustment of the Warrant Exercise Price, the Company shall give written notice thereof, by first class mail, postage prepaid, addressed to the registered Holder at the address of the Holder as shown on the books of the Company, which notice shall state the Warrant Exercise Price resulting from such adjustment and the increase or decrease, if any, in the number of shares purchasable at such price upon the exercise of this Warrant, setting forth in reasonable detail the method of calculation and the facts upon which such calculation is based.

(e) Except as hereinafter provided, no adjustment of the Warrant Exercise Price hereunder shall be made if such adjustment results in a change in the Warrant Exercise Price then in effect of less than five cents (\$.05). Any adjustment of less than five cents (\$.05) of any Warrant Exercise Price shall be carried forward and shall be made at the time of and together with any subsequent adjustment which, together with any adjustment or adjustments so carried forward, amounts to five cents (\$.05) or more. However, upon the exercise of this Warrant, the Company shall make all necessary adjustments (to the nearest cent) not theretofore made to the Warrant Exercise Price up to and including any date upon which this Warrant is exercised.

5. Consolidation, Merger, or Sale of Assets. In the case of any consolidation or merger of the Company with another corporation, the sale of all or substantially all of its assets to another person, or any reorganization or reclassification of the capital stock of the Company (except a split-up or combination, provision for which is made in Section 4 hereof):

(a) As a condition of such consolidation, merger, sale, reorganization, or reclassification, lawful and adequate provision shall be made whereby the Holder shall thereafter have the right to purchase upon the basis and upon the terms and conditions specified herein and in lieu of the Warrant Shares immediately theretofore purchasable hereunder, such shares of stock, securities, or assets as may (by virtue of such consolidation, merger, sale,

reorganization, or reclassification) be issued or payable with respect to, or in exchange for, a number of outstanding shares of the Company's Common Stock equal to the number of Warrant Shares immediately theretofore so purchasable hereunder had such consolidation, merger, sale, reorganization, or reclassification not taken place, and in any such case appropriate provision shall be made with respect to the rights and interests of the Holder to the end that the provisions hereof (including, without limitation, provisions for adjustments of the Warrant Exercise Price) shall thereafter be applicable, as nearly as may be, in relation to any shares of stock, securities, or assets thereafter deliverable upon the exercise of this Warrant. The Company shall not effect any such consolidation, merger, or sale unless, prior to, or simultaneously with, the consummation thereof, the successor person or persons purchasing such assets or succeeding or resulting from such consolidation, merger, reorganization, or reclassification shall assume by written instrument, executed and mailed or delivered to the Holder, the obligation to deliver to the Holder such shares of stock, securities, or assets as, in accordance with the foregoing provisions, the Holder may be entitled to receive.

(b) In the event that the Company shall make any distribution of its assets upon, or with respect to, its Common Stock, as a liquidating or partial liquidating dividend, or other than as a dividend payable out of earnings or any surplus legally available for dividends under the laws of the State of Minnesota, the Holder shall, upon the exercise of this Warrant after the record date for such distribution or, in the absence of a record date, after the date of such distribution, receive, in addition to the Warrant Shares subscribed for, the amount of such assets (or, at the option of the Company, a sum equal to the value thereof at the time of distribution as determined in good faith by the Board of Directors) that would have been distributed to the Holder if the Holder had exercised this Warrant immediately prior to the record date for such distribution or, in the absence of a record date, immediately prior to the date of such distribution.

6. Fractional Shares. Fractional shares shall not be issued upon the exercise of this Warrant, but in any case where the Holder would, except for the provisions of this Section, be entitled under the terms hereof to receive a fractional share, the Company shall, upon the exercise of this Warrant for the largest number of whole shares then called for, pay an amount in cash equal to the sum of (a) the excess, if any of the Market Price of such fractional share over the proportional part of the Warrant Exercise Price represented by such fractional share plus (b) the proportional part of the Warrant Exercise Price represented by such fractional share. For purposes of this Section, the term "Market Price" with respect to shares of Common Stock of any class or series means the last reported sale price or, if none, the average of the last reported closing bid and asked prices on any national securities exchange or on The Nasdaq Stock Market (NASDAQ), or if not listed on a national securities exchange or on NASDAQ, the average of the last reported closing bid and asked prices as reported by market makers in such Common Stock on the over-the-counter market or, if not listed on a national securities exchange or on NASDAQ or quoted by market makers, the fair market value as determined in good faith by the Company's Board of Directors.

7. Common Stock. As used herein, the term "Common Stock" shall mean and include the Company's currently authorized shares of Common Stock and shall also include any capital stock of any class of the Company hereafter authorized which shall not be limited to a fixed sum or percentage in respect of the rights of the holders thereof to participate in dividends or in the distribution of assets upon the voluntary or involuntary liquidation, dissolution, or winding-up of the Company.

8. No Voting Rights. This Warrant shall not entitle the Holder to any voting rights or other rights as a shareholder of the Company.

9. Restrictions on Transfer of the Warrant and the Warrant Shares.

(a) The Holder, by acceptance hereof, acknowledges that neither this Warrant nor the Warrant Shares have been registered under the Securities Act of 1933, as amended (the "Securities Act") or applicable state securities laws and

certifies that the Warrant is being acquired for investment, for the Holder's own account, and not for distribution or sale. The Holder further acknowledges that similar representations may be required prior to the delivery of Warrant Shares following exercise of the Warrant.

(b) The Holder, by acceptance hereof, agrees to give written notice to the Company before transferring this Warrant or any Warrant Shares of the Holder's intention to do so, describing briefly the manner of any proposed transfer. Promptly upon receiving such written notice, the Company shall present copies thereof to the Company's counsel, and if in the opinion of such counsel the proposed transfer complies with federal and state securities laws and may be effected without registration or qualification (under any federal or state law), the Company, as promptly as practicable, shall notify the Holder of such opinion, whereupon the Holder shall be entitled to transfer or dispose of the Warrant or Warrant Shares in accordance with the written notice.

If, in the opinion of Company's counsel referred to in this Section 9, the proposed transfer of the Warrant or any Warrant Shares described in the written notice given pursuant to this Section 9 may not be effected without registration or qualification under federal or state securities laws, the Company shall promptly give written notice thereof to the Holder, and the Holder will limit the Holder's activities in respect to such as, in the opinion of such counsel, are permitted by law.

(c) An appropriate legend in substantially the form set forth at the end of this Warrant respecting restrictions upon the transfer of the Warrant and the Warrant Shares shall be endorsed on all certificates for the Warrant and the Warrant Shares. In addition, the Company's transfer agent shall place a stop order on the Company's transfer books with regard to the Warrant and the Warrant Shares.

(d) Any legend endorsed on a certificate pursuant to Section 9(c) will be removed, and the Company will issue a new certificate without such legend if the Warrant Shares represented by such certificate are being disposed of by the Holder pursuant to a registration statement filed under the Securities Act or pursuant to Rule 144 under the Securities Act or similar rule then in effect. In addition, if the Holder delivers to the Company an opinion of counsel acceptable to the Company to the effect that no subsequent transfer of the Warrant Shares will require registration under the Securities Act, the Company will promptly upon such contemplated transfer deliver new certificates evidencing such Warrant Shares that do not bear the legend set forth in Section 9(c).

10. Subject to the provisions of Section 9, this Warrant and all rights hereunder are transferable, in whole or in part, at the principal office of the Company by the Holder in person or by duly authorized attorney, upon surrender of the Warrant properly endorsed to any person or entity who represents in writing that he/it is acquiring the Warrant for investment and without any view to the sale or other distribution thereof. Each holder of this Warrant, by taking or holding the same, consents and agrees that the bearer of this Warrant, when endorsed, may be treated by the Company and all other persons dealing with this Warrant as the absolute owner hereof for any purpose and as the person entitled to exercise the rights represented by this Warrant, or to the transfer hereof on the books of the Company, any notice to the contrary notwithstanding; but until such transfer on such books, the Company may treat the registered owner hereof as the owner for all purposes.

11. Limitation on Return on Investment. In the event the Holder sells some or all of the Warrant Shares at a price per share exceeding the Target Price corresponding to the Warrant Exercise Price for this Warrant set forth in Schedule I to this Warrant (the "Target Price") (as adjusted to reflect any stock splits, stock dividends, or similar events affecting the Common Stock, either before or after the exercise of the Warrants), all amounts received by the Holder for such Warrant Shares in excess of the Target Price per share (as adjusted to reflect any stock splits, stock dividends, or similar events affecting the Common Stock, either before or after the exercise of the Warrants) shall be remitted to the Company within five business days after receipt of Holder of such funds.

12. Right of Redemption. If at any time more than two years following the exercise of this Warrant the Market Price per share of the Common Stock (as defined in Section 6 hereof) equals or exceeds the Target Price (as adjusted to reflect any stock splits, stock dividends, or similar events affecting the Common Stock, either before or after the exercise of the Warrants) for a period of twenty consecutive business days, the Company, at its option, may redeem some or all of the Warrant Shares from the Holder for the Target Price per share (as adjusted to reflect any stock splits, stock dividends, or similar events affecting the Common Stock, either before or after the exercise of the Warrants).

13. Neither this Warrant nor any term hereof may be changed, waived, discharged or terminated orally but only by an instrument in writing signed by the party against which enforcement of the change, waiver, discharge or termination is sought.

IN WITNESS WHEREOF, APA Optics, Inc. has caused this Warrant to be signed by its duly authorized officer and this Warrant to be dated _____, 199 .

APA OPTICS, INC.

By
Anil K. Jain, President

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE "1933 ACT"), OR ANY STATE SECURITIES LAWS. THEY MAY NOT BE SOLD, OFFERED FOR SALE, OR TRANSFERRED IN THE ABSENCE OF EITHER AN EFFECTIVE REGISTRATION UNDER THE 1933 ACT AND UNDER ANY APPLICABLE STATE SECURITIES LAWS OR AN OPINION OF COUNSEL SATISFACTORY TO THE COMPANY THAT SUCH TRANSACTION IS EXEMPT FROM REGISTRATION UNDER THE 1933 ACT AND UNDER APPLICABLE STATE SECURITIES LAWS.

SCHEDULE I

Year	Warrant Factor	Warrant Exercise Price	Maximum ROI	Target Price
1	\$ 4.00	\$ 4.00	\$ 3.00	\$11.00
2	5.00	5.00	3.75	13.75
3	6.00	6.00	4.50	16.50
4	7.00	7.00	5.25	19.25
5	8.00	8.00	6.00	22.00

WARRANT EXERCISE FORM

To be signed only upon exercise of Warrant.

The undersigned, the holder of the within Warrant, hereby irrevocably elects to exercise the purchase right represented by such Warrant for, and to purchase thereunder, of the shares of Common Stock of APA Optics, Inc. to which such Warrant relates and herewith makes payment of \$ _____ therefor in cash or by certified check, and requests that such shares be issued and be delivered to the undersigned at the address set forth below.

Dated: _____ (Signature)

(Address)

(Taxpayer's I.D. Number)

NOTE: If the shares are to be issued to a person other than the holder, please contact the Company for further instructions.

WARRANT ASSIGNMENT

(To be signed only upon transfer of Warrant)

FOR VALUE RECEIVED, the undersigned hereby sells, assigns and transfers unto _____ the purchase right represented by the within Warrant to purchase _____ of the shares of Common Stock of APA Optics, Inc. to which such Warrant relates and appoints _____ attorney to transfer such purchase right on the books of APA Optics, Inc. with full power of substitution in the premises.

Dated:

Signature

Name

Address
